2014 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: August 2014

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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_2) using passive diffusion tubes and automatic monitors.

Exceedences of the annual mean air quality standard for NO_2 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_2 as the annual mean exceeded 60 µgm^{-3}. No exceedence of the hourly mean air quality standard for NO_2 was detected in the Coalville AQMA.

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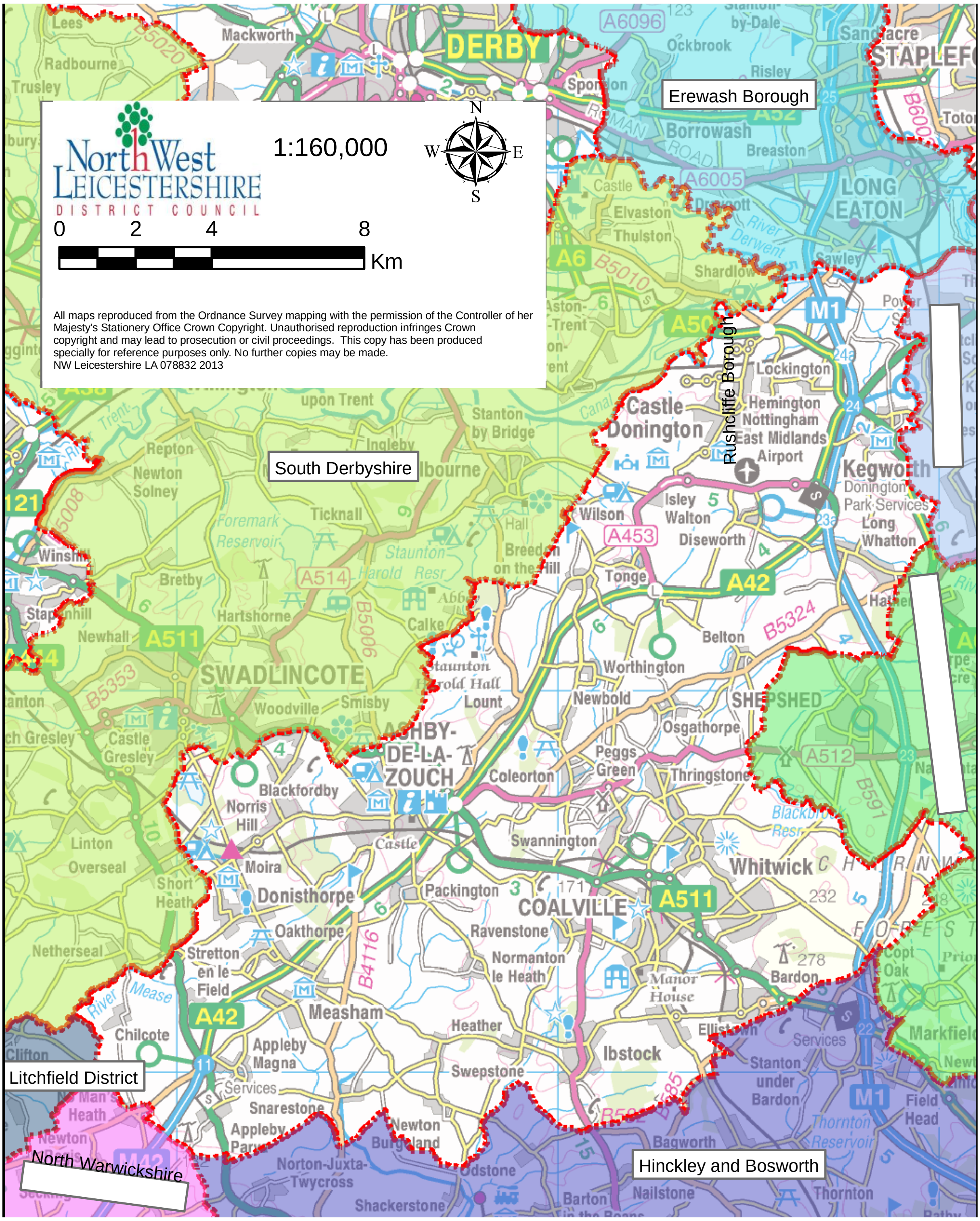
1.1 Description of Local Authority Area

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 approximately 280Km2 (approximately 108 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 2011 census found the population of the district to be 93,468[50]; the population is mainly distributed 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 A511 from Leicester to Burton-on-Trent.

1.2 Purpose of Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

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 LAQM 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 LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1. This table shows the objectives in units of microgrammes per cubic metre $\mu g.m^{-3}$ (milligrammes per cubic metre, $mg.m^{-3}$ for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu g.m^{-3}$	Running annual mean	31.12.2003
	5.00 $\mu g.m^{-3}$	Annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g.m^{-3}$	Running annual mean	31.12.2003
Carbon monoxide	10 $mg.m^{-3}$	Running 8-hour mean	31.12.2003
Lead	0.50 $\mu g.m^{-3}$	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
Particulate Matter (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	24-hour mean	31.12.2004

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
	times a year		
	266 µg.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

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 Update and Screening Assessment (USA) undertaken in 2006 [1] 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 2 and Figure 3

The Detailed Assessment [6] undertaken in September 2007 of the three locations identified as possible areas for AQMAs in the USA 2006 [1], the three locations were High Street/Bondgate in Castle Donington, Broom Leys Road, Coalville and Bardon Road, Coalville, 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 4, and the second covering Broom Leys Road and Bardon Road in Coalville, presented in Figure 5

The Air Quality Progress Report conducted in April 2008 [7] 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 [9] 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 as shown in Figure 6.

The Detailed assessment of East Midlands airport published in March 2009 [8] concluded that the Air quality objective for NO_2 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 [10] 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 [11] 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 [12] found that a detailed assessment for SO_2 was required in some areas of the district in relation to the burning of solid fuel, to which this report relates. The report also recommended that the M1 AQMA is expanded to include an exceedence of the 1-hour mean objective for NO_2 as the yearly mean has exceeded 60µgm^{-3}.

The Progress Report published in April 2010 [13] found no significant change in the district.

A Detailed Assessment for SO_2 was conducted in 2010 [14]. This found that solid fuel usage within off-gas areas of the district was insufficient to warrant further investigation.

A Detailed assessment of the M1 AQMA conducted in 2011 [16] found that most of the declared area could be revoked as there is either no relevant receptor or the annual mean air quality standard for NO_2 is not being exceeded.

A Detailed Assessment of the Coalville AQMA conducted in 2011 [15] found that the declared area could be reduced to the declared area of Stephenson Way as the annual mean air quality standard for NO_2 is not being exceeded along Bardon Road.

The 2011 progress report [17] found that Broomleys junction in the Coalville AQMA exceeded the 1-hour mean air quality standard for NO_2 and recommended that a detailed assessment be undertaken.

The progress report also found that the current air quality action plan is insufficient and needs to be updated.

The 2011 detailed assessment of 1-hour Mean Air Quality Standard at Broomleys junction Coalville[18] found that the 1-hour mean air quality standard was being exceeded and the AQMA should be amended.

The 2012 detailed assessment of Castle Donington[20] found that a large proportion of the AQMA was not exceeding the air quality standard and recommended the AQMA be amended.

The 2012 Further assessment of Copt Oak [21] found that a large proportion of the AQMA was not exceeding the Air Quality Standard and recommended the AQMA be amended.

The 2012 Detailed assessment of Kegworth [22] found that it was likely that most of the AQMA was exceeding the Air Quality Standard and recommended a new monitoring location was installed in the north of the AQMA.

The 2013 Further assessment of Coalville AQMA[23] found that some of its area was not exceeding the annual mean or hourly mean air quality standards for NO_2. The report recommended that a traffic survey be undertaken to further inform action planning

Figure 2. Kegworth AQMA (highlighted in blue).

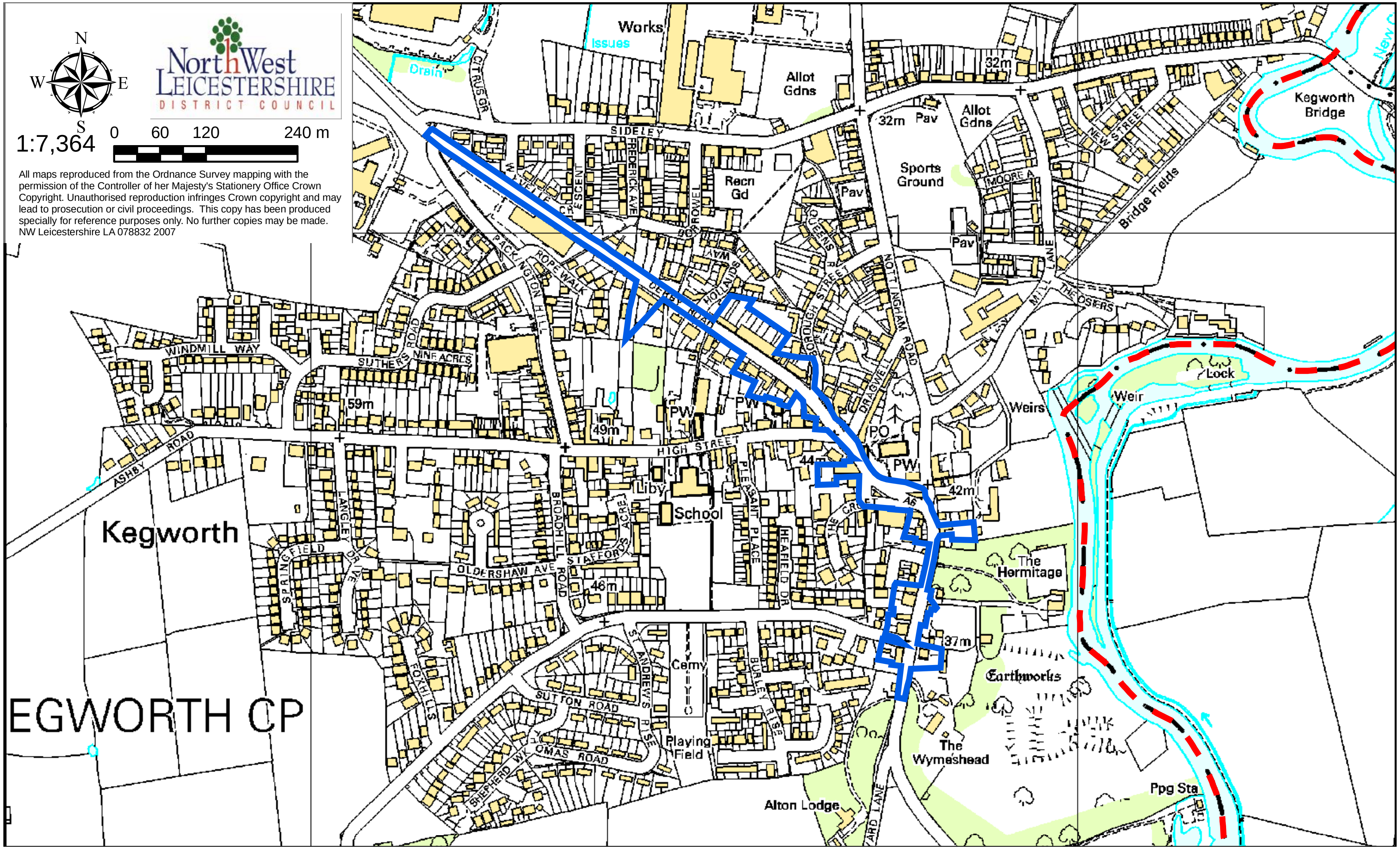


Figure 3. M1 AQMA (Outlined in Dark Blue)

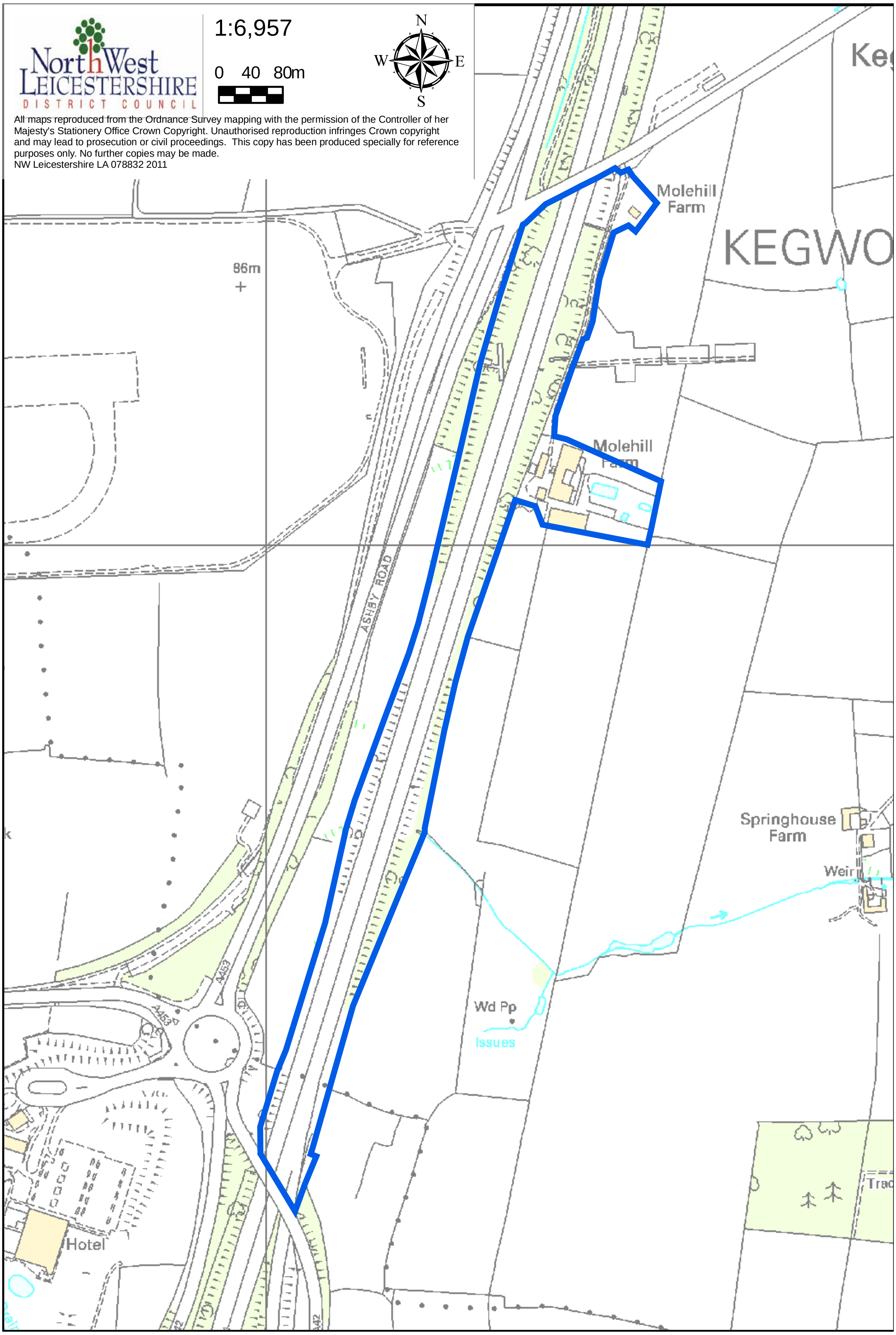


Figure 4. Castle Donington Air Quality Management Area

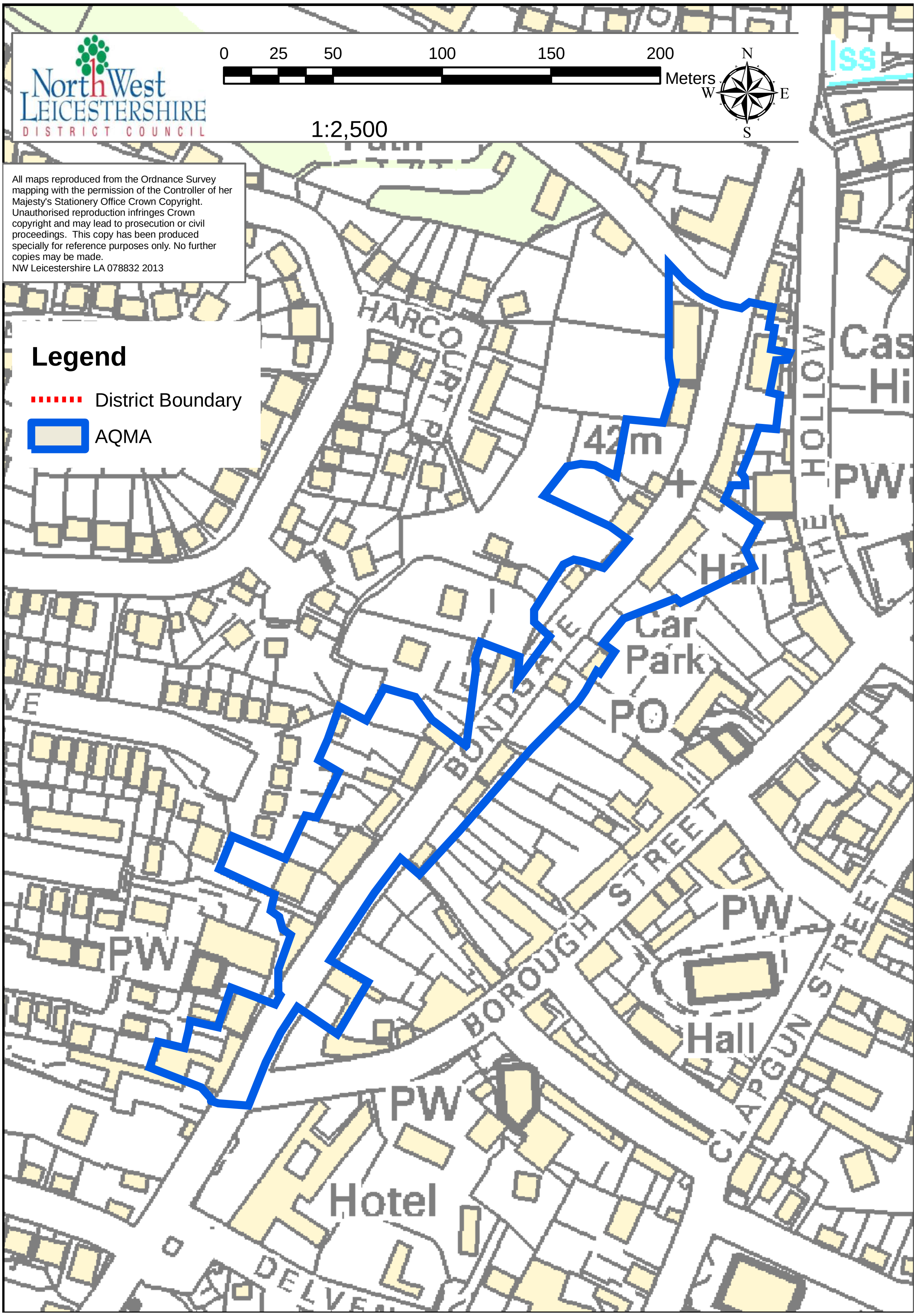


Figure 5. Coalville Air Quality Management Area (Broom Leys Junction)

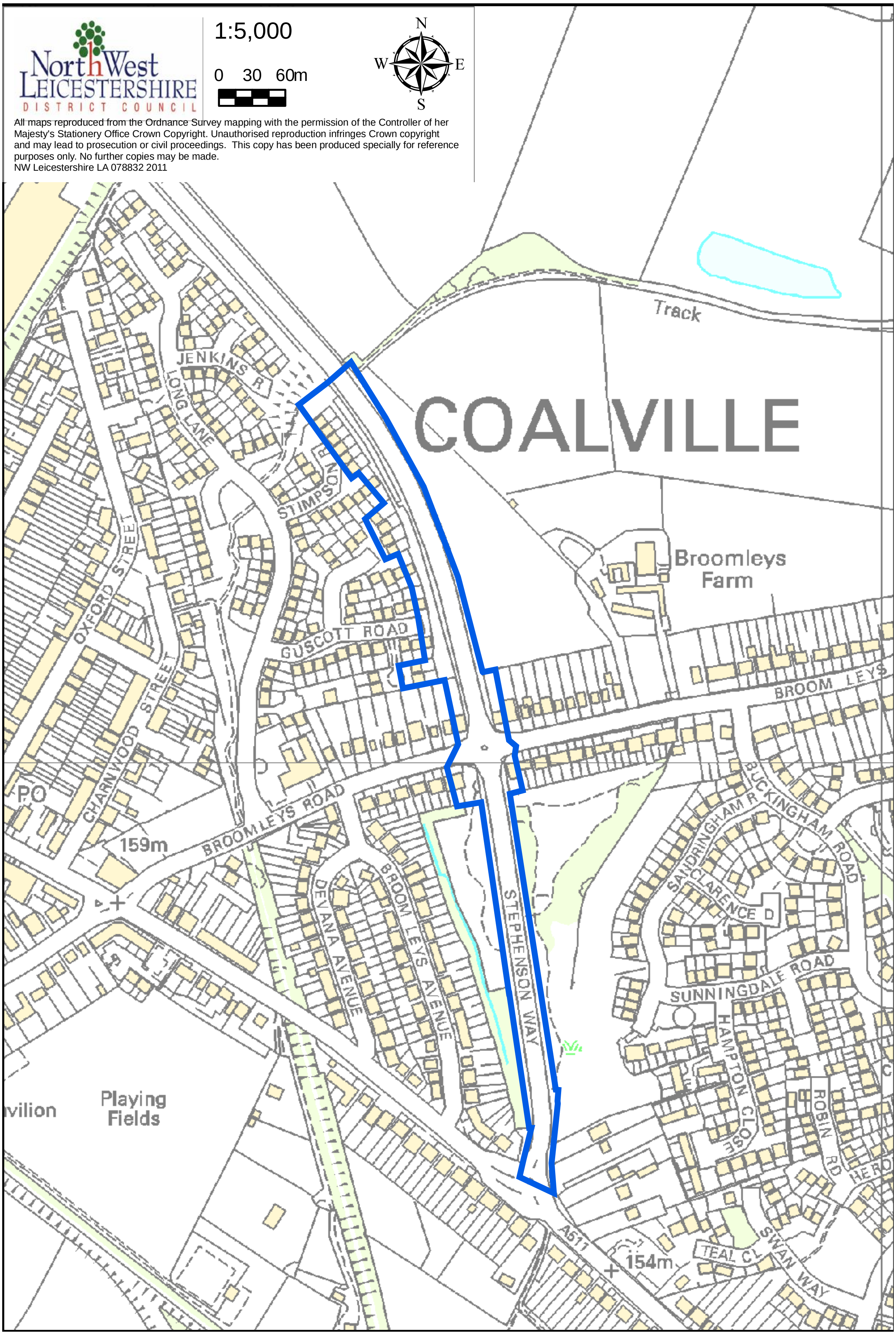
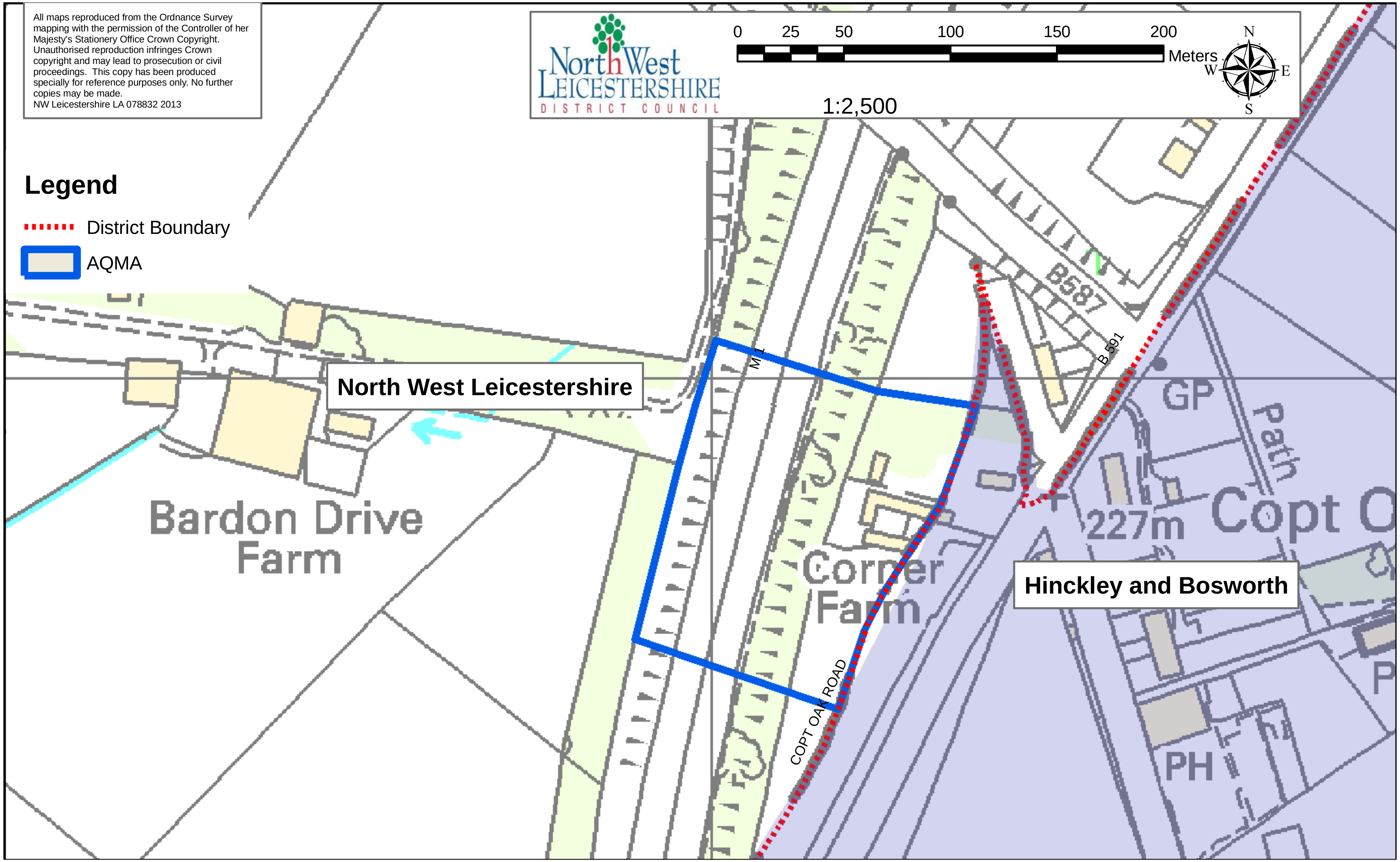


Figure 6. Copt Oak AQMA



2 Methodology

2.1 Projecting measured annual mean roadside nitrogen dioxide concentrations to future years

The technical guidance LAQM.TG(09) [39] defines a method for projecting the NO_2 concentration to future years in paragraph 2.13 page 2-3 and box 2.1 on page 2-4. A correction to box 2.1 was published in an Errata published in 2010 [40]. The corrected version of Box 2.1 is reproduced in Table 2 for reference.

Table 2. Box 2.1 from Errata to LAQM.TG(09): Is the example in box 2.1 of TG(09) correct?

Box 2.1: Projecting measured annual mean roadside nitrogen dioxide concentrations to future years					
Year	**Adjustment factor to be applied**				**Example:**
	Central London	**Inner London**	**Outer London**	**Rest of UK**	The measured NO_2 concentration at a roadside site in Outer London in 2009 is 45.8 µgm^{-3}. The projected concentration for 2010 would be $45.8 \times \left(\frac{0.832}{0.916}\right) = 41.6\,\mu gm^{-3}$ Roadside locations are typically within 1 to 5 metres of the kerbside, but may extend up to 15 metres depending upon the road configuration and traffic flow.
2008	1.000	1.000	1.000	1.000	
2009	0.940	0.926	0.916	0.916	
2010	0.881	0.853	0.832	0.832	
2011	0.824	0.799	0.780	0.783	
2012	0.766	0.746	0.729	0.735	
2013	0.709	0.692	0.678	0.687	
2014	0.652	0.639	0.626	0.639	
2015	0.595	0.585	0.575	0.591	
2016	0.554	0.549	0.542	0.557	
2017	0.513	0.513	0.508	0.523	
2018	0.472	0.477	0.475	0.489	
2019	0.430	0.441	0.442	0.454	
2020	0.389	0.405	0.408	0.420	

Modified from Box 2.1 in *Errata to TG(09): Is the example in Box 2.1 of TG(09) correct?* [40]

From the example given in Box 2.1 it is believed the projection factors should be used as follows

$$Y_p = Y_m \times \frac{AF_p}{AF_m}$$

Where:

Y_p = NO_2 concentration for the Projected Year

Y_m = Measured NO_2 Concentration

AF_p = Adjustment factor for the year to be projected

AF_m = Adjustment factor for the year NO_2 was measured

2.2 Façade Correction

Some diffusion tubes required 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 3)

Table 3. Box 2.3: Predicting nitrogen dioxide concentrations at different distances from roads?

Box 2.3: Predicting nitrogen dioxide concentrations at different distances from roads

A method has been developed to allow NO_2 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.

Step 1: Identify the local background concentration in µgm^{-3}, either from local monitoring or from the national maps published at www.airquality.co.uk. (Note that the background concentration must be less than the measured concentration).

Step 2: apply the following calculation

$$C_z = \left(\frac{C_y - C_b}{-0.5476 \times Ln(D_y) + 2.7171} \right) \times \left(-0.5476 \times Ln(D_z) + 2.7171\right) + C_b$$

Where:

- C_z is the total predicted concentration (µgm^{-3}) at distance D_z;
- C_y is the total measured concentration (µgm^{-3}) at distance D_y;
- C_b is the background concentration (µgm^{-3});
- D_y is the distance from the kerb at which concentrations were measured;
- D_z is the distance from the kerb (m) at which concentrations are to be predicted.
- $Ln(D)$ is the natural log of the number D.

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 (http://laqm.defra.gov.uk/helpdesks.html).

Calculator

The equation above is available as a simple calculator (available at http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html). 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.

Modified from Box 2.3 page 2-6 of the technical Guidance 2009 [39] (modification are improved layout of equation and insertion of updated hyperlinks where footnotes are present in the original.

2.3 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) [39] (reproduced in Table 4).

Table 4. 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

Example

It has only been possible to carry out a monitoring survey (automatic or diffusion tube) at site **S** for six months between July and December 2008. The measured mean concentration **M** for this period is 30.2µgm^{-3}. How can this be used to estimate the annual mean for this location?

Adjustment to estimate annual mean

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:

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.
2. Obtain the annual means, **Am**, for the calendar year for these sites, 2008 in this example.
3. Work out the period means, **Pm**, for the period of interest, in this case July to December 2008. [It may be necessary to use unratified automatic data.]
4. Calculate the ratio, **R**, of the annual mean to the period mean $\left(\frac{Am}{Pm}\right)$ for each of the sites.
5. Calculate the average of these ratios, $\mathbf{R_a}$. This is then the adjustment factor.
6. Multiply the measured period mean concentration **M** by this adjustment factor $\mathbf{R_a}$ to give the estimate of the annual mean for 2008.

Long term site	Annual mean 2008 (Am)	Period Mean 2008 (Pm)	Ratio $\left(\frac{Am}{Pm}\right)$
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
		Average (R_a)	0.944

For this example the best estimate of the annual mean for site **S** in 2008 will be **M** × $\mathbf{R_a}$ = 30.2 x 0.944 = 28.5µgm^{-3}.

Notes

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.

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.

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.

Modified from Box 3.2 page 3-4 of the technical Guidance 2009 [39].

2.4 Volatile Correction Model

Tapered Element Oscillating Microbalance (TEOM) analysers are widely used however, the outcome of the equivalence study means that TEOM analysers cannot strictly be used to measure PM_{10} concentrations for comparison with the air quality objectives. Wherever possible the data collected should be adjusted using the Volatile Correction Model (VCM) (as described in Table 5) rather than the use of a simple 1.3 multiplication factor.

Table 5. Application of the Volatile Correction Model

Box 3.4: Application of the Volatile Correction Model

A VCM web portal is available through the national air quality archive at http://www.volatile-correction-model.info/Default.aspx This allows local authorities to download geographically specific correction factors to apply to the TEOM PM_{10} results.
There are a number of steps that need to be taken to apply the VCM, as the default settings for the TEOMs used in the UK contain a "US EPA correction factor" and are reported at standard temperature and pressure (STP).

Step 1: Remove the default "US EPA correction factor" from the measured TEOM PM_{10} data.
TEOM instruments, as supplied by the manufacturer, include a default US EPA adjustment that is embedded into the software. This adjustment factor is:

The TEOM PM_{10} concentration at STP, with the US EPA adjustment factor removed, is given by:

Step 2: Correct the measurements to atmospheric temperature and pressure
The TEOM is configured to report measurements at a standard temperature (25ºC) and a standard pressure (1 atm). This differs from the European position, which reports at ambient conditions and this difference therefore increases uncertainty in the comparison with the European reference method. By using measurements of ambient temperature and pressure, the temperature and pressure correction can be removed from the TEOM measurements at STP to provide an ambient temperature and pressure TEOM measurement ($TEOM_{ATP}$) using the following equation:

Where P = ambient pressure in atmospheres and T = ambient temperature in ºC

Step 3: The Regional Purge Concentration
The regional purge concentration is the mean of up to three of the nearest Automatic Urban and Rural Network (AURN) FDMS instruments within the model domain. Current evidence suggests that the model domain extends to approximately 130 km from the measurement site. This is multiplied by 1.87 to account for the additional loss of volatile material from the TEOM filter, which is maintained at 50ºC, compared to the FDMS filter, which is maintained at 30ºC. This factor has been derived from TEOM and FDMS co-location studies.

Step 4: The calculating the $TEOM_{VCM}$ concentration
Steps 1 and 3 can be combined into the equation below.

These calculations will be undertaken by the VCM web portal to provide a time series of daily or hourly correction factors that can then be applied to TEOM PM_{10} measurements as they are recorded by the instrument.

Modified from Box 3.4 page 3-11 of the technical Guidance 2009 [39].

3 New Monitoring Data

3.1.1 Automatic Monitoring Sites

Council Run Sites

Currently North West Leicestershire District Council operates 2 automatic monitors in the district located at Castle Donington, Coalville. These monitors are all located with AQMAs declared for exceedences of the nitrogen dioxide air quality standards.

Details of the sites are shown in Table 6. Full Data is available from North West Leicestershire District Council Website [52]

Both monitors are API 200A NO_x analysers

Site operated by third parties

Aggregate industries operate 1 partisol PM_{10} monitor located on Bradgate Drive in Coalville for environmental monitoring relating to their environmental permit.

East Midlands Airport operate an automatic monitor for NO_2 as part of their environmental monitoring program.

Details of the sites are shown in Table 6.

Figure 7. Map of Automatic Monitoring Sites

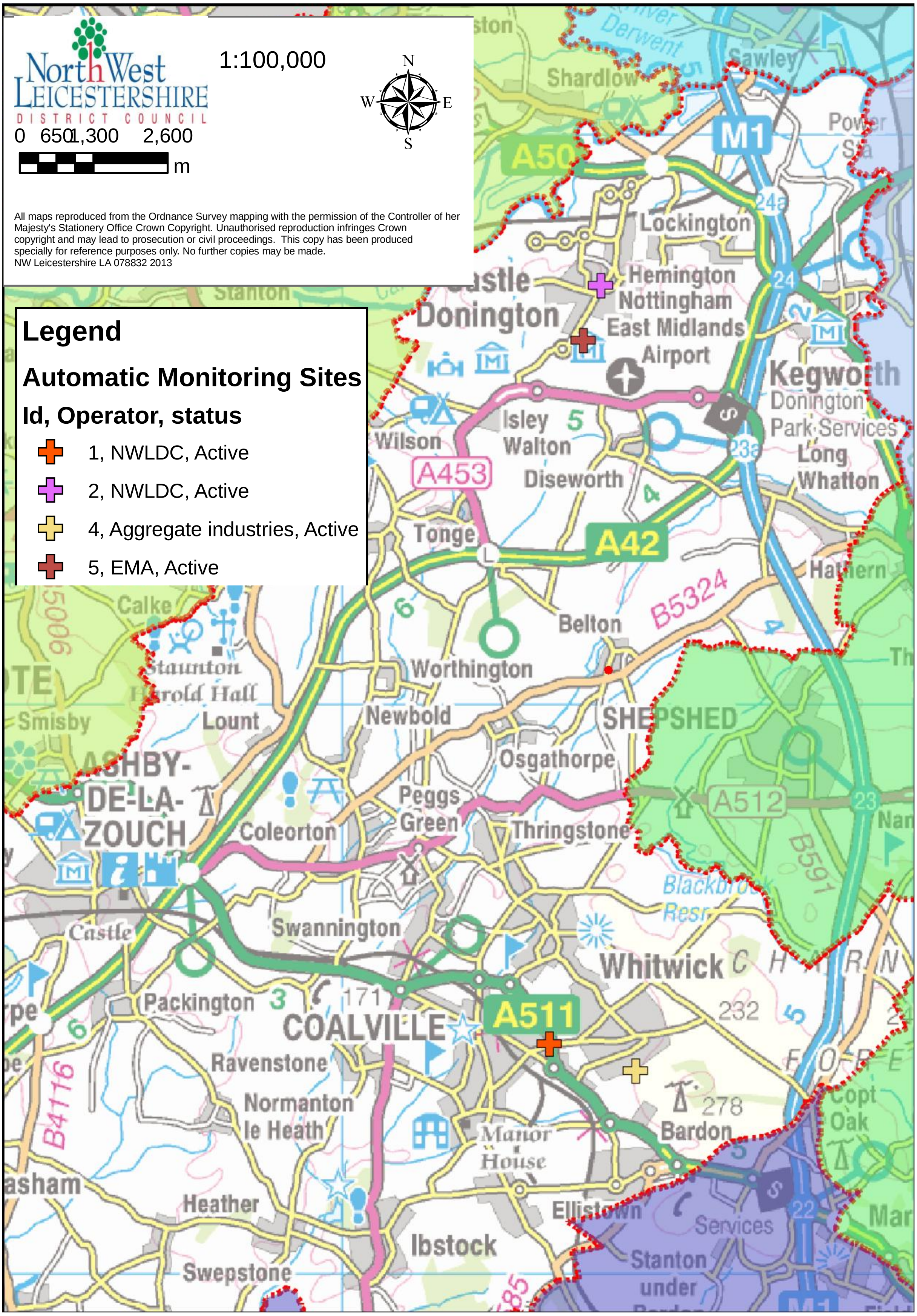


Table 6. Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	OS Grid Ref X	OS Grid Ref Y	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?
1	Coalville	Roadside	443660	314002	NO NO_2 NO_x	Chemiluminescence	Y	5.8	2	Y
2	Castle Donington	Roadside	444534	327365	NO NO_2 NO_x	Chemiluminescence	Y	0	1.5	Y
4	Bradgate Drive Coalville	Other	445147	313563	PM_{10}	Partisol 2025 Sequential sampler	N	Y	N/A	N
5	EMA	Other	444226	326396	NO NO_2 NO_x	Chemiluminescence	N	N	N/A	N
					PM_{10}	TEOM				

3.1.2 Non-Automatic Monitoring Sites

Council Run Sites

The council undertakes extensive diffusion tube monitoring within its AQMAs. Details of the tubes are shown in Table 7. Full Data is available from North West Leicestershire District Council Website [51]

East Midlands Airport run sites

The East Midlands Airport undertakes extensive diffusion tube monitoring in the area of the airport. Details of the tubes are shown in Table 8..

Table 7. North West Leicestershire Diffusion tube monitoring locations

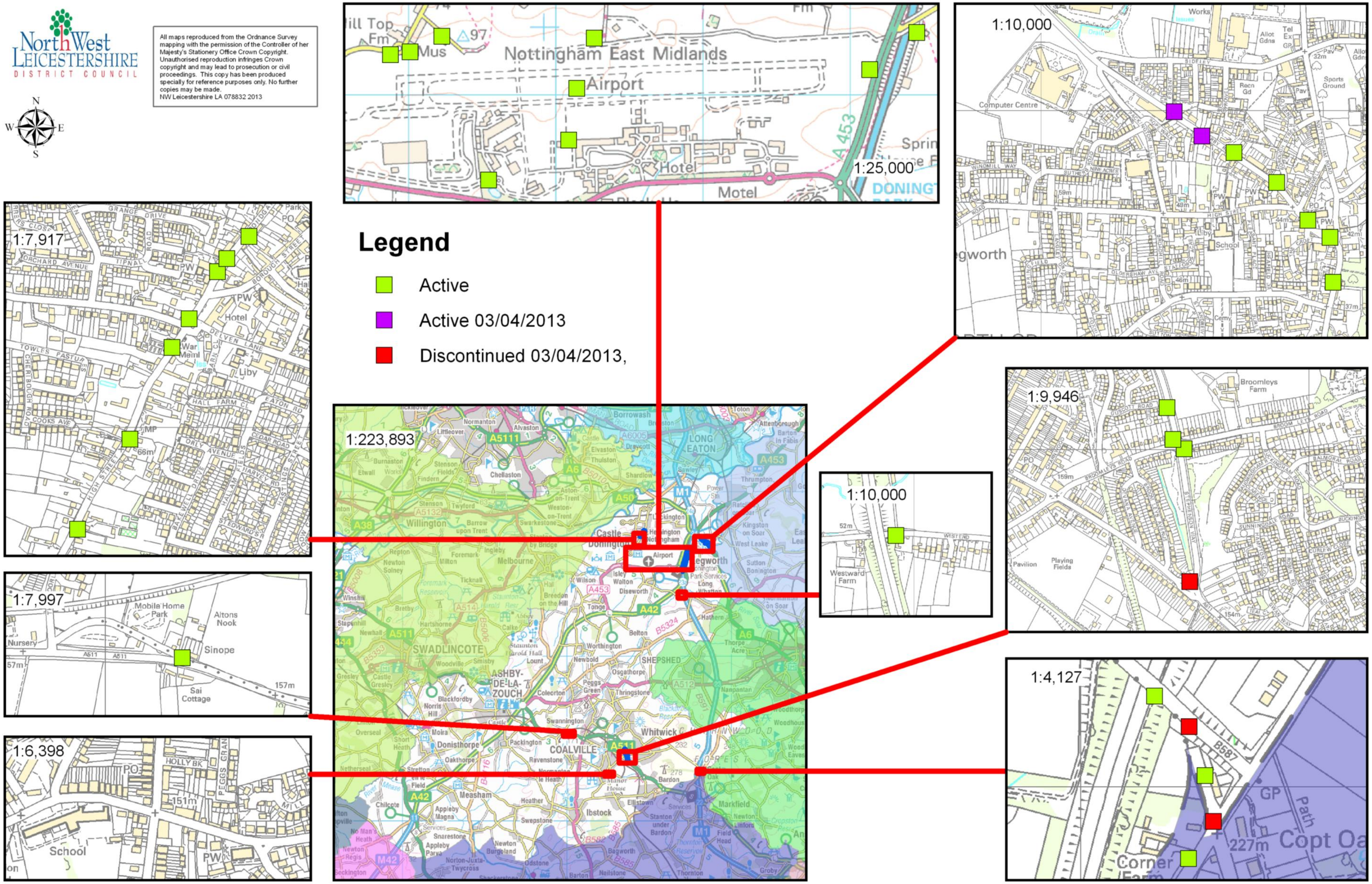
Site details	location	Location type	Grid Reference X	Grid Reference Y	Our Tube No.	Pollutant monitored	In AQMA ?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
06N	Broomleys junction (1)	Roadside	443632	314026	6	NO_2	Y	N	5.8	2	Y
08N	End Cottage Copt Oak	Rural	448138	313012	8	NO_2	Y	N	0	N/A	N
09N	Whitwick Rd Copt Oak	Rural	448120	313066	9	NO_2	Y	N	N	N/A	N
12N	Aeropark	Other	444161	326355	12	NO_2	N	N	N	N/A	N
14N	69 High St Castle Donington	Roadside	444216	326788	14	NO_2	N	N	0	2.9	Y
16N	Crossroads Castle Donington	Roadside	444450	327233	16	NO_2	N	N	7.53	1	Y
17N	13 Bondgate Castle Donington	Roadside	444512	327335	17	NO_2	Y	N	2	2.5	Y
18N	34 Bondgate Castle Donington	Roadside	444580	327411	18	NO_2	Y	N	0	2.3	Y
19N	94 Bondgate Castle Donington	Roadside	444707	327603	19	NO_2	Y	N	0.8	1.4	Y
20N	Derby Rd Kegworth	Roadside	448523	326885	20	NO_2	Y	N	3.2	1	Y
22N	A6 2 Kegworth	Roadside	448817	326621	22	NO_2	Y	N	0	2.3	Y
23N	120 Whatton Rd Kegworth	Suburban	448108	326305	23	NO_2	N	N	N	N/A	Y
26N	Molehill House	Roadside	447457	326420	26	NO_2	Y	N	0	50	Y
31N	Sinope	Roadside	440167	315264	31	NO_2	N	N	7.8	3.2	Y
32N	M1 Bridge Copt Oak	Other	448082	313100	30	NO_2	N	N	N	N/A	Y
33N	Monitoring Station Copt Oak (1)	Other	448124	313048	5	NO_2	Y	Y	N	N/A	Y
34N	Monitoring Station Copt Oak (2)	Other	448124	313048	10	NO_2	Y	Y	N	N/A	Y
35N	Monitoring Station Coalville (1)	Roadside	443660	314002	7	NO_2	Y	Y	5.8	2	Y
36N	Monitoring Station Coalville (2)	Roadside	443660	314002	27	NO_2	Y	Y	5.8	2	Y

Site details	location	Location type	Grid Reference X	Grid Reference Y	Our Tube No.	Pollutant monitored	In AQMA ?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
37N	Monitoring Station Castle Donington (1)	Roadside	444534	327365	24	NO_2	Y	Y	0	1	Y
38N	Monitoring Station Castle Donington (2)	Roadside	444534	327365	25	NO_2	Y	Y	0	1	Y
39N	LW New M1	Other	446935	323744	11	NO_2	Y	N	N	N/A	N
40N	35 High Street Castle Donington	Roadside	444323	326975	13	NO_2	N	N	3	0.9	Y
41N	18 Highstreet Castle Donington	Roadside	444474	327171	15	NO_2	N	N	4	1	Y
42N	Lamppost A511 W of Broomleys junc	Roadside	443613	314114	1	NO_2	Y	N	16	1.9	N
43N	Direction Sign Bardon Rd/A511 RBT	Roadside	443675	313642	2	NO_2	Y	N	2.4	3	N
44N	Copt oak cross roads	Roadside	448147	312961	3	NO_2	Y	N	3	2.3	N
45N	Outside Corner farm Copt oak	Roadside	448119	312920	4	NO_2	Y	N	27	4.3	N
46N	Kegworth PO Derby Road	Roadside	448724	326702	21	NO_2	Y	N	0	1.3	Y
47N	12 Derby Rd Kegworth	Roadside	448639	326805	28	NO_2	Y	N	4.7	2.5	Y
48N	28 London Road Kegworth	Roadside	448792	326533	29	NO_2	Y	N	0.8	1.5	Y
49N	10 Central Road Hugglescote	Roadside	442578	312871	5	NO_2	n	N	4.1	2.5	y
50N	Hugglescote Crossroads	Roadside	442562	312823	10	NO_2	n	N	5.4	1	y
51N	40mph sign N of petrol station	roadside	448361	326997	3	NO_2	Y	n	9.6	3.2	y
52N	lamppost 65 Derby Road	roadside	448436	326931	9	NO_2	Y	n	5.9	2.5	y

Table 8. East Midlands Airport Diffusion tube Monitoring Locations

Site details	location	Location type	Grid Reference		Pollutant monitored	In AQMA ?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
			X	Y						
A1	Stand 15 (amended 16)	Other	445091	325690	NO_2	n	n	N/A	N/A	N
A2	Crash gate 27 ILS	Other	447136	326169	NO_2	n	n	N/A	N/A	N
A3	Crash gate 4	Other	445265	326382	NO_2	n	n	N/A	N/A	N
A4	Central IRVR	Other	445147	326042	NO_2	n	n	N/A	N/A	N
A5	Western perimeter fence	Other	443879	326271	NO_2	n	n	N/A	N/A	N
A6	Aeropark	Other	444230	326396	NO_2	n	n	N/A	N/A	N
A7	Ambassador Rd	Other	444548	325418	NO_2	n	n	N/A	N/A	N
A8	Aeropark (2)	Other	444230	326396	NO_2	n	y	N/A	N/A	N
A9	Aeropark (3)	Other	444230	326396	NO_2	n	y	N/A	N/A	N

Figure 8. Map of Coalville Diffusion Tube Monitoring Sites



3.2 Comparison of Monitoring Results with Air Quality Objectives

3.2.1 Nitrogen Dioxide (NO2)

Automatic Monitoring Data

Table 9. Results of Automatic Monitoring for NO_2: Comparison with Annual Mean Objective

Site ID		1	2	5
		Coalville	Castle Donington	EMA
Site Type		Roadside	Roadside	Other
Within AQMA?		Y	Y	N
Valid Data Capture for Monitoring Period % [a]		96.4	99.8	95.1
Valid Data Capture 2013 %		96.4	99.8	95.1
Annual Mean Concentration (μgm^{-3})	2010 [c]	**54.63**	**40.84**	
	2011[c]	**36.96**	26.9	24.83
	2012 [c]	**45.56**	**37.5**	28.5
	2013[c]	**43.73**	35.8	22.7

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. Highlighted in green

	Annualised mean (See Box 3.2 of TG(09))
???	Value exceeds Annual mean air quality standard
???	Value is approaching Annual mean air quality standard (exceeded $36\mu gm^{-3}$)

Figure 9. Trends in Annual Mean NO_2 Concentrations Measured at Coalville Automatic Monitoring Site

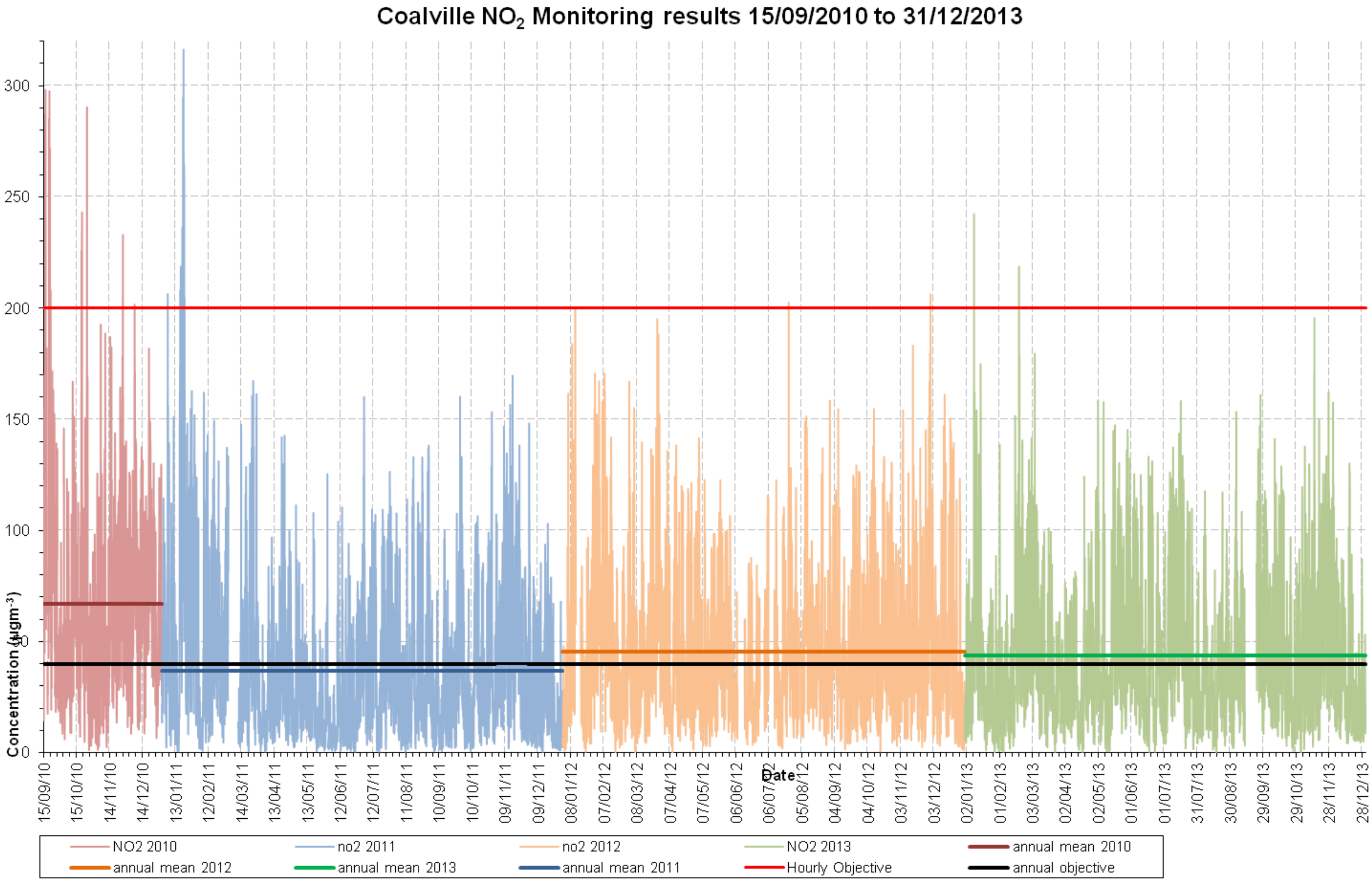


Figure 10. Trends in Annual Mean NO_2 Concentrations Measured at Castle Donington Automatic Monitoring Site

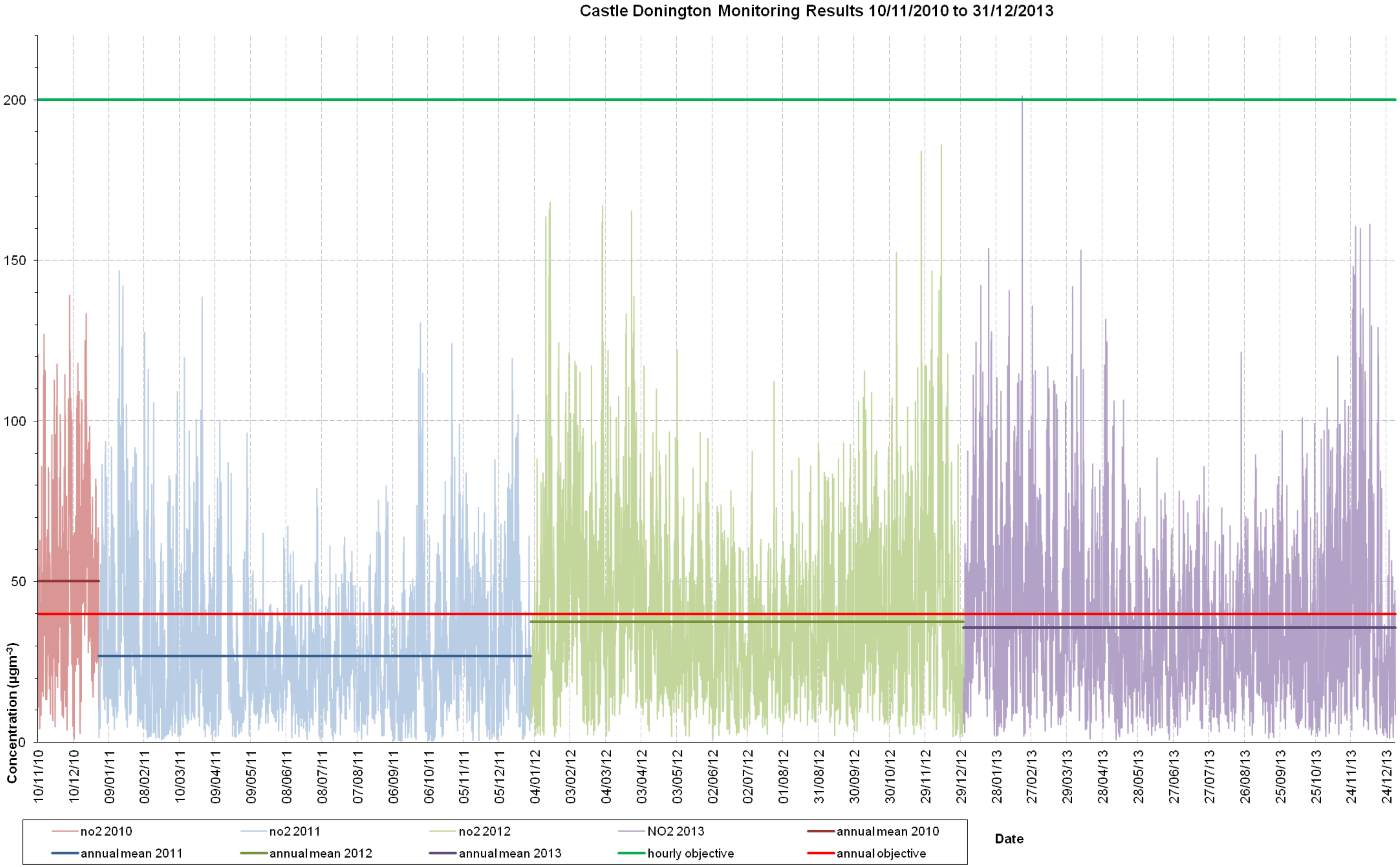


Figure 11. Trends in Annual Mean NO_2 Concentrations Measured at East Midlands Airport Automatic Monitoring Sites

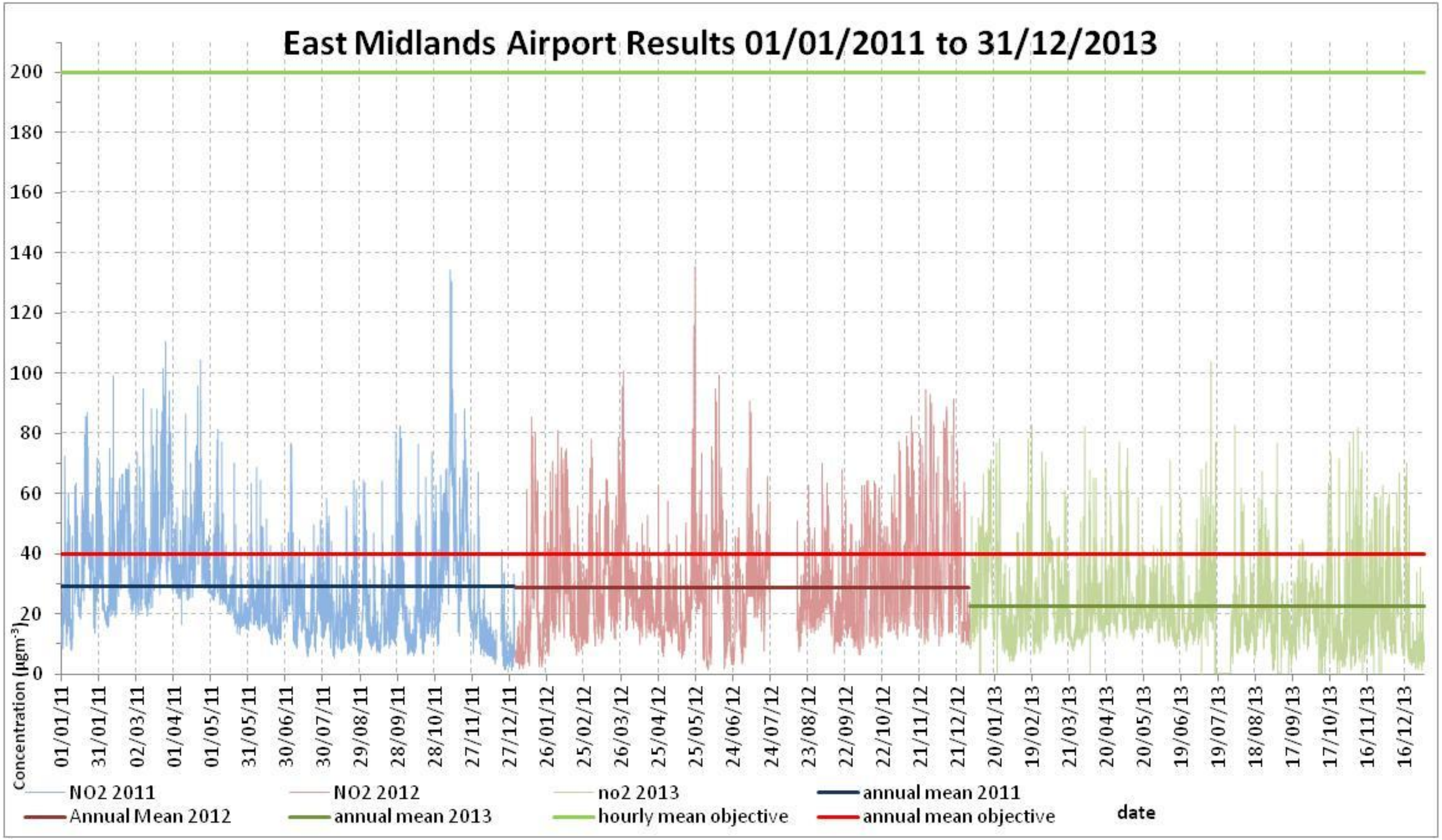


Table 10. Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective

Site ID		Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2012 % [b]	Number of Exceedences of Hourly Mean (200 µgm^{-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.**			
						2010 [C]	2011 [c]	2012 [C]	2013 c
1	Coalville	Roadside	Y	96.4	96.4	29 (270.44)	20	3	2
2	Castle Donington	Roadside	Y	99.8	99.8	0 (130.28)	0	0	1
5	EMA	Other	N	95.1	95.1		0	0	0

A i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
B i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
C If the period of valid data is less than 90%, include the 99.8th percentile of hourly means in brackets
*Number of exceedences for previous years are optional.

Diffusion Tube Monitoring Data

An overview of the data is shown in Table 11. Façade corrections of relevant tubes is shown in Table 13. Full monitoring data is available in Appendix B.

Coalville

Tubes 06N 35N 36N 42N 43N are located within the Coalville AQMA.

- Tubes 06N and 35N did not exceed the annual mean objective but exceeded 36µgm^{-3}
- Tube 36N exceeded the annual mean objective.
- Tubes 42N and 43N did not exceed the annual mean objective

Castle Donington

Tubes 16N, 17N 18N, 19N, 37N, and 38N are located within the Castle Donington AQMA. Tubes 12N, 14N, 16N, 40N and 41N are located south of the AQMA.

- Tubes 16N, 17N, 37N, and 38N did not exceed the annual mean objective but did exceed 36 μgm^{-3}
- Tube 18N and 41N exceeded the annual mean objective

Copt Oak

Tubes 09N and 44N ceased monitoring at the end of march following reduction of the AQMA. Tube 45N is located within the AQMA. Tubes 08N and 32N are located on the façade of the nearest receptor to the M1 and level with the ‘kerb’ of the M1 respectively

- Tube 32N exceeded the annual mean objective.
- Tubes 08N, 09N, 44N, 45N were significantly below the annual mean objective.

Kegworth

Tubes 20N, 22N, 46N, 47N, 48N, are within the Kegworth AQMA. Tubes 51N and 52N were commissioned beginning of April to look at northern end of the AQMA. Tube 23N is a Suburban tube placed under East Midlands Airport flight path.

- Tubes 46N and 48N exceeded the annual mean objective.
- Tubes 51N and 52N were below the annual mean objective but exceeded 36μgm^{-3}. The annualised results were also below annual mean objective but exceeded 36μgm^{-3}. Both the façade corrected annual mean and the façade corrected annualised mean were both significantly below the annual mean objective
- Tubes 20N, 22N, 23N were significantly below the annual mean objective

M1 (Mole Hill Farm and Long Whatton)

Tube 26N is located on the façade of Molehill house within the M1 AQMA. Tube 39N is located east of the M1 between the M1 and the nearest receptor.

Both tubes were significantly below the annual mean objective

Other Tubes

Tube 31N is located in Sinope. It was significantly below the annual mean objective.

Tube 49N and 50N are located in Hugglescote, north of the Central Road | Station Road | Grange Road crossroads, and on the crossroads respectively. Both tubes were significantly below the annual mean objective.

Table 11. Results of NO_2 Diffusion Tubes 2013

Site details	location	Location type	In AQMA ?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) [a]	2013 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.87 [b]
06N	Broomleys junction (1)	Roadside	Y	N	100.0%	**36.11**
08N	End Cottage Copt Oak	Rural	Y	N	100.0%	28.64
09N	Whitwick Rd Copt Oak	Rural	Y	N	25.0%	34.83
12N	Aeropark	Other	N	N	91.7%	23.65
14N	69 High St Castle Donington	Roadside	N	N	100.0%	29.36
16N	Crossroads Castle Donington	Roadside	N	N	91.7%	**36.62**
17N	13 Bondgate Castle Donington	Roadside	Y	N	100.0%	**37.05**
18N	34 Bondgate Castle Donington	Roadside	Y	N	100.0%	**49.52**
19N	94 Bondgate Castle Donington	Roadside	Y	N	100.0%	32.41
20N	Derby Rd Kegworth	Roadside	Y	N	100.0%	32.84
22N	A6 2 Kegworth	Roadside	Y	N	100.0%	34.08
23N	120 Whatton Rd Kegworth	Suburban	N	N	91.7%	23.96
26N	Molehill House	Roadside	Y	N	100.0%	33.64
31N	Sinope	Roadside	N	N	100.0%	32.99
32N	M1 Bridge Copt Oak	Other	N	N	100.0%	**49.16**
35N	Monitoring Station Coalville (1)	Roadside	Y	N	91.7%	**36.54**
36N	Monitoring Station Coalville (2)	Roadside	Y	N	83.3%	**42.37**
37N	Monitoring Station Castle Donington (1)	Roadside	Y	N	91.7%	**38.99**
38N	Monitoring Station Castle Donington (2)	Roadside	Y	N	83.3%	**36.19**

Site details	location	Location type	In AQMA ?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) [a]	2013 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 0.87 [b]
39N	LW New M1	Other	Y	N	83.3%	32.28
40N	35 High Street Castle Donington	Roadside	N	N	100.0%	29.36
41N	18 Highstreet Castle Donington	Roadside	N	N	100.0%	**41.25**
42N	Lamppost A511 W of Broomleys junc	Roadside	Y	N	75.0%	31.51
43N	Direction Sign Bardon Rd/A511 RBT	Roadside	Y	N	91.7%	28.95
44N	Copt oak cross roads	Roadside	Y	N	25.0%	33.06
45N	Outside Corner farm Copt oak	Roadside	Y	N	100.0%	34.08
46N	Kegworth PO Derby Road	Roadside	Y	N	100.0%	**42.78**
47N	12 Derby Rd Kegworth	Roadside	Y	N	100.0%	**37.92**
48N	28 London Road Kegworth	Roadside	Y	N	100.0%	**40.96**
49N	10 Central Road Hugglescote	Roadside	n	N	83.3%	33.58
50N	Hugglescote Crossroads	Roadside	n	N	100.0%	34.29
51N	40mph sign N of petrol station	roadside	Y	N	75.0%	**37.78**
52N	lamppost 65 Derby Road	roadside	Y	N	75.0%	**37.19**

XX	exceedence of the NO_2 annual mean AQS objective of 40µg/m^3
XX	Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective
XX	Annual mean is approaching the annual mean objective
	Means should be "annualised" as in Box 3.2 of TG(09)(http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if full calendar year data capture is less than 75%

Table 12. Results of NO_2 Diffusion Tubes (2009 to 2013)

Tube location		Location Type	In AQMA ?	Annual Means				
				2009	2010	2011	2012	2013
				0.9	1.06	1.06	0.91	0.87
06N	BROOMLEYS junc (1)	Roadside	Y	**39.37**	**43.77**	**39.66**	**41.18**	**36.11**
08N	End Cottage Copt Oak	Rural	N	29.02	33.76	31.27	30.94	28.64
09N	whitwick rd COPT OAK	Rural	N	**42.68**	**48.06**	**42.22**	**42.16**	34.83
12N	AEROPARK	Other	N	17.44	28.36	21.68	22.37	23.65
14N	CD 69 HIGH st	Roadside	N	25.42	33.14	29.33	28.36	29.36
16N	Bondgate CD crossroads	Roadside	N	33.46	**42.10**	33.44	35.57	**36.62**
17N	13 BondGate	Roadside	Y	33.61	**44.69**	**36.13**	**37.23**	**37.05**
18N	34 bondgate	Roadside	Y	**43.94**	**57.88**	**59.07**	**49.22**	**49.52**
19N	Bondgate CD (94)	Roadside	Y	29.78	**41.14**	35.95	34.43	32.41
20N	DERBY RD Keg	Roadside	Y	35.69	**43.18**	33.48	35.16	32.84
22N	Keg A6 2	Roadside	Y	**36.95**	**46.50**	**38.64**	35.95	34.08
23N	KEG EMA 120 whatton road	Suburban	N	18.75	27.82	24.19	24.80	23.96
26N	MOLEHILL HOUSE	Roadside	Y	**40.64**	**41.29**	**36.13**	**37.08**	33.64
31N	SINOPE	Roadside	N	30.44	**37.89**	**38.78**	**36.70**	32.99
32N	M1 Bridge Copt Oak	Other	N	**58.28**	**71.21**	**50.79**	**50.55**	**49.16**
35N	monitoring station Coalville (1)	Roadside	Y		**48.90**	**39.32**	35.95	**36.54**
36N	monitroing station Coalville (2)	Roadside	Y		**47.90**	31.62	**40.45**	**42.37**
37N	monitoring station CD (1)	Roadside	Y		**42.57**	**38.16**	**37.01**	**38.99**
38N	monitoring station CD (2)	Roadside	Y		**43.44**	35.51	**37.40**	**36.19**
39N	NEW M1 LW	Other	Y		34.35	31.91	29.62	32.28
40N	35 high street castle donington	Roadside	N			27.52	31.02	29.36
41N	18 highstreet castle donington	Roadside	N			**37.67**	**39.71**	**41.25**
42N	lamppost A511 W of broomleys junc	Roadside	Y			**41.07**	**38.77**	31.51
43N	Direction Sign Bardon Rd/A511 RBT	Roadside	Y			33.47	32.26	28.95

Tube location		Location Type	In AQMA ?	Annual Means				
				2009	2010	2011	2012	2013
				0.9	1.06	1.06	0.91	0.87
44N	copt oak cross roads	Roadside	N			36.51	37.16	33.09
45N	outside corner farm copt oak	Roadside	Y			38.79	35.41	34.08
46N	Kegworth PO Derby Road	Roadside	y			44.12	42.52	42.78
47N	12 Derby Rd Kegworth	Roadside	y			32.86	43.59	37.92
48N	28 london road kegworth	Roadside	y			45.15	40.19	40.96
49N	Hugglescote crossroads	Roadside	N				27.02	33.58
50N	10 central road hugglescote	Roadside	N				27.96	34.29
51N	40mph sign N of petrol station	Roadside	Y					37.78
52N	lamppost 65 Derby Road	Roadside	Y					37.19

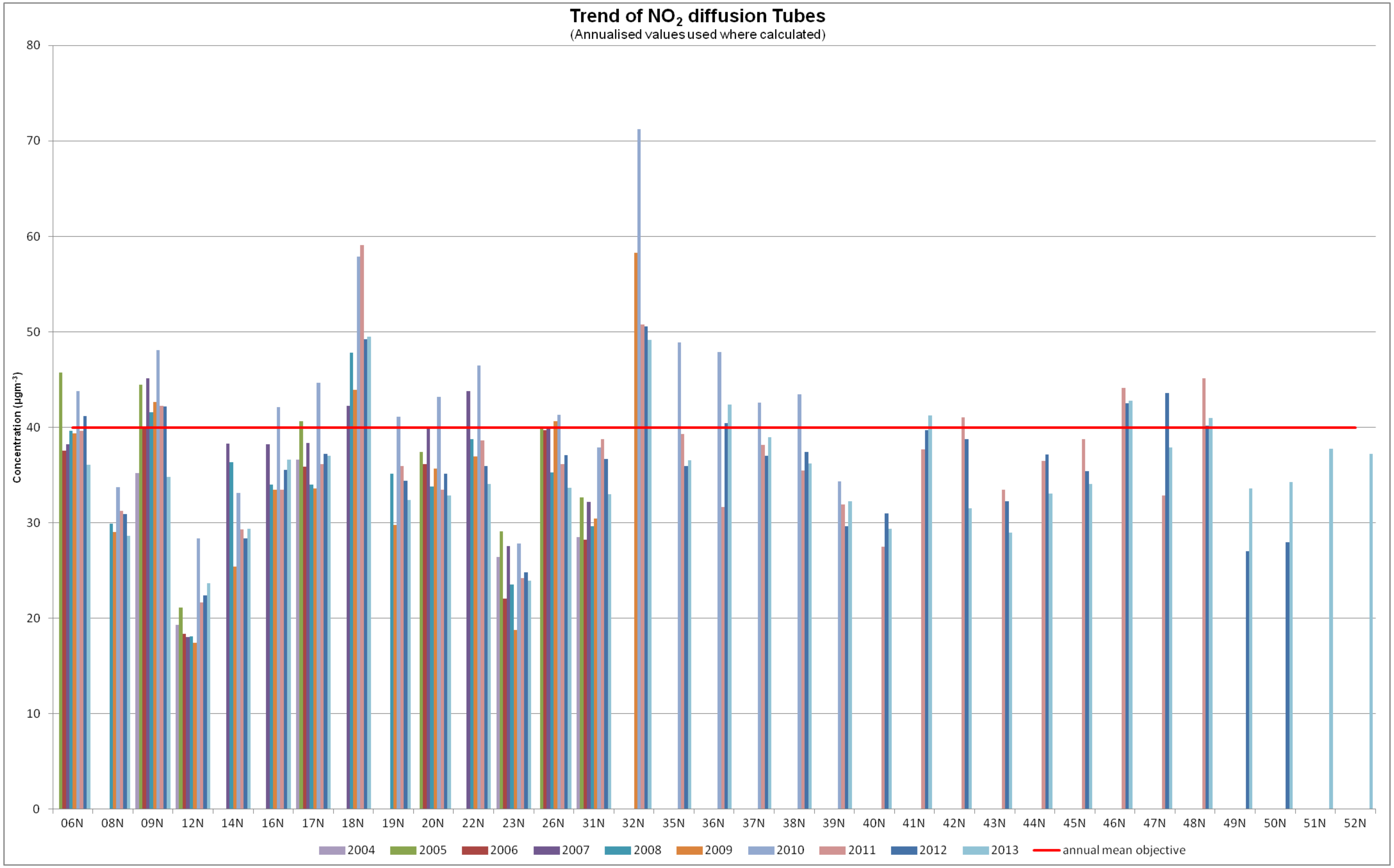
XX	exceedence of the NO_2 annual mean AQS objective of 40µg/m^3
<u>XX</u>	Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective
XX	Annual mean is approaching the annual mean objective
	Means should be "annualised" as in Box 3.2 of TG(09)(http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if full calendar year data capture is less than 75%
	Not Monitored

Table 13. Façade correction

Site Code	location	Location Type	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 (Bias adjusted mean used)	receptor correction for roadside tubes (annualised Bias adjusted mean used)
			X	Y			
06N	Broomleys junction (1)	Roadside	443500	313500	16.24	29.77	[redacted]
08N	End Cottage Copt Oak	Rural	447500	312500	20.05	Not Roadside	[redacted]
09N	Whitwick Rd Copt Oak	Rural	447500	312500	20.05	Not Roadside	[redacted]
12N	Aeropark	Other	443500	325500	15.86	Not Roadside	[redacted]
14N	69 High St CD	Roadside	443500	326500	15.82	N/A	[redacted]
16N	Crossroads CD	Roadside	443500	326500	15.82	27.64	[redacted]
17N	13 Bondgate CD	Roadside	443500	326500	15.82	33.96	[redacted]
18N	34 Bondgate CD	Roadside	444500	326500	21.38	N/A	[redacted]
19N	94 Bondgate CD	Roadside	444500	327500	19.11	31.11	[redacted]
20N	Derby Rd Kegworth	Roadside	447500	326500	27.88	31.41	[redacted]
22N	A6 2 Kegworth	Roadside	448500	326500	20.53	N/A	[redacted]
23N	120 Whatton Rd Kegworth	Suburban	447500	325500	25.95	Not Roadside	[redacted]
26N	Molehill House	Roadside	446500	325500	27.69	N/A	[redacted]
31N	Sinope	Roadside	439500	314500	12.55	26.34	[redacted]
32N	M1 Bridge Copt Oak	Other	447500	312500	20.05	Not Roadside	[redacted]
35N	monitoring station Coalville (1)	Roadside	443500	313500	16.24	30.07	[redacted]
36N	monitoring station Coalville (2)	Roadside	443500	313500	16.24	34.04	[redacted]

37N	monitoring station CD (1)	Roadside	443500	326500	15.82	N/A	
38N	monitoring station CD (2)	Roadside	443500	326500	15.82	N/A	
39N	LW New M1	other	446500	323500	22.07	Not Roadside	
40N	35 high street castle donington	roadside	443500	326500	15.82	25.44	
41N	18 high street castle donington	roadside	443500	326500	15.82	33.00	
42N	lamppost A511 W of broomleys junc	roadside	443500	313500	16.24	23.58	
43N	Direction Sign Bardon Rd/A511 RBT	roadside	443500	313500	16.24	27.01	
44N	copt oak cross roads	roadside	447500	312500	20.05	30.43	30.45
45N	outside corner farm copt oak	roadside	447500	312500	20.05	26.13	
46N	Kegworth PO Derby Road	roadside	448500	326500	20.53	N/A	
47N	12 Derby Rd Kegworth	roadside	448500	326500	20.53	33.37	
48N	28 london road kegworth	roadside	448500	325500	18.08	**38.82**	
49N	10 central road hugglescote	roadside	442500	312500	15.53	29.25	
50N	hugglescote cross roads	roadside	442500	312500	15.53	27.27	
51N	40mph sign N of petrol station	roadside	447500	326500	27.88	33.87	34.17
52N	lamppost 65 Derby Road	roadside	447500	326500	27.88	34.08	34.40

Figure 12. Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Diffusion Tube Monitoring Sites



3.2.2 Particulate Matter (PM_{10})

Bradgate Drive

The annual mean objective was not exceeded

The site recorded 14 exceedences of the daily mean objective this is well below the 35 permitted exceedences.

East Midlands Airport

The annual mean was not exceeded

The site recorded 11 exceedences of the daily mean objective this is well below the 35 permitted exceedences.

Table 14. Results of Automatic Monitoring for PM_{10}: Comparison with Annual Mean Objective

Site ID		4 Bradgate Drive Coalville	5 EMA
Site Type		Suburban	Other
Within AQMA?		N	N
Valid Data Capture for Monitoring Period % [a]		99.18	98.6
Valid Data Capture 2013 % [b]		99.18	98.6
Confirm Gravimetric Equivalent (Y or N/A)		Y	N/A
Annual Mean Concentration (µg/m^3)	2011* [c]	21.73	19.26
	2012* [c]	19.93	17.63
	2013 [c]	21.67	18.36

In bold, exceedence of the PM_{10} annual mean AQS objective of 40µgm^{-3}
[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) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if valid data capture is less than 75%
* Annual mean concentrations for previous years are optional

(shaded)	TEOM corrected as Box 3.4 Application of Volatile Correction Model of LAQM.TG(09)

Table 15. Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour Mean Objective

Site ID		4 Bradgate Drive Coalville	5 EMA
Site Type		Suburban	Other
Within AQMA?		N	N
Valid Data Capture for Monitoring Period % [a]		99.18	98.6
Valid Data Capture 2013 % [b]		99.18	98.6
Confirm Gravimetric Equivalent (Y or N/A)		Y	N/A
Number of Daily Means > 50µg/m^3	2011* [c]	11	4
	2012* [c]	9	2
	2013 [c]	14	6

In bold, exceedence of the PM_{10} daily mean AQS objective (50µg/m^3 – not to be exceeded more than 35 times per year)
[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
[c] if data capture for full calendar year is less than 90%, include the 90.4th percentile of 24-hour means in brackets
* Number of exceedences for previous years is optional

(blue shading)	TEOM corrected as Box 3.4 Application of Volatile Correction Model

Figure 13. Bradgate Drive Trends in Annual Mean PM_{10} Concentrations

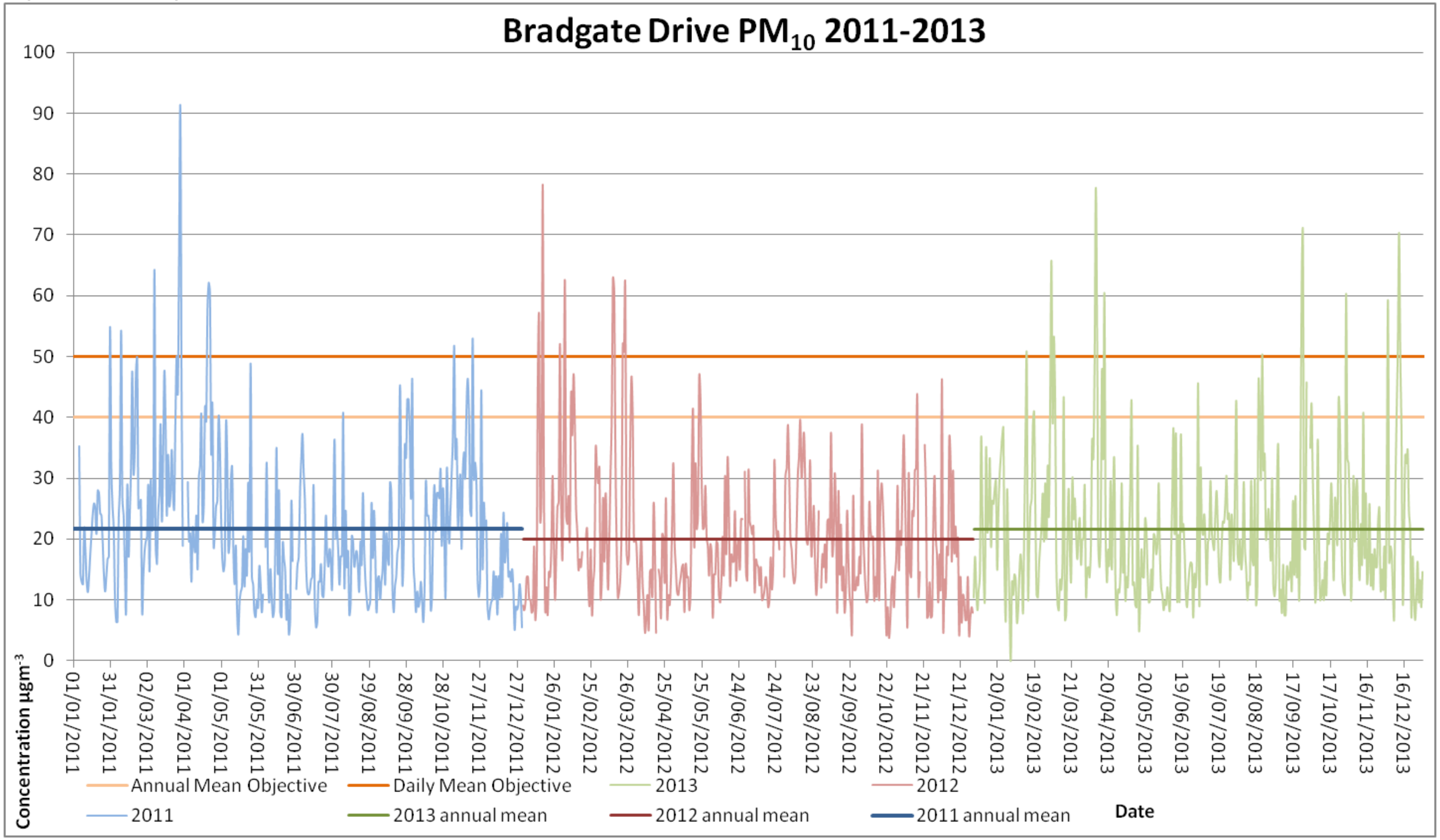
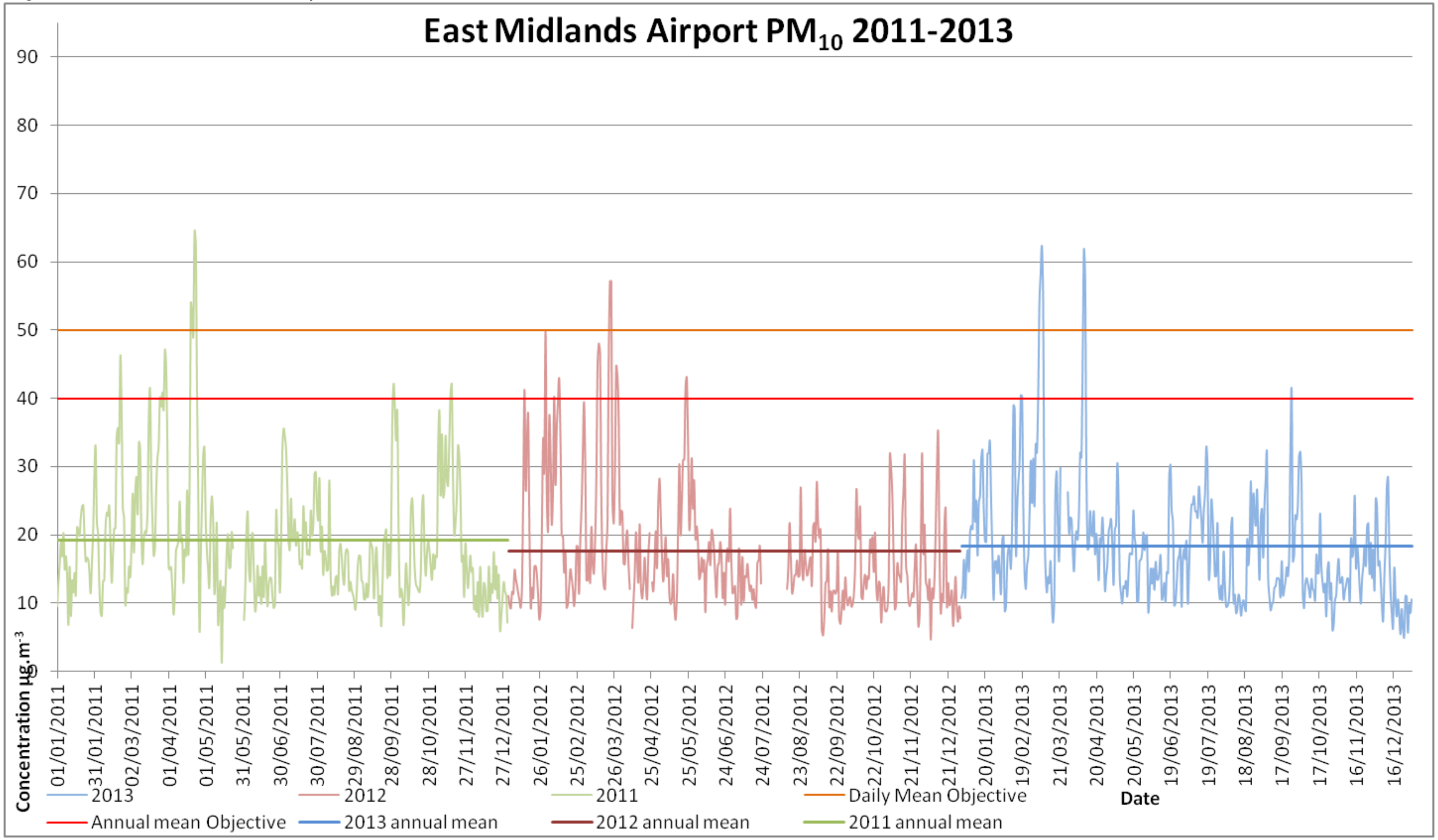


Figure 14. East Midlands Airport Trends in PM_{10} Concentrations



3.2.3 Sulphur Dioxide (SO_2)

This authority does not monitor for this pollutant

3.2.4 Benzene

This authority does not monitor for this pollutant

3.2.5 Other Pollutants Monitored

This authority does not monitor for any other pollutants

4 Summary of Compliance with AQS Objectives

North West Leicestershire District Council has examined the results from monitoring in the district.

Concentrations within the AQMA still exceed the Annual Mean objective for NO_2 within the 5 AQMA's and the AQMA's should remain.

Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

5 New Local Developments

5.1 Road Traffic Sources

No New Road Traffic Sources since Last Update and Screening Assessment

5.2 Other Transport Sources

No New Other Traffic Sources since Last Update and Screening Assessment

5.3 Industrial Sources

No New Industrial Sources since Last Update and Screening Assessment

5.4 Commercial and Domestic Sources

No New Commercial and Domestic Sources since Last Update and Screening Assessment

5.5 New Developments with Fugitive or Uncontrolled Sources

No New Developments with Fugitive or Uncontrolled Sources since Last Update and Screening Assessment

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.

North West Leicestershire District Council confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

6 Local / Regional Air Quality Strategy

There is not currently a local or regional air quality strategy covering North West Leicestershire District

7 Planning Applications

All applications likely to effect air quality are assessed inline with Environmental Impact assessment requirements

8 Air Quality Planning Policies

North West Leicestershire District council has not adopted policies specifically to deal with air quality however Policy E3 of the adopted Local Plan seeks to protect residential amenities by not permitting development which by virtue of “smell, fumes, smoke, soot, ash, grit…” would be injurious to residential amenity.

9 Local Transport Plans and Strategies

The Council is currently working with Leicestershire County Council as the Highway authority to develop action plan and for the actions to be included in the Local transport plan 3 implementation plans.

10 Implementation of Action Plans

The council has recently adopted a new action plan framework document and is currently working with Leicestershire County Council to draw up schemes for assessment inline with the framework.

11 Conclusions and Proposed Actions

Air quality objectives are still being exceeded within air quality management areas

11.1 Proposed Actions

Progress Schemes to improve air quality inline with the adopted air quality action plan.

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13 Appendices

Appendix A. Appendix A: QA:QC Data

QA/QC of automatic monitoring

The analyser at Coalville is an API 200 chemiluminescence analyser,

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.

Appendix B. Monthly Diffusion Tube, façade correction, and annualisation Data

Full details and results of Diffusion Tube monitoring in North West Leicestershire is available from the councils website

http://www.nwleics.gov.uk/pages/air_quality_monitoring_no2_diffusion_tubes

Appendix C. Automatic Monitoring Data

Full details and results of Automatic monitoring in North West Leicestershire is available from the councils website

http://www.nwleics.gov.uk/pages/air_quality_realtime_monitoring