

# Worcestershire Regulatory Services

*Supporting and protecting you*

## 2015 Updating and Screening Assessment for Bromsgrove District Council

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

December 2015



<b>Local Authority Officer</b>	Contaminated Land and Air Quality Team
<b>Department</b>	Worcestershire Regulatory Services
<b>Address</b>	Wyre Forest House Finepoint Way Kidderminster Worcestershire DY11 7WF
<b>Telephone</b>	01905 822799
<b>e-mail</b>	<a href="mailto:enquiries@worcsregservices.gov.uk">enquiries@worcsregservices.gov.uk</a>
<b>Report Reference number</b>	BDC USA 2015
<b>Date</b>	December 2015

## Executive Summary

This report represents the findings of the Bromsgrove District Council's Updating and Screening Assessment (USA) of air quality within the district. The USA evaluates new and changed sources to identify those that may give rise to a risk of an exceedance of an air quality objective and whether further detailed assessment is required to quantify any impact. Results from the calendar year 2014 monitoring within the district are presented and evaluated in relation to the national objectives.

Monitoring in the Bromsgrove district takes place for nitrogen dioxide only and consists of a network of NO<sub>2</sub> diffusion tubes. To date four Air Quality Management Areas (AQMAs) have been declared within the Bromsgrove District due to measured exceedances of the annual mean concentration objective for nitrogen dioxide. These are located at Kidderminster Road, Hagley, and Lickey End, Redditch Road and Worcester Road, Bromsgrove (see figures 1.2 to 1.5).

Monitoring data for 2014 identified no exceedances of the air quality objectives outside of the existing AQMAs. Exceedances were recorded within the Lickey End and Worcester Road AQMAs and therefore will need to be retained. No exceedances were identified at any monitoring locations within the Kidderminster Road, Hagley, or Redditch Road AQMAs. Further monitoring will be required at these locations to identify whether this is an isolated event or a continuing trend enough to allow for revocation of these AQMAs following detailed assessment of further data.

# Table of contents

<b>1</b>	<b>Introduction .....</b>	<b>7</b>
1.1	Description of Local Authority Area .....	7
1.2	Purpose of Report.....	8
1.3	Air Quality Objectives .....	9
1.4	Summary of Previous Review and Assessments .....	10
<b>2</b>	<b>New Monitoring Data .....</b>	<b>15</b>
2.1	Summary of Monitoring Undertaken.....	15
2.1.1	Automatic Monitoring Sites .....	15
2.1.2	Non-Automatic Monitoring Sites .....	15
2.2	Comparison of Monitoring Results with Air Quality Objectives .....	21
2.2.1	Nitrogen Dioxide .....	21
2.2.2	PM <sub>10</sub> .....	34
2.2.3	Sulphur Dioxide.....	34
2.2.4	Benzene.....	34
2.2.5	Other pollutants monitored .....	34
2.2.6	Summary of Compliance with AQS Objectives .....	34
<b>3</b>	<b>Road Traffic Sources .....</b>	<b>35</b>
3.1	Narrow Congested Streets with Residential Properties Close to the Kerb .....	35
3.2	Busy Streets Where People May Spend 1-hour or More Close to Traffic.....	35
3.3	Roads with a High Flow of Buses and/or HGVs. ....	35
3.4	Junctions.....	36
3.5	New Roads Constructed or Proposed Since the Last Round of Review and Assessment.....	36
3.6	Roads with Significantly Changed Traffic Flows.....	36
3.1	Bus and Coach Stations .....	37
<b>4</b>	<b>Other Transport Sources.....</b>	<b>38</b>
4.1	Airports.....	38
4.2	Railways (Diesel and Steam Trains) .....	38
4.2.1	Stationary Trains.....	38
4.2.2	Moving Trains .....	38
4.3	Ports (Shipping) .....	39
<b>5</b>	<b>Industrial Sources.....</b>	<b>40</b>
5.1	Industrial Installations .....	40
5.1.1	New or Proposed Installations for which an Air Quality Assessment has been Carried Out.....	40
5.1.2	Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced .....	40

5.1.3	New or Significantly Changed Installations with No Previous Air Quality Assessment.....	40
5.2	Major Fuel (Petrol) Storage Depots .....	41
5.3	Petrol Stations.....	41
5.4	Poultry Farms.....	41
<b>6</b>	<b>Commercial and Domestic Sources .....</b>	<b>42</b>
6.1	Biomass Combustion – Individual Installations .....	42
6.2	Biomass Combustion – Combined Impacts.....	42
6.3	Domestic Solid-Fuel Burning .....	42
<b>7</b>	<b>Fugitive or Uncontrolled Sources.....</b>	<b>43</b>
<b>8</b>	<b>Conclusions and Proposed Actions.....</b>	<b>44</b>
8.1	Conclusions from New Monitoring Data .....	44
8.2	Conclusions from Assessment of Sources .....	44
8.3	Proposed Actions.....	44
<b>9</b>	<b>References.....</b>	<b>46</b>

**List of Tables**

Table 1.1	Air Quality Objectives included in Regulations for the purpose of LAQM in England	9
Table 2.1	Details of Non-Automatic Monitoring Sites	18
Table 2.2	Results of Nitrogen Dioxide Diffusion Tubes in 2014	24
Table 2.3	Results of Nitrogen Dioxide Diffusion Tubes (2009 to 2014)	27

**List of Figures**

Figure 1.1	Map of Bromsgrove District and Major Roads	8
Figure 1.2	Kidderminster Road, Hagley AQMA Boundary and Diffusion Tube Locations	13
Figure 1.3	Lickey End, Bromsgrove AQMA Boundary and Diffusion Tube Locations	13
Figure 1.4	Redditch Road, Bromsgrove AQMA Boundary and Diffusion Tube Locations	14
Figure 1.5	Worcester Road, Bromsgrove AQMA Boundary and Diffusion Tube Locations	14
Figure 2.1	Map of Non-Automatic Monitoring Sites – Bromsgrove	16
Figure 2.2	Map of Non-Automatic Monitoring Sites – Aston Fields	17
Figure 2.3	Map of Non-Automatic Monitoring Sites – Catshill / Marlbrook	17
Figure 2.4	Trends in Annual Mean Nitrogen Dioxide Concentration measured at Diffusion Tube Monitoring Sites – Kidderminster Road, Hagley	29
Figure 2.5	Trends in Annual Mean Nitrogen Dioxide Concentration measured at Diffusion Tube Monitoring Sites – Lickey End, Bromsgrove	30
Figure 2.6	Trends in Annual Mean Nitrogen Dioxide Concentration measured at Diffusion Tube Monitoring Sites – Redditch Road, Bromsgrove	31
Figure 2.7	Trends in Annual Mean Nitrogen Dioxide Concentration measured at	32

Diffusion Tube Monitoring Sites – Worcester Road, Bromsgrove	
Figure 2.8 Trends in Annual Mean Nitrogen Dioxide Concentration measured at	33
Diffusion Tube Monitoring Sites – Monitoring Locations outside AQMAs	

**Appendices**

Appendix A: QA/QC Data	49
Appendix B: DMRB Calculations Full Dataset of Measured Monthly Concentrations and Bias Adjustment	50
Appendix C: Roadside NO <sub>2</sub> Corrections to Façade – F1/F2/F3 and LE4	51
Appendix D: Annualisation of Locations – BR, RES1, RES2, RES3, and RES4	52

# **1 Introduction**

## **1.1 Description of Local Authority Area**

The Bromsgrove District lies in the northeast of the county of Worcestershire, bordering the metropolitan borough of Dudley, the city of Birmingham and Wychavon, Redditch and Wyre Forest Districts.

The District is mixed urban and rural with the main urban area being the town of Bromsgrove, together with small towns including Catshill, Hagley, Alvechurch and Hollywood.

The population of the District is approximately 93,600. There are a number of major roads passing through Bromsgrove District including the M42, M5, A38, A456, A435, A441, A448 and the A491. The main source of air pollution in the District is emissions from vehicular traffic.

A map detailing the Bromsgrove District boundary and principle road network is shown below in Figure 1.1.



Figure 1.1 Map of Bromsgrove District and Major Roads

## 1.2 Purpose of Report

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



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

### 1.3 Air Quality Objectives

The 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 1.1. This table shows the objectives in units of microgrammes per cubic metre  $\mu\text{g}/\text{m}^3$  (milligrammes per cubic metre,  $\text{mg}/\text{m}^3$  for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

**Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England**

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 $\text{mg}/\text{m}^3$	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM <sub>10</sub> ) (gravimetric)	50 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004

<b>Sulphur dioxide</b>	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

## 1.4 Summary of Previous Review and Assessments

Bromsgrove District Council undertook the first round of review and assessment of air quality between 1998 and 2002. The first round assessments resulted in the declaration of an Air Quality Management Area (AQMA) as a result of predicted exceedances of the annual mean objective for nitrogen dioxide at Lickey End, due to road traffic emissions from the M42 at Junction 1.

The second round of review and assessment commenced with the 2003 Updating and Screening Assessment (USA). This report concluded that a Detailed Assessment would be required for nitrogen dioxide due to road traffic emissions from the A38 Redditch Road (Aston Road Industrial Estate), the A456/A491 at Hagley, and the A38 Marlbrook Crossroads. The Detailed Assessment concluded that the declaration of further AQMAs was not required.

The third round of review and assessment commenced with the 2006 USA. This report concluded that a Detailed Assessment was required for nitrogen dioxide due to measured exceedances of the annual mean objective at the nearest receptors to two diffusion tube monitoring locations on Redditch Road, Bromsgrove and Kidderminster Road, Hagley. Triplicate diffusion tube monitoring was introduced in these locations. The Detailed Assessment 2007 concluded that the annual mean objective for nitrogen dioxide was likely to be exceeded at Redditch Road, Bromsgrove. As a consequence Bromsgrove District Council installed a continuous monitor at Redditch Road in March 2008, for a six-month period.

In 2009, Bromsgrove District Council completed a Detailed Assessment which covered Redditch Road and Kidderminster Road, Hagley, as well as a number of

areas in Bromsgrove town centre, where measured exceedances were identified in the 2008 Progress Report. As a result of the 2009 Detailed Assessment two AQMAs were declared for Kidderminster Road, Hagley and Redditch Road, Bromsgrove, effective as of the 17th of February 2010 for exceedances of the nitrogen dioxide annual mean objective. In addition, a continuous monitoring site was installed at Worcester Road and a detailed traffic survey within Bromsgrove town centre was undertaken.

In July 2010, Bromsgrove District Council completed a Detailed Assessment for nitrogen dioxide at Worcester Road, following 12 months of continuous monitoring which identified the potential for exceedances of the annual mean objective. The Detailed Assessment concluded that an AQMA should be declared on Worcester Road.

The 2011 Progress Report concluded that there remained widespread exceedances of the annual mean nitrogen dioxide objective, although there were no exceedances of the 1-hour mean objective. All exceedances were in existing AQMAs or the Worcester Road AQMA in Bromsgrove, which was declared in October 2011.

Bromsgrove District Council's fifth round of review and assessment commenced with the 2012 Updating and Screening Assessment where results from monitoring by the Council were presented and sources of air pollution identified. The USA concluded that little has changed in terms of sources of emissions in Bromsgrove District since the fourth round USA undertaken in 2009. The USA concluded that no additional Detailed Assessments for air quality within Bromsgrove District are necessary for any pollutant.

In 2012 there were no measured exceedances within the Redditch Road, Bromsgrove and Kidderminster Road, Hagley AQMAs. The report concluded that consideration should be given as to whether revocation of these AQMAs is required. Monitoring data in 2012 confirmed that concentrations of nitrogen dioxide remained well below the annual mean objective outside of the existing AQMAs and there was no need to progress to Detailed Assessment at any new locations.

The 2013 Progress Report concluded that measured exceedances remained within the Lickey End and Worcester Road AQMAs, these AQMAs therefore were to remain in place.

The 2014 Progress Report identified no new exceedances of the nitrogen dioxide objective outside of existing AQMAs. Exceedances of the national objective were measured within the Worcester Road, Redditch Road, Lickey End and Kidderminster Road, Hagley AQMAs and therefore all AQMAs were required to be kept in place.

Figure 1.2 Kidderminster Road, Hagley AQMA Boundary and Diffusion Tube Locations



Figure 1.3 Lickey End, Bromsgrove AQMA Boundary and Diffusion Tube Locations

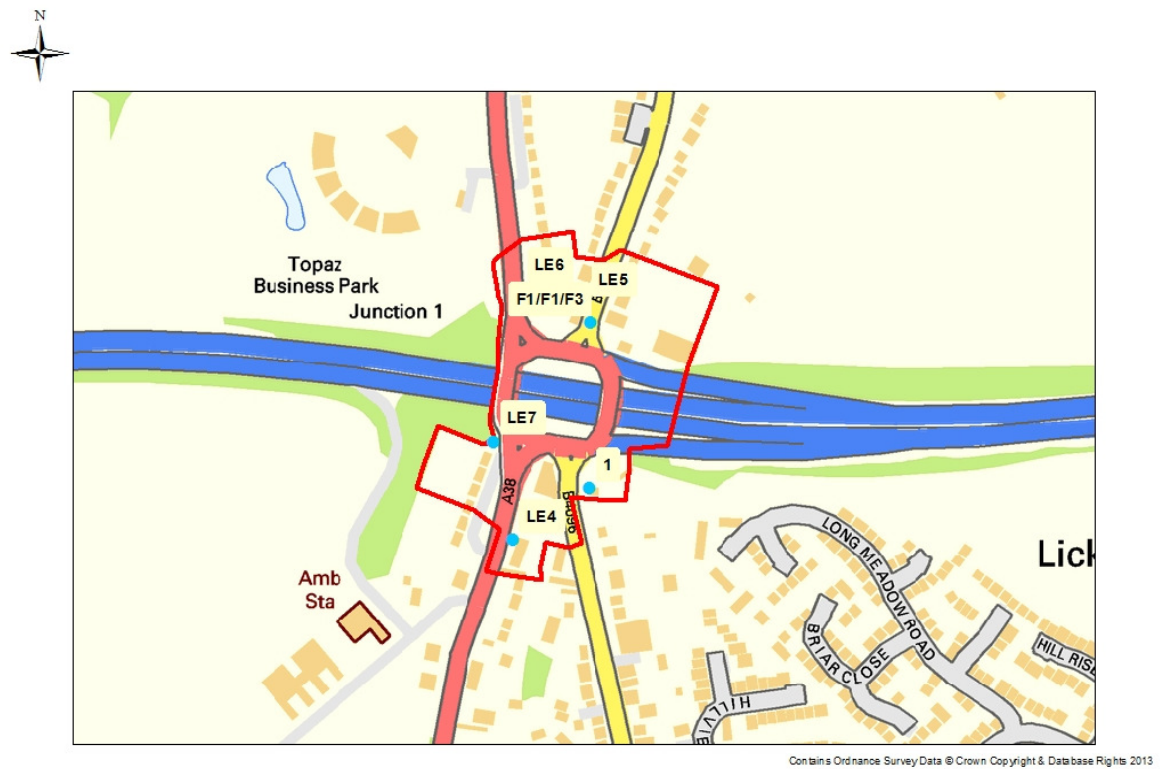


Figure 1.4 Redditch Road, Bromsgrove AQMA Boundary and Diffusion Tube Locations



Contains Ordnance Survey Data © Crown Copyright & Database Rights 2013

Figure 1.5 Worcester Road, Bromsgrove AQMA Boundary and Diffusion Tube Locations



Contains Ordnance Survey Data © Crown Copyright & Database Rights 2013

## **2 New Monitoring Data**

### **2.1 Summary of Monitoring Undertaken**

#### **2.1.1 Automatic Monitoring Sites**

There are no automatic monitoring sites in the Bromsgrove District Council area.

#### **2.1.2 Non-Automatic Monitoring Sites**

During 2014, Bromsgrove District Council monitored annual mean nitrogen dioxide concentrations using forty three passive diffusion tubes at thirty five locations across the area. This was an increase of seven locations from the twenty eight sites monitored in 2013.

Monitoring location LC (Street light opposite 174 Worcester Road, B61 7AY) was decommissioned as part of the 2014 rationalisation of monitoring sites as it did not represent relative exposure and had measured significantly below the objective for several years.

Eight new locations were established across the area. Four of these (RES1 to RES4) were within the Kidderminster Road, Hagley AQMA as part of a local residents project and were installed in May 2014. Two new locations (LE6 and LE7) were established in the north and west of the Lickey End AQMA to provide further data along the A38 corridor. Two further locations were established in the vicinity of the Worcester Road, Bromsgrove AQMA. Location WR4 replaced the decommissioned LC in an area of relevant exposure and RH1 was located south of the AQMA boundary to quantify levels of nitrogen dioxide in this area. These other sites were established prior to the commencement of monitoring in January 2014.

Figures 2.1 through to 2.4 identify the location of the monitoring points situated outside of an AQMA referred to in this report. Monitoring locations within AQMAs (or in the general vicinity) are shown within the plans above (Figure 1.2 to 1.5) Table 2.1 provides details of each of the monitoring sites including co-ordinates.

Results of non-automatic monitoring of nitrogen dioxide diffusion tubes for 2014 are presented in section 2.2. The results have been adjusted for bias using a national correction factor derived from Defra of 0.89.

QA/QC information on the company and methods used are detailed in Appendix A.

Figure 2.1 Map of Non-Automatic Monitoring Sites - Bromsgrove





Figure 2.2 Map of Non-Automatic Monitoring Sites – Aston Fields

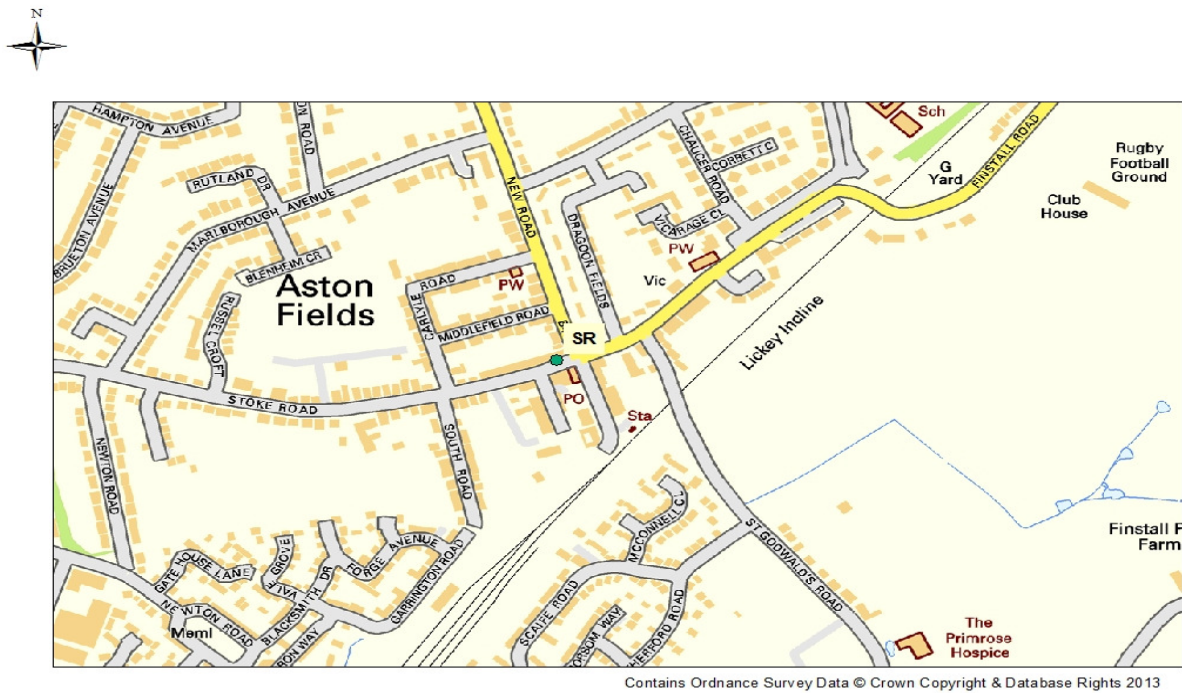


Figure 2.3 Map of Non-Automatic Monitoring Sites – Catshill / Marlbrook

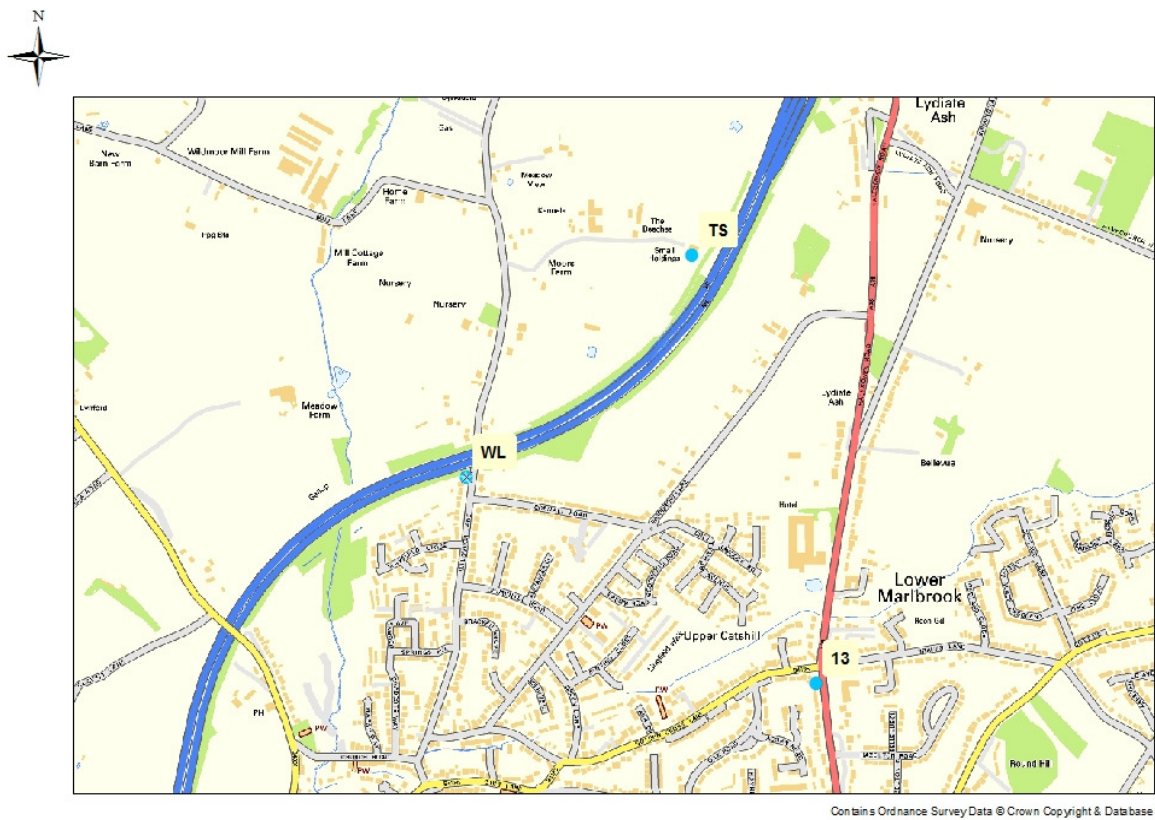


Table 2.1 Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
<b>KIDDERMINSTER ROAD, HAGLEY AQMA</b>										
HL	20 Birmingham Rd, Hagley	Roadside	391551	280999	NO <sub>2</sub>	Y	N	N(13)	2m	N
KR62	62 K'minster Road, Hagley	Roadside	391182	280631	NO <sub>2</sub>	Y	N	Y (0)	7m	Y
8	9 Market Way, Hagley	Roadside	391452	280947	NO <sub>2</sub>	Y	N	Y (0)	15.3m	N
9/9a/9b	78 Kidderminster Rd, Hagley	Roadside	391210	280668	NO <sub>2</sub>	Y	N	Y (0)	8.3m	N
10	77 Park Road, Hagley	Roadside	391137	280638	NO <sub>2</sub>	Y	N	Y (0)	17m	N
11	74 Worcester Road, Hagley	Roadside	390295	280043	NO <sub>2</sub>	N	N	Y (0)	2.5m	N
RES 1	26 Stourbridge Road, Hagley	Roadside	391449	281169	NO <sub>2</sub>	Y	N	Y (0)	15m	Y
RES 2	21 B'ham Rd, Hagley	Roadside	391552	281038	NO <sub>2</sub>	Y	N	Y (0)	15m	Y
RES 3	104 Kidderminster Rd South	Roadside	389825	279587	NO <sub>2</sub>	N	N	Y (0)	14.3m	Y
RES 4	23 Worcester Rd, Hagley	Roadside	390022	279761	NO <sub>2</sub>	N	N	Y (0)	14.5m	Y
<b>LICKEY END AQMA</b>										
1	3A Alcester Road, Lickey End.	Roadside	396999	272979	NO <sub>2</sub>	Y	N	Y (4)	15m	N
LE4	Harvester (Forest inn) PH Birmingham Road, Lickey End	Roadside	396935	272949	NO <sub>2</sub>	Y	N	Y (11)	1.4m	N
LE5	5 Old Birmingham Road, Lickey End	Roadside	396999	273143	NO <sub>2</sub>	Y	N	Y (0m)	6.5m	Y

Bromsgrove District Council

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
F1/F2/F3	Lickey End / Forrest Inn Island	Roadside	397010	273112	NO2	Y	N	Y (15)	2.5m	Y
LE6	5 Old Birmingham Road, Lickey End	Roadside	396999	273143	NO2	Y	N	Y (0m)	6.53m	N
LE7	308 B'ham Rd, Lickey End	Roadside	396958	273157	NO2	y	N	Y (0m)	18.30m	N
<b>REDDITCH ROAD, BROMSGROVE AQMA</b>										
HR	52 Hanbury Road, Stoke Heath	Roadside	394772	268441	NO2	Y	N	Y (0)	5m	Y
255	255 Worcester Road (A38 Roundabout)	Roadside	394408	268417	NO2	N	N	Y (0)	12m	Y
18	84 Redditch Road, Bunsford Hill	Roadside	395180	268549	NO2	Y	N	Y (0)	2m	N
19/19a/19b	93 Redditch Road, Bunsford Hill	Roadside	395188	268564	NO2	Y	N	Y (0)	2.9m	N
16	58 Redditch Road, Bromsgrove	Roadside	394701	268444	NO2	Y	N	Y (0)	2.8m	N
<b>WORCESTER ROAD, BROMSGROVE AQMA</b>										
WR2	159 Worcester Road, Bromsgrove	Roadside	395511	270180	NO2	Y	N	Y (0)	2.2m	Y
WR3	138 Worcester Road, Bromsgrove	Roadside	395501	270190	NO2	Y	N	Y(0)	5m	N
BC	Ye Olde Black Cross, Worcester Road, Bromsgrove	Roadside	395685	270424	NO2	Y	N	Y (0)	2.5m	N
BCX	16 Worcester Road, Bromsgrove	Roadside	395807	270549	NO2	Y	N	Y (0)	2.5m	N
WR/WRa/WRb	10 Hanover Street, B61 7JH	Roadside	395702	270423	NO <sub>2</sub>	Y	N	Y (0)	6.4m	N

Bromsgrove District Council

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
WR4	188 Worcester Road, B'grove	Roadside	395312	269938	NO <sub>2</sub>	Y	N	Y (0m)	7.50m	Y
RH	8 Rockhill, Bromsgrove	Roadside	359243	269844	NO <sub>2</sub>	N	N	Y (0m)	6.25m	Y
<b>MONITORING LOCATIONS – BROMSGROVE, MARLBROOK &amp; ASTON FIELDS</b>										
BR	35 Birmingham Road, Bromsgrove	Roadside	396292	271210	NO <sub>2</sub>	N	N	Y (0)	4m	N
BG1	Davenall House, Birmingham Road, Bromsgrove	Roadside	396238	271118	NO <sub>2</sub>	N	N	N	2.3m	N
BG3	Finstall Primary School, Carnforth Road, Bromsgrove	Background	396755	270400	NO <sub>2</sub>	N	N	Y (0)	N/A	N
SR	2 Stoke Road, Aston Fields, Bromsgrove	Roadside	396780	269450	NO <sub>2</sub>	N	N	Y (0)	4.9m	Y
13	Wilkes Associates Ltd, 485 Birmingham Road, Marlbrook.	Roadside (façade)	396889	274133	NO <sub>2</sub>	N	N	Y (0)	14.5m	N
WL	Street Light near 112 Wildmoor Lane, Catshill	Roadside	396095	274592	NO <sub>2</sub>	N	N	Y (0)	16m	N
TS	Smallholdings, Wildmoor Lane, Catshill	Roadside	396613	275085	NO <sub>2</sub>	N	N	Y (0)	50m	N

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

### 2.2.1 Nitrogen Dioxide

#### Automatic Monitoring Data

There are no automatic monitoring locations within the Bromsgrove District Council area.

#### Diffusion Tube Monitoring Data

Measured concentrations at the thirty five diffusion tube monitoring sites in 2014 are presented in Table 2.2. Concentrations since 2009, at all sites where monitoring data is available, are presented in Table 2.3.

The full dataset of monthly results for 2014 and annual mean, adjusted for bias, are shown in Appendix B.

Where there was less than 75% data capture the data has been annualised (as per Box 3.2 of LAQM.TG(09)). The locations that were annualised were RES1, RES2, RES3, RES4 and BR. Further details are provided in Appendix D.

Exceedances of the annual mean objective of  $40\mu\text{g}/\text{m}^3$  for nitrogen dioxide were measured at five sites during 2014. All of these exceedances were recorded within the Lickey End and Worcester Road, Bromsgrove AQMAs.

No exceedances were recorded within the Kidderminster Road, Hagley or Redditch Road, Bromsgrove AQMAs. No exceedances of the  $\text{NO}_2$  objectives were recorded outside of existing AQMAs where annual mean concentrations of nitrogen dioxide ranged from  $18.37\mu\text{g}/\text{m}^3$  at BG3 – Finstall Primary School, Bromsgrove (background location), to  $31.81\mu\text{g}/\text{m}^3$  at BG1 – Davenall House, Birmingham Road, Bromsgrove.

#### **Kidderminster Road, Hagley AQMA**

No exceedances were recorded within the AQMA in 2014. Concentrations ranged from  $17.55\mu\text{g}/\text{m}^3$  at RES3 (104 Kidderminster Road South) to  $33.65\mu\text{g}/\text{m}^3$  at

9a/9b/9c (78 Kidderminster Road). The 2013 Progress Report identified a single exceedance at 9a/9b/9c measuring 40.2µg/m<sup>3</sup>. Long term trend data shows the only other exceedance within the AQMA was in 2010 at the same location and measured 40µg/m<sup>3</sup>. Additional monitoring data should be obtained and if there are no further exceedances of the objective consideration should be given to the possibility for revocation of the AQMA.

### **Lickey End, Bromsgrove AQMA**

Concentrations continue to exceed the annual mean objective within the Lickey End AQMA. LE4 (Harvester/Forest Inn PH) measured 51.26µg/m<sup>3</sup> and F1/F2/F3 (Lickey End, Forest Inn Island) measured 59.5µg/m<sup>3</sup>. It is therefore necessary for this AQMA to remain in place.

Given the distance to relevant exposure associated with tube LE4 (11m) and F1/F2/F3 (15m) the NO<sub>2</sub> fall-off with distance calculator has been used to better understand the estimated levels of NO<sub>2</sub> where relevant exposure exists, and whether further consideration is warranted in relation to the hourly mean objective for NO<sub>2</sub>.

The background NO<sub>2</sub> level used in the calculator was obtained from the background monitoring location BG3 (Finstall Primary School) 2014 as this was a higher value and therefore more conservative than the national background maps published by DEFRA.

The calculator estimated NO<sub>2</sub> levels where relevant exposure exists to be 41.3µg/m<sup>3</sup> at F1/F2/F3 and 36.6µg/m<sup>3</sup> at LE4. It is therefore not currently considered necessary to further assess compliance with the hourly mean objective in this area. Bromsgrove District Council will continue to monitor the situation in these locations. Details of these calculations are shown in Appendix C.

### **Redditch Road, Bromsgrove AQMA**

No exceedances of the objective were recorded within the AQMA in 2014. Concentrations ranged from 25.37µg/m<sup>3</sup> at 255 (255 Worcester Road) to 37.05µg/m<sup>3</sup> at 19/19a/19b (93 Redditch Road, Bunsford Hill). The 2013 Progress Report identified two exceedances, one at location 18 measuring 41 µg/m<sup>3</sup>, the other

at 19/19a/19b measuring 43µg/m<sup>3</sup>. Long term trend data shows the last exceedances prior to 2013 were in 2010. Additional monitoring data should be obtained and if there are no further exceedances of the objective consideration should be given to the possibility for revocation of the AQMA.

### **Worcester Road, Bromsgrove AQMA**

Concentrations continue to exceed the annual mean objective within the Worcester Road AQMA. BCX (16 Worcester Road) measured 46.81µg/m<sup>3</sup>, BC (Ye Olde Black Cross, Worcester Road) measured 45.62µg/m<sup>3</sup> and WR2 (159 Worcester Road) measured 40.69 µg/m<sup>3</sup>. It is therefore necessary for this AQMA to remain in place. The levels recorded are such that there is unlikely to be a breach of the hourly mean objective for NO<sub>2</sub>.

### **Summary**

The long term trend data, where available, indicates a general decrease in NO<sub>2</sub> levels when comparing 2014 with previous years, with the exception of 2012. Concerns were raised previously regarding the reliability of the 2012 monitoring data relating to the bias-adjustment factor provided and confidence in the accuracy of results that were considered to be much lower than previous years. As a result of this a new laboratory was used in 2013 for supply and analysis of diffusion tubes.

Only one monitoring location shows an increase of NO<sub>2</sub> levels in 2014 when compared with the 2013 results. This point which shows an increase is located within the Lickey End AQMA at monitoring location F1/F2/F3 (triplicate).

Figures 2.4 to 2.8 show a comparison of 2014 data with that of previous years. Overall concentrations are shown to have remained reasonable stable at these locations, where previous year's data is available, and indicate a general reduction in NO<sub>2</sub> levels across the board.

Table 2.2 Results of Nitrogen Dioxide Diffusion Tubes in 2014

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.89)
								2014 ( $\mu\text{g}/\text{m}^3$ )
<b>KIDDERMINSTER ROAD, HAGLEY AQMA</b>								
HL	20 Birmingham Rd, Hagley	Roadside	Y	N	12	N	N	25.48
KR62	62 K'minster Road, Hagley	Roadside	Y	N	12	N	N	31.76
8	9 Market Way, Hagley	Roadside	Y	N	12	N	N	20.42
9/9a/9b	78 Kidderminster Rd, Hagley	Roadside	Y	Y	12	N	N	33.65
10	77 Park Road, Hagley	Roadside	Y	N	12	N	N	32.01
11	74 Worcester Road, Hagley	Roadside	N	N	12	N	N	29.87
RES 1	26 Stourbridge Road, Hagley	Roadside	Y	N	8	Y	N	20.29 <sup>a</sup>
RES 2	21 B'ham Rd, Hagley	Roadside	Y	N	8	Y	N	30.36 <sup>a</sup>
RES 3	104 Kidderminster Rd South	Roadside	Y	N	6	Y	N	17.55 <sup>a</sup>
RES 4	23 Worcester Rd, Hagley	Roadside	Y	N	8	Y	N	30.47 <sup>a</sup>
<b>LICKEY END AQMA</b>								
1	3A Alcester Road, Lickey End.	Roadside	Y	N	12	N	N	30.37
LE4	Harvester (Forest inn) PH Birmingham Road, Lickey End	Roadside	Y	N	10	N	N	<b>51.26</b>
LE5	5 Old Birmingham Road, Lickey End	Roadside	Y	N	12	N	N	34.51
F1/F2/F3	Lickey End / Forrest Inn Island	Roadside	Y	Y	12	N	N	<b>59.5</b>
LE6	5 Old Birmingham Road, Lickey End	Roadside	Y	N	12	N	N	31.22



Bromsgrove District Council

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.89)
								2014 ( $\mu\text{g}/\text{m}^3$ )
LE7	308 B'ham Rd, Lickey End	Roadside	Y	N	12	N	N	32.99
<b>REDDITCH ROAD, BROMSGROVE AQMA</b>								
HR	52 Hanbury Road, Stoke Heath	Roadside	Y	N	12	N	N	32.09
255	255 Worcester Road (A38 Roundabout)	Roadside	N	N	12	N	N	25.37
18	84 Redditch Road, Bunsford Hill	Roadside	Y	N	12	N	N	35.47
19/19a/19b	93 Redditch Road, Bunsford Hill	Roadside	Y	Y	12	N	N	37.05
16	58 Redditch Road, Bromsgrove	Roadside	Y	N	12	N	N	34.56
<b>WORCESTER ROAD, BROMSGROVE AQMA</b>								
WR2	159 Worcester Road, Bromsgrove	Roadside	Y	N	11	N	N	<b>40.69</b>
WR3	138 Worcester Road, Bromsgrove	Roadside	Y	N	10	N	N	32.71
BC	Ye Olde Black Cross, Worcester Road, Bromsgrove	Roadside	Y	N	12	N	N	<b>45.62</b>
BCX	16 Worcester Road, Bromsgrove	Roadside	Y	N	12	N	N	<b>46.81</b>
WR/WRa/WRb	10 Hanover Street, B61 7JH	Roadside	Y	Y	12	N	N	39.41
WR4	188 Worcester Road, B'grove	Roadside	Y	Y	12	N	N	31.83
RH	8 Rockhill, Bromsgrove	Roadside	N	N	10	N	N	33.3

## Bromsgrove District Council

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.89)
								2014 ( $\mu\text{g}/\text{m}^3$ )
<b>MONITORING LOCATIONS – BROMSGROVE, MARLBROOK &amp; ASTON FIELDS</b>								
BR	35 Birmingham Road, Bromsgrove	Roadside	N	N	8	Y	N	29.98 <sup>a</sup>
BG1	Davenall House, Birmingham Road, Bromsgrove	Roadside	N	N	12	N	N	31.81
BG3	Finstall Primary School, Carnforth Road, Bromsgrove	Background	N	N	9	N	N	18.37
SR	2 Stoke Road, Aston Fields, Bromsgrove	Roadside	N	N	12	N	N	26.46
13	Wilkes Associates Ltd, 485 Birmingham Road, Marlbrook.	Roadside (façade)	N	N	12	N	N	27.7
WL	Street Light near 112 Wildmoor Lane, Catshill	Roadside	N	N	12	N	N	26.14
TS	Smallholdings, Wildmoor Lane, Catshill	Roadside	N	N	12	N	N	28.13

In bold, exceedance of the NO<sub>2</sub> annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$ , indicating a potential exceedance of the NO<sub>2</sub> hourly mean AQS objective

<sup>a</sup> Has been “annualised” (as per Box 3.2 of TG(09)) if full calendar year data capture is less than 75%

<sup>b</sup> If an exceedance is measured at a monitoring site not representative of public exposure, NO<sub>2</sub> concentration at the nearest relevant exposure should be estimated based on the “NO<sub>2</sub> fall-off with distance” calculator, and results should be discussed in a specific section. The procedure is also explained in Box 2.3 of Technical Guidance LAQM.TG(09)

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes (2009 to 2014)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$					
			2009 (Bias Adjustment Factor = 0.90)	2010 (Bias Adjustment Factor = 0.95)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.69)	2013 (Bias Adjustment Factor = 0.90)	2014 (Bias Adjustment Factor = 0.89)
<b>KIDDERMINSTER ROAD, HAGLEY AQMA</b>								
HL	Roadside	Y	-	-	-	21.49	34	25.48
KR62	Roadside	Y	-	-	-	28.24	33	31.76
8	Roadside	Y	25	28	22.1	16.17	27	20.42
9/9a/9b	Roadside	Y	38	40	37.2	27.51	40.2	33.65
10	Roadside	Y	37	38	37.6	29.65	37	32.01
11	Roadside	N	35	34	31.5	24.71	33	29.87
RES 1	Roadside	Y	-	-	-	-	-	20.02
RES 2	Roadside	Y	-	-	-	-	-	29.94
RES 3	Roadside	Y	-	-	-	-	-	16.84
RES 4	Roadside	Y	-	-	-	-	-	30.06
<b>LICKEY END AQMA</b>								
1	Roadside	Y	32	34	32.3	21.33	31	30.37
LE4	Roadside	Y	-	-	-	48.34	67	51.26
LE5	Roadside	Y	-	-	-	-	46.7	34.51
F1/F2/F3	Roadside	Y	51	53	53.1	54.09	50	59.5
LE6	Roadside	Y	-	-	-	-	-	31.22
LE7	Roadside	Y	-	-	-	-	-	32.99
<b>REDDITCH ROAD, BROMSGROVE AQMA</b>								
HR	Roadside	Y	-	-	-	29.3	37	32.09
255	Roadside	N	-	-	-	22.17	30	25.37
18	Roadside	Y	37	40	36.1	31.08	41	35.47
19/19a/19b	Roadside	Y	44	43	38.4	31.54	43	37.05
16	Roadside	Y	41	41	37.7	33.58	35	34.56
<b>WORCESTER ROAD, BROMSGROVE AQMA</b>								
WR2	Roadside	Y	-	45	39.3	32.36	42	40.69
WR3	Roadside	Y	-	39	34.4	26.73	38	32.71
BC	Roadside	Y	54	56	49	43.2	56	45.62

Bromsgrove District Council

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$					
			2009 (Bias Adjustment Factor = 0.90)	2010 (Bias Adjustment Factor = 0.95)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.69)	2013 (Bias Adjustment Factor = 0.90)	2014 (Bias Adjustment Factor = 0.89)
<b>BCX</b>	Roadside	Y	<b>57</b>	<b>53</b>	<b>47.6</b>	<b>40.31</b>	<b>58</b>	<b>46.81</b>
<b>WR/WRa/WRb</b>	Roadside	Y	-	<b>48</b>	<b>42.9</b>	32.59	<b>47</b>	39.41
<b>WR4</b>	Roadside	Y	-	-	-	-	-	31.83
<b>RH</b>	Roadside	N	-	-	-	-	-	33.3
<b>MONITORING LOCATIONS – BROMSGROVE, MARLBROOK &amp; ASTON FIELDS</b>								
<b>BR</b>	Roadside	N	34	36	32.3	24.81	33	29.47
<b>BG1</b>	Roadside	N	39	39	33	30.23	36	31.81
<b>BG3</b>	Background	N	24	24	21.9	16.98	26	18.37
<b>SR</b>	Roadside	N	32	31	26.6	20.65	31	26.46
<b>13</b>	Roadside	N	33	35	29.6	22.36	32	27.7
<b>WL</b>	Roadside	N	31	31	30.1	23.68	30	26.14
<b>TS</b>	Roadside	N	32	34	29.5	22.1	32	28.13

In bold, exceedance of the NO<sub>2</sub> annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$

Underlined, annual mean > 60 $\mu\text{g}/\text{m}^3$ , indicating a potential exceedance of the NO<sub>2</sub> hourly mean AQS objective

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

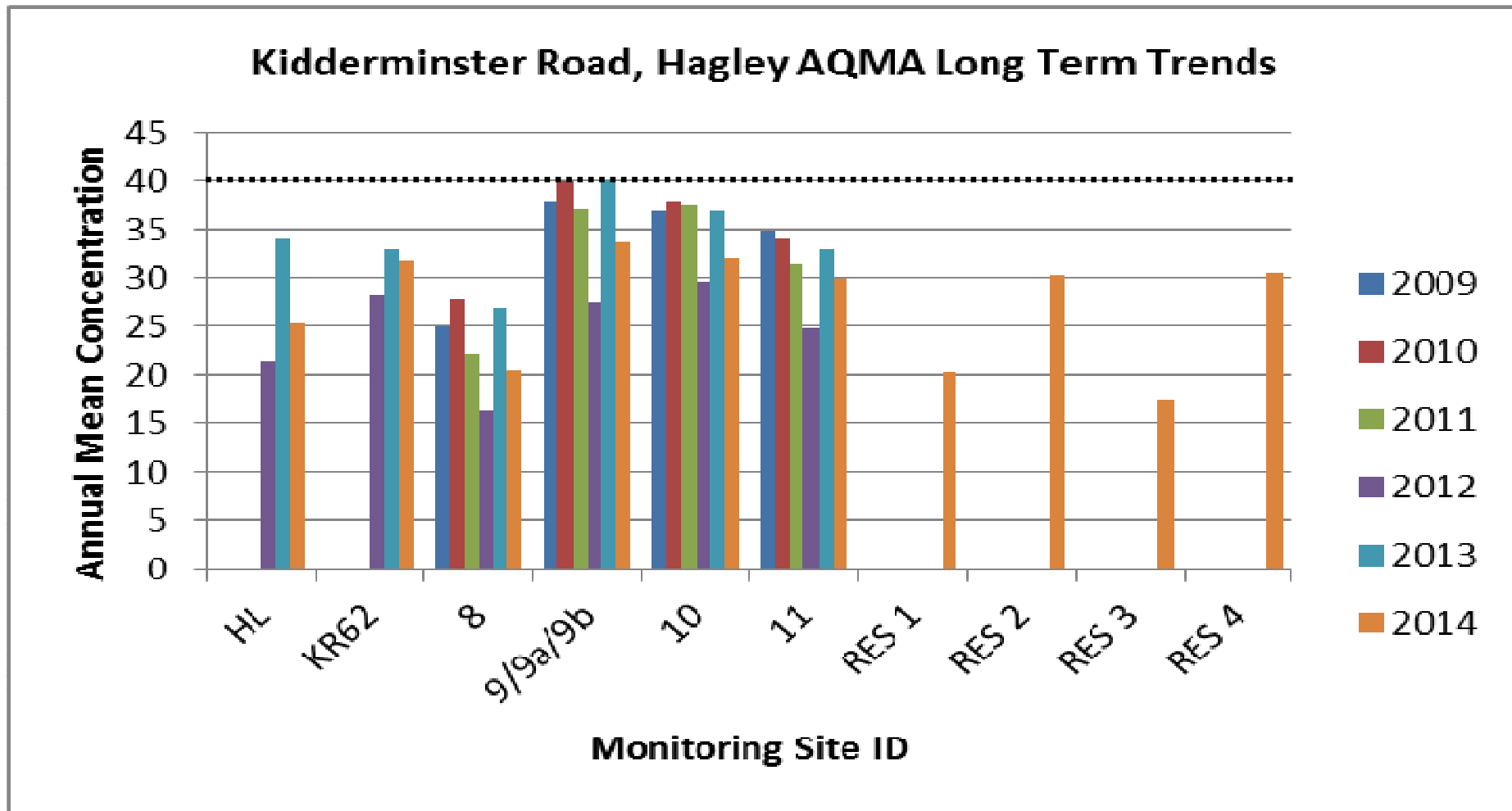


Figure 2.5 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites

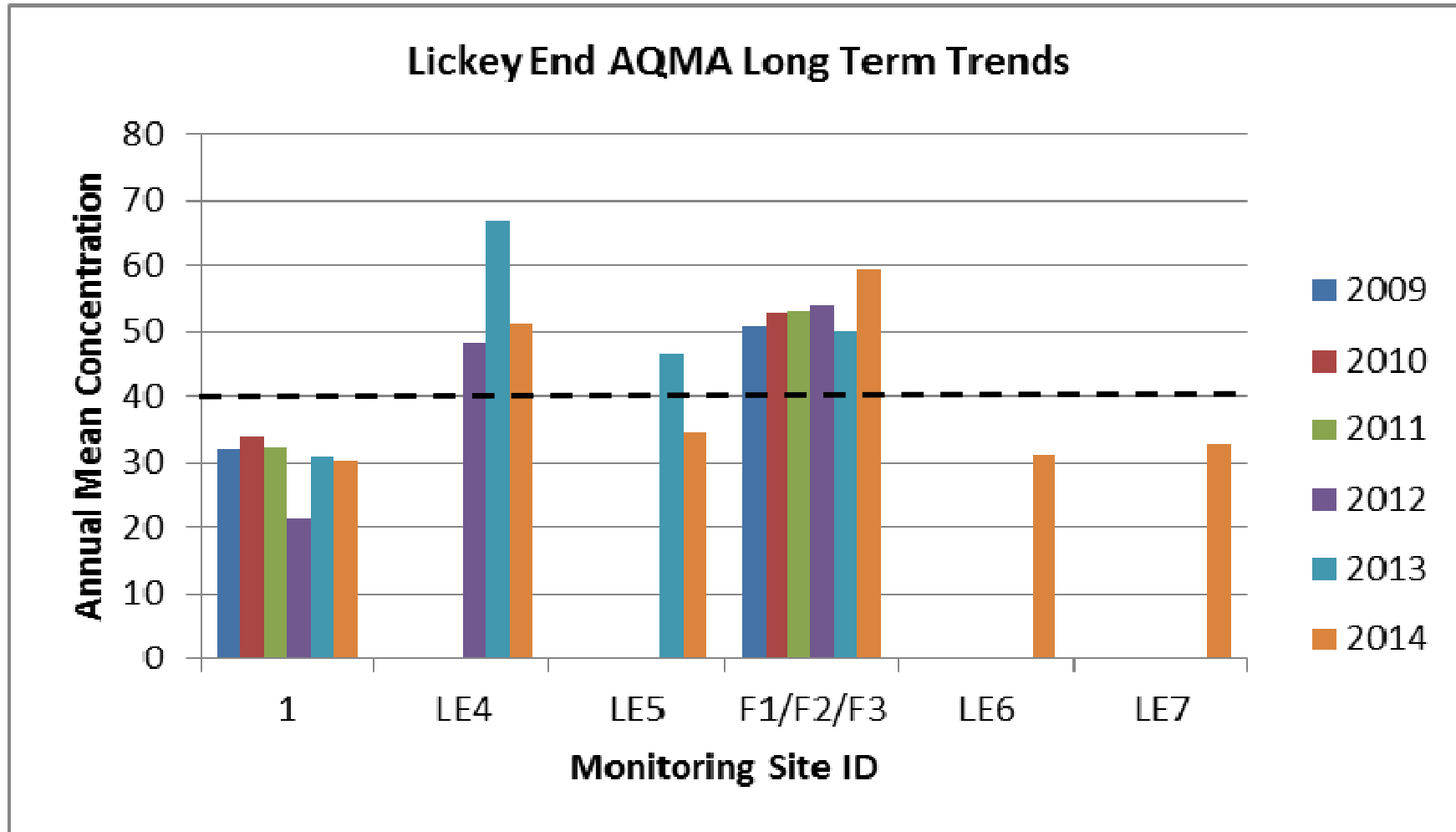


Figure 2.6 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites

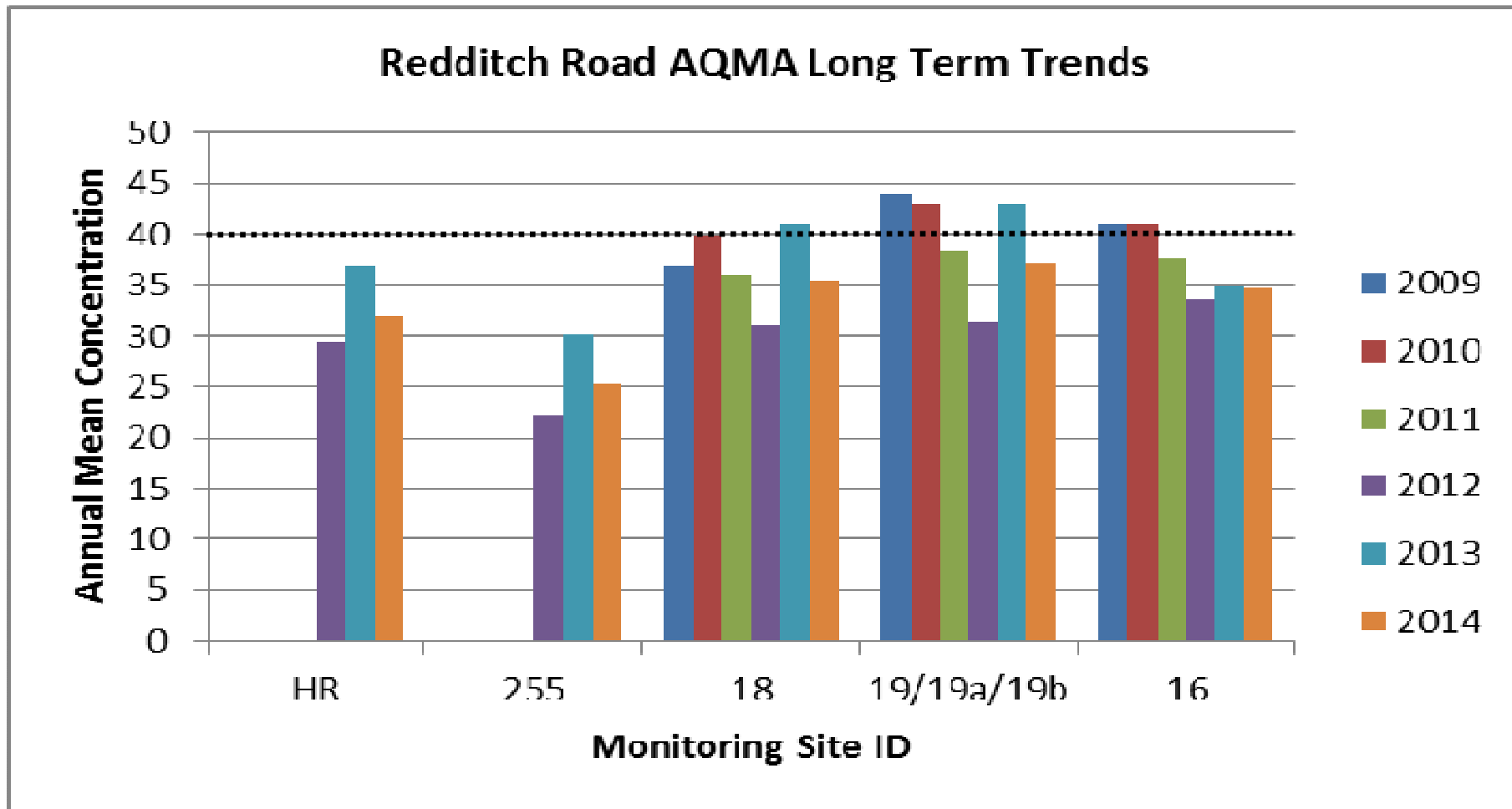


Figure 2.7 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites

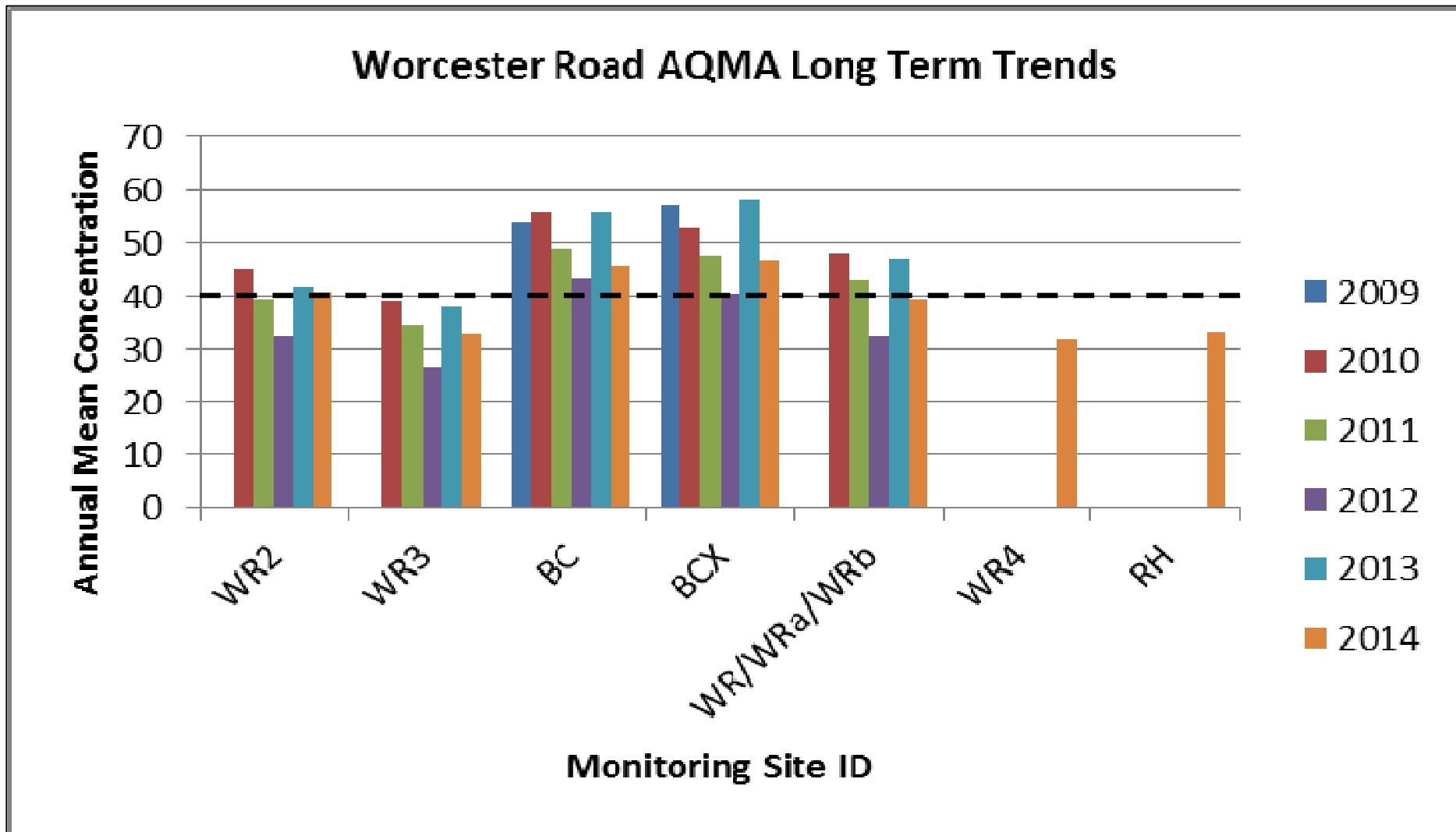
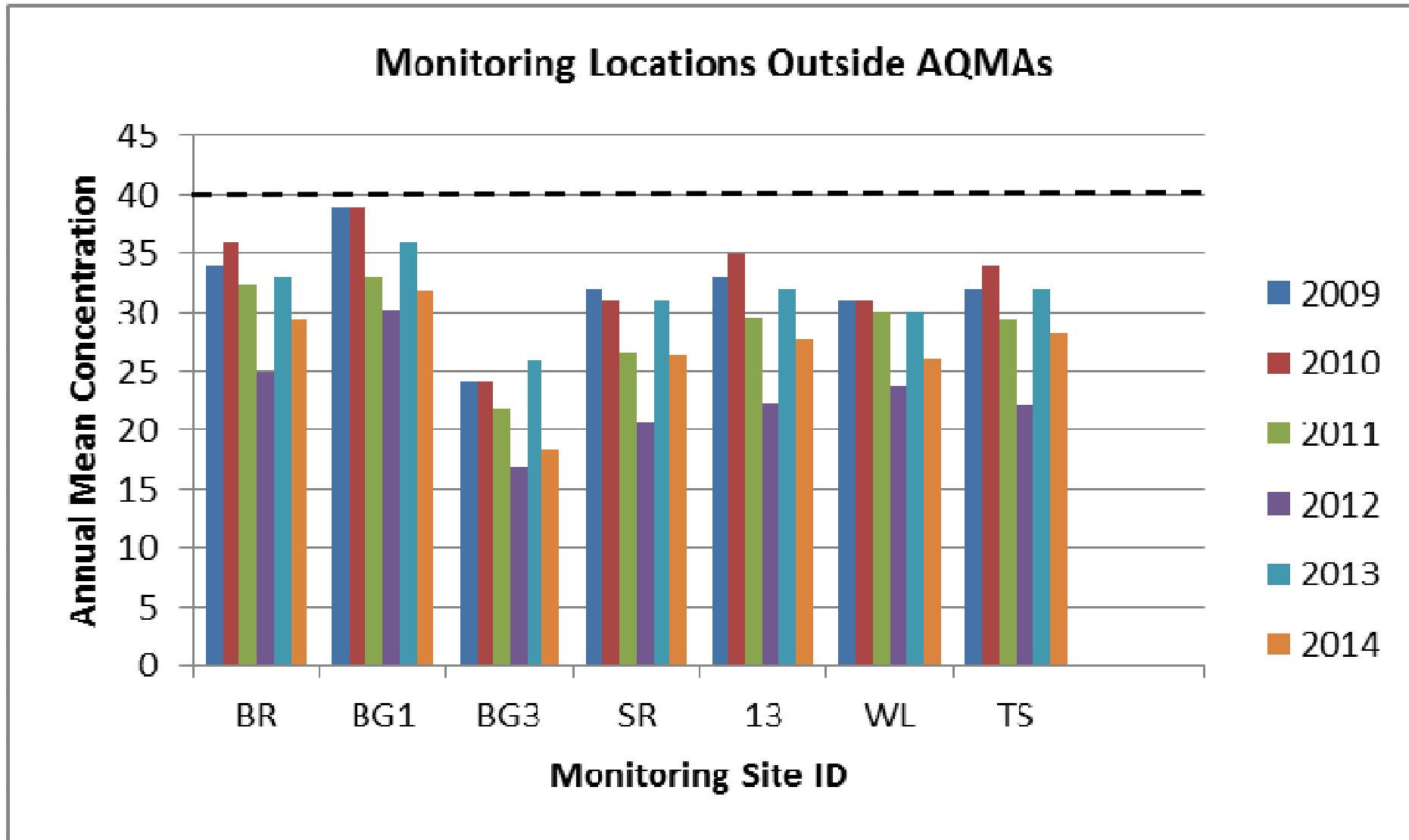




Figure 2.8 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



**2.2.2 PM<sub>10</sub>**

PM10 is not monitored within the Bromsgrove District.

**2.2.3 Sulphur Dioxide**

Sulphur Dioxide is not monitored within the Bromsgrove District.

**2.2.4 Benzene**

Benzene is not monitored within the Bromsgrove District.

**2.2.5 Other pollutants monitored**

No other pollutants are monitored with the Bromsgrove District.

**2.2.6 Summary of Compliance with AQS Objectives**

Bromsgrove District Council has examined the results from monitoring in the district. Concentrations outside of the AQMAs are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

### **3 Road Traffic Sources**

#### **3.1 Narrow Congested Streets with Residential Properties Close to the Kerb**

The criteria for assessing narrow congested streets are set out in Section A.1 of Box 5.3, LAQM.TG(09). The 2012 Updating and Screening Assessment did not identify any locations requiring assessment, and this remains the case.

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

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

The criteria for assessing busy streets relevant for the hourly nitrogen dioxide objective are set out in Section A.2 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. The 2012 Updating and Screening Assessment did not identify any locations requiring assessment, and no new locations have subsequently been identified.

Bromsgrove District Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

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

The criteria for assessing roads with high flows of buses and / or HGVs are set out in Section A.3 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of

Review and Assessment. The 2012 Updating and Screening Assessment did not identify any locations requiring assessment, and no new locations have subsequently been identified.

Bromsgrove District Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

### **3.4 Junctions**

The criteria for assessing junctions are set out in Section A.4 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. The 2012 Updating and Screening Assessment did not identify any junctions requiring assessment. No new junctions have subsequently been identified.

Bromsgrove confirms that there are no new/newly identified busy junctions/busy road.

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

The criteria for assessing new roads are set out in Section A.5 of Box 5.3, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. No major new roads have been constructed or proposed since the previous Updating and Screening Assessment was completed.

Bromsgrove District Council confirms that there are no new/proposed roads.

### **3.6 Roads with Significantly Changed Traffic Flows**

The criteria for assessing roads with significant increases in traffic flows are set out in Section A.6 of Box 5.3, LAQM.TG(09). There are no locations identified which are

likely to exceed the specified criteria of 25% increase in traffic on roads with more than 10,000 vehicle trips per day.

Bromsgrove District Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

### **3.1 Bus and Coach Stations**

The criteria for assessing bus and coach stations are set out in Section A.7 of Box 5.3, LAQM.TG(09). Previous Updating and Screening Assessments have concluded that there are no bus stations within the District with more than 2500 daily movements or with relevant exposure within 10m. Bromsgrove District Council has confirmed that there have been no significant changes.

Bromsgrove District Council confirms that there are no relevant bus stations in the Local Authority area.

## 4 Other Transport Sources

### 4.1 Airports

The criteria for assessing airports are set out in Section B.1 of Box 5.4, LAQM.TG(09). There are no airports within the Bromsgrove District.

Bromsgrove District Council confirms that there are no airports in the Local Authority area.

### 4.2 Railways (Diesel and Steam Trains)

The criteria for assessing railways (diesel and steam trains) are set out in Section B.2 of Box 5.4, LAQM.TG(09).

#### 4.2.1 Stationary Trains

The 2012 Updating and Screening Assessment did not identify any locations where diesel locomotives were stationary for more than 15 minutes on a regular basis. There has been no change to this position.

Bromsgrove District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

#### 4.2.2 Moving Trains

None of the rail lines identified in Table 5.1 of LAQM.TG(09) as carrying large numbers of movements of diesel locomotives travel through the Bromsgrove area.

Bromsgrove District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

### **4.3 Ports (Shipping)**

The criteria for assessing ports (shipping) are set out in Section B.3 of Box 5.4, LAQM.TG(09). Bromsgrove is located inland and there is no significant shipping to consider.

Bromsgrove District Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

## 5 Industrial Sources

### 5.1 Industrial Installations

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

The criteria for assessing industrial installations are set out in Section C.1 of Box 5.5, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. There have been no new industrial installations identified within the Bromsgrove District Council area since the 2012 USA was completed.

Bromsgrove District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area.

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

None of the industrial installations identified in previous Updating and Screening Assessments have substantially increased emissions and no new exposure has been introduced nearby.

Bromsgrove District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

#### 5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

The criteria for assessing industrial installations are set out in Box 5.5, section C.1 of LAQM.TG(09). There are no new or significantly changed industrial installations within Bromsgrove District since the last USA.

Bromsgrove District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.



## 5.2 Major Fuel (Petrol) Storage Depots

The criteria for assessing major fuel (petrol) storage depots are set out in Section C.2 of Box 5.5, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. No such locations have been identified.

There are no major fuel (petrol) storage depots within the Bromsgrove District Council area.

## 5.3 Petrol Stations

The criteria for assessing petrol stations are set out in Section C.3 of Box 5.5 LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. Bromsgrove District Council confirmed in the 2012 USA that there are no petrol stations meeting the criteria requiring assessment. Since then no new petrol stations have been installed.

Bromsgrove District Council confirms that there are no petrol stations meeting the specified criteria.

## 5.4 Poultry Farms

The criteria for assessing poultry farms are set out in Section C.4 of Box 5.5 LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. Bromsgrove District Council confirmed in the 2012 USA that there were no poultry farms meeting the criteria requiring assessment. No new installations have been identified.

Bromsgrove District Council confirms that there are no poultry farms meeting the specified criteria.

## **6 Commercial and Domestic Sources**

### **6.1 Biomass Combustion – Individual Installations**

The criteria for assessing biomass combustion (individual installations) are set out in Section D1a of Box 5.8, TG(09). Bromsgrove District Council has not identified any new biomass boilers between 50kW and 20MW since the 2012 Updating and Screening Assessment was produced.

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

### **6.2 Biomass Combustion – Combined Impacts**

The criteria for assessing biomass combustion (combined impacts) are set out in Section D.1b of Box 5.8, LAQM.TG(09). No significant combined impacts have been identified since the previous Updating and Screening Assessment was undertaken in 2012.

Bromsgrove District Council confirms that there are no significant combined impacts from biomass combustion in the Local Authority area.

### **6.3 Domestic Solid-Fuel Burning**

The criteria for assessing domestic solid-fuel burning are set out in Section D.2 of Box 5.8, LAQM.TG(09) and are unchanged from previous Review and Assessments. The 2012 Updating and Screening Assessment concluded that there were no areas of significant domestic coal or smokeless fuel burning. There has not been a significant increase in domestic solid-fuel burning within the area since that time.

Bromsgrove District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

## 7 Fugitive or Uncontrolled Sources

The criteria for assessing fugitive or uncontrolled sources are set out in Section E.1 of Box 5.10, LAQM.TG(09) and are unchanged from previous rounds of Review and Assessment. The 2012 USA concluded that there were no potential sources of fugitive dust within the Bromsgrove District area.

No new potential fugitive or uncontrolled sources have been identified.

Bromsgrove District Council confirms that there are no permanent potential sources of fugitive particulate matter emissions in the Local Authority area.

## **8 Conclusions and Proposed Actions**

### **8.1 Conclusions from New Monitoring Data**

Bromsgrove District Council measured Nitrogen Dioxide at thirty five locations across its area in 2014. All concentrations have been recorded as below the annual mean objective at monitoring locations outside of existing AQMAs. Five exceedances of the objective were recorded at locations within the Lickey End and Worcester Road AQMAs and therefore these AQMAs are required to remain in place. No exceedances of the objective were recorded within the Kidderminster Road, Hagley and Redditch Road, Bromsgrove AQMAs in 2014. Exceedances were recorded in these areas in 2013 and therefore further monitoring is required to ascertain whether these reductions are part of an on-going trend or isolated events. These AQMAs should remain in place until sufficient data is obtained that shows a consistent reduction of NO<sub>2</sub> levels below the annual mean objective.

The long term trend data, where available, indicates a general decrease in NO<sub>2</sub> levels when comparing 2014 with previous years. Overall concentrations are shown to have remained reasonable stable at these locations, where previous year's data is available, and indicate a general reduction in NO<sub>2</sub> levels across the board.

### **8.2 Conclusions from Assessment of Sources**

The Updating and Screening Assessment has not identified any significant changes to emission sources that would lead to deterioration in air quality within the Bromsgrove District Council area. There have been no new or significantly altered industrial processes, road, transport, commercial, domestic or fugitive sources of emissions requiring a more Detailed Assessment to be undertaken.

### **8.3 Proposed Actions**

Bromsgrove District Council confirms that the existing AQMAs at Kidderminster Road, Hagley, and Lickey End, Redditch Road, and Worcester Road, Bromsgrove, must remain in place.

Bromsgrove District Council has not identified a requirement to move to Detailed Assessment for any pollutant. The Council will continue to monitoring nitrogen dioxide levels across its area.

Bromsgrove District Council will submit a Progress Report in 2016 to Defra, as required, as part of the local air quality management annual review and assessment process.

## 9 References

- Air Quality Review & Assessment Helpdesk
- AQC – Bromsgrove District Council Air Quality Progress Report 2011
- AQC – Bromsgrove District Council Air Quality Progress Report 2010
- AQC - Bromsgrove District Council Updating and Screening Assessment 2012
- Bromsgrove District Council emerging District Plan  
<http://www.bromsgrove.gov.uk/council/policy-and-strategy/planning-policies/local-development-plan/the-emerging-bromsgrove-district-plan-2011-30.aspx>
- DEFRA (2009) 'Local Air Quality Management Technical Guidance LAQM TG.(09)'
- DEFRA (2015) 'National Diffusion Tube Bias Adjustment Factor Spreadsheet v.03/15'
- Defra (2012) Data Archive, available at: <http://uk-air.defra.gov.uk/data>
- EPUK & IAQM (2015) 'Land-Use Planning & Development Control: Planning for Air Quality v1.1'
- NO2 Distance from roads calculator used for regression of values available at: <http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>
- NPPF  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/6077/2116950.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf)
- Office for National Statistics (ONS) (July 2012) 'Mid-year estimates of population 2011'
- Worcestershire Air Quality Action Plan September, 2013
- Worcester Transport Strategy
- Worcestershire Local Transport Plan 3

## **Bromsgrove District Council**

- Worcestershire Regulatory Services (2013) '2013 Air Quality Progress Report for Bromsgrove District Council'
- Worcestershire Regulatory Services (2014) '2014 Air Quality Progress Report for Bromsgrove District Council'

# **Appendices**

Appendix A: QA/QC Data

Appendix B: DMRB Calculations Full Dataset of Measured Monthly Concentrations and Bias Adjustment

Appendix C: Roadside NO<sub>2</sub> Corrections to Façade – F1/F2/F3 and LE4

Appendix D: Annualisation of Locations – BR, RES1, RES2, RES3, and RES4



## **Appendix A: QA/QC Data**

### **Factor from Local Co-location Studies (if available)**

No local co-location studies for nitrogen dioxide have been undertaken in 2014.

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

The following UKAS accredited company provides Malvern Hills District Council with nitrogen dioxide diffusion tubes and analysis:

Somerset Scientific Services,  
The Crescent  
County Hall  
Taunton  
TA1 4DY

0300 123 2224

[somersetscientific@somerset.gov.uk](mailto:somersetscientific@somerset.gov.uk)

The 20% Triethanolamine (TEA) / De-ionised Water preparation method is used.

The bias adjustment factor applied to the results in 2014 was 0.89 (Spreadsheet Version No. 03/15) which were derived from the national studies.

### **Short-term to Long-term Data Adjustment**

Data capture was of a level that no annualisation was necessary.

### **QA/QC of Automatic Monitoring**

No Automatic Monitoring Data is available for 2014.

### **QA/QC of Diffusion Tube Monitoring**


Under the WASP Scheme Somerset Scientific Services performed 100% satisfactory for all periods in 2014. Tube precision was generally 'Good' throughout 2014.

## Appendix B: DMRB Calculations Full Dataset of Measured Monthly Concentrations and Bias Adjustment

Ref	Location	Jan 14	Feb 14	Mar 14	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep 14	Oct 14	Nov 14	Dec 14	Ave	Bias adj	Adj Ave	No Months Capt	Annualised Figure
RH1	8 Rock Hill 186A Worcester Road	43.13	40.58	22.94	36.96			21.15	32.8	45.09	43.25	52.97	35.33	37.42	0.89	33.3	10	
WR4	159 Worcester Road	36.14	37.14	37.5	30.73	33.8	30.92	30.47	30.54	44.56	36.7	44.58	35.99	35.76	0.89	31.8	12	
WR2	138 Worcester Road	50.49	43.09	52.18	46.13	37.14		36.64	30.27	56.1	48.51	60.93	41.5	45.72	0.89	40.7	11	
WR3	Ye Olde Black Cross, 70 Worc Rd	34.62	36.43	45.45	26.75	34.03			31.3	44.55	34.15	40.37	39.87	36.75	0.89	32.7	10	
BC	16 Hanover Place, Worcester Road	54.56	54.97	40.48	36.38	46.23	46.14	51.75	51.14	56.52	61.08	62.99	52.88	51.26	0.89	45.6	12	
BCX	10 Hanover Street	63.01	52.77	64.28	52.3	46.92	45.67	42.82	39.84	60.79	56.48	60.06	46.27	52.6	0.89	46.8	12	
WR	10 Hanover Street	51.51	42.34	53.7	47.99	40.82	38.77	39.21	35.77	53.87	48.96	48.18	41.02	45.18	0.89	40.2	12	
WRa	10 Hanover Street	46.78	46.86	49.95	45.62	42.55	39.65	40.53	34.39	34.94	43.2	51.25	43.75	43.29	0.89	38.5	12	
WRb	10 Hanover Street	54.06	47.49	56.38	46.2	38	35.92	40.65	34.78	44.65	49.38	46.88	37.93	44.36	0.89	39.5	12	
BG1	Davenal House	48.29	44.66	26.45	27.02	34.55	30.72	33.32	29.54	36.15	36.32	46.74	35.11	35.74	0.89	31.8	12	
BR	35 Birmingham Road	36.82	35.11				31.5	30.79	21.11		31.06	37.54	33.7	32.2	0.89	28.7	8	29.98
1	3a Alcester Road, Lickey End	26.49	28.82	37.56	65.45	28.32	27.68	32.1	27.9	37.01	27.1	39.6	31.36	34.12	0.89	30.4	12	
LE4	Harvester Pub, Lickey End Near 371 Birmingham Road	49.61	54.09			51.59	44.79	71.88	56.71	68.06	61.19	60.11	57.82	57.59	0.89	51.3	10	
LE7	J1 M42 roundabout	33.92	32.47	45.98	40.65	34.6	37.32	38.47	24.71	45.51	33.66	47.32	30.26	37.07	0.89	33	12	
F1	J1 M42 roundabout	79.5	91.38	71.65	70.87	57.58	58.53	54.14	59.02	57.2	74.36	66.77	65.14	67.18	0.89	59.8	12	
F2	J1 M42 roundabout	80.05	100.6	77.61	70.52	60	64.75	53.34	65.3	56.52	72.35	67.3	65.27	65.27	0.89	58.1	12	
F3	J1 M42 roundabout	85.99	92.07	73.87	69.72	61.09	57.9	51.27	66.63	56.91	72.35	64.52	65.05	68.11	0.89	60.6	12	
LE5	5 Old Birmingham Road	44.64	46.23	45.69	42.78	24.12	35.56	34.34	34.28	34.33	40.81	43.24	39.39	38.78	0.89	34.5	12	
LE6	308 Birmingham Road	43.07	41.9	40.07	36.49	29.99	20.37	26.18	33.73	31.46	40.43	35.67	41.55	35.08	0.89	31.2	12	
13	485 Birmingham Road	33.37	39.38	36.56	17.66	27.63	29.14	25.13	24.75	32.56	30.79	40.99	35.51	31.12	0.89	27.7	12	
WL	112 Wildmoor Lane The Smallholdings, off Wildmoor Lane	39.37	38.82	36.97	30.83	28.73	22.2	23.87	19.18	29.27	27.68	38.03	29.89	30.4	0.89	26.1	12	
TS	77 Park Road	34.04	35.86	43.17	33.95	27.86	21.01	23.23	19.13	35.3	33.63	44.65	27.48	31.61	0.89	28.1	12	
10	74 Worcester Road	32.72	44.4	37.45	36.66	31.79	27.57	30.87	26.01	38.7	42.34	47.77	35.41	35.97	0.89	32	12	
11	74 Worcester Road	34.4	38.04	40.88	33.34	32.08	32.1	25.77	23.35	36.98	31.93	42.09	31.88	33.57	0.89	29.9	12	
HL	sign of 20 Birmingham Road, Hagley	26.24	26.18	33.72	30.86	26.65	28.93	29.69	20.94	35.31	24.07	33.09	27.91	28.63	0.89	25.5	12	
8	9 Market Way	19.25	20.85	29.07	22.46	21.7	21.72	25.53	16.92	28	21.93	25.12	22.7	22.94	0.89	20.4	12	
9	78 Kidderminster Road	36.28	40.16	44.48	23.51	35.98	33.82	32.53	33.18	41.19	32.95	46.19	40.67	36.74	0.89	32.7	12	
9a	78 Kidderminster Road	34.22	44.22	45.65	34.51	41.86	36.64	31.16	26.84	42.09	36.37	46.61	39.74	38.33	0.89	34.1	12	
9b	78 Kidderminster Road	37.07	43.8	40.71	40.3	40.99	29.28	35.86	31.58	43.58	39.13	41.53	36.6	38.37	0.89	34.2	12	
KR62	62 Kidderminster Rd	35.19	37.5	42.51	40.07	30.28	34.37	37.76	32.34	37.6	28.77	37.43	34.44	35.69	0.89	31.8	12	
RES 1	26 Stourbridge Road					21.01	20.54	20.6	18.93	24.95	27.83	29.69	24.6	23.52	0.89	20.9	8	20.29
RES 2	21 Birmingham Road					35.06	33.82	30.01	33.34	38.89	31.54	38.68	40.09	35.18	0.89	31.3	8	30.36
RES 3	104 Kidderminster Road South					14.08	18.29	17.82	13.63	26.52	21.34			18.61	0.89	16.6	6	17.55
RES 4	23 Worcester Road, Firstall School					36.33	33.31	36.33	33.23	25.52	31.93	50.57	35.37	35.32	0.89	31.4	8	30.47
BG3	2 Stoke Road	24.56	17.02			17.85	17.84	16.04	16.37	24.46		20.6	31.02	20.64	0.89	18.4	9	
SR	84 Redditch Road	27.93	28.25	36.6	28.6	25.64	23.45	26.82	24.74	36.87	25.04	37.91	34.88	29.73	0.89	26.5	12	
18	93 Redditch Road	37.81	36.91	27.58	39.13	33.82	44.73	36.97	34.59	57.13	33.98	52.01	43.57	39.85	0.89	35.5	12	
19	93 Redditch Road	42.29	40.12	50.19	36.11	38.9	46.11	34.73	36.82	45.74	42.58	40.4	44.59	41.55	0.89	37	12	
19a	93 Redditch Road	41.97	41.38	50.58	34.34	40.01	40.54	37.72	38.09	47.37	41.17	46.8	42.76	41.89	0.89	37.3	12	
19b	93 Redditch Road	42.48	38.93	50.92	37.05	37.87	40.64	39.28	36.13	43.29	41.06	46.62	43.27	41.46	0.89	36.9	12	
HR	52 Hanbury Road	35.54	31.68	45.9	32.72	25.16	40.26	33.58	33.43	42.12	31.99	42.58	37.78	36.06	0.89	32.1	12	
16	58 Redditch Road	41.51	42.96	46.86	38.92	35.8	39.16	35.71	31.94	43.44	38.54	29.48	41.64	38.83	0.89	34.6	12	
255	255 Worcs Road	27.23	30.32	36.66	23.23	25.32	23.98	22.29	24.04	28.82	26.85	36.14	37.22	28.51	0.89	25.4	12	

## Appendix C:

### Roadside NO<sub>2</sub> Corrections to Façade – F1/F2/F3

This calculator allows you to predict the annual mean NO<sub>2</sub> concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph. 

**Enter data into the yellow cells**

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	2.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	15	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	18.37	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	59.5	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	41.3	µg/m <sup>3</sup>


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

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

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

Issue 4: 25/10/11. Created by Dr Ben Marner; Approved by Prof Duncan Laxen. Contact: ben.marner@aqconsultants.co.uk

### Roadside NO<sub>2</sub> Corrections to Façade – LE4

This calculator allows you to predict the annual mean NO<sub>2</sub> concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph. 

**Enter data into the yellow cells**

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	1.4	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	11	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	18.37	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	(Note 2)	51.26	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	(Note 3)	36.6	µg/m <sup>3</sup>

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

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

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

Issue 4: 25/10/11. Created by Dr Ben Marner; Approved by Prof Duncan Laxen. Contact: ben.marner@aqconsultants.co.uk

**Appendix D:**

**Annualisation of Location BR**

Site	Site Type	Annual Mean	Period Mean	Ratio
Birmingham Acocks Green	Background Urban	43.04	40.54	1.06
Birmingham Tyburn	Background Urban	29.81	29.40	1.01
Walsall Woodlands	Background Urban	24.66	23.26	1.06
Average				<b>1.05</b>
BR Result				28.66
BR Annualised				<b>29.98</b>

**Annualisation of Location RES1**

Site	Site Type	Annual Mean	Period Mean	Ratio
Birmingham Acocks Green	Background Urban	43.04	40.03	0.96
Birmingham Tyburn	Background Urban	29.81	29.84	1.0
Walsall Woodlands	Background Urban	24.66	25.68	0.96
Average				<b>0.97</b>
RES1 Result				20.93
RES1 Annualised				<b>20.29</b>

**Annualisation of Location RES2**

Site	Site Type	Annual Mean	Period Mean	Ratio
Birmingham Acocks Green	Background Urban	43.04	40.03	0.96
Birmingham Tyburn	Background Urban	29.81	29.84	1.0
Walsall Woodlands	Background Urban	24.66	25.68	0.96
Average				<b>0.97</b>
RES2 Result				31.31
RES2 Annualised				<b>30.36</b>

**Annualisation of Location RES3**

Site	Site Type	Annual Mean	Period Mean	Ratio
Birmingham Acocks Green	Background Urban	43.04	45.01	0.96
Birmingham Tyburn	Background Urban	29.81	25.93	1.15
Walsall Woodlands	Background Urban	24.66	22.98	1.07
Average				<b>1.06</b>
RES3 Result				16.56
RES3 Annualised				<b>17.55</b>

**Annualisation of Location RES4**

Site	Site Type	Annual Mean	Period Mean	Ratio
Birmingham Acocks Green	Background Urban	43.04	40.03	0.96
Birmingham Tyburn	Background Urban	29.81	29.84	1.0
Walsall Woodlands	Background Urban	24.66	25.68	0.96
Average				<b>0.97</b>
BR Result				31.43
BR Annualised				<b>30.47</b>