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**Powys County Council**

**2018 Air Quality Progress Report**

In fulfillment of Part IV of the Environment Act 1995

Local Air Quality Management

**October 2018**

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## Executive Summary: Air Quality in Our Area

### Air Quality in Powys

Powys is an extensive, largely upland and extremely rural county covering 2000 square miles, that is about a quarter of the area of Wales. With only 1 person in every 10 acres (4 hectares) it is one of the most sparsely populated local authority areas in England and Wales.

The economy is based on agriculture and tourism, with high self-employment and small businesses predominating, and an important contribution to employment opportunities from the public sector.

The main source of air quality pollution in the county is caused by vehicle emissions from the road network. In addition there are some small pockets of industrial sources, most notably in the towns of Newtown and Welshpool

### Actions to Improve Air Quality

Powys County Council does not currently have any AQMA's and therefore is not undertaking any further action plans at this time. We continue to screen new developments in our area, particularly through the planning process in relation to their impact on air quality.

### Local Priorities and Challenges

Powys County Council does not have any specific air quality challenges going forward, however we will be continuing to monitor the impact the Newtown bypass will have on air quality following it's opening in 2019.

Some investigative monitoring of levels of NO<sub>2</sub> in Llanfaes, Brecon will also take place in 2019 following the re-phasing of a set of traffic lights.

### How to Get Involved

Members of the public can obtain further information on air quality by contacting the report author.

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## **1. Actions to Improve Air Quality**

### **1.1 Previous Work in Relation to Air Quality**

### **1.2 Air Quality Management Areas**

Air Quality Management Areas (AQMAs) are declared when air quality is close to or above an acceptable level of pollution (known as the air quality objective (Please see Appendix A)). After declaring an AQMA the authority must prepare an Air Quality Action Plan (AQAP) within 18 months setting out measures it intends to put in place to improve air quality to at least the air quality objectives, if not even better. AQMA(s) are seen by local authorities as the focal points to channel resources into the most pressing areas of pollution as a priority.

Powys County Council currently does not have any AQMAs.

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## **2. Air Quality Monitoring Data and Comparison with Air Quality Objectives**

### **2.1 Summary of Monitoring Undertaken in 2017**

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

This section sets out what monitoring has taken place and how results compare with the objectives.

There are currently no automatic monitoring sites operating within Powys. Automatic monitoring was undertaken in respect of NO<sub>2</sub> at New Road, Newtown during 2006/7 and is reported in the Detailed Assessment.

## Non-Automatic Monitoring Sites

Powys undertook non- automatic (passive) monitoring of NO<sub>2</sub> at 7 sites during 2017. Table 2.1 presents the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure 2.1 . Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

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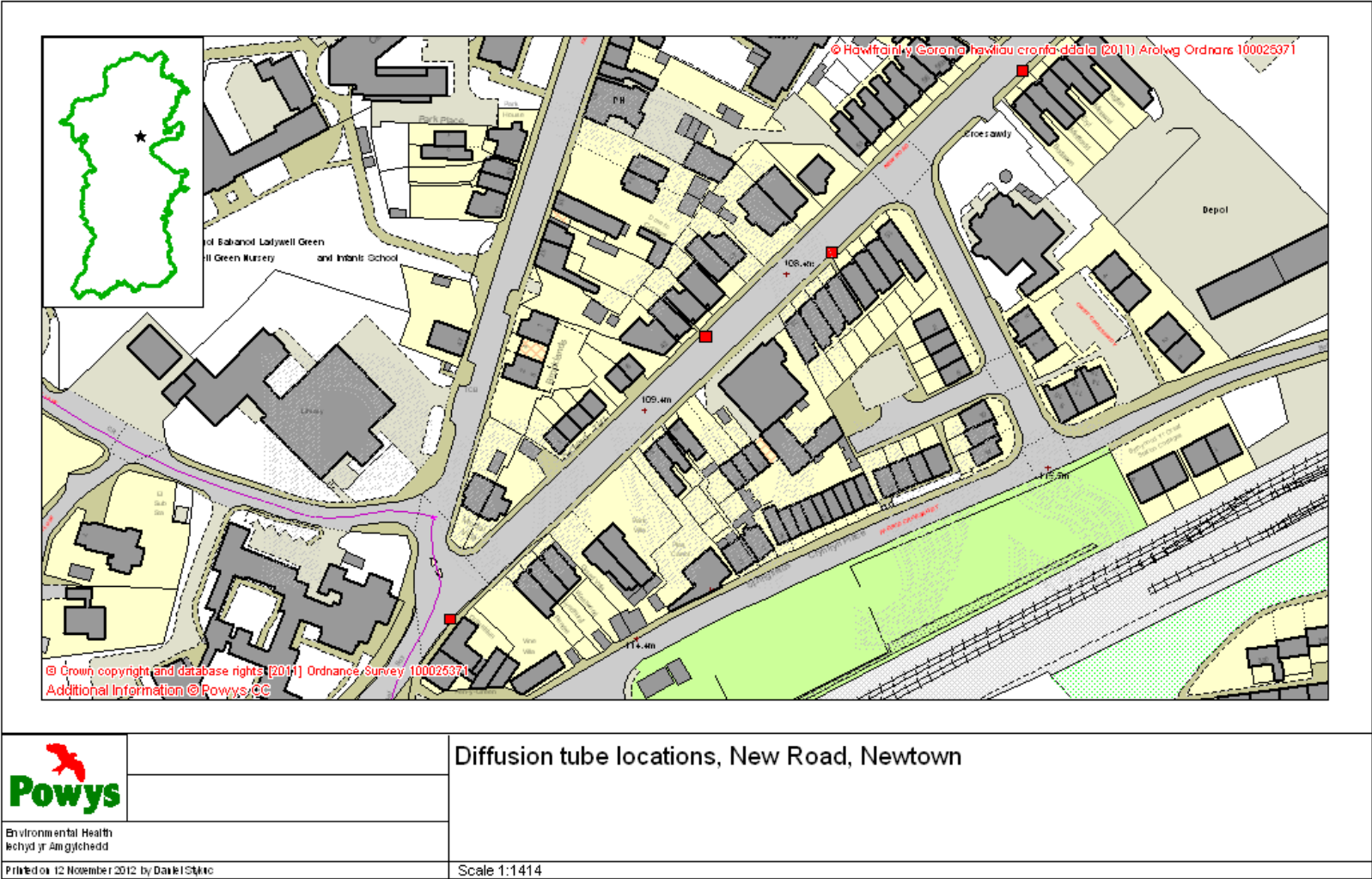
Table 2.1 – Details of Non-Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
19 New Road	Kerbside (single)	310799	291268	NO <sub>2</sub>	N	N	Y(5m)	2m	Y
Dollarddun, New Road	Façade (triplicate)	310693	291165	NO <sub>2</sub>	Y	N	Y(0m)	2m	Y
Eryl, New Road	Kerbside (single)	310854	291320	NO <sub>2</sub>	N	N	Y(5m)	2m	Y
45 New Road	Roadside (single)	310761	291246	NO <sub>2</sub>	N	N	Y(5m)	0m	Y
Brimmon Road, Newtown	Urban Background (single)	310798	290984	NO <sub>2</sub>	N	N	N	2m	Y

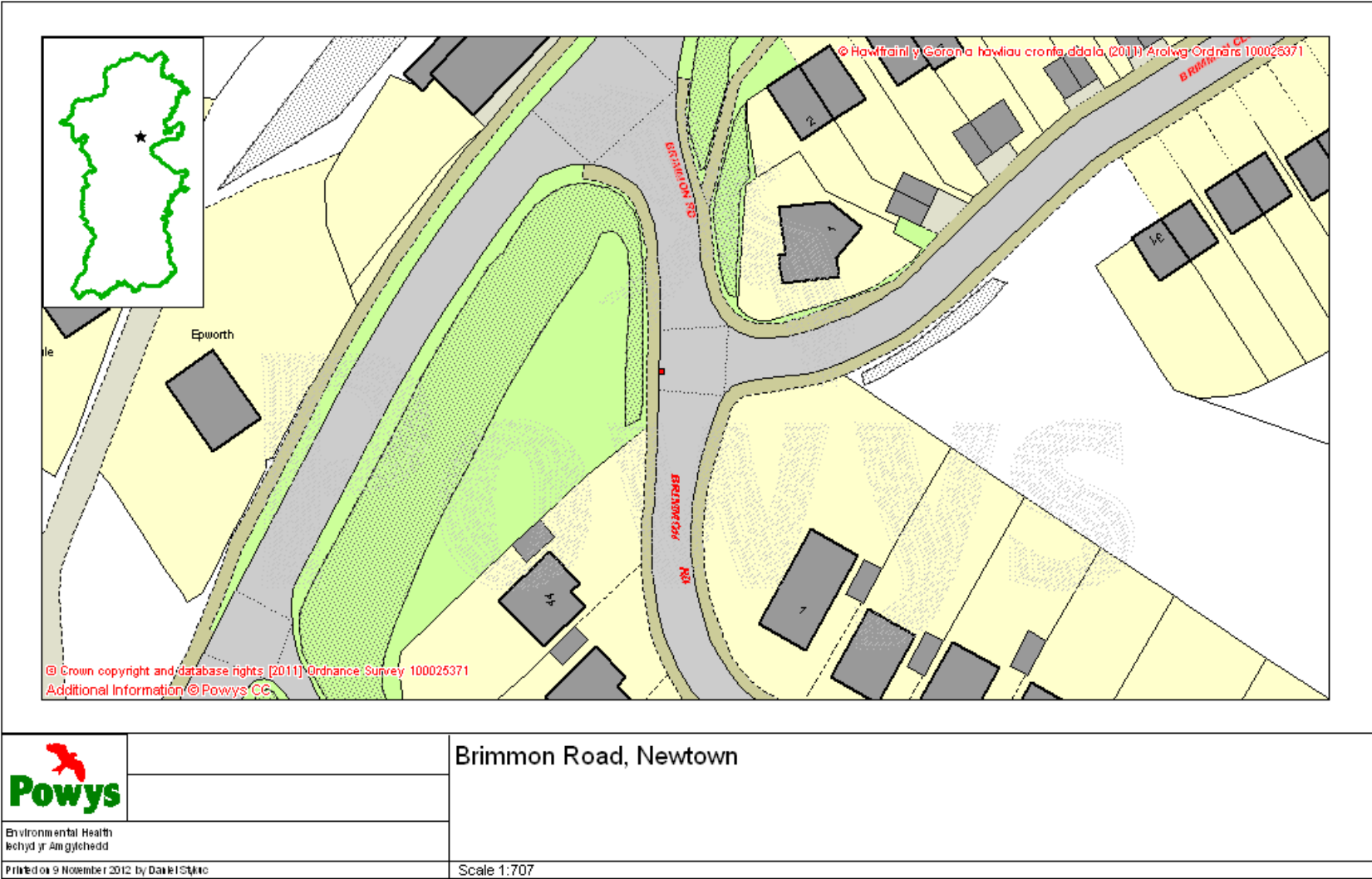
The above nitrogen dioxide diffusion tubes are supplied and analysed by Environmental Scientifics Group (ESG). Our chosen Laboratory follows the procedures set out in the Harmonisation Practical Guidance and uses a 50% TEA in acetone method of preparing the tubes.

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Figure 2.1 – Map(s) of Non-Automatic Monitoring Sites



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## 2.2 2017 Air Quality Monitoring Results

Table 2.2 – Annual Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2013	2014	2015	2016	2017
POW(M)1	Kerbside	Difussion Tube	92	92	31.9	28.8	29	31	38
POW(M) 2	Kerbside	Diffusion Tube	100	100	32.9	33.9	29	32	37
POW (M) 3,4,5	Façade	Triplicate Diffusion Tube	92	92	39.5	38.1	38	39	36
POW(M) 6	Roadside	Diffusion Tube	100	100	36.6	33	30	32	33
POW(M) 7	Kerbide	Diffusion Tube	100	100	10.4	9.4	9	11	9

### Notes:

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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## 2.3 Comparison of 2017 Monitoring Results with Previous Years and the Air Quality Objectives

During 2017 Powys County Council only collected diffusion tube data for Nitrogen Dioxide in the vicinity of the previously revoked New Road AQMA. Valid data capture was achieved at or above 92% for all sites. It is our intention to continue to monitor these sites through 2018 and to a point where the Newtown Bypass has been opened and the new trend established.

### 2.3.1 Nitrogen Dioxide (NO<sub>2</sub>)

The data collected for the last 5 years on New Road does not show any exceedance of the AQ objective level for NO<sub>2</sub>, levels recorded are also fairly consistent over this period. In early 2019 the Newtown Bypass which is currently under construction will open. We will continue to monitor levels at these locations after the opening of the Bypass, however significant reductions in levels of NO<sub>2</sub> are expected.

### 2.3.2 Particulate Matter (PM<sub>10</sub>)

Powys County Council does not currently monitor for PM<sub>10</sub>

### 2.3.3 Particulate Matter (PM<sub>2.5</sub>)

Powys County Council does not currently monitor for PM<sub>2.5</sub>

## 2.4 Summary of Compliance with AQS Objectives as of 2017

Powys County Council has examined the results from monitoring in the Powys. Concentrations are all below the Objectives, therefore no further action is required.

### **3. New Local Developments**

New Local developments have been considered below

#### **3.1 Road Traffic Sources (& other transport)**

The Newtown bypass is due to open in early 2019 and is expected to cause significant reductions in levels of NO<sub>2</sub> in the New Road area of Newtown. NO<sub>2</sub> will continue to be monitored following the opening of the bypass to show this impact.

Following a complaint from a resident living on Orchard St, Llanfaes which is served by the B4601, Powys County Council intend to install diffusion tubes in this area to obtain façade level NO<sub>2</sub> levels. The complaint noted an increase in traffic queuing in a street canyon, which is alleged to have increased following a change in phasing of the traffic lights at the junction at the end of the road. In order to investigate this situation tubes will be installed from the 1<sup>st</sup> January 2019.

#### **3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources**

There are no new sources of significance in accordance with the guidance since the last report.

#### **3.3 Planning Applications**

There are no new planning applications of significance in accordance with the guidance since the last report.

#### **3.4 Other Sources**

There are no new other sources of significance in accordance with the guidance since the last report.

Powys County 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.

Powys County 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.**

## **4. Polices and Strategies Affecting Airborne Pollution**

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

Not applicable

## **5. Conclusions and Proposed Actions**

### **5.1 Conclusions from New Monitoring Data**

New monitoring data has not identified any potential breaches of the air quality objectives and monitored levels of NO<sub>2</sub> remain stable for a period of time.

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

There are no new Local Developments which are likely to have a significant adverse impact on Air Quality, however the opening of the Newtown Bypass in early 2019 is expected to have a positive impact.

### **5.3 Other Conclusions**

Additional diffusion tubes for NO<sub>2</sub> need to be installed on the B5601 through Llanfaes, to assess the impact of changing phasing of lights at a nearby junction.

### **5.4 Proposed Actions**

Powys County Council intends to continue to monitor levels of No<sub>2</sub> on New Road Newton and will also put in 3 additional tubes in Llanfaes, Brecon.

## References



## Appendices

Appendix A: Monthly Diffusion Tube Monitoring Results

Appendix B: A Summary of Local Air Quality Management

Appendix C: Air Quality Monitoring Data QA/QC

## Appendix A: Monthly Diffusion Tube Monitoring Results

Table A.1 – Full Monthly Diffusion Tube Results for 2017

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (factor) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
POW (M) 1	62.5	59.8	56.8	47.3	52.4	#	37.3	37.9	46.7	46	51.8	47.8	49.66	38.2382	N/A
POW (M) 2	65.8	56.4	55.6	42.1	50.2	38.4	38.5	33.9	46.5	44.7	59.9	50.8	48.57	37.3989	N/A
POW (M) 3	61.3	53.7	59.2	46.9	46.9	37.6	36.5	37.8	44.4	47.5	47.5	#	47.21	36.3517	36.3517
POW (M) 4	72.8	58.8	62.1	47.5	51.6	40.7	38.8	30.6	42.85	50.7	61	44.1	50.1	38.577	38.577
POW (M) 5	65.4	53.6	52.5	47.4	47	33.9	33.8	30.7	42.3	41.7	55.3	46.6	45.85	35.3045	35.3045
POW (M) 6	57.7	45.7	49.8	48.2	36.1	30.4	33.7	35.4	38.5	35.7	52.5	45.5	42.43	32.6711	<b>N/A</b>
POW (M) 7	23.3	16.9	15.3	10.7	9.8	6.8	8.3	7.1	10.3	11.2	14.3	12	12.17	9.3709	<b>N/A</b>

### Notes:

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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## Appendix B: A Summary of Local Air Quality Management

### Purpose of an Annual Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment Act 1995 and associated government guidance. 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 being achieved. Where exceedances occur, or are likely to occur, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) within 18 months of declaration setting out the measures it intends to put in place in pursuit of the objectives. Action plans should then be reviewed and updated where necessary at least every 5 years.

For Local Authorities in Wales, an Annual Progress Report replaces all other formal reporting requirements and have a very clear purpose of updating the general public on air quality, including what ongoing actions are being taken locally to improve it if necessary.

### Air Quality Objectives

The air quality objectives applicable to LAQM in Wales are set out in the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138), Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298), and are shown in Table B.1.

The 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 B.1 – Air Quality Objectives Included in Regulations for the Purpose of LAQM in Wales

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen Dioxide (NO <sub>2</sub> )	200µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40µg/m <sup>3</sup>	Annual mean	31.12.2005
Particulate Matter (PM <sub>10</sub> )	50µg/m <sup>3</sup> , not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18µg/m <sup>3</sup>	Annual mean	31.12.2010
Particulate Matter (PM <sub>2.5</sub> )	10µg/m <sup>3</sup>	Annual mean	31.12.2020
Sulphur dioxide (SO <sub>2</sub> )	350µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25µg/m <sup>3</sup>	Running annual mean	31.12.2010
1,3 Butadiene	2.25µg/m <sup>3</sup>	Running annual mean	31.12.2003
Carbon Monoxide	10.0mg/m <sup>3</sup>	Running 8-Hour mean	31.12.2003
Lead	0.25µg/m <sup>3</sup>	Annual Mean	31.12.2008

## Appendix C: Air Quality Monitoring Data QA/QC

### Diffusion Tube Bias Adjustment Factors

The tube supplies analyst was ESG Didcot, the method was 50% TEA in acetone and the bias adjustment factor used was 0.77

### Factor from Local Co-location Studies

No co-location data was available

### Discussion of Choice of Factor to Use

No opportunity for a co-location study was available so the national bias adjustment factor was used

### QA/QC of Diffusion Tube Monitoring

Tube precision by the chosen laboratory in 2017 is recorded as good.

The chosen laboratory took part in AIR NO<sub>2</sub> PT rounds in 2017 and was found to be satisfactory

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## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide