

# 2018 Air Quality Annual Status Report (ASR)

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

June 2018

**Epsom & Ewell Borough Council**

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## Executive Summary: Air Quality in Our Area

### Air Quality in Epsom & Ewell

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas<sup>1,2</sup>.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>3</sup>.

In common with much of the region, the principle pollutant of concern is nitrogen dioxide arising from road transport. In response to a local hotspot in Ewell High Street, the Council declared an Air Quality Management Area (AQMA) in 2007 and modified the boundary in 2011. Details on the Ewell High Street AQMA can be found here [https://uk-air.defra.gov.uk/aqma/details?aqma\\_ref=508](https://uk-air.defra.gov.uk/aqma/details?aqma_ref=508). An action plan to begin to take measures to improve air quality and reduce exposure was subsequently developed and consulted on. It is recognised that work to improve air quality depends on close cooperation with other agencies. In particular the two tier working arrangements in this area require the local highways authority, Surrey County Council to be involved with air quality matters. Results for 2017 in the AQMA show an improvement in air quality compared with 2016 taking the measurement made in the centre of the AQMA as the source.

Within the Borough, generally speaking a slow and gradual reduction in nitrogen dioxide levels has been noted over the past decade or more and there have been no new major sources of emissions either transport related or industrial in nature. No new AQMAs have been declared in the past year. The first phase to the alterations to the traffic flow in Epsom town centre have taken place with the remainder and

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<sup>1</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

<sup>2</sup> Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

<sup>3</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

more substantial changes to follow in 2018. Additional monitoring has been located in the area subject to the most change to quantify the effect on air quality.

## **Actions to Improve Air Quality**

In 2017 there were no new actions to improve air quality directly. Actions which have previously been undertaken, specifically within the Ewell High Street area are being monitored to judge effectiveness.

The county wide modelling exercise outlined in the 2017 status report is now underway being carried out by jointly procured consultants. This will provide for high resolution maps of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations across major roads in the Borough allowing the council to determine where objectives are predicted to be exceeded, where a marginal exceedance is likely and obtain source apportionment and local mortality estimates.

The Council is a founder member of the Surrey Air Alliance, an association of the district and borough councils and the county highways and public health functions. Through this route a county wide plan has been formed with overarching actions in addition to the specific actions associated with individual AQMAs. For example the modelling and bid referred to elsewhere in this documents are actions stemming from the alliance.

## **Conclusions and Priorities**

The imminent adjustments to Epsom town centre traffic flows as a result of the “Plan E” changes will have an effect on air quality. These changes (partially complete), will involve the return of two way running in the southern end of the town with an expected net reduction in traffic levels in the remainder of the locality as a result. It is expected that an overall improvement in air quality will result and the Council will continue to monitor at key locations to assess changes.

The results of the modelling exercise outlined above are expected in the final quarter of 2018-2019 and will inform future work in this area.

There remains one area of exceedance of the NO<sub>2</sub> annual mean objective as measured by diffusion tubes. This is within the existing Ewell High Street AQMA and was therefore expected. However the margin by which it has exceeded is the lowest in the last five years highlighting the positive effect of actions to improve air quality as well as likely favourable meteorological conditions in 2017.

## **Local Engagement and How to get Involved**

The Council encourages individuals to change their behaviour so as to reduce emissions from transport, their home and their work. The Epsom and Ewell borough is compact with public transport links through to areas of south and south west London as well as routes to Sussex and the south coast. The council is in the early stages of considering electrical charging point provision in its car parks and, together with the County Council, opportunities for on street charging. On behalf of residents, the Council pays an annual fee for membership of the air alert system whereby anyone can sign up for free text messages and/or use an App to receive information about predicted periods of poor air quality. For vulnerable people or those with respiratory conditions, this helps to provide a warning to allow them to plan their activities.

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## 1 Local Air Quality Management

This report provides an overview of air quality in Epsom and Ewell during 2017. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) 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 an exceedance is considered likely the local authority must 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. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Epsom & Ewell Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

## 2 Actions to Improve Air Quality

### 2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Epsom & Ewell Borough Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at [https://uk-air.defra.gov.uk/aqma/local-authorities?la\\_id=100](https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=100). Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA.



Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Ewell	09/07/2007	NO2 Annual Mean	Ewell	An area encompassing the section of High Street, Ewell from the junction with Spring Street to the mini roundabout at the junction with Cheam Road and continues a further 30 metres south on High Street Ewell	No	63	µg/m3	42	µg/m3	Ewell High Street Air Quality Action Plan	2010	<a href="#">Here</a>

Epsom & Ewell Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date

## 2.2 Progress and Impact of Measures to address Air Quality in Epsom and Ewell

Defra's appraisal of last year's ASR concluded the action plan for the AQMA would need to be reviewed in light of the modelling outcomes described elsewhere in this report. It is the Council's intention to review the action plan in this way and indeed use the results to generally review the position borough wide. The report also asked for additional clarity on the tube bias adjustment factor adopted and for presentation of additional graphical information. These latter two points have been addressed in this 2017 report and actions flowing from the modelling will be taken into account once the results have been received in early 2019.

Epsom & Ewell Borough Council has previously taken forward a number of direct measures in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in the existing action plan. Key completed measures are:

- The conversion of the mini roundabout in Ewell High Street into a conventional junction ensuring queuing traffic takes place outside the AQMA.
- The removal of on road parking during peak times promoting laminar traffic flow within the AQMA.
- The associated parking enforcement to ensure the junction is kept clear during peak times within the AQMA.

Epsom & Ewell Borough Council does not expect any further actions to be completed within the AQMA in the forthcoming year as the viable actions have largely been completed. Epsom & Ewell Borough Council's priorities for the coming year are to continue to monitor air quality through the alterations to Epsom town road network and beyond, take delivery of the results of the air quality modelling and begin to assess the implications for the existing AQMA and any other identified areas of exceedance. In partnership with the other members of the Surrey Air Alliance, a successful bid was made to provide resources to schools within 2km of AQMAs in the county and to include bikeability training, a theatrical engagement session, and the use of a specialist company to deliver interactive education sessions with pupils.

The principal challenges and barriers to implementation that Epsom & Ewell Borough Council anticipates facing are likely to be practical and financial in nature. It is unlikely to be feasible to implement significant changes to the local road network owing to the congested nature of the area. Measures therefore rely on smaller, less effective traffic and parking management and “soft measures” such as awareness raising.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Epsom & Ewell Borough Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the Ewell AQMA. It is apparent however that actions undertaken to date have contributed to an improvement of air quality as measured locally.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Remove the formally marked parking bays from 53 to 67 High Street	Transport Planning and Infrastructure	Other	Surrey County Council	Complete	Complete	None	High	Complete	-	An evolution of this proposal was brought forward and delivered
2	Widen the road at 76 – 62 High Street	Transport Planning and Infrastructure	Other	Surrey County Council	Complete	Complete	None	High	Complete	-	Carried out in conjunction with above measure
3	Remove on-street car parking on Church Street junction.	Transport Planning and Infrastructure	Other	Surrey County Council	-	-	None	Medium	Not started	-	Opinion sought that proposal would be difficult to achieve and not offer exceptional air quality gains.
4	Alter the junction of Cheam Road/High Street*	Transport Planning and Infrastructure	Other	Surrey County Council	Complete	Complete	None	High	Complete	-	A conventional give way junction has replaced the mini roundabout. Queuing traffic now occurs away from AQMA.
5	Re-apply for traffic regulation order in relation to 7.5 tonne weight restriction	Traffic Management	Emission based parking or permit charges	Surrey County Council	-	-	-	Low	Not started	-	Not a priority for local transport service
6	Place restrictions on delivery times and stopping on High	Traffic Management	Parking Enforcement on highway	Epsom & Ewell Borough Council	Complete	Complete	None	Medium	Complete	Complete	Stopping/Delivery restrictions in place in the most pollution sensitive area

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	Street between Cheam Road and Spring Street junctions										
7	Paint 'keep clear' lines at entrance to junctions of High Street with Church Street and West Street.	Transport Planning and Infrastructure	Other	Surrey County Council	-	-	-	Medium	Not started	-	No longer favoured by local transport service
8	Pedestrianise Ewell High Street in conjunction with Kiln Lane Link	Transport Planning and Infrastructure	Other	Surrey County Council	-	-	None	High	Not started – non viable	-	Kiln Lane link presently unfunded
9	Pedestrianise Ewell High Street without Kiln Lane Link	Transport Planning and Infrastructure	Other	Surrey County Council	-	-	None	High	Not started – non viable	-	Feedback indicates not a priority
10	Implement a one-way system	Transport Planning and Infrastructure	Other	Surrey County Council	-	-	None	High	Not started – non viable	-	Dependent on Kiln Lane Link
11	Remove the traffic lights at the junction between Spring Street and High Street	Transport Planning and Infrastructure	Other	Surrey County Council	-	-	None	High	Not started – non viable	-	Judgement that the worsening of pedestrian safety was unacceptable

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12	Replace the pelican crossing outside market parade with zebra crossing	Transport Planning and Infrastructure	Other	Surrey County Council	-	-	None	Medium	Not started - unnecessary	-	Clarification was received that these lights were linked with traffic control signals and had no effect on traffic flow
13	Implement a one-way system on Church Street/West Street	Transport Planning and Infrastructure	Other	Surrey County Council	-	-	None	Medium	Not started	-	Non viable at present

## 2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Given the low concentration and difficulty in monitoring PM<sub>2.5</sub>, all local authorities in the Surrey Air Alliance are undertaking a joint detailed modelling exercise across the county. This work, currently underway, will model all major urban and suburban areas within Surrey as well as providing background concentrations (including the effect of domestic wood burning). High resolution maps, will be produced for the county available as GIS compatible shape files for PM<sub>2.5</sub> and also PM<sub>10</sub>, NO<sub>2</sub> and NO<sub>x</sub>. The analysis will include attributable deaths and associated life-years lost, by pollutant. Where possible, the combined impact of both pollutants will be calculated.

Taking into account the public health outcomes framework, following receipt of the results, a full review will take place to determine what, if any additional measures might be warranted for PM<sub>2.5</sub>, recognising that measures aimed at other pollutants will often have an additional contributory effect for particulates.

## 3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

Epsom & Ewell Borough Council no longer has any automatic monitoring sites.

#### 3.1.2 Non-Automatic Monitoring Sites

Epsom & Ewell undertook non- automatic (passive) monitoring of NO<sub>2</sub> at 22 sites during 2017. Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

### 3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

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

Table A.2 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

For diffusion tubes, the full 2017 dataset of monthly mean values is provided in Appendix B.

An exceedance of the annual mean objective for NO<sub>2</sub> has been identified within the existing AQMA. No other exceedances have been determined when taking into account tube bias correction any annualisation and any distance correction. The exceedance within the AQMA was expected and follows the trend first identified in 2007. However, the 2017 exceedance is the lowest since monitoring began and alongside historical data provides some evidence of the success of the measures in improving air quality in this locality. The graph in figure one provides graphical



confirmation of this using 15 years worth of data from tube EE10 – at the centre of the AQMA.

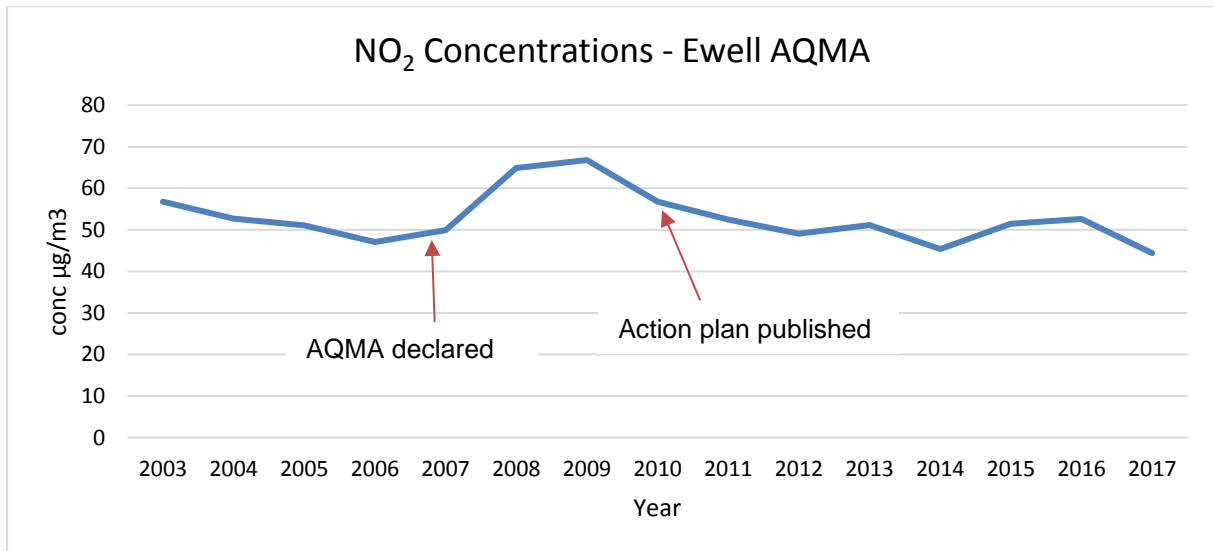


Figure 1 - NO<sub>2</sub> Trends - Ewell AQMA

## Appendix A: Monitoring Results

Table A.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?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
EE1	The Clock Tower	Roadside	520732	160762	NO <sub>2</sub>	NO	13	2.5	NO	2.1
EE3	26 The Crescent-Background	Urban Background	519293	160026	NO <sub>2</sub>	NO	9	2	NO	2
EE6	Jct Kingston Rd/ Worcester Park Rd	Roadside	520525	165040	NO <sub>2</sub>	NO	8.2	6.8	NO	2.1
EE7	Jct Ruxley Lane/Kingston Rd	Roadside	520916	164636	NO <sub>2</sub>	NO	4.2	6.8	NO	2.3
EE9	Chessington Road, Ewell	Kerbside	519830	163740	NO <sub>2</sub>	NO	2.4	3.2	NO	2.4
EE10	High Street, Ewell	Kerbside	521998	162633	NO <sub>2</sub>	YES	0.5	1.3	NO	2.1
EE14	Hook Road Epsom-	Kerbside	520885	161308	NO <sub>2</sub>	NO	3.4	1.6	NO	2
EE16	Church Street/High Street Ewell	Kerbside	522026	162624	NO <sub>2</sub>	NO	0.1	1.1	NO	1.7
EE17	High Street Ewell	Kerbside	522025	162563	NO <sub>2</sub>	YES	0.1	2	NO	2.2
EE22	High Street, Epsom	Kerbside	520965	160871	NO <sub>2</sub>	NO	3	0.5	NO	2.3

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EE36	Capitol Square, Church Street	Roadside	521069	160817	NO <sub>2</sub>	NO	0.2	9.2	NO	2.1
EE37	British Heart Foundation, High Street	Roadside	520726	160857	NO <sub>2</sub>	NO	0.6	4.5	NO	2.4
EE38	Station Approach	Roadside	520726	160857	NO <sub>2</sub>	NO	0.1	2.8	NO	1.8
EE39	The Parade	Roadside	520844	160729	NO <sub>2</sub>	NO	0.2	3.3	NO	2.1
EE42	High Street/East Street	Roadside	521004	160901	NO <sub>2</sub>	NO	0	7.7	NO	2.1
EE43	Kiln Lane	Roadside	521478	161447	NO <sub>2</sub>	NO	0.3	5.5	NO	2.3
EE45	Castle Parade	Roadside	522211	163103	NO <sub>2</sub>	NO	0.4	8.3	NO	2.1
EE46	Waterloo Road	Roadside	520724	161027	NO <sub>2</sub>	NO	4.6	0.6	NO	2.1
EE47	Chessington Road	Roadside	520713	162968	NO <sub>2</sub>	NO	0.2	4.7	NO	1.9
EE48	Ewell High Street South	Roadside	522022	162502	NO <sub>2</sub>	YES	0.4	1.7	NO	2.1
EE49	37 South Street	Roadside	520580	160586	NO <sub>2</sub>	NO	0.2	3.5	NO	2.2
EE50	Major Plaice Ewell High Street	Kerbside	521975	162677	NO <sub>2</sub>	YES	7.5	0.9	NO	2.1

**Notes:**

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.

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

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2013	2014	2015	2016	2017
EE1	Roadside	Diffusion Tube	100	91	<b>44.8</b>	<b>33.1</b>	<b>39.8</b>	39.1	33.9
EE3	Urban Background	Diffusion Tube	100	91	23.3	17.1	19.8	20.2	16.9
EE6	Roadside	Diffusion Tube	100	91	<b>42.2</b>	<b>36</b>	<b>41.1</b>	37.5	31.3
EE7	Roadside	Diffusion Tube	100	91	38.2	36.6	39.4	<b>41.8</b>	35.5
EE9	Roadside	Diffusion Tube	100	100	30.9	26.7	27.5	29.8	23.2
EE10	Roadside	Diffusion Tube	100	91	<b>51.2</b>	<b>45.4</b>	<b>51.5</b>	<b>52.6</b>	<b>44.4</b>
EE14	Roadside	Diffusion Tube	100	100	32.6	26.8	29	29.0	25.4
EE16	Roadside	Diffusion Tube	100	91	35.2	30.8	34.6	33.6	30.7
EE17	Roadside	Diffusion Tube	100	100	39.5	33.6	36.7	36.0	30.2
EE22	Roadside	Diffusion Tube	100	100	<b>48.6</b>	<b>41.8</b>	<b>41.4</b>	<b>48.1</b>	39.3
EE36	Roadside	Diffusion Tube	100	100	31.1	25.8	29.6	29.1	26.3
EE37	Roadside	Diffusion Tube	100	66	<b>40.5</b>	34.2	<b>43.6</b>	38.6	33.4
EE38	Roadside	Diffusion Tube	100	75	32.6	25.7	29.2	29.0	25.1
EE39	Roadside	Diffusion Tube	100	91	36.8	32	33.6	35.6	27.6
EE42	Roadside	Diffusion Tube	100	100	35	30.3	34.5	32.9	28.8
EE43	Roadside	Diffusion Tube	100	100	36	29.9	35	34.4	28.5
EE45	Roadside	Diffusion Tube	100	100	30.8	26.1	28.8	28.3	22.5
EE46	Roadside	Diffusion Tube	100	58	24.8	19.2	25.5	22.97	24.6
EE47	Roadside	Diffusion Tube	100	100	32.1	25.3	28.4	32.97	24.5
EE48	Roadside	Diffusion Tube	100	100	<u>n/a</u>	<u>n/a</u>	31.6	32.24	29.0
EE49	Roadside	Diffusion Tube	100	91	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	28.6
EE50	Roadside	Diffusion Tube	100	75	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	36.4

- ☒ Diffusion tube data has been bias corrected
- ☒ Annualisation has been conducted where data capture is <75%

**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.

## Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results - 2017

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.9) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
EE1	64	50	31	34	21	36	36	24	43		38	36	37.5	33.79	26.2
EE3	35	23	21	18	10	12		10	16	19	23	19	18.7	16.9	16.9
EE6	51	45	30	27	23	21	31	17		39	59	39	34.7	31.3	27.6
EE7	55	47	42	39	29	36	35	34	37	40		40	39.5	35.5	32.6
EE9	44	33	24	26	15	22	20	20	22	29	33	21	25.8	23.2	22.3
EE10	78	61	51	45		39	32	30	49	58	50	50	49.4	44.4	42.2
EE14	53	34	22	28	18	24	22	22	26	28	30	31	28.2	25.4	23.2
EE16	50	39	34	37		31	32	28	30	29	39	26	34.1	30.7	30.2
EE17	53	37	38	36	20	27	32	28	21	34	41	36	33.6	30.2	30.0
EE22	58	57	45	41	36	28	44	30	34	50	53	48	43.7	39.3	31.6
EE36	46	37	30	26	12	25	26	22	30	28	40	28	29.2	26.3	26.2
EE37	52	47	41			33	28	28	35	44			38.5	33.4	32.8
EE38	40	36	26	26		24		21	25		33	20	27.9	25.1	25.0
EE39	42		37	35	21	21	30	28	30	30	39	24	30.6	27.6	27.4
EE42	44	37	36	28	19	27	22	27	41	31	39	33	32.0	28.8	28.8
EE43	48	37	35	29	19	30	23	26	28	32	34	39	31.7	28.5	28.3

## Epsom & Ewell Borough Council

EE45	27	31	24	24	19	24	23	23	26	24	32	23	25.0	22.5	22.4
EE46				34	23		19	21	33	32	36		28.3	24.6	21.6
EE47	44	34	29	26	18	24	24	22	27	28	31	20	27.3	24.5	24.4
EE48	57	37	30	28	19	22	27	25	29	39	37	37	32.3	29.0	28.4
EE49		40	37	27	27	31	31	31	32	31	34	28	31.7	28.6	28.4
EE50		37	47	39	17	43		45	50	46		40	40.4	36.4	27.9

- Local bias adjustment factor used
- National bias adjustment factor used
- Annualisation has been conducted where data capture is <75%
- Where applicable, data has been distance corrected for relevant exposure

### 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.

EE3 is a background site and cannot be corrected for distance, assume the concentration is equal at the receptor

## Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

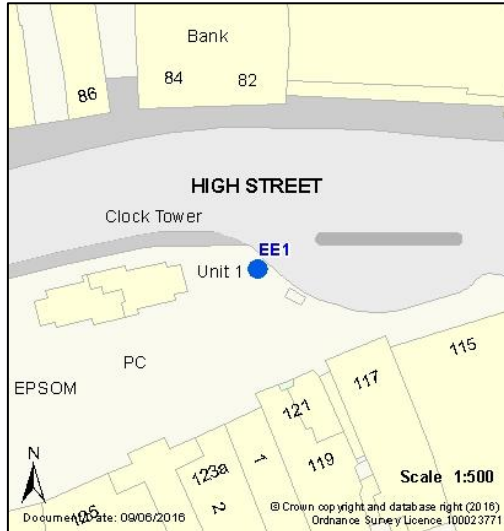
The diffusion tubes are supplied and analysed by Lambeth Scientific Services. The method of preparation is 50% TEA in acetone. The lab follows the procedures set out in the Practical Guidance Documents.

The analysing laboratory participates in the AIR NO<sub>2</sub> Proficiency Testing Scheme for diffusion tubes which provides a Quality Assurance / Quality Control (QA/QC). It achieved a 100 percent score for the last four rounds of this scheme.

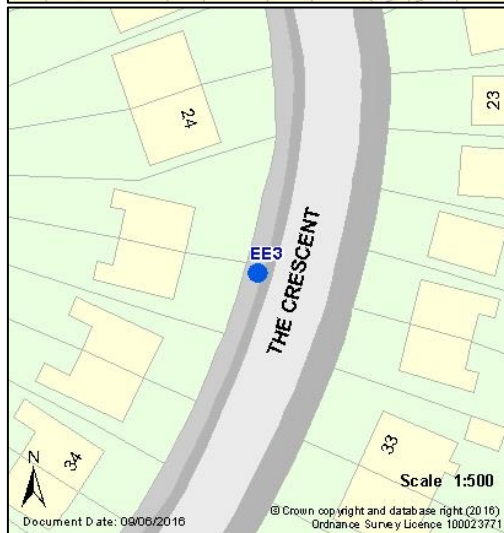
The chosen bias adjustment factor is 0.9 taken directly from the March 2018 edition of the bias adjustment spreadsheet. Unfortunately only one study appears in this dataset from Marylebone Road which cannot be said to be particularly representative of the types of locations in the Epsom and Ewell borough. However the neighbouring borough of Reigate and Banstead report the average of their three co-location studies is almost identical at 0.91 using the same diffusion tube supplier. This has given added confidence in the use of the adopted factor for 2017.



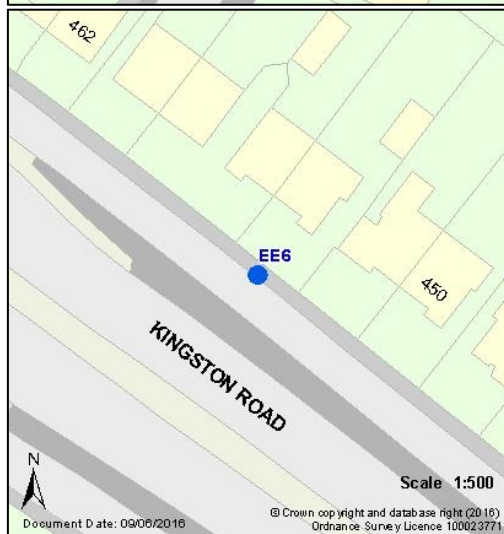
## Appendix D: Map(s) of Monitoring Locations and AQMAs



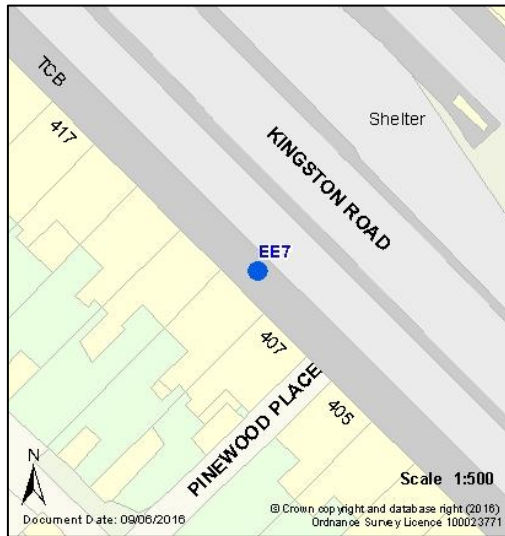
EE1 Clock Tower Epsom



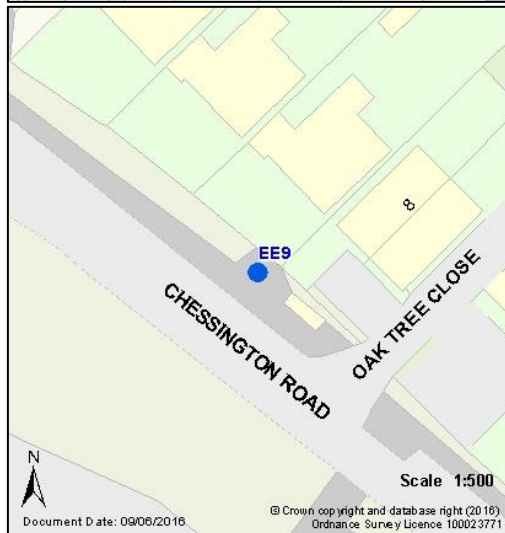
EE3 The Crescent Epsom



EE6 Kingston Road, Ewell



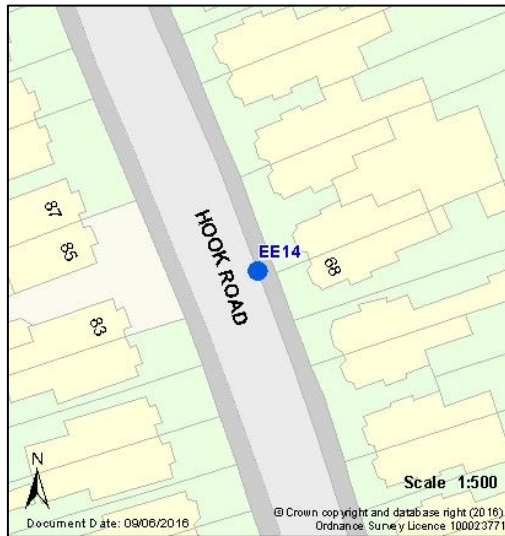
EE7 Kingston Road Ewell



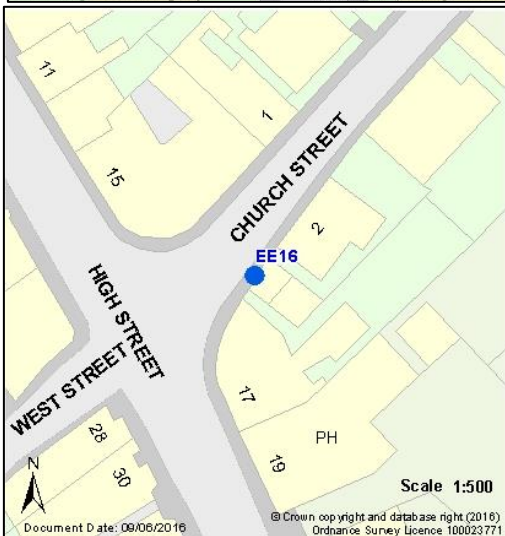
EE9 Chessington Road Ewell



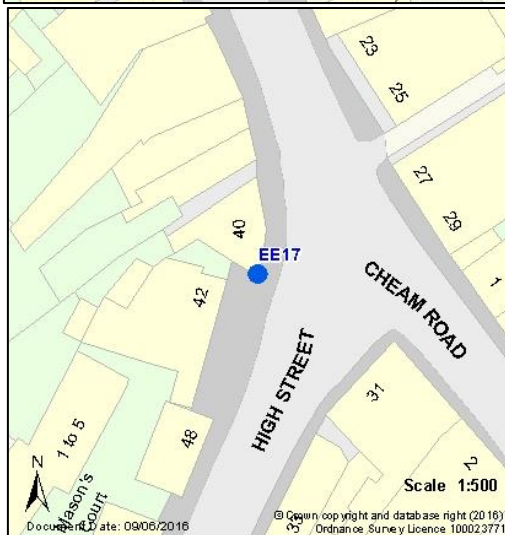
EE10 High Street Ewell



EE14 Hook Road Epsom



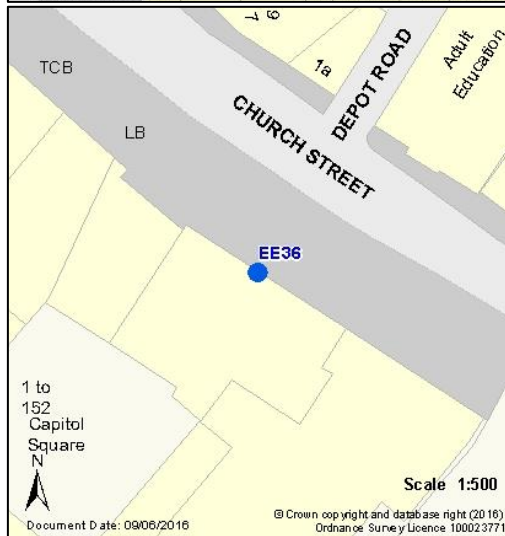
EE 16 Church Street Ewell



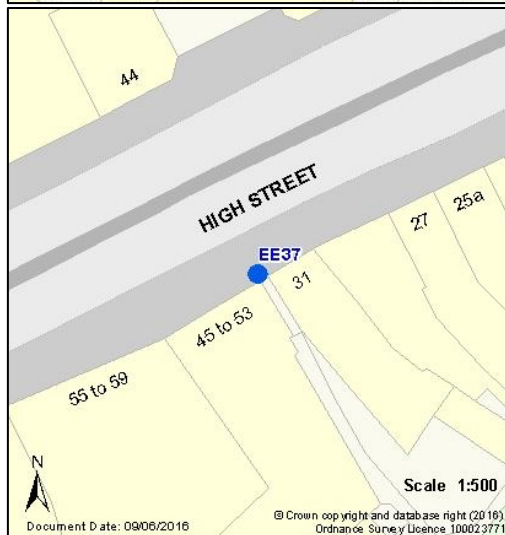
EE17 High Street Ewell



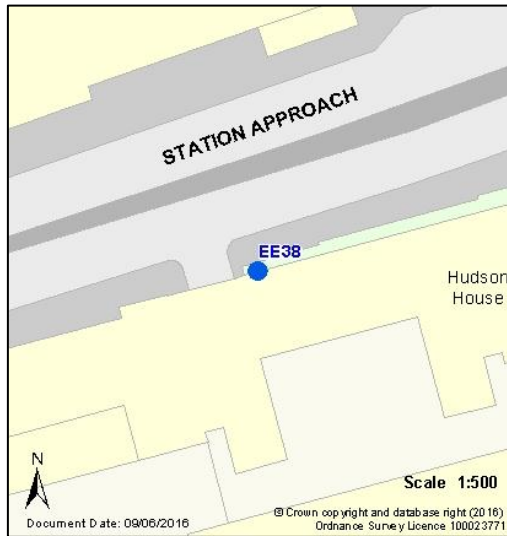
EE22 High Street Epsom



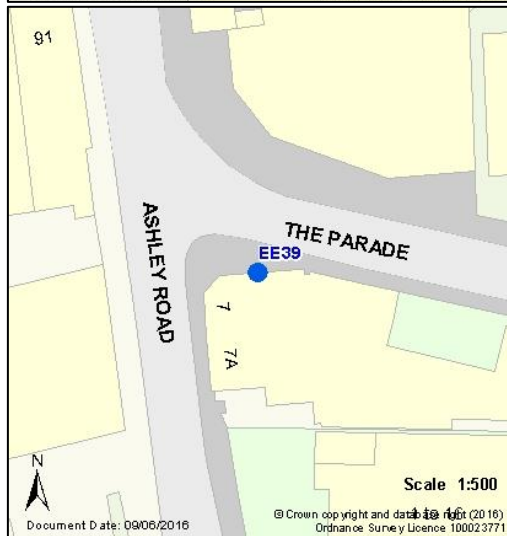
EE36 Church Street Epsom



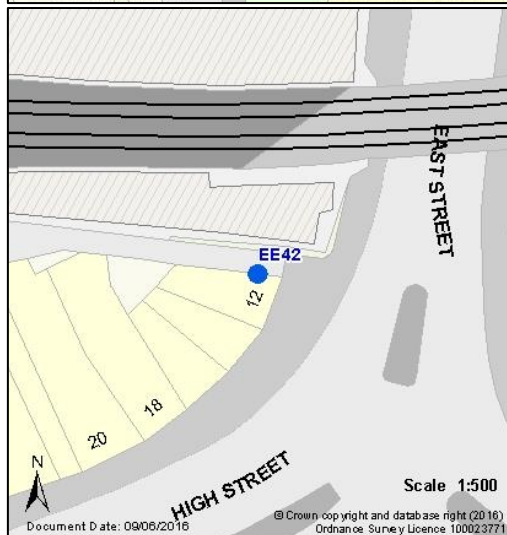
EE37 High Street Epsom



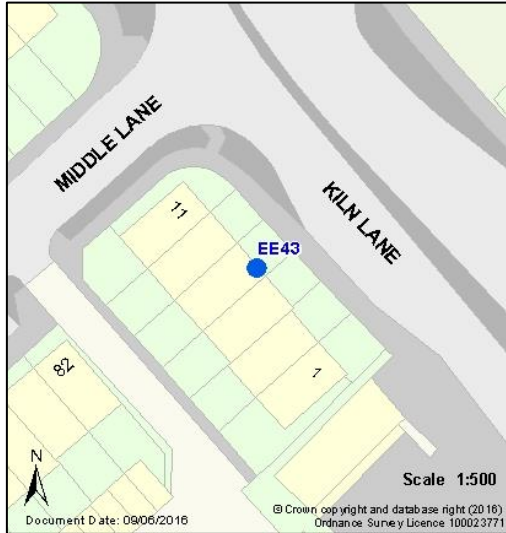
EE38 Station Approach Epsom



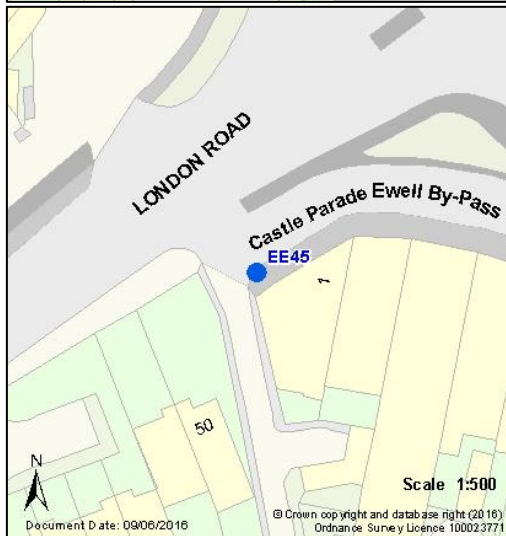
EE39 The Parade Epsom



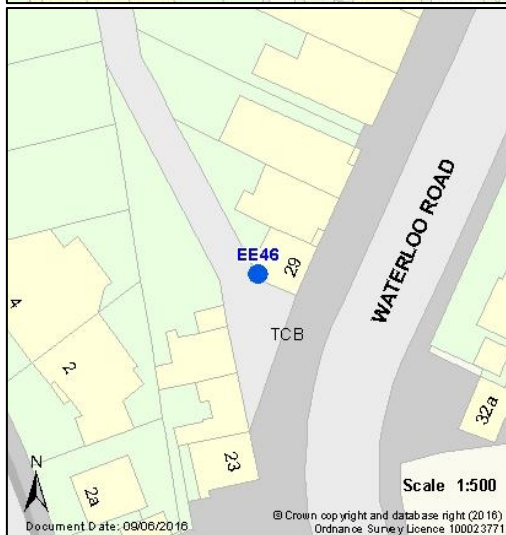
EE42 East Street Epsom



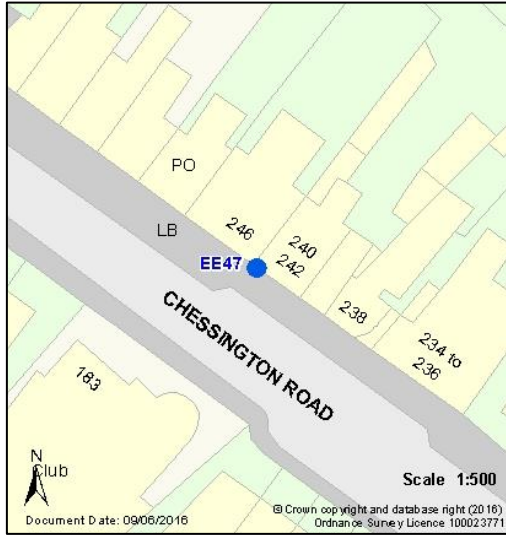
EE43 Kiln Lane Epsom



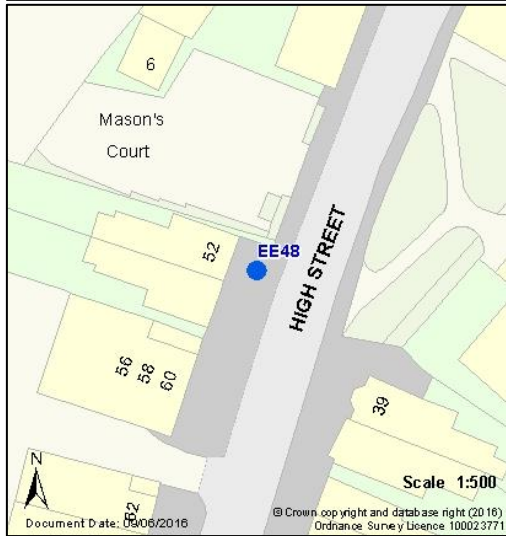
EE45 Castle Parade Ewell



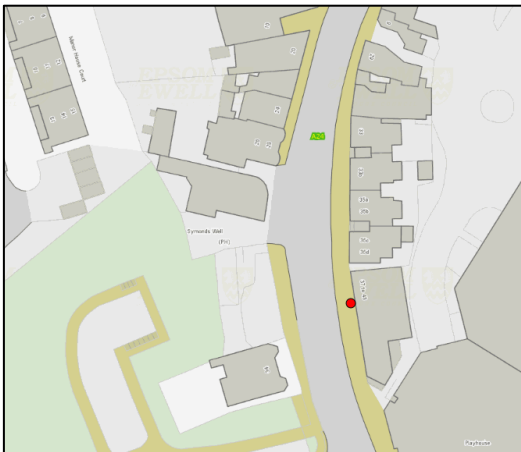
EE46 Waterloo Road Epsom



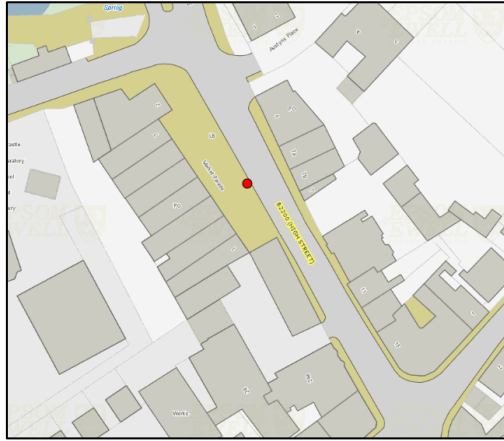
EE47 Chessington Road Ewell



EE48 High Street Ewell



EE49 – East Street Epsom



EE50 High Street Ewell

Ewell High Street AQMA showing diffusion tubes location

(EE40 is actually EE50)





## Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective <sup>4</sup>	
	Concentration	Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>4</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority 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
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
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
SAA	Surrey Air Alliance