



2019 Air Quality Annual Status Report (ASR)

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

June 2019

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^{1,2}.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

In common with much of the region, the principle pollutant of concern is nitrogen dioxide arising from road transport. The other potentially relevant pollutants contained within the national air quality strategy have long been screened out. 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. 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 Epsom & Ewell Borough Council (EEBC), departments such as planning and partner 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 2018 in the AQMA show continued improvement in air quality compared with 2017 taking the measurement made in the centre of the AQMA as the source.

Within the Borough a gradual decline in nitrogen dioxide levels has been noted for over a decade which has been aided by no new major transport or industrial related sources of emissions, nor has there been any new AQMA declarations in the past year. 2018 was the first year since 2003 that no sites exceeded the national objective

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

for nitrogen dioxide opening up the prospect that the Ewell High Street AQMA may be undeclared should this trend continue into 2019.

Alterations to the traffic flow in Epsom town centre as part of 'Plan E' have taken place with the remainder and more substantial changes scheduled to follow in 2019 including the relocation of a taxi rank and work to the market square. Monitoring along South Street (site EE49) is located in the area subject to the most traffic flow change and will be used to quantify the effect on air quality longer term after installation since the 2017 ASR report. The preliminary first year's results showed a marginal fall in annual mean pollution and it is expected this location will be maintained in the long term.

Actions to Improve Air Quality

In 2018 as part of a joint county wide project, the Council was successful in applying for DEFRA funds to conduct a schools project with the aim of increasing the awareness of the health impacts of poor air quality, improving the awareness of air quality management areas close to the schools, improve the understanding of what can be done to address poor air quality and change behaviour to promote, for example, less polluting forms of transport.

As at the production of this report, the Council has taken delivery of the draft results of joint county wide modelling exercise including source apportionment and local mortality estimates and is in the very early stages of assessing the implications of this new data.

Both these actions have been delivered through the Surrey Air Alliance of which the council is a founder member. The alliance is an association of the district and borough councils together with 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.

Conclusions and Priorities

The adjustments to Epsom town centre traffic flows as a result of the "Plan E" changes will have an effect on air quality. These changes saw the return of two way traffic 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.

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 actively considering the best way to provide electrical vehicle charging points in its car parks and works together with the County Council in considering opportunities for on street charging. Additionally, in 2019 it is planned to acquire the Council's first electric vehicle for use in the borough. 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. There are 70 residents who currently benefit from the text service with many more able to benefit from the app.

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1 Local Air Quality Management

This report provides an overview of air quality in Epsom and Ewell during 2018. 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 (AQMA) 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 AQMA declared by Epsom & Ewell Borough Council can be found in Table A. Further information related to declared or revoked AQMA, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=100. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMA, which provides for a map of air quality monitoring locations in relation to the AQMA.

Table A – 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	34.8	µg/m3	Ewell High Street Air Quality Action Plan	2010	Here

☒ 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 & Ewell Borough Council;

Defra's appraisal of last year's ASR determined that the conclusions reached were acceptable for all sources and pollutions with certain provisos such as the recommendation to include trend data for each monitoring site and a review of the AQMA following the findings of the modelling exercise.

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 B.

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's priorities for the coming year are to review the detailed modelling results and plan an approach to follow up on areas of modelled exceedance not already identified. Unfortunately a subsequent DEFRA bid to obtain funding to run the schools project in 2019 was not successful and it is presently unlikely funds are available to run it in the near future.

The principal challenges and barriers to implementation that Epsom & Ewell Borough Council anticipates facing are likely to be practical and financial in nature. Excepting the "Plan E" alterations, it is rarely 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.

Epsom & Ewell Borough Council now anticipates that the measures stated above and in Table 2.2 will achieve compliance in the Ewell High Street AQMA and appears to

have done so in 2018 taking into account available data. However it is not considered prudent to undeclare the AQMA at this time as this observation is based on one year's data alone and so a view will be taken at the time of the next Annual Status Report.

Table B – 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

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6	Place restriction s on delivery times and stopping on High Street between Cheam Road and Spring Street junctions	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
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

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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
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_{2.5} – 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_{2.5} (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM_{2.5} has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

As discussed earlier in the report, Epsom & Ewell Borough Council is now in the preliminary stages of examining the results of the modelling exercise which included particulate concentrations and source apportionment for a range of pollutants. It is clear at this early stage that the majority of PM_{2.5} is background in nature with only a small fraction associated with local road transport and “other” sources. It is concluded that actions to reduce other pollutants particulates generally are appropriate to reduce PM_{2.5} when combined with regional and national efforts. Through the Surrey Air Alliance, a degree of regional coordination has been achieved and it is open to national policy to promote large scale strategic measures outside the immediate control of Epsom & Ewell Borough Council and the Surrey Air Alliance.

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 does not operate any automatic monitoring sites.

3.1.2 Non-Automatic Monitoring Sites

Epsom & Ewell Borough Council undertook non- automatic (passive) monitoring of NO₂ at 23 sites during 2018. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further 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 (NO₂)

For the first time there were zero exceedances of the national NO₂ annual mean objective within the single AQMA leading to the possibility may be undeclared in the future. Prudence however dictates a further year’s worth of data will be required to make this a certainty. There was also no locations outside the AQMA which exceeded the objective.

There was however difficulty in obtaining 100 percent data capture with two months worth of data having to be discounted due in the first instance the blank tube showing evidence of having been exposed leading to doubts about unreliable data, and in the second instance, operator error. These incidents combined with the expected level of tube loss through vandalism and tampering resulted in a higher number of results being subject to the annualisation process as outlined in

Technical Guidance LAQM.TG(16). It is considered that the damage is limited as, other than EE22 – Epsom High Street, the majority of the tubes which required annualisation recorded concentrations significantly below the national objective with the likelihood that they would have remained below had a greater data capture been obtained. It is not expected 2019's data will be affected in the same way.

A further site is reported on in this status report – EE51 which was established in late 2017 but produced too little data to feature in the 2018 report. This site was selected as a corresponding site to EE38 but on the northern carriageway and monitors any containment of pollutants arising from local tall buildings plus the contribution of emissions from a nearby taxi rank. In 2018 both these sites were recorded as being below the national objectives.

As previously discussed, no sites recorded exceedances of the annual mean objective for NO₂ including, for the first time, those within the AQMA. The graph in figure one illustrates 16 years of data from tube EE10 – at the centre of the AQMA.

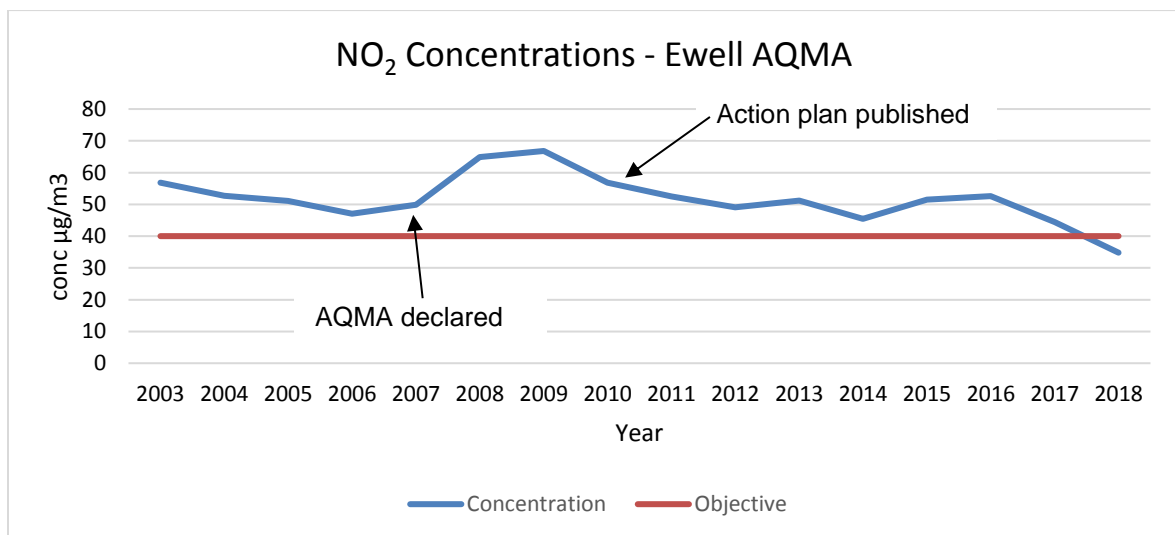


Figure 1 - NO₂ Trends – Ewell High Street AQMA

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
Not monitored										

Notes:

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

(2) N/A if not applicable.

Table A.2 – 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) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
EE1	The Clock Tower	Roadside	520732	160762	NO2	NO	13	2.5	NO	2.1
EE3	The Crescent-Background	Urban Background	519293	160026	NO2	NO	9	2	NO	2
EE6	Jct Kingston Rd/ Worcester Park Rd	Roadside	520525	165040	NO2	NO	8.2	6.8	NO	2.1
EE7	Jct Ruxley Lane/Kingston Rd	Roadside	520916	164636	NO2	NO	4.2	6.8	NO	2.3
EE9	Chessington Road, Ewell	Kerbside	519830	163740	NO2	NO	2.4	3.2	NO	2.4
EE10	High Street, Ewell	Kerbside	521998	162633	NO2	YES	0.5	1.3	NO	2.1
EE14	Hook Road Epsom-	Kerbside	520885	161308	NO2	NO	3.4	1.6	NO	2
EE16	Church Street/High Street Ewell	Kerbside	522026	162624	NO2	NO	0.1	1.1	NO	1.7
EE17	High Street Ewell	Kerbside	522025	162563	NO2	YES	0.1	2	NO	2.2
EE22	High Street, Epsom	Kerbside	520965	160871	NO2	NO	3	0.5	NO	2.3
EE36	Capitol Square, Church Street	Roadside	521069	160817	NO2	NO	0.2	9.2	NO	2.1
EE37	British Heart Foundation, High Street	Roadside	520726	160857	NO2	NO	0.6	4.5	NO	2.4

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EE38	Station Approach South	Roadside	520726	160857	NO2	NO	0.1	2.8	NO	1.8
EE39	The Parade	Roadside	520844	160729	NO2	NO	0.2	3.3	NO	2.1
EE42	High Street/East Street	Roadside	521004	160901	NO2	NO	0	7.7	NO	2.1
EE43	Kiln Lane	Roadside	521478	161447	NO2	NO	0.3	5.5	NO	2.3
EE45	Castle Parade	Roadside	522211	163103	NO2	NO	0.4	8.3	NO	2.1
EE46	Waterloo Road	Roadside	520724	161027	NO2	NO	4.6	0.6	NO	2.1
EE47	Chessington Road	Roadside	520713	162968	NO2	NO	0.2	4.7	NO	1.9
EE48	Ewell High Street South	Roadside	522022	162502	NO2	YES	0.4	1.7	NO	2.1
EE49	South Street	Roadside	520580	160586	NO2	NO	0.2	3.5	NO	2.2
EE50	Ewell High Street	Kerbside	521975	162677	NO2	YES	7.5	0.9	NO	2.1
EE51	Station Approach North	Roadside	TBA	TBA	NO2	NO	3	3.3	NO	1.8

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.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
EE1	Roadside	Diffusion Tube	100	75	33.1	39.8	39.1	33.8	29.6
EE3	Urban Background	Diffusion Tube	100	83	17.1	19.8	20.2	16.9	14.8
EE6	Roadside	Diffusion Tube	100	83	36	41.1	37.5	31.3	30.4
EE7	Roadside	Diffusion Tube	100	83	36.6	39.4	41.8	35.5	33.5
EE9	Roadside	Diffusion Tube	100	67	26.7	27.5	29.8	23.2	23.5
EE10	Roadside	Diffusion Tube	100	83	45.4	51.5	52.6	44.4	34.8
EE14	Roadside	Diffusion Tube	100	83	26.8	29	29.0	25.4	25.2
EE16	Roadside	Diffusion Tube	100	67	30.8	34.6	33.6	30.7	25.5
EE17	Roadside	Diffusion Tube	100	83	33.6	36.7	36.0	30.2	28.9
EE22	Roadside	Diffusion Tube	100	75	41.8	41.4	48.1	39.3	35.1
EE36	Roadside	Diffusion Tube	100	83	25.8	29.6	29.1	26.3	23.5
EE37	Roadside	Diffusion Tube	100	50	34.2	43.6	38.6	33.4	26.9
EE38	Roadside	Diffusion Tube	100	67	25.7	29.2	29.0	25.1	23.3
EE39	Roadside	Diffusion Tube	100	75	32	33.6	35.6	27.6	29.9

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EE42	Roadside	Diffusion Tube	100	50	30.3	34.5	32.9	28.8	23.1
EE43	Roadside	Diffusion Tube	100	83	29.9	35	34.4	28.5	26.0
EE45	Roadside	Diffusion Tube	100	83	26.1	28.8	28.3	22.5	23.9
EE46	Roadside	Diffusion Tube	100	83	19.2	25.5	23.0	24.6	27.1
EE47	Roadside	Diffusion Tube	100	75	25.3	28.4	33.0	24.5	23.5
EE48	Roadside	Diffusion Tube	100	75	n/a	31.6	32.2	29.0	27.8
EE49	Roadside	Diffusion Tube	100	83	n/a	n/a	n/a	28.6	34.1
EE50	Roadside	Diffusion Tube	100	83	n/a	n/a	n/a	36.4	36.2
EE51	Roadside	Diffusion Tube	100	75	n/a	n/a	n/a	n/a	30.1

☒ Diffusion tube data has been bias corrected

☒ Annualisation has been conducted where data capture is <75%

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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.

Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2014	2015	2016	2017	2018
Not monitored									

Notes:

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

(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) If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

Table A.5 – Annual Mean PM10 Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2014	2015	2016	2017	2018
Not monitored								

☐ Annualisation has been conducted where data capture is <75%

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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

Table A.5 – 24-Hour Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM ₁₀ 24-Hour Means > 50µg/m ³ ⁽³⁾				
				2014	2015	2016	2017	2018
Not Monitored								

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

(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) If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

Table A.6 – PM_{2.5} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM _{2.5} Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2014	2015	2016	2017	2018
Not monitored								

☐ Annualisation has been conducted where data capture is <75%

Notes:

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

Table A.7 – SO₂ Monitoring Results

Site ID	Site Type	Valid Data Capture for monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	Number of Exceedances 2018 (percentile in bracket) ⁽³⁾		
				15-minute Objective (266 µg/m³)	1-hour Objective (350 µg/m³)	24-hour Objective (125 µg/m³)
Not monitored						

Notes:

Exceedances of the SO₂ objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year)

(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) If the period of valid data is less than 85%, the relevant percentiles are provided in brackets.

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO ₂ Mean Concentrations (µg/m³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (1.03) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
EE1	27		33	30	28	29	28	23			35	34	29.7	29.6	
EE3	19		16	13	13	11	11	11		10	20	20	14.4	14.8	
EE6	30		40	26	22	26	30	20		22	33	46	29.5	30.4	
EE7	27		41	28	25	28	45	20		24	41	46	32.5	33.5	
EE9	22			21		19	24	15		14	35	32	22.8	23.5	
EE10	42		46	28	35	23	38	14		27	41	44	33.8	34.8	
EE14	27		25	28	21	20	22	14		18	41	29	24.5	25.2	
EE16	26			25	28		12	21		20	33	36	25.1	25.5	
EE17	28		41	30	22	25	31	25		20	26	33	28.1	28.9	
EE22	26		39	35	41	31		28		28	41	46	35.0	35.1	
EE36	29		28	22	25	18	17	12		17	26	34	22.8	23.5	
EE37			31	25			25	20			29	35	27.5	26.9	
EE38			27	18	22	21		14		18	29	30	22.4	23.3	
EE39	30		36	28	30	27	33	16		15		35	27.8	29.9	
EE42	23		27				26	17		17		32	23.7	23.1	

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EE43	35		28	21	21	22	24	20		18	28	35	25.2	26.0	
EE45	21		23	20	31	20	25	18		19	27	28	23.2	23.9	
EE46	22		31	23	25	22	32	20		21	31	36	26.3	27.1	
EE47	19		24	20	20		27	18		20	31	32	23.4	23.5	
EE48	30		35	26	23	25	21	15		21		36	25.8	27.8	
EE49	33		40	28	41	38	30	22		23	35	41	33.1	34.1	
EE50	26		42	35	32	34	48	23		25	38	48	35.1	36.2	27.2
EE51	22		33	26	36	28	27	22			32	46	30.2	30.1	

☒ 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 NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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.

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

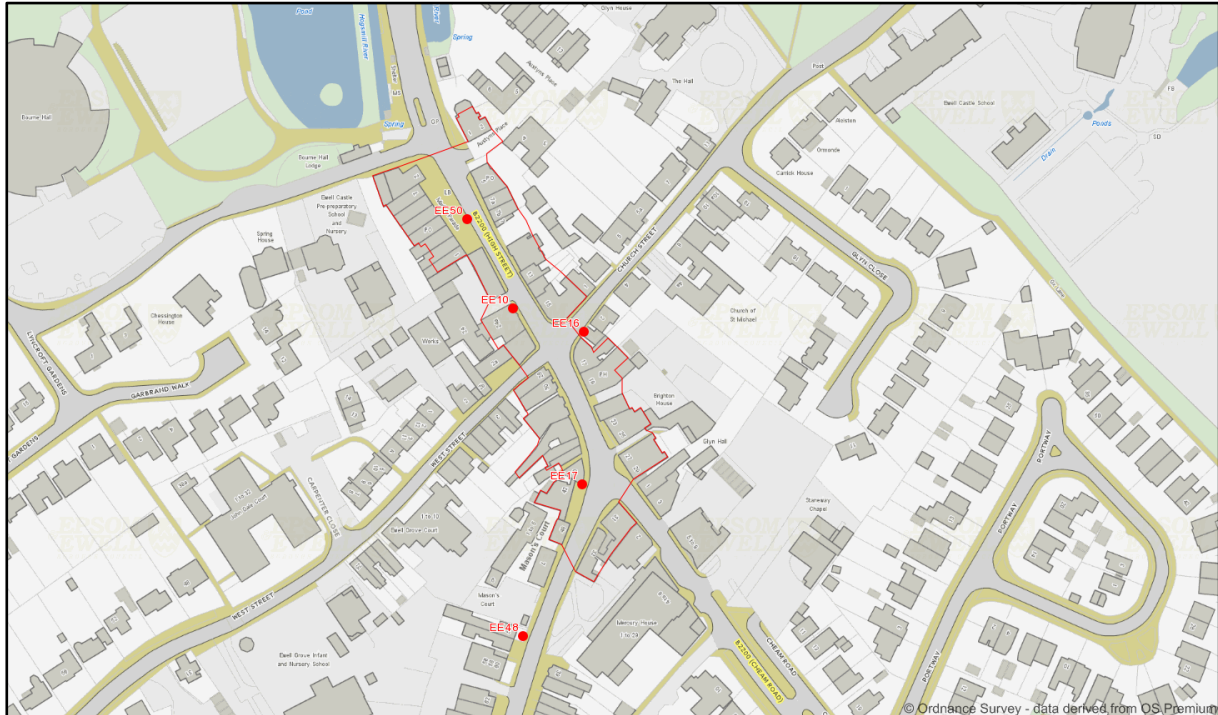
The diffusion tubes are supplied and analysed by Lambeth Scientific Services. The method of preparation is 50% TEA in acetone. The lab follows the procedures set out in the Practical Guidance Documents.

The analysing laboratory participates in the AIR NO₂ Proficiency Testing Scheme for diffusion tubes which provides Quality Assurance / Quality Control (QA/QC).

Based on advice contained within LAQM.TG(16), only one result was subject to a distance fall off calculation – EE50 as the results were marginally above the 36 µg/m³ level considered to be within the range of error for diffusion tubes of the 40 µg/m³ national objective. As discussed elsewhere, it was necessary to conduct annualisation calculations for several tubes, specifically EE1, EE9, EE16, EE37, EE38, EE39, EE48, EE22, EE42, EE47 and EE51. As no automatic analyser was present, the results from tube EE3 have been used as the background site data consistent with box 7.10 of LAQM.TG(16).

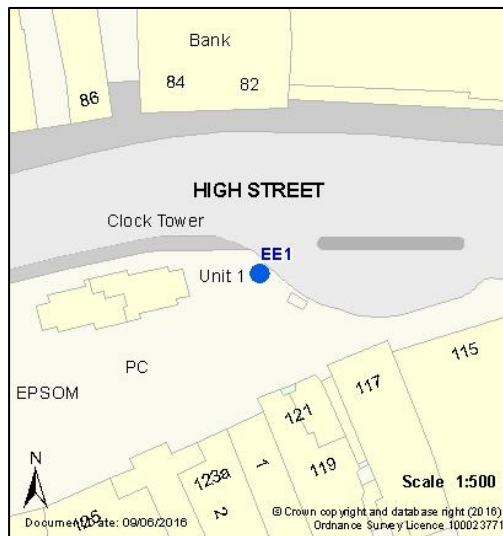
The bias adjustment factor was sourced from the June 2019 version of the national database which featured an average of seven studies for the relevant laboratory.

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

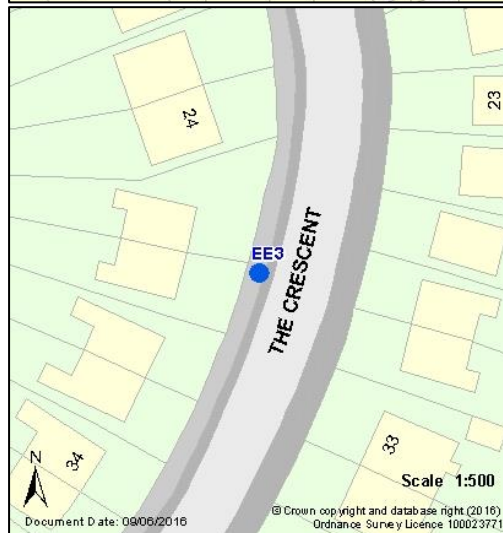


Map of diffusion tubes in relation to Ewell High Street AQMA

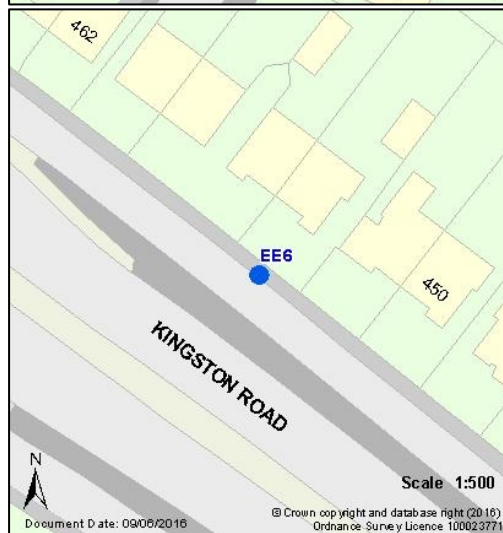
The following maps show the location of each tube site



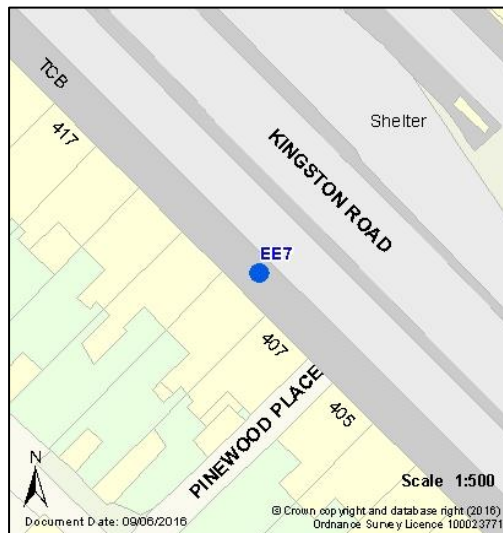
EE1 Clock Tower Epsom



EE3 The Crescent Epsom



EE6 Kingston Road, Ewell



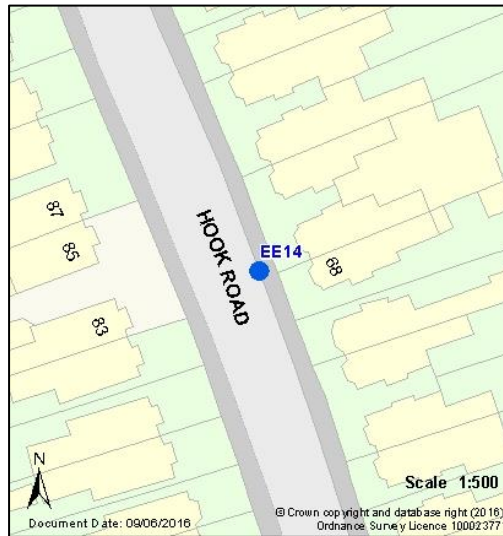
EE7 Kingston Road Ewell



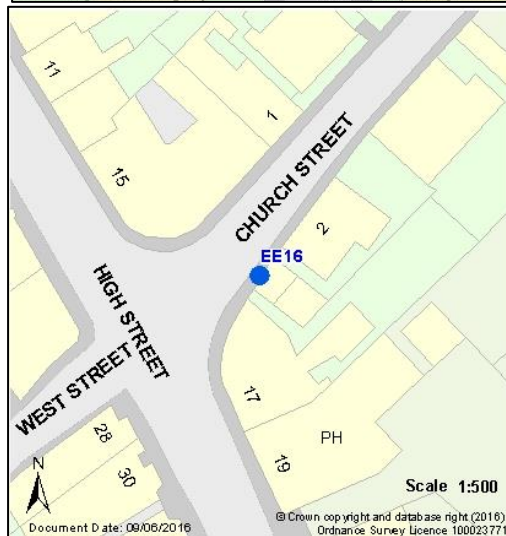
EE9 Chessington Road Ewell



EE10 High Street Ewell



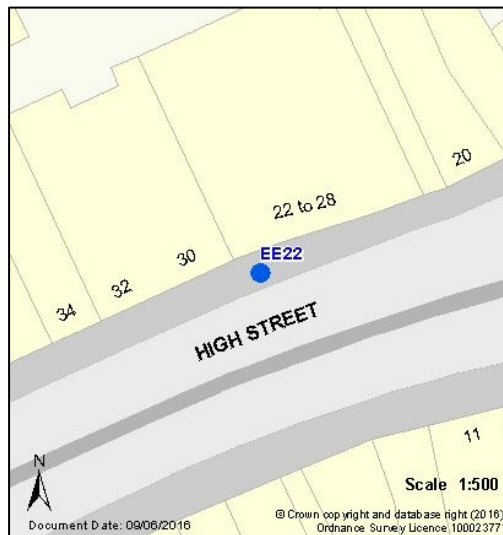
EE14 Hook Road Epsom



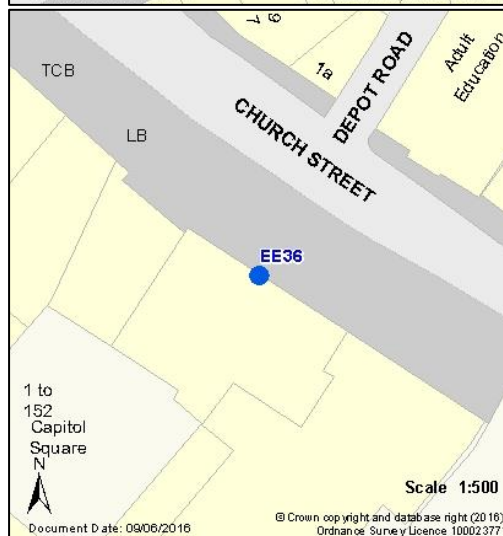
EE 16 Church Street Ewell



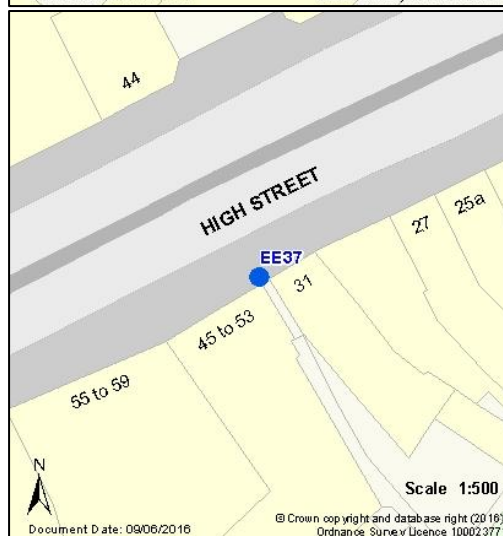
EE17 High Street Ewell



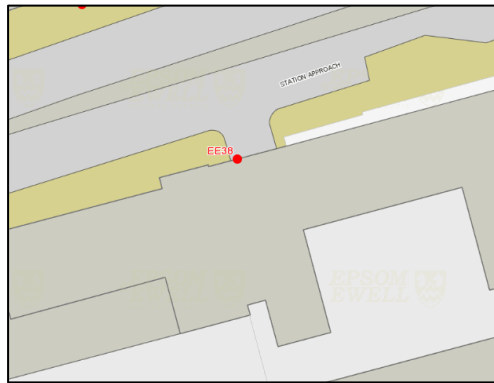
EE22 High Street Epsom



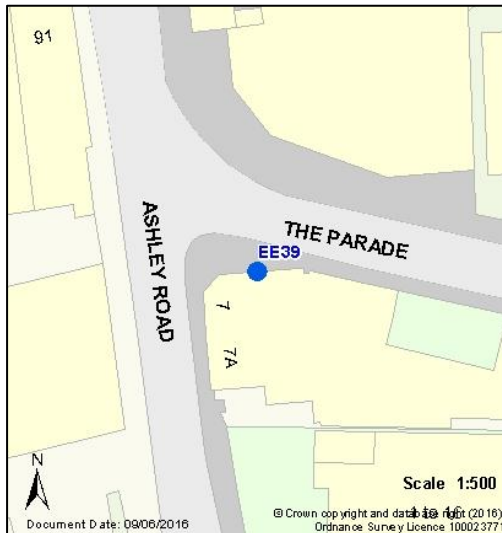
EE36 Church Street Epsom



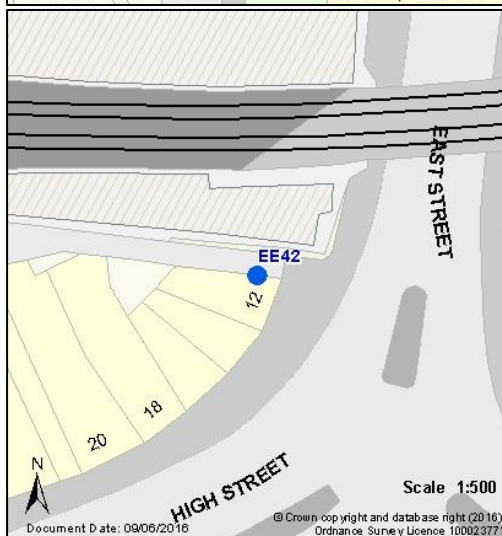
EE37 High Street Epsom



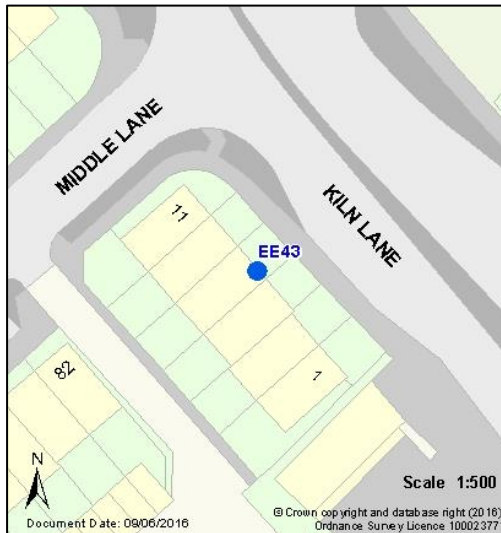
EE38 Station Approach South
Epsom



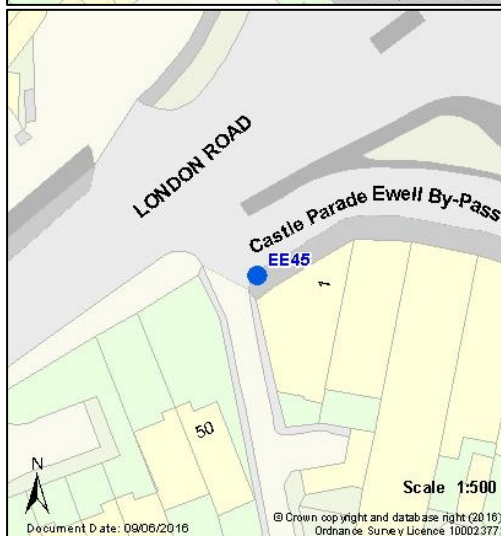
EE39 The Parade Epsom



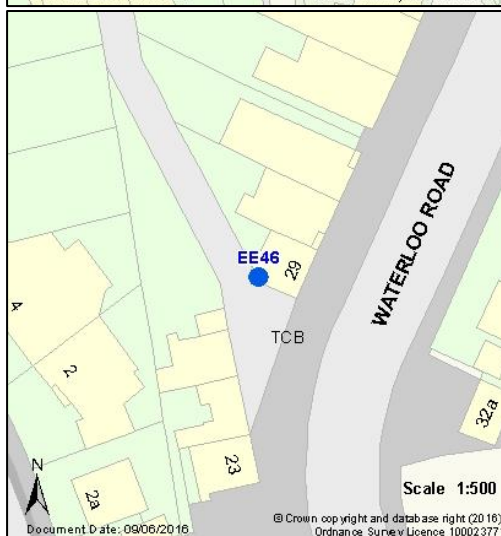
EE42 East Street Epsom



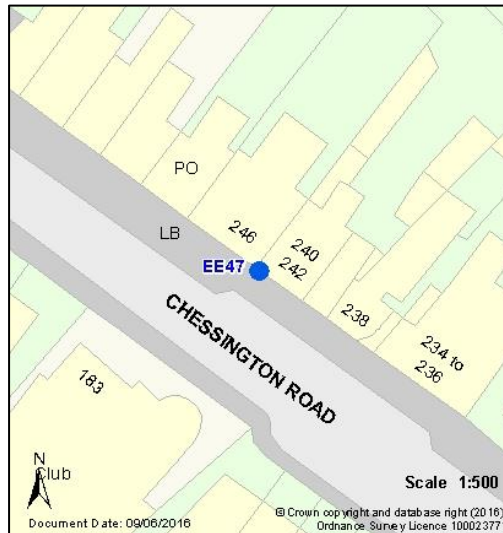
EE43 Kiln Lane Epsom



EE45 Castle Parade Ewell



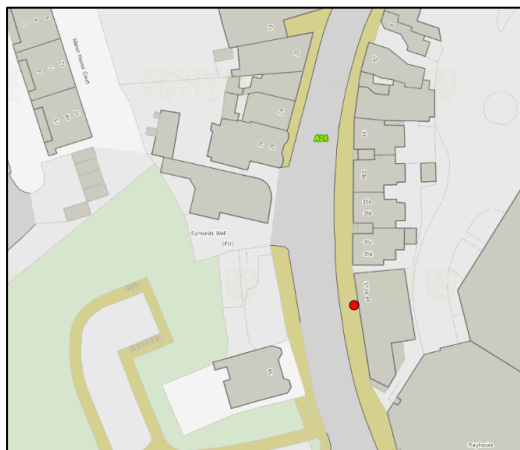
EE46 Waterloo Road Epsom



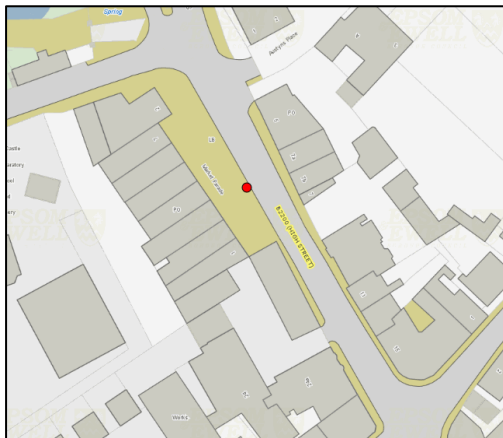
EE47 Chessington Road Ewell



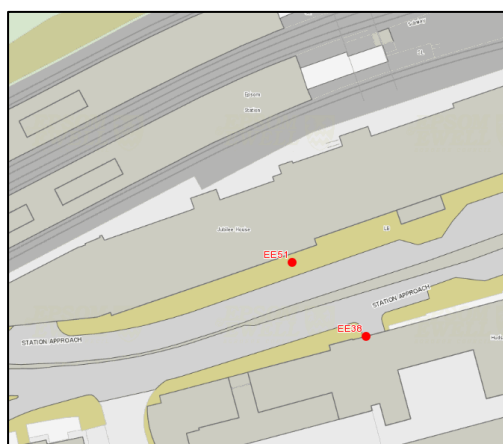
EE48 High Street Ewell



EE49 – South Street Epsom



EE50 High Street Ewell



EE51 Station Approach North

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

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

⁴ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

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
EEBC	Epsom & Ewell Borough Council
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide