



# 2019 Air Quality Annual Status Report (ASR)

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

June 2019

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## Executive Summary: Air Quality in Our Area

### Air Quality in Stevenage Borough

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>.

Air quality in Stevenage continues to remain good. There are no AQMAs and no major point sources of emissions. Emissions have remained largely constant over the years. Monitoring takes place of nitrogen dioxide (NO<sub>2</sub>) and particulate matter less than 2.5 microns (PM<sub>2.5</sub>).

Additional monitoring of NO<sub>2</sub> using diffusion tubes is taking place in areas that have been developed for housing.

Regular meetings are held with colleagues in other authorities to share information on the gathering of air quality data, as part of the Herts and Beds Air Quality Network.

We are grateful for the funding provided by Hertfordshire County Council, which has gone toward the purchase of a new analyser for measuring PM<sub>2.5</sub>.

Due to the ongoing redevelopment of the town, the air quality monitoring station (AQMS) housing the NO<sub>x</sub> and PM<sub>2.5</sub> analysers, as well as being the location of a NO<sub>2</sub> tube, has been moved from its site on Lytton Way, to St George's Way, another edge of town centre site, next to a busy road. This site aligns well with a new residential development and is the best fit to give representative results.

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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

## Actions to Improve Air Quality

The pool bike scheme and electric cars are still in operation around the borough.

## Conclusions and Priorities

Monitoring has once again provided valuable data. Distance correction has shown the benefit of the original town plan, with wide verges separating receptors from roads, the main source of emissions.

Planning took place for the tube network in 2019, and these changes have been made.

Concentrations over time, while fluctuating, are largely flat. There is no statistically significant trend.

## Local Engagement and How to get Involved

The public can

- Use the excellent network of cycle paths laid out across the borough
- Ensure cars are serviced regularly
- Reduce the use of cars for short journeys
- When changing vehicles, consider a more efficient / cleaner one.

Stevenage Borough Council was an active participant in this year's Clean Air Day, promoting the steps that people can take to look after their local environment.

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## 1 Local Air Quality Management

This report provides an overview of air quality in Stevenage 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 Stevenage 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.

Stevenage Borough Council currently does not have any AQMAs.

**☒ Stevenage Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date (website shows “No information about this local authority is currently available” – Defra have been informed no AQMAs in Stevenage).**



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

Defra's appraisal of last year's ASR concluded

1. In 2017 there has been one measured exceedance of the annual mean NO<sub>2</sub> objective at Site 34 (newly introduced in 2017) measuring an annual mean concentration of 57.33 µg/m<sup>3</sup>. Site 34 is located more than 50m from relevant exposure, and therefore it is not appropriate to distance correct the result.
2. It is recommended site 34 be kept under review, and that the Council consider undertaking additional monitoring in proximity to Site 34, but at relevant exposure.
3. It is encouraging to see that the Council has introduced two new diffusion tube sites to the monitoring network in 2017, and is considering making further changes as needed, to the network in the future. This is supported, and the Council should continue to regularly review and make any necessary changes to the monitoring program moving forward.
4. Again, calculation details for distance correction and annualisation have not been provided in Appendix C. These must be included in future reports.  
**Now included.**
5. It would be useful if in Section 2.3, the Local Authority made reference to the Public Health Outcomes Framework and their local indicator for PM<sub>2.5</sub>, in addition to providing details of how they are working with Public Health to address PM<sub>2.5</sub>.  
**Now included.**
6. The smaller maps presented in Appendix D are helpful, and the Council should continue to provide these in future reports.

Stevenage Borough Council has taken forward a number of direct measures during the current reporting year of 2019 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Table 2.1 – 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	Local plan mobility strategy	Promoting Travel Alternatives	Promotion of cycling	SBC	Current	Ongoing	NK	Reduced vehicle emissions	Dealt with by Planning Policy team.	Ongoing	
2	Local plan mobility strategy	Promoting Travel Alternatives	Promotion of walking	SBC	Current	Ongoing	NK	Reduced vehicle emissions	Dealt with by Planning Policy team.	Ongoing	
3	Local plan mobility strategy	Transport Planning and Infrastructure	Cycle network	SBC	Current	Ongoing	NK	Reduced vehicle emissions	Dealt with by Planning Policy team.	Ongoing	First phase successful, second phase on-going
4	Relocating diffusion tubes	Other	Other	SBC	Mid 2018	Ongoing		Some tubes have been removed and new locations found	SBC continue to monitor the locations	Ongoing	None
5	Local plan mobility strategy	Transport Planning and Infrastructure	Public cycle hire scheme	SBC	Current	Ongoing	NK	Reduced vehicle emissions	Promotion of this scheme continues.	Ongoing	
6	Electric car club	Alternatives to private vehicle use	Car Clubs	SBC	Current	Ongoing	NK	Reduced vehicle emissions	Promotion of this scheme continues.	Ongoing	
7	Promotion of Clean Air Day	Public Information	Via the Internet	SBC	Current	Ongoing	NK	Public information	SBC continue to promote this.	Annual	
8	Air pollution episode alert system	Public Information	Other	SBC	Current	Implemented	NK	Public information	In place.	Complete	

## Stevenage Borough Council

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
9	Monitoring air quality	Public Information	Via other mechanisms	HCC / SBC	Current	Ongoing	NK	Public information	SBC continue to monitor this.	Ongoing	
10	Engagement with Comms	Public Information	Via the Internet	SBC	Current	Ongoing	NK	Public information	EH continue to discuss with colleagues.	Ongoing	
11	Consider air quality on new planning applications	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	SBC	Current	Ongoing	NK	Reduced vehicle emissions	This continues to happen.	Ongoing	

## 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.

Stevenage Borough Council encourage the use of electric vehicles and low emission vehicles, and continue to promote the extensive network of cycle paths around the borough. Air quality in general is considered for new developments.

Hertfordshire County Council's public health team provided funding for the PM<sub>2.5</sub> analyser which continues to gather data for establishing a baseline level of PM<sub>2.5</sub> across Hertfordshire.

## Public Health Outcomes Framework - Fraction of mortality attributable to particulate air pollution 2017:

Table Extract from - <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/6/par/E12000006/ati/101/are/E07000241/iid/30101/age/230/sex/4>

Area	Recent Trend	Neighbour Rank	Count	Value	95% Lower CI	95% Upper CI
England	-	-	-	5.1	-	-
East of England region	-	-	-	5.5	-	-
North Norfolk	-	-	-	4.6	-	-
King's Lynn and West Norfolk	-	-	-	4.9	-	-
Breckland	-	-	-	4.9	-	-
South Norfolk	-	-	-	5.0	-	-
Broadland	-	-	-	5.0	-	-
Great Yarmouth	-	-	-	5.0	-	-
Fenland	-	-	-	5.1	-	-
Waveney	-	-	-	5.1	-	-
Forest Heath	-	-	-	5.2	-	-
Suffolk Coastal	-	-	-	5.2	-	-
Tendring	-	-	-	5.2	-	-
East Cambridgeshire	-	-	-	5.2	-	-
Norwich	-	-	-	5.2	-	-
Mid Suffolk	-	-	-	5.3	-	-
Peterborough	-	-	-	5.3	-	-
Maldon	-	-	-	5.3	-	-
St. Edmundsbury	-	-	-	5.3	-	-
Babergh	-	-	-	5.3	-	-
Huntingdonshire	-	-	-	5.4	-	-
South Cambridgeshire	-	-	-	5.4	-	-
Uttlesford	-	-	-	5.4	-	-
Rochford	-	-	-	5.5	-	-
Braintree	-	-	-	5.5	-	-
Colchester	-	-	-	5.5	-	-
Castle Point	-	-	-	5.5	-	-
Southend-on-Sea	-	-	-	5.5	-	-
Bedford	-	-	-	5.6	-	-
Cambridge	-	-	-	5.6	-	-
East Hertfordshire	-	-	-	5.6	-	-
Central Bedfordshire	-	-	-	5.6	-	-
North Hertfordshire	-	-	-	5.6	-	-
Dacorum	-	-	-	5.6	-	-
Chelmsford	-	-	-	5.7	-	-
Stevenage	-	-	-	5.7	-	-
Basildon	-	-	-	5.7	-	-
Ipswich	-	-	-	5.7	-	-
Harlow	-	-	-	5.7	-	-
Brentwood	-	-	-	5.8	-	-
Three Rivers	-	-	-	5.8	-	-
St Albans	-	-	-	5.8	-	-
Welwyn Hatfield	-	-	-	5.9	-	-
Broxbourne	-	-	-	5.9	-	-
Epping Forest	-	-	-	5.9	-	-
Hertsmere	-	-	-	5.9	-	-
Watford	-	-	-	6.0	-	-
Thurrock	-	-	-	6.1	-	-
Luton	-	-	-	6.2	-	-

This table shows a comparison for the East of England, England and regional areas for the attributable mortality rates due to particulate air pollution in 2017.

The region of Stevenage has a value of 5.7% and this compares to the whole of England which is 5.1% and the East of England region which is 5.5%.

## **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**

This section sets out what monitoring has taken place and how it compares with objectives.

Stevenage Borough Council undertook automatic (continuous) monitoring at two sites during 2018 due to the relocation of the AQMS.

Table A.1 in Appendix A shows the details of the sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. National monitoring results are available at <http://www.airqualityengland.co.uk/>

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

#### **3.1.2 Non-Automatic Monitoring Sites**

Stevenage Borough Council undertook non-automatic (passive) monitoring of NO<sub>2</sub> at 31 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 (NO<sub>2</sub>)

Table A.3 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 2018 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

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

Table A.7 in Appendix A presents the ratified and adjusted monitored PM<sub>2.5</sub> annual mean concentrations for the past 5 years. The annualised reading of 10 indicates PM<sub>2.5</sub> at the Stevenage monitoring site to be low.

## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
SE16	Stevenage 1	Kerbside	523586	223967	NO2	NO	Chemiluminescent	110	3	2
SE16	Stevenage 1	Kerbside	523586	223967	PM2.5	NO	BAM	110	3	2
AQMS 2	St Georges Way	Roadside	523923	224329	NO2	NO	Chemiluminescent	85	1.5	2.9
AQMS 2	St Georges Way	Roadside	523923	224329	PM2.5	NO	BAM	85	1.5	2.9

**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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
1	Town Centre	Roadside	523771	224090	NO2	N	102	4	N	2.35
2	Ashdown Road	Roadside	525832	221495	NO2	N	14	1.7	N	2.7
3	Monks View	Urban background	524857	222756	NO2	N	9.5	0.2	N	2.9
4	Bedwell Crescent	Kerbside	524345	224468	NO2	N	20	0.8	N	2.5
5	Salisbury Road	Urban background	525373	226985	NO2	N	6.6	19	N	2.8
6	Letchmore Road	Roadside	523845	225386	NO2	N	14	1.3	N	2.6
7	High Street	Roadside	523278	225479	NO2	N	9	2.4	N	3
8	Fishers Green	Urban background	522259	226001	NO2	N	18	0.95	N	2.75
9	Magpie Crescent	Roadside	526652	223438	NO2	N	12.5	2	N	2.9
10	Shoreham Close	Urban background	522075	225568	NO2	N	8	2.05	N	2.5
11	Newlyn Close	Urban background	522126	224862	NO2	N	3.5	1.7	N	2.65
12	Chadwell Road	Suburban	522955	223335	NO2	N	25	0.4	N	2.6
13	Whitney Drive	Urban background	523070	226070	NO2	N	8	1.9	N	2.3
14	Lytton Way	Roadside	523586	223967	NO2	N	110	>5	Y	2.9
17	Hitchin Road	Roadside	522700	226550	NO2	N	14	2.4	N	2.5

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)
18	Fairlands Valley Park	Urban background	525425	224183	NO2	N	167	172.5	N	2.6
19	7 Tates Way	Roadside	522700	226570	NO2	N	0	9	N	2.25
21	13 Hitchin Road	Roadside	523128	225677	NO2	N	0	16	N	2.17
22	Townsend Mews	Roadside	523360	224786	NO2	N	0	7.8	N	2.65
23	Hitchin Road - Longfields	Roadside	523014	226029	NO2	N	7.4	2.45	N	2.1
24	Martins Way	Kerbside	525987	226368	NO2	N	8	0.8	N	2.15
25	Cherwell Drive	Roadside	525470	227287	NO2	N	8.7	1.3	N	2.8
26	Vardon Road	Roadside	524542	225654	NO2	N	10.2	7.7	N	2.6
27	Mildmay Road	Kerbside	525815	226061	NO2	N	8	0.4	N	2.9
28	Chells Way	Roadside	526078	224818	NO2	N	1.5	1.5	N	2.35
29	Edmonds Drive	Roadside	526964	223760	NO2	N	1.5	1	N	2.8
30	Shephall Way	Roadside	526094	223389	NO2	N	2.8	2.9	N	2.75
31	Hydean Way	Kerbside	522710	226550	NO2	N	0	6	N	2.6
32	Hitchin Road (collocated tube 17) - base	Roadside	522700	226550	NO2	N	14	2.4	N	0.6

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)
33	Hitchin Road – Longfields (collocated tube 23) - base	Roadside	523014	226029	NO2	N	7.4	2.45	N	0.86
34	A602/A1(M) Junction 7	Kerbside	523697	222590	NO2	NO	>50	2.2	NO	2.2
35	A602 The Chequers	Kerbside	527020	221097	NO2	NO	>50	0.5	NO	2.2
36	St Georges Way	Roadside	523923	224329	NO2	NO	>50	1.5	Y	2.9

**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 NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2018 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2014	2015	2016	2017	2018
1	Roadside	Diffusion Tube		100.0	32.2	31.2	33.2	33.0	30.6
2	Roadside	Diffusion Tube		100.0	17.6	16.3	18.0	18.2	18.4
3	Suburban	Diffusion Tube		50.0	22.0	21.0	22.1	22.4	18.7
4	Kerbside	Diffusion Tube		100.0	21.0	19.5	21.5	20.4	19.8
5	Background	Diffusion Tube		100.0	15.0	13.9	13.8	14.4	13.9
6	Roadside	Diffusion Tube		100.0	20.6	17.9	19.2	18.1	17.8
7	Roadside	Diffusion Tube		83.3	31.8	30.9	31.5	30.2	30.5
8	Suburban	Diffusion Tube		100.0	22.5	20.0	21.4	19.6	20.9
9	Kerbside	Diffusion Tube		75.0	25.7	24.5	26.6	25.0	25.1
10	Roadside	Diffusion Tube		91.7	26.6	26.5	26.5	27.2	26.1
11	Suburban	Diffusion Tube		100.0	21.9	20.2	20.8	20.3	19.2
12	Suburban	Diffusion Tube		100.0	19.7	16.2	19.5	16.6	19.0
13	Suburban	Diffusion Tube		91.7	23.9	21.8	22.4	22.2	21.2
14	Kerbside	Diffusion Tube		91.7	32.9	30.0	33.0	31.3	28.7
17	Roadside	Diffusion		100.0	<b>47.6</b>	<b>46.9</b>	<b>44.4</b>	<b>48.6</b>	<b>42.2</b>

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2018 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2014	2015	2016	2017	2018
		Tube							
18	Background	Diffusion Tube		100.0	16.7	13.7	16.3	15.3	14.5
19	Roadside	Diffusion Tube		100.0	33.5	35.0	37.0	37.0	35.1
21	Roadside	Diffusion Tube		91.7	27.8	25.0	26.5	25.4	24.3
22	Roadside	Diffusion Tube		100.0	25.1	23.6	27.0	23.2	23.2
23	Roadside	Diffusion Tube		100.0		36.8	36.3	31.5	33.5
24	Kerbside	Diffusion Tube		100.0		27.0	29.8	32.0	31.4
25	Roadside	Diffusion Tube		91.7		17.8	17.8	16.4	16.6
26	Roadside	Diffusion Tube		100.0		19.9	20.8	21.1	21.0
27	Kerbside	Diffusion Tube		100.0		17.2	19.9	18.1	18.1
28	Roadside	Diffusion Tube		100.0		21.9	24.2	23.0	22.4
29	Roadside	Diffusion Tube		91.7		16.2	16.7	17.5	15.4
30	Roadside	Diffusion Tube		91.7		17.0	19.3	17.4	17.1
31	Roadside	Diffusion Tube		100.0		21.1	23.3	22.2	23.3
34	Kerbside	Diffusion Tube		100.0	-			57.3	49.5
35	Kerbside	Diffusion Tube		100.0	-			24.6	28.3

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2018 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2014	2015	2016	2017	2018
36	Kerbside	Diffusion Tube		8.3	-				27.4
SE16	Kerbside	Automatic		49.3	-		25.9	26.3	24.0
AQMS 2	Roadside	Automatic		10.4	-				28.0

☒ 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.

Table A.4 – 1-Hour 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 2018 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2014	2015	2016	2017	2018
SE16	Kerbside	Automatic		49.33	n/a	n/a	1	1	0
AQMS 2	Roadside	Automatic		10.4	n/a	n/a	n/a	n/a	0

**Notes:**

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> 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 99.8<sup>th</sup> percentile of 1-hour means is provided in brackets.

Table A.5 – PM<sub>2.5</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2018 (%) <sup>(2)</sup>	PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2014	2015	2016	2017	2018
SE16	Kerbside		86	n/a	n/a	11	11	10
AQMS 2	Kerbside		6.74	n/a	n/a	n/a	n/a	9

☒ 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.



## Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results - 2018

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.89) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
1	36.1	30.8	36.4	35.7	41.1	26.6	36.1	24.9	37.4	39.4	33.0	34.8	34.4	30.6	18.5
2	24.5	28.6	25.8	18.9	16.7	12.5	16.5	17.0	19.3	20.9	22.5	25.1	20.7	18.4	17.5
3		25.42	29.18		16.04	12.24	10.91					28.98	20.5	18.7	18.1
4	24.8	27.05	26.58		15.21	14.39	16.85	19.29	21.79	23.8	28.05	26.85	22.2	19.8	16.9
5	18.93	19.79	19.32	15.94	8.94	6.89	10.28	11.81	13.49	16.8	23.71	21.25	15.6	13.9	
6	23.87	25.44	23.83	17.58	11.45	9.54	15.01	16.67	18.65	22.64	29.39	26.23	20.0	17.8	17.8
7	34.24	39.38	38.12	32.35	33.64	25.43	32.6		30.32	39.83		36.76	34.3	30.5	25.7
8	25.13	28.28	28.31	21.46	19.06	15.16	17.86	18.87	22.48	25.66	29.97	29	23.4	20.9	19.4
9		26.25	30.25	24.44			28.22	25.42	28.44	28.33	35.33	27.49	28.2	25.1	19.9
10	33.84	38.5	31.91	26.33	22.93	18.65	27.88	29.38	27.16	29.57		37.01	29.4	26.1	22.9
11	24.33	27.17	25.71	21.71	15.52	11.43	19.09	19.22	18.86	23.44	25.26	27.67	21.6	19.2	19.0
12	20.85	30.77	26.69	20.22	22	19.02	17.08	15.54	14.16	23.07	22.9	23.35	21.3	19.0	16.0
13	28.9	28.78		24.4	15.13	11.42	19.52		22.84	26.64	29.93	30.94	23.9	21.2	19.2
14	28.48	41.77	36.25	32.48	27.45	21.5	24.05	35.64	32.58	36.87	38.14	x	32.3	28.7	24.9
17	31.53	49.14	48.93	49.66	49.29	45.25	55.09	47.25	47.67	46.72	46.15	51.66	47.4	42.2	31.0

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 (0.89) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
18	20.04	22.74	19.66	15.53	9.09	6.42	10.87	13.71	14.28	18.41	24.31	19.86	16.2	14.5	
19	41.66	40.87	43.69	40.49	40.47	34.91	40.24	35.86	35.38	38.44	38.71	42.88	39.5	35.1	35.1
21	27.65	32.12	30.37	28.13	25.95	20.31	26.98	24.43	22.76	29.41		31.74	27.3	24.3	24.3
22	26.12	29.32	31.45	27.27	23.25	23.58	25.21	23.94	25.35	31.2	32.21	13.88	26.1	23.2	23.2
23	34.2	41.02	49.46	39.72	35.29	33.78	36.2	29.75	29.97	39.24	44.13	39.51	37.7	33.5	27.5
24	35.25	34.75	37.82	33.1	36.08	31.19	36.23	34.37	36.66	40.61	35.44	31.41	35.2	31.4	23.9
25		26.08	23.75	18.02	12.66	9.02	13.48	15.41	15.82	20.57	26.22	24.47	18.7	16.6	16.0
26	26.44	27.58	26.57	23.13	14.69	12.15	17.14	20.1	23.39	25.91	33.97	32.19	23.6	21.0	19.4
27	25.24	24.71	22.52	17.06	12.96	10.03	15.13	22.44	17.4	21.84	27.13	27.73	20.3	18.1	16.6
28	24.65	30.01	33.13	24.87	19.75	16.32	23.83	15.82	22.35	28.56	30.86	31.59	25.1	22.4	21.0
29	18.21	23.27	22.43	16.79	10.46	8.86	11.88	15.47	17.61	20.71	24.97		17.3	15.4	15.1
30	23.07	23.96	25.92	19.71	15.17	10.28	15.16	13.56	17.41	22.2	25.44		19.3	17.1	16.6
31	27.09	28.52	30.87	25.27	22.94	20.34	21.03	20.22	25.35	30.48	32.53	29.5	26.2	23.3	23.3
34	60.81	55.19	62.9	52.86	52.91	42.95	61.82	68.68	25.22	61.71	58.89	63.88	55.7	49.5	25.8
35	24.4	34.2	30.07	27.15	29.97	24.41	28.28	26.36	65.13	30.79	31.39	29.85	31.8	28.3	16.3

☒ 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.

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

### Diffusion Tube Bias Adjustment Factors

The diffusion tubes are supplied and analysed by Gradko International Ltd. Tubes are all 50% TEA in acetone. The bias factor used is the national figure of 0.89. Distance correction was applied where necessary.

### QA/QC of diffusion tube monitoring

The Stevenage nitrogen dioxide diffusion tube programme is operated through an approved laboratory (Gradko International Ltd) with formal accreditation to BS standards, and one that participates in the AIR-PT programme.

### QA/QC of automatic monitoring

Automatic measurements of PM<sub>2.5</sub> were made using a BAM-1020, a beta attenuation mass monitor.

Measurements of NO<sub>x</sub> were made using an Enviro Technology Model 200E, a chemiluminescent method analyser.

All measurements were logged by the instruments themselves and collected by Enviro Technology hourly. Measurements from the monitoring site were validated by Ricardo using the most up to date calibration factors and publicly disseminated in near real time on the HBAQN web page [http://www.airqualityengland.co.uk/local-authority/?la\\_id=408](http://www.airqualityengland.co.uk/local-authority/?la_id=408)

Distance

Enter data into the pink cells

Site Name/ID	Distance (m)		NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> )			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
1.0	4.0	50.0	13.5	30.6	18.5	Warning: your receptor is more than 20m further from the kerb than yo
2.0	1.7	15.7	16.7	18.4	17.5	

# Stevenage Borough Council

3.0	0.2	9.7	17.7	18.7	18.1	
4.0	0.8	20.8	15.2	19.8	16.9	Warning: your receptor is more than 20m further from the kerb than you
5.0	19.0	25.6	15.2	13.9	-	Error: Measured concentration must be above backgr
6.0	1.3	15.3	17.8	17.8	17.8	
7.0	2.4	11.4	17.8	30.5	25.7	

8.0	1.0	19.0	18.4	20.9	19.4	
9.0	2.0	14.5	13.9	25.1	19.9	
10.0	2.5	10.1	16.8	26.2	22.9	
11.0	1.7	5.2	18.4	19.2	19.0	
12.0	0.4	25.4	14.8	19.0	16.0	Warning: your receptor is more than 20m further from the kerb than yo

# Stevenage Borough Council

13.0	1.9	9.9	16.0	21.2	19.2	
14.0	5.0	50.0	23.2	28.7	24.9	Warning: your receptor is more than 20m further from the kerb than yo
17.0	2.4	16.4	18.4	42.2	31.0	
18.0	50.0	50.0	14.6	14.5	-	Error: Measured concentration must be above backgr
19.0	9.0	9.0	18.4	35.1	35.1	



# Stevenage Borough Council

21.0	16.0	16.0	17.8	24.3	24.3	Warning: your monitor is more than 10m further from the kerb than you
22.0	7.8	7.8	20.3	23.2	23.2	
23.0	2.5	9.9	16.0	33.5	27.5	
24.0	0.8	8.8	15.2	31.4	23.9	
25.0	1.3	10.0	15.2	16.6	16.0	

26.0	7.7	17.9	15.5	21.0	19.4	
27.0	0.4	8.4	15.2	18.1	16.6	
28.0	1.5	3.0	13.5	22.4	21.0	
29.0	1.0	2.5	13.9	15.4	15.1	
30.0	2.9	5.7	13.9	17.1	16.6	

31.0	6.0	6.0	14.6	23.3	23.3	
					-	
					-	
34.0	2.2	50.0	17.8	49.5	25.8	Warning: your receptor is more than 20m further from the kerb than yo
35.0	0.5	50.0	13.5	28.3	16.3	Warning: your receptor is more than 20m further from the kerb than yo

## Stevenage Borough Council

36.0	1.5	50.0	20.3	27.5	21.9	Warning: your receptor is more than 20m further from the kerb than yo
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Annualisation

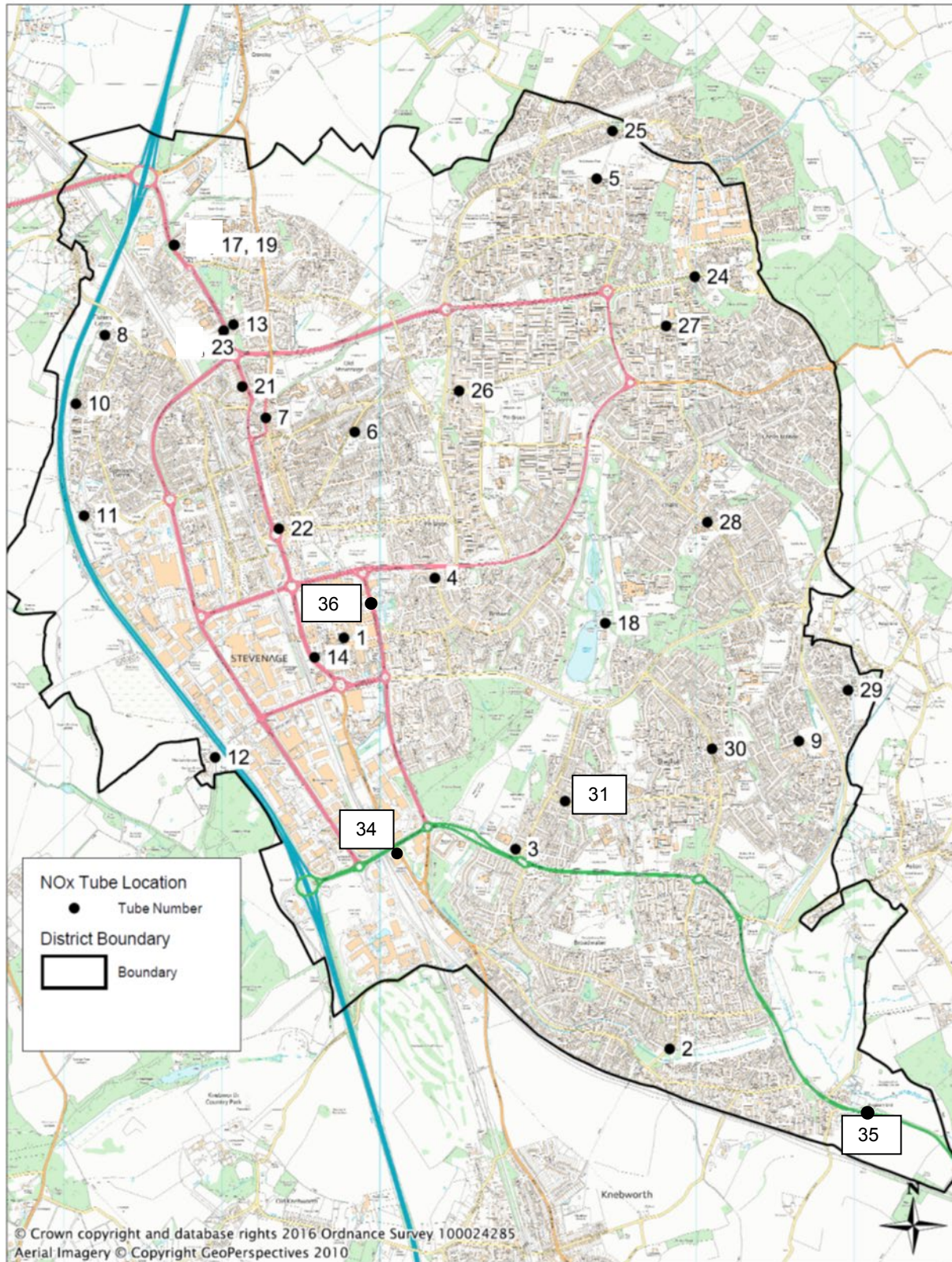
Start date 2018	End date 2018	St Georges Way	Background site Borehamwood Meadow Park	Period mean Borehamwood Meadow Park	Background Northampton Spring Park	Period Mean Northampton Spring Park
03-Jan	31-Jan		24.2		16.8	
31-Jan	28-Feb		24.9		16.8	
28-Feb	28-Mar		27.4		16.8	
28-Mar	02-May		19.1		12.5	
02-May	06-Jun		16.1		8.7	
06-Jun	04-Jul		11.0		5.5	
04-Jul	01-Aug		15.9		9.0	
01-Aug	05-Sep		14.9		10.4	
05-Sep	03-Oct		19.0		9.6	
03-Oct	31-Oct		22.0		13.6	
31-Oct	05-Dec		29.2		17.5	
05-Dec	09-Jan	30.84	27.6	27.6	18.9	18.9
<b>MEAN</b>		<b>30.8</b>	<b>20.9</b>	<b>27.6</b>	<b>13.0</b>	<b>18.9</b>
RATIO AM:PM				<b>0.76</b>		<b>0.69</b>
				Average Ratio	<b>0.72</b>	
				<b>Annual Mean</b>	<b>22.31</b>	

Start date 2018	End date 2018	SE16	Background site Borehamwood Meadow Park	Period mean Borehamwood Meadow Park	Background Northampton Spring Park	Period Mean Northampton Spring Park
03-Jan	31-Jan	33	24.2	24.2	16.8	16.8
31-Jan	28-Feb	34.7	24.9	24.9	16.8	16.8
28-Feb	28-Mar	26.9	27.4	27.4	16.8	16.8
28-Mar	02-May	22.1	19.1	19.1	12.5	12.5
02-May	06-Jun	18.3	16.1	16.1	8.7	8.7
06-Jun	04-Jul	12.7	11.0	11	5.5	5.5
04-Jul	01-Aug		15.9		9.0	
01-Aug	05-Sep		14.9		10.4	
05-Sep	03-Oct		19.0		9.6	
03-Oct	31-Oct		22.0		13.6	
31-Oct	05-Dec		29.2		17.5	
05-Dec	09-Jan		27.6		18.9	
<b>MEAN</b>		<b>24.6</b>	<b>20.9</b>	<b>20.45</b>	<b>13.0</b>	<b>12.85</b>
RATIO AM:PM				<b>1.02</b>		<b>1.01</b>
				Average Ratio	<b>1.02</b>	
				<b>Annual Mean</b>	<b>25.06</b>	

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

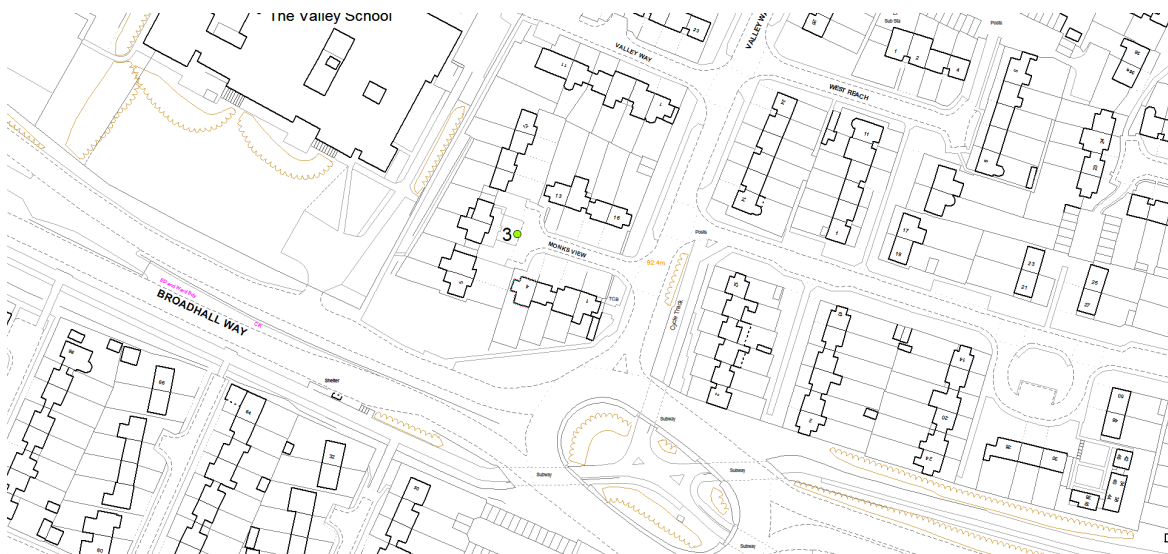
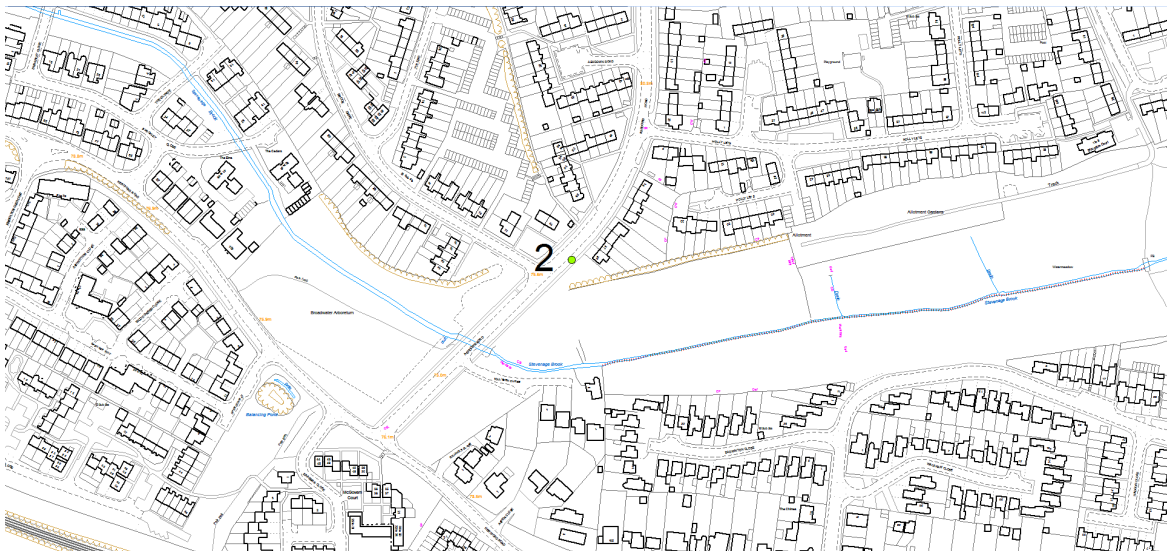
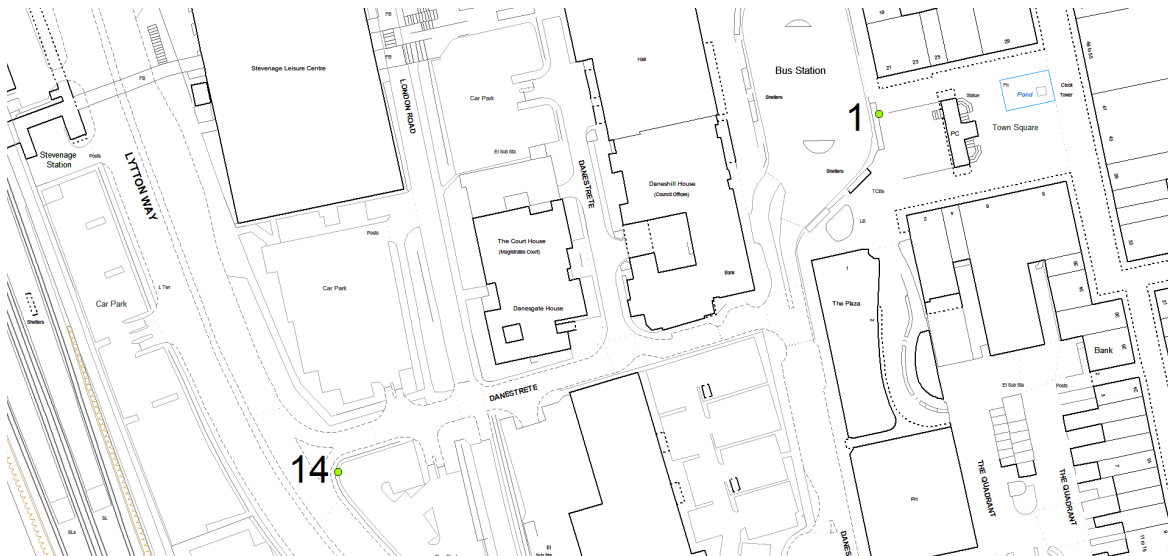
### NOx Tube Locations

June 2018

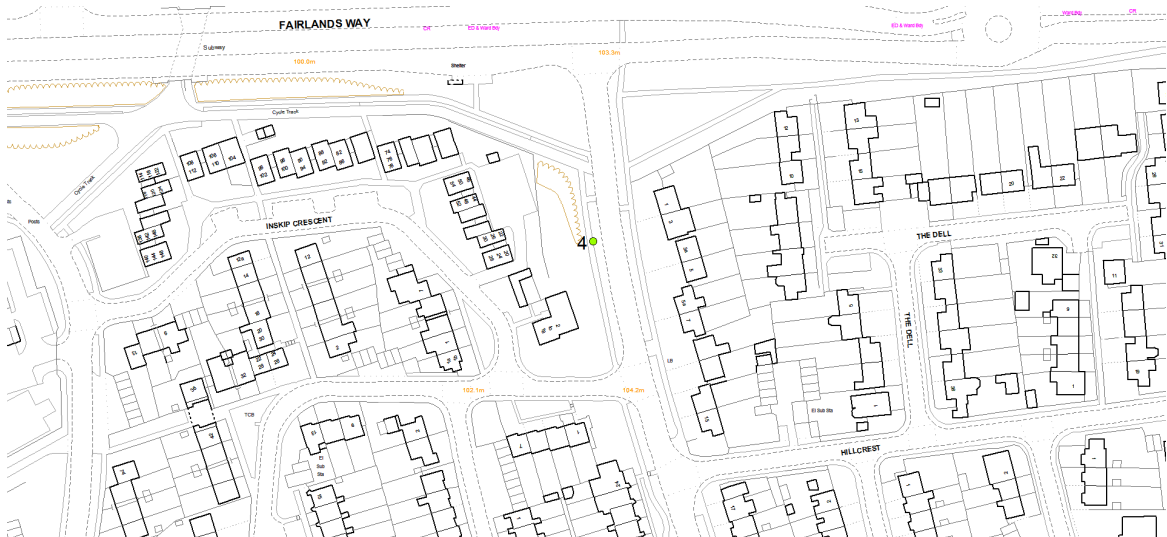


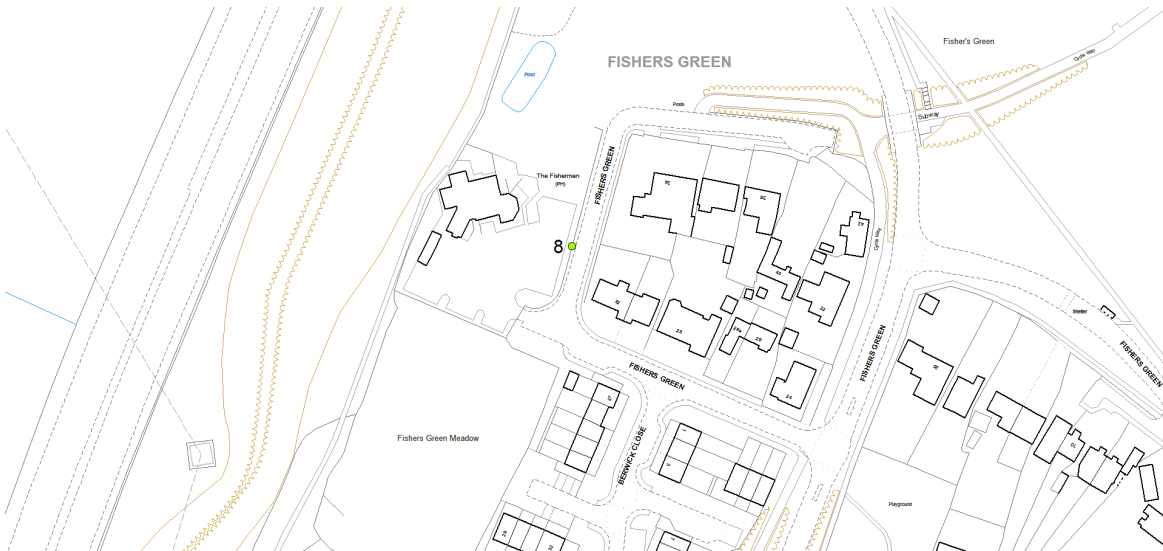


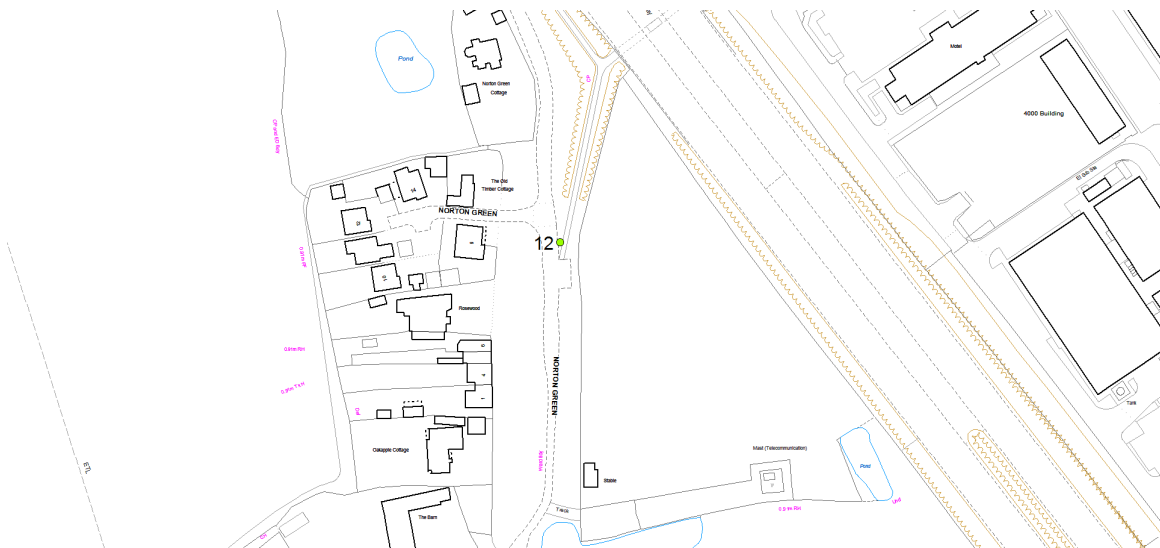
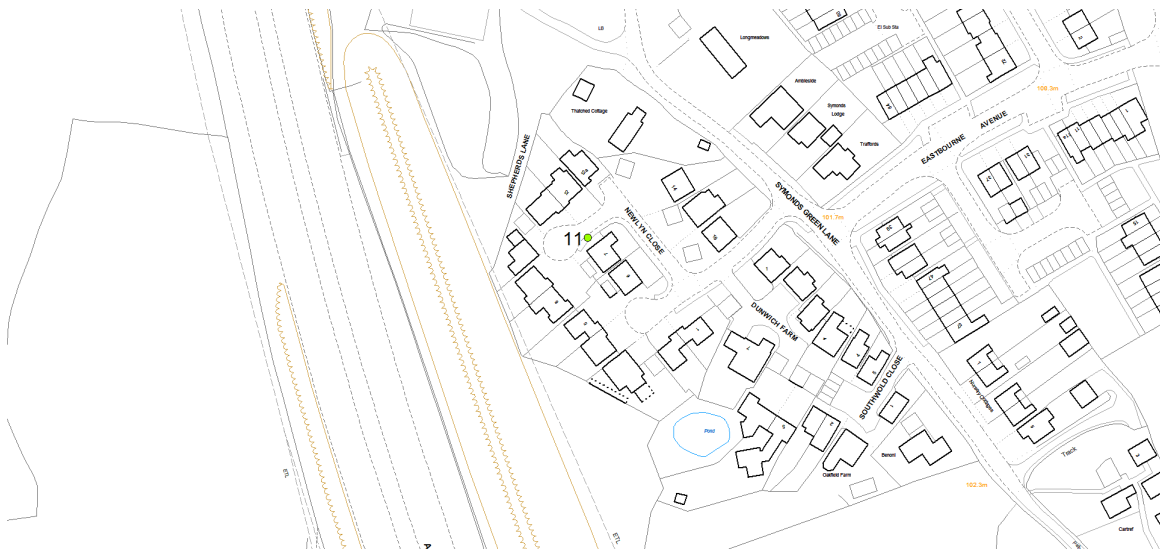
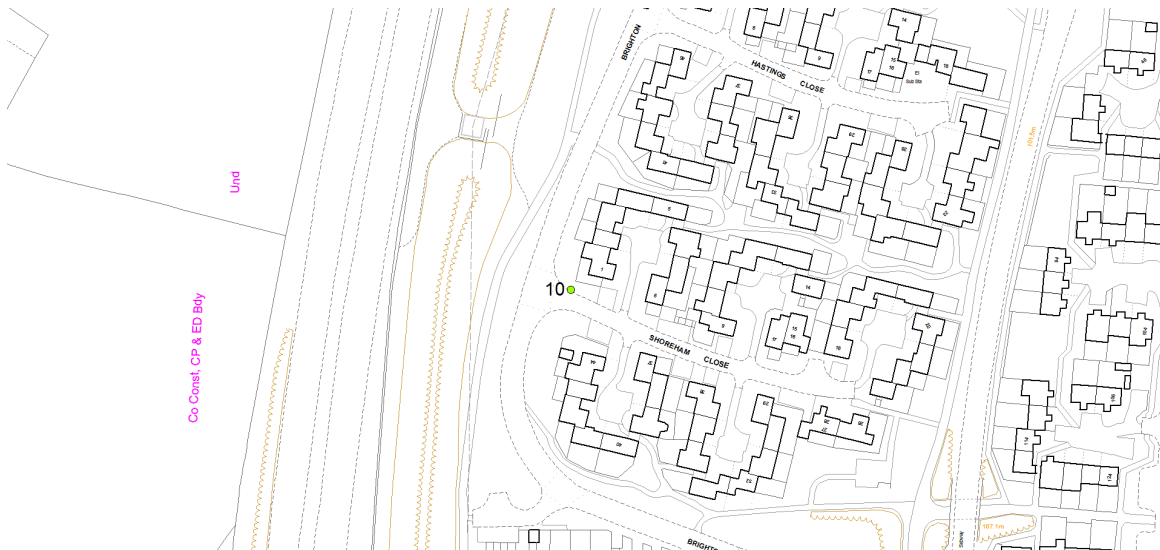
## NOx tube locations

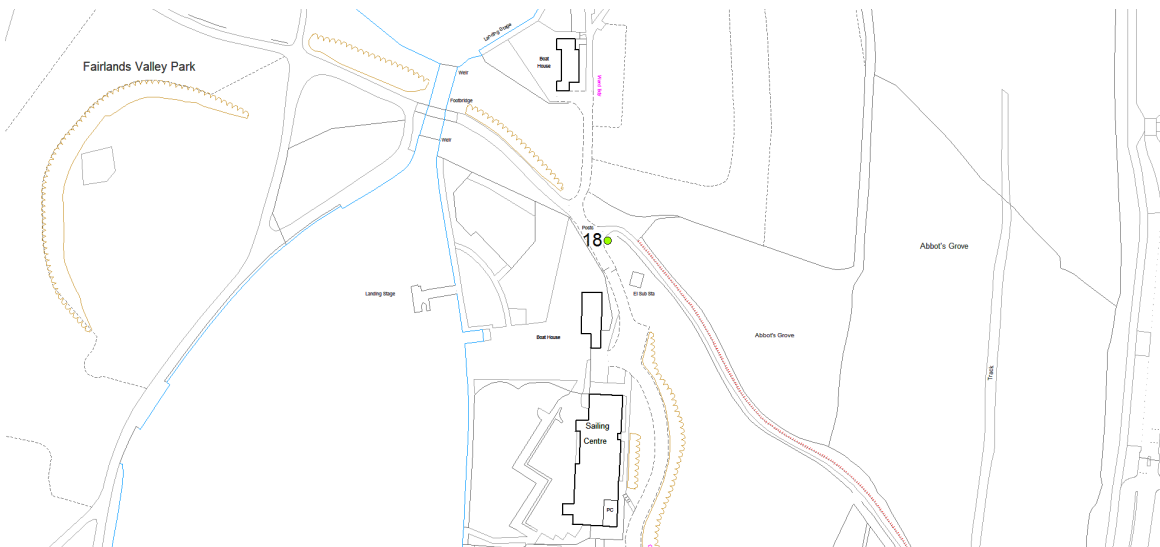
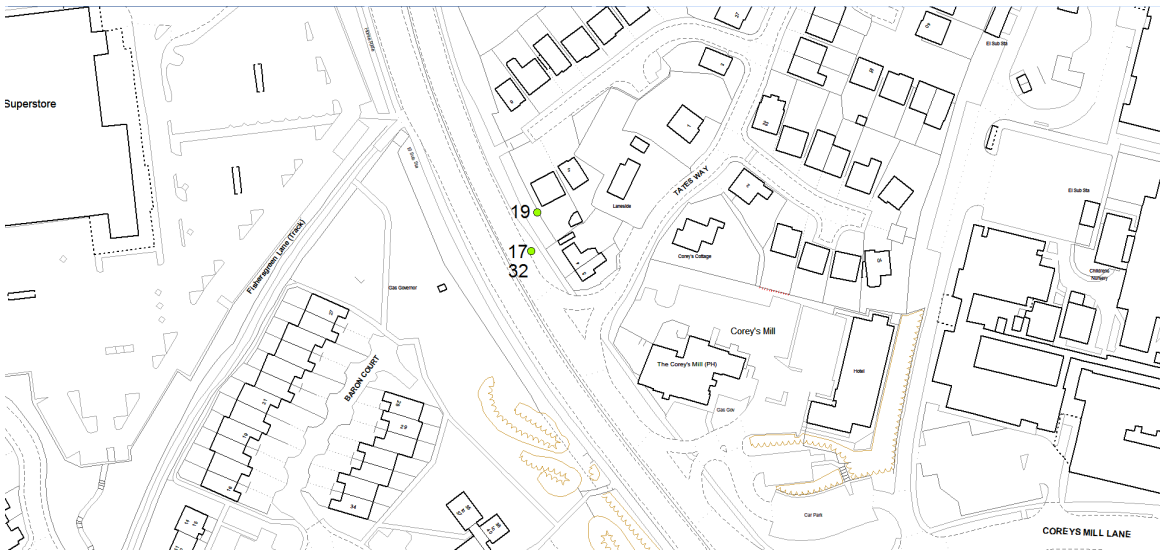
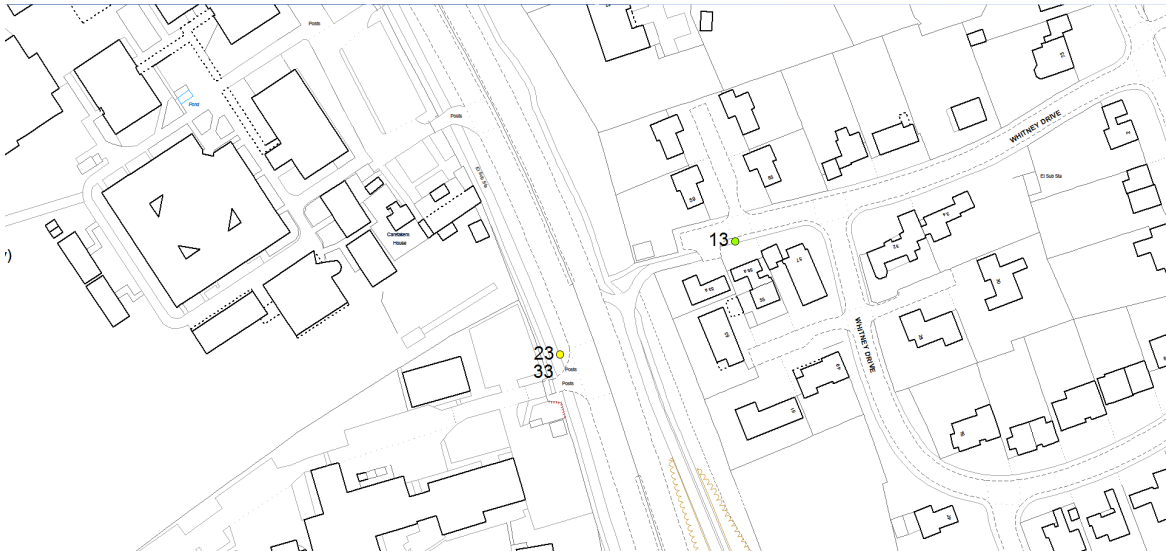




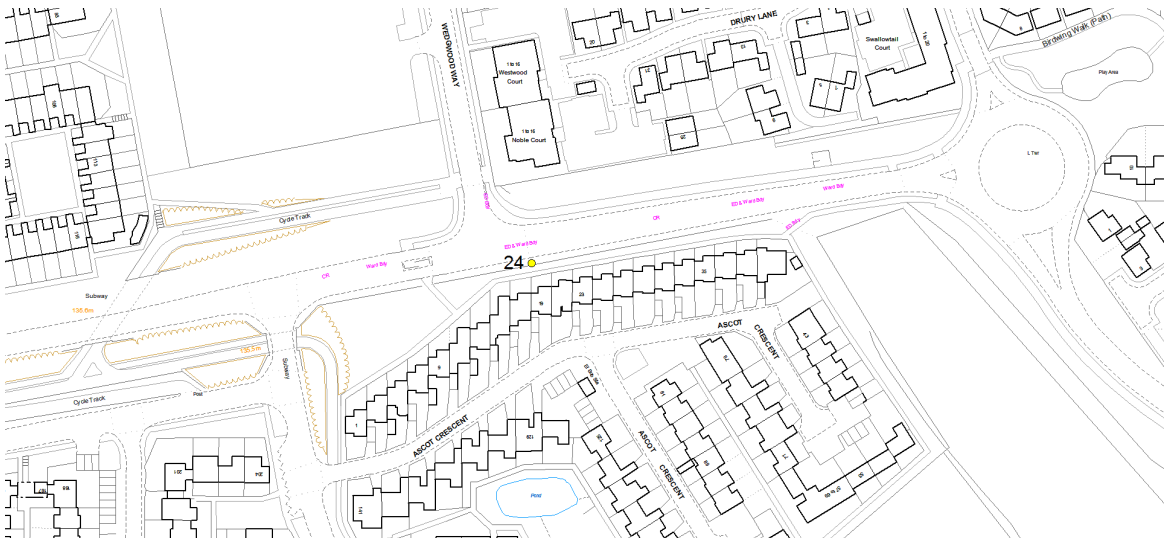
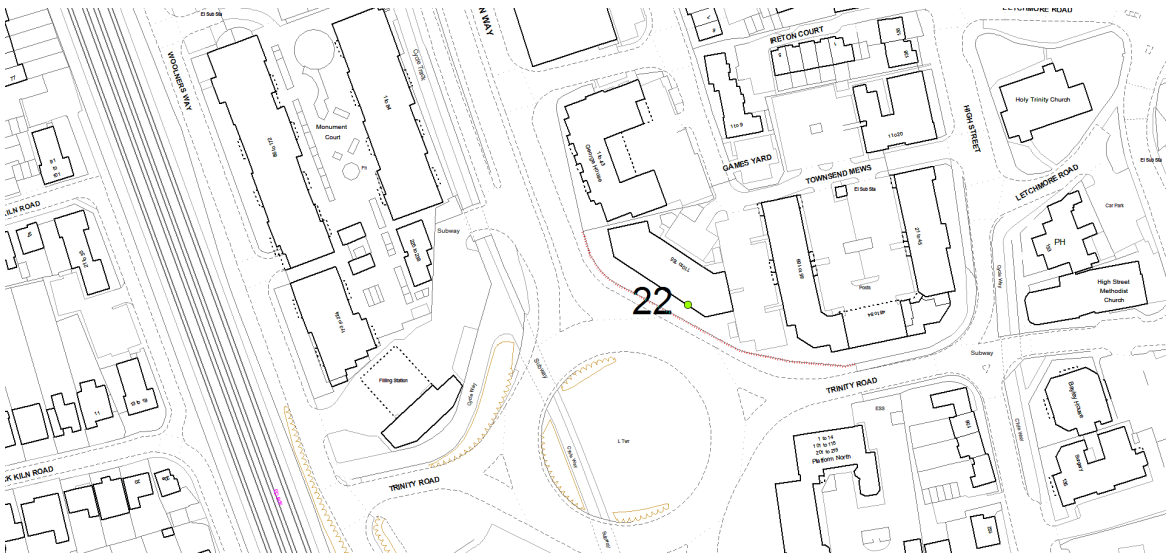


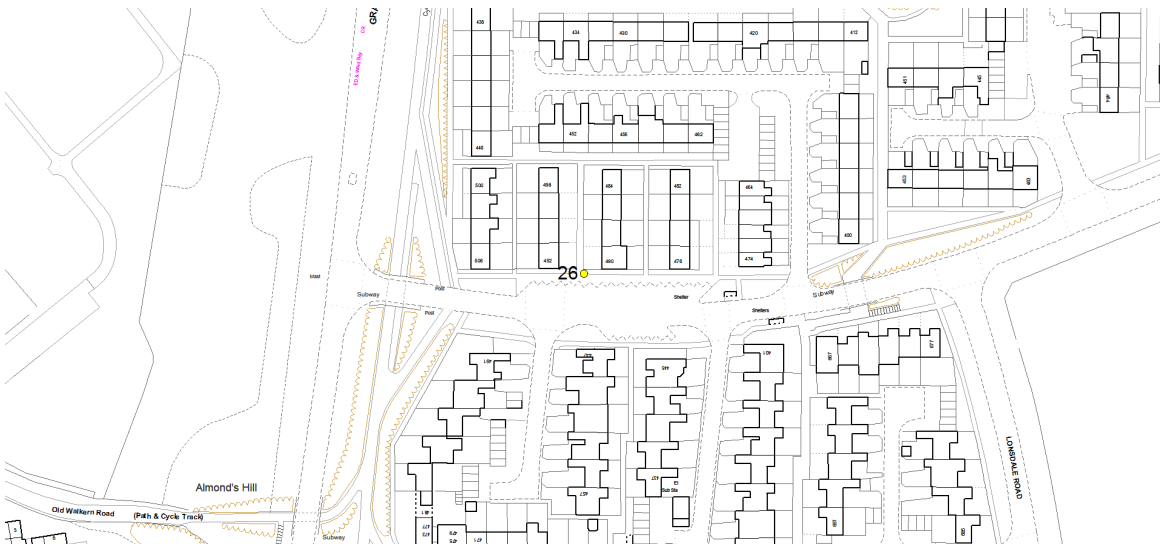
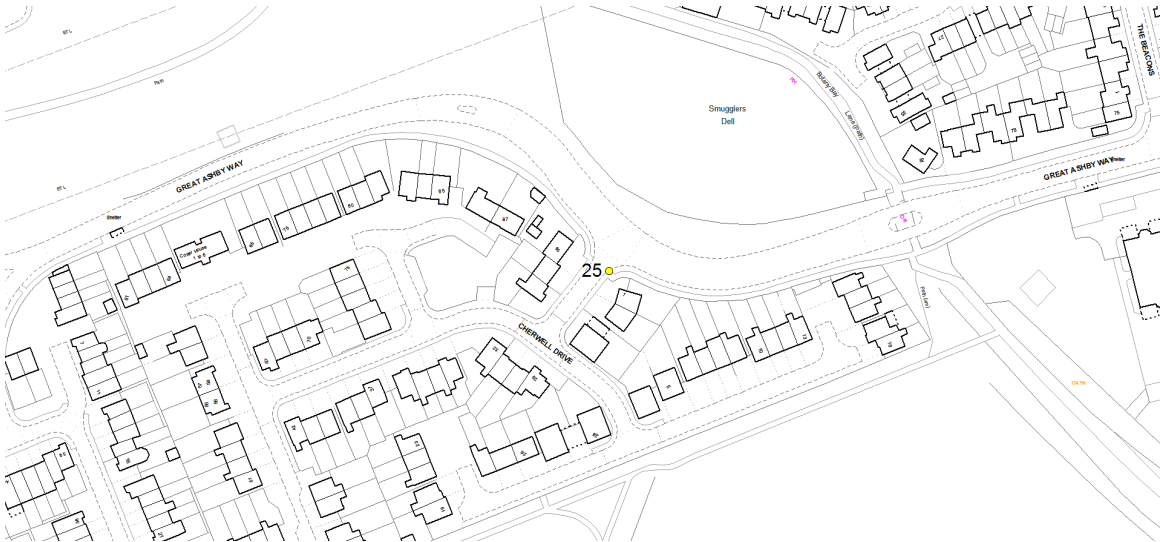


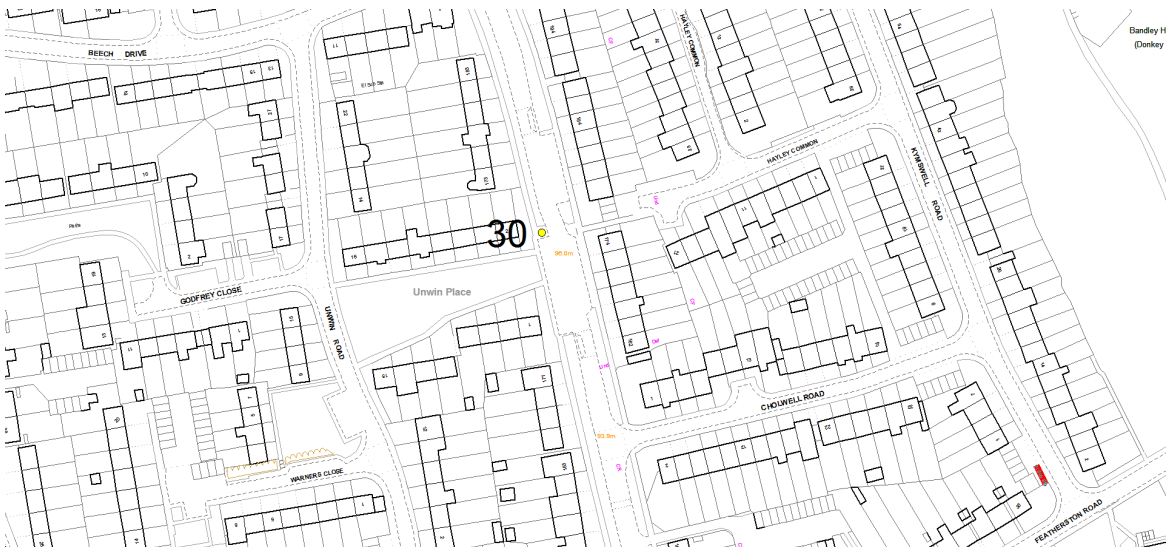
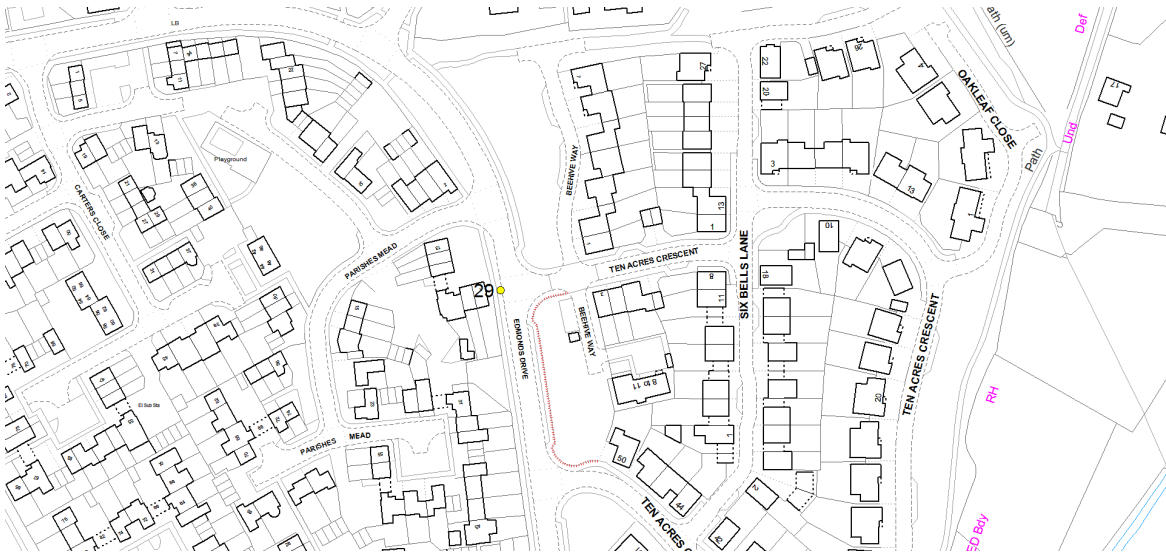
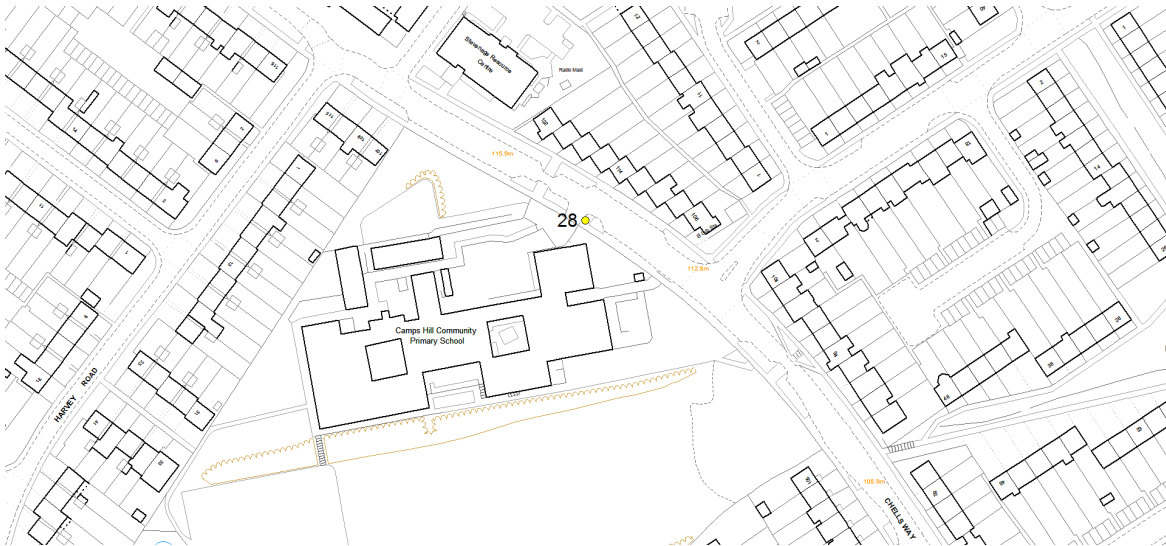


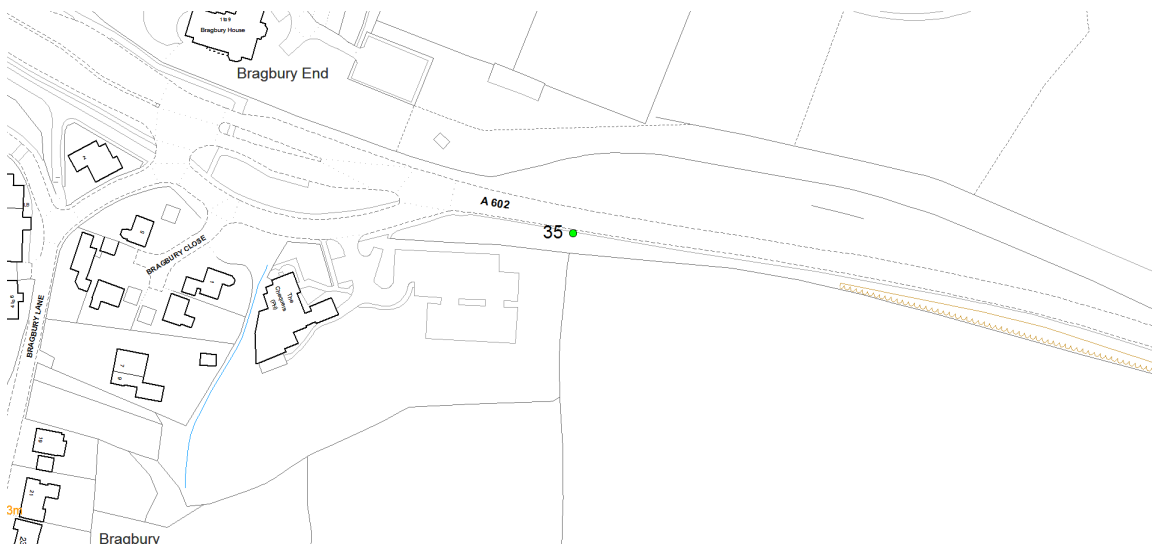
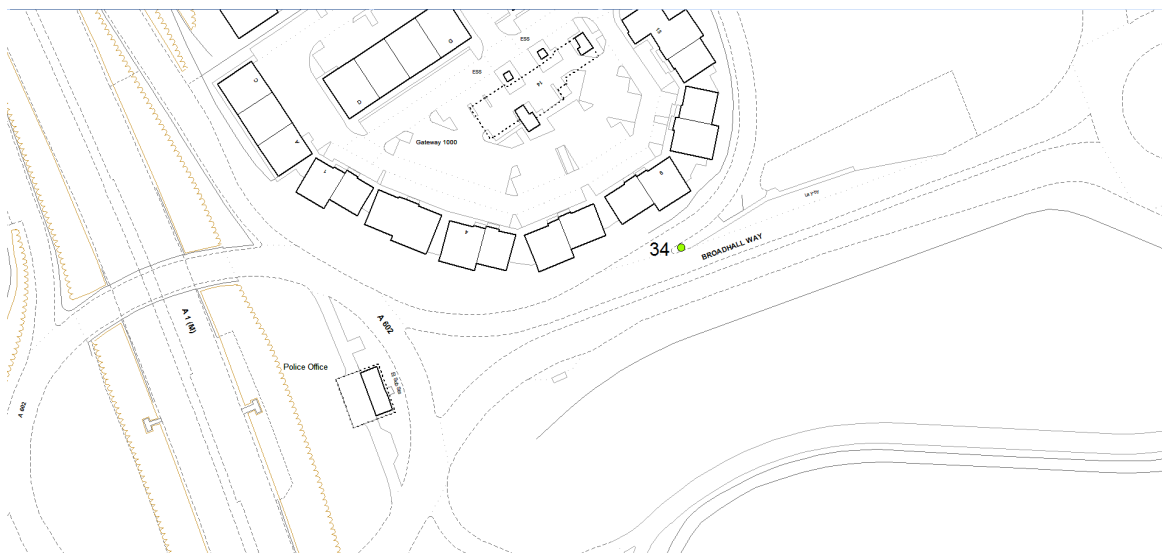
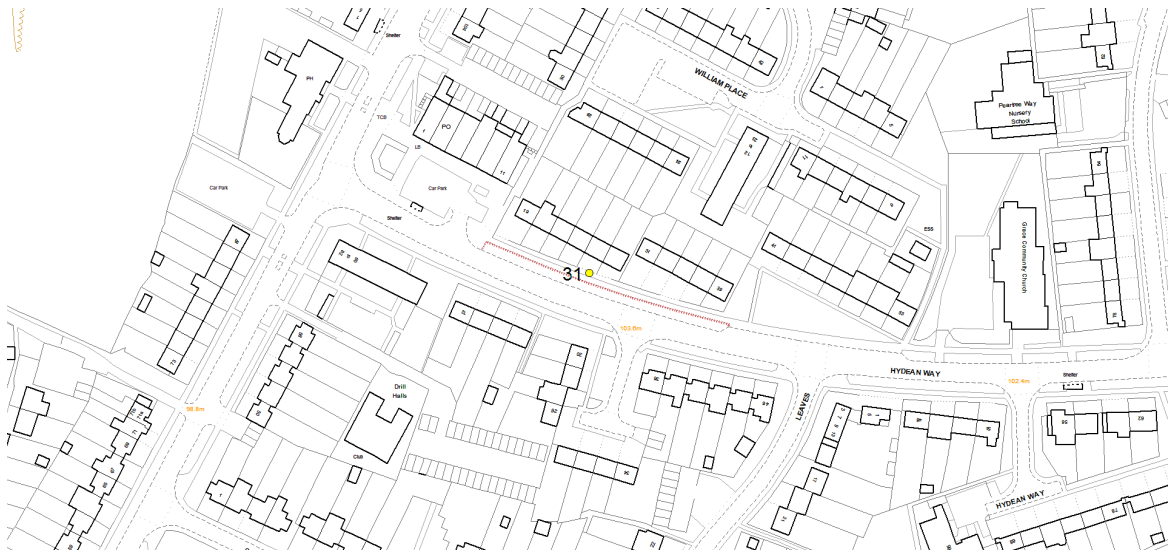
















## Appendix E: Summary of Air Quality Objectives in England

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

## **References**

Stevenage Borough Council Green Travel Plan 2013 to 2018

Stevenage Air Quality Strategy

Local Plan Mobility Strategy

LAQM TG16

Diffusion Tubes for Ambient NO<sub>2</sub> Monitoring: Practical Guidance