2020 Air Quality Annual Status Report (ASR)

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

2020

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Executive Summary: Air Quality in Our Area

This report fulfils the requirements of the Local Air Quality Management as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents.

Monitoring in 2019 has shown a decrease in NO_2 levels at all monitoring locations from levels monitored in 2018. Only one diffusion tube recorded levels above the annual mean objective where there is relevant exposure.

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 billion[3].

[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

Air Quality in Sevenoaks

The primary source of air pollution within the district is from nitrogen dioxide and particulate matter from road traffic. The district is traversed by three major motorways and these have a considerable flow of continental HGVs using the port at Dover and the Channel Tunnel. Local journeys, school runs, commuting to London or connection with London contribute significantly to a number of hot spots in Sevenoaks, Swanley and in several small towns along the A25 road.

Air quality monitoring in 2019 has shown a decrease in NO_2 levels at all monitoring locations. Only five of the 49 diffusion tube recorded NO_2 levels above the annual average objective.

A decrease in levels were reported at the continuous monitors for both NO_2 and PM_{10}. No breaches of the NO_2 hourly mean or PM_{10} daily mean objectives were recorded within the District.

All results that show any breaches of the annual objectives are located within current AQMA's.

The majority of monitoring carried out within the district is at locations classified as being roadside, and consideration should be given that these results do not indicate the levels of exposure at the nearest receptor to the pollution source. Monitored levels have been corrected for distance to the nearest residential receptor where appropriate. This is displayed in table B1 and full details of the calculations can be found in Appendix C.

Following the distance correction only one diffusion tube recorded levels above the annual mean objective where there is relevant exposure.

Actions to Improve Air Quality

The primary source of nitrogen dioxide pollution within the district is from road traffic, many of the actions to reduce nitrogen dioxide pollution requires the input of highways authorities. Sevenoaks District Council continues to work closely with Kent County Council Highways. Air quality is a theme that is fed into the Sevenoaks Joint Transport Board.

As well as actions to improve air quality Sevenoaks District Council also operates a scheme with an aim to improve health and reduce exposure to air pollution. Sevenoaks District Council provides a free messaging service that will send free messages to mobile or home telephones to inform vulnerable people that poor air quality is predicted in the area.

Sevenoaks District Council has commissioned air quality consultants BureauVeritas to carry out a review of the existing AQMAs and to produce a new Air Quality Action Plan which will incorporate new measures to reduced levels of pollution within the declared AQMA's.

The council now has eight electrical charging bays within the town centre Buckhurst car park as well as operating two electric vehicles as part of its fleet.
Sevenoaks District Council was part of a successful bid with Kent County Council and five other district councils for funding to provide rapid chargers to be used by taxis and private hire vehicles.

Conclusions and Priorities

Significant improvements in local air quality have been identified in 2019 with only one monitoring location showing levels of NO_2 in exceedance of air quality objectives when distance corrected to the nearest relevant receptor.

The lower levels of nitrogen dioxide recorded in 2019 is likely to mean that the some of the current AQMAs will be able to be amended or revoked in the near future.

As part of the work to develop a new Air Quality Action Plan a review of the existing AQMAs is to be carried out.

The priority for 2020 is for the finalisation of the new Air Quality Action Plan and for progress to begin on the delivery of the measures detailed within the plan.

Local Engagement and How to get Involved

Members of the public can help to improve air quality by making small changes to their everyday lives.

- Walking and cycling instead of making car journeys will reduce the amount of traffic on the local roads and reducing emissions and also helping to improve the congestion. Other small changes include not allowing car engines to idle when vehicles are stationary.
- Anticipate traffic flow, keeping in the highest gear possible and maintaining a steady speed at a low revs per minute (RPM). This will help to reduce pollution from your car, and save on fuel consumption.
- Consider purchasing a cleaner electric, hybrid vehicle or one that meets the euro 6 emission standard.
- Maintain your vehicle regularly, if a diesel, make sure the oil and filters are changed frequently. If you notice sooty emissions from the exhaust, take your vehicle to a servicing garage as soon as possible. Ensure your tyres are maintained at the optimum pressure to achieve the best fuel consumption and save you money.
- Turn off your engine when your vehicle is stationary; not only will this reduce your emissions but you will also save fuel.
- Avoid using your car for short journeys - short trips are very polluting as vehicle engines needs to reach a very high temperature to work efficiently; on short trips it won't reach that temperature.
- For short journeys, walking, cycling and public transport can be the best and cheapest option.
- Sevenoaks District Council operates a free service which provides an early warning of poor air quality by text/SMS, voice-mail or e-mail for individuals with asthma or poor respiratory health.
- Avoid/reduce the burning of solid fuels and garden bonfires as these produce significant particulate pollution.

- Some areas of the District are subject to smoke control orders under the Clean Air Act 1993. Residents can check if their property is include by visiting the councils Website.

In a Smoke Control area only fuel on the list of authorised fuels, or any of the following 'smokeless' fuels can be burned, unless an exempt appliance is used.

- Anthracite
- Semi-anthracite
- Gas
- Low volatile steam coal

Even if your property is not within a Smoke Control Area, you should be aware that appliances that burn solid fuel contribute to local air pollution and evidence is that their contribution is increasing due to the popularity of solid fuel burning for occasional heating requirements, especially in the winter time. Domestic solid fuel burning can generate significant levels of particulate pollution, and the council have noted an increase in complaints concerning smoke emitted from domestic properties. Non-compliance with the smoke control rules can result in a fine of up to £1000.

The Department for Environmental Food and Rural Affairs have produced Guidance should residents still wish to use solid fuels or solid fuel appliances.

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in Sevenoaks District Council during 2019. 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 Sevenoaks District 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.

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A summary of AQMAs declared by Sevenoaks District 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: http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality or see full list at http://uk-air.defra.gov.uk/aqma/list

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
AQMA 1	01/03/2002 Amended 2005	NO2 Annual Mean	SDC	Junction 3 of the M25 to the district boundary with Tonbridge and Malling Borough Council including part of the A20 at Farningham.	YES		45 µg/m^3	(DT26)	27.2 µg/m3	Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality
AQMA 2	01/03/2002	NO2 Annual Mean	SDC	County border with Surrey to district border with Dartford, including Junctions 3, 4 and 5 and the extension of Junction 5 to connect with the	YES		55 µg/m^3	(DT12)	26.4 µg/m3	Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality

				A25 at Bessel's Green								
AQMA 3	01/03/2002	NO2 Annual Mean	SDC	M26 - from junction 5 of the M25 to the district boundary with Tonbridge and Malling Borough Council.	YES		50 µg/m^3	No current monitoring		Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality
AQMA 4	01/03/2002	NO2 Annual Mean	Swanley	Swanley Bypass - from junction 3 of the M25 to the district boundary with the London Borough of Bromley	YES		45 µg/m^3	No current monitoring		Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality
AQMA 6	01/09/2006	PM10 24 Hour Mean	SDC	Junction 5 to Kent / Surrey border	YES		Risk predicted	No current monitoring		Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality
AQMA 8	01/09/2006	NO2 Annual Mean	Swanley	Swanley – London Road (East); High Street; Bartholomew Way and parts of Central town area	YES		56.7 µg/m^3	(DT40)	28.3 µg/m3	Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality

AQMA 10	10/01/2008	NO2 Annual Mean	Sevenoaks	Sevenoaks – High Street & London Road	YES		46.5 µg/m^3	(DT51)	27.7 µg/m3	Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality
AQMA 13	14/01/2014	NO2 Annual Mean	SDC	The entire length of the A25 from the border with Tonbridge and Malling in the east to the border with Tandridge in the west.	YES		55.3 µg/m^3	(DT32)	40.5 µg/m3	Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality
AQMA 14	14/01/2014	NO2 Annual Mean	Swanley	The junction of London Road and Birchwood Road, Swanley.	YES		48.8 µg/m^3	(DT83)	38.2 µg/m3	Sevenoaks Air Quality Action Plan	2009	http://www.sevenoaks.gov.uk/services/community-and-living/pollution/air-quality

☒ **Sevenoaks District 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 Sevenoaks

Defra's appraisal of last year's ASR concluded

The report is generally considered to be well structured, very detailed and comprehensive, and provides the all the information specified in the Guidance, as well as some extra detailed modelling in support of AQMA declarations. More specific comments include:

1. The diffusion tube mapping is comprehensive and clearly demonstrates the monitoring network. However, labelling of the AQMAs in the maps could be made clearer by using the SITE ID code rather than the names and a single map of all the AQMAs would be a helpful addition in future ASRs.

2. Monitoring QA/QC is considered robust. The local bias factor was used and calculations were shown. The bias factor was also compared to the national factor to check it is representative as previously suggested.

3. The Council should give consideration to $PM_{2.5}$ in the new AQAP. Examples of measures that would target that pollutant include regulation of smoke control areas, dust mitigation, wood burning etc.

4. Links to public health outcomes framework should be included in future ASRs.

5. The new AQAP should aim to be included in the 2020 ASR for all AQMAs and should consider more measures to reduce exceedances within the AQMAs.

6. Labelling of diffusion tubes in table A.2, A.3 would be easier to read if tubes were ordered by ascending site ID numbers.

Sevenoaks District 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.

More detail on these measures can be found in their respective Action Plans.

Sevenoaks District Council's priorities for the coming year are to finalise the new Air Quality Action Plan and to begin action to implement the measures detailed in the plan.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Sevenoaks District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of declared AQMAs

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	The Sevenoaks Joint Transport Board will continue to consider and review options and proposals made under the Traffic Management Act and the LTP as well as via the Member/Officer air quality working group and both liaise and lobby KCC Highways Services to establish scheme acceptance, prioritisation and funding	Traffic Management	Other	SDC	2009-13	2009-13	N/A	<0.4ugm/3	Ongoing	N/A	
2	The District Council will continue to consider the impact new developments have on air quality and take appropriate steps to minimise any increase in air	Policy Guidance and Development Control	Other	SDC	2009-13	2009-13	N/A	<0.4ugm/4	Ongoing	N/A	

3	Set up an internal working group to identify, implement and monitor air quality mitigation measures secured by Section 106 Agreement.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	SDC	2009-13	2009-13	N/A	<0.4ugm/5	Working group set up and meeting regularly	N/A	Working group set up and meeting regularly
4	For the KCC/SDC Member/officer air quality working group to make recommendations to the JTB regarding suitable traffic reducing proposals	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	SDC	2009-10	2011-13	N/A	<0.2ugm/6	Ongoing	Ongoing	Regular liaison and reporting of air quality issues to JTB
5	The Council will demonstrate best practice in the purchase and operation of its own vehicle fleet in order to cut harmful emissions where possible	Traffic Management	UTC, Congestion management, traffic reduction	SDC	Ongoing	Ongoing	N/A	No Specific Target	Ongoing	Ongoing	SDC currently operate 2 Electric cars used for parking enforcement, 2 electric bicycles and an electric road sweeper.
6	The District Council will continue to promote and publicise schemes including working with partners where appropriate to encourage a reduction in car use	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	SDC	2009-13	2009-13	N/A	No Specific Target	Ongoing	Ongoing	10 electric vehicle charging points recently installed in public car parks and a programme to install more points in districts car parks in coming year
7	Reducing congestion and improving air quality as a result	Promoting Travel Alternatives	Personalised Travel Planning	SDC	Ongoing	Ongoing	N/A	No Specific Target	Ongoing	Ongoing	Regular review of car parks to help ensure drivers can find convenient

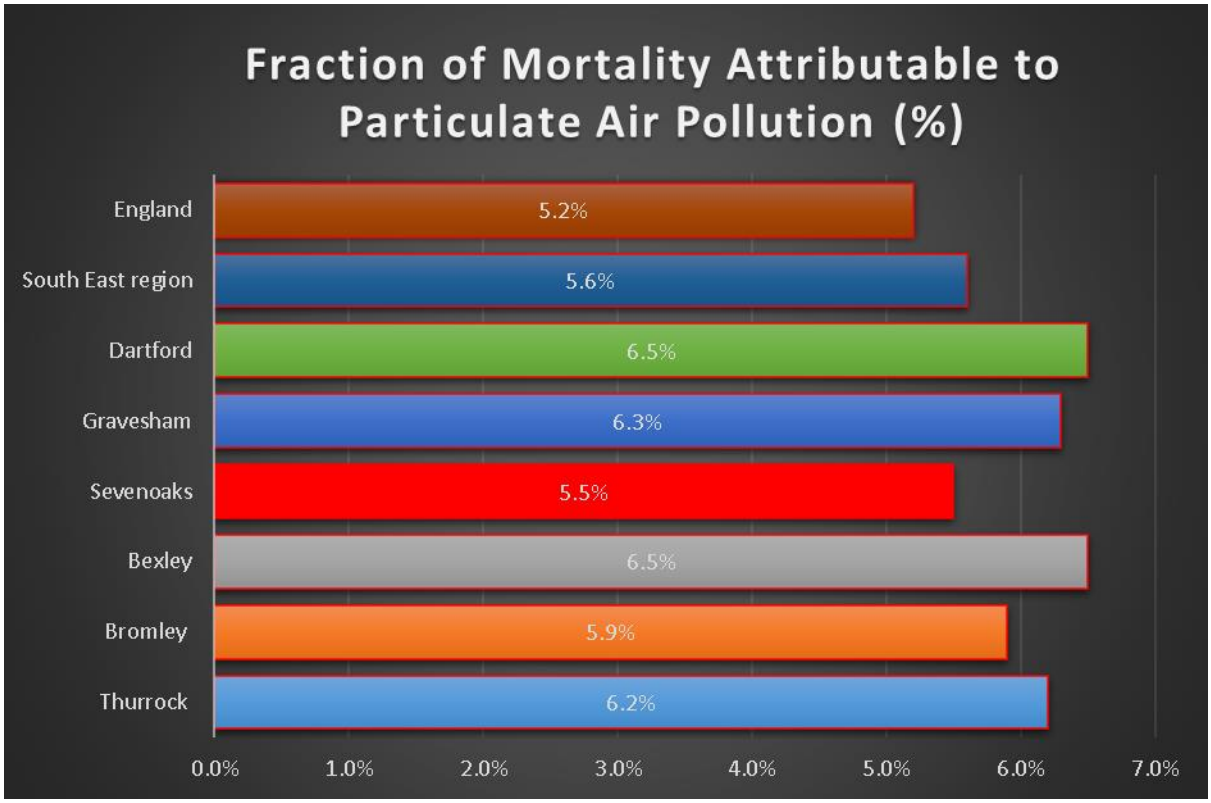
	through parking schemes										parking rather than searching for a space.
8	The District Council will promote a number of initiatives to reduce energy consumption, improve energy efficiency and recycling and develop its carbon management role	Traffic Management	Emission based parking or permit charges	SDC	Ongoing	Ongoing	N/A	<0.2umg/3	Ongoing	Ongoing	Retrofitting low carbon measures in housing stock encouraging switch and save.
9	Continue to improve and raise the level of knowledge and publicity relating to air pollution	Policy Guidance and Development Control	Other policy	SDC	Ongoing	Ongoing	N/A	No Specific Target	Ongoing	Ongoing	SDC is a member of the London Air Quality Network which disseminates information and health advice via their website.
10	AirAlert: Provide AQ health warning for vulnerable people advising them about pollution levels in their area.	Public Information	Other	SDC	Ongoing	Ongoing	N/A	No Specific Target	Ongoing	Ongoing	AirAlert service has been supplemented by the development of an AirAlert app. Allowing information to be accessed by a wider audience.
11	Kent Planning Guidance	Other	Other	Kent and Medway Air Quality Partnership	Completed but not adopted				Whilst not adopted the guidance is being used informally as an advice note to developers		Guidance due for renewal before formal adoption

12	Kent Energy & Low Emission Strategy	Other	Other	KCC/Kent Air Quality Partnership					Working closely with Kent County Council over the formation of an Energy and Low Emissions Strategy. The aim of the strategy is to identify and prioritise action to reduce harmful emissions that contribute to climate change and poor air quality leading to impacts on people's health.	Draft strategy produced – Consultation being carried out June/July 2019	

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.

The Public Health Outcomes Framework data tool compiled by Public Heath England (5) quantifies the mortality burden of PM2.5 within England on a National, Regional and Local Authority scale. The latest available data (2018) shows the fraction of mortality attributable to air pollution across England is 5.2% and 5.6% within the South East region. The fraction within Sevenoaks District Council 5.5%.



(5) https://fingertips.phe.org.uk/profile/public-health-outcomes-framework

Sevenoaks District Council is working on producing a new Air Quality Action Plan that will include appropriate measures to reduce $PM_{2.5}$ as well as other priority pollutants.

Parts of the District are subject to smoke control orders under the Clean Air Act 1993. Appliances that burn solid fuel contribute to local air pollution and evidence is that their contribution is increasing due to the popularity of solid fuel burning for occasional heating requirements, especially in the winter time. Non-compliance with the smoke control rules can result in a fine of up to £1000.

The Council will continue to work with developers and planners to reduce particulate emissions from construction site and if necessary take enforcement action if required.

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.

Sevenoaks District Council undertook automatic (continuous) monitoring at 2 sites during 2019.Table A.1 in Appendix A shows the details of the sites.

National monitoring results are available at https://uk-air.defra.gov.uk/data/

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

Sevenoaks District Council undertook non- automatic (passive) monitoring of NO_2 at 49 sites during 2019. 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[4], “annualisation” (where the data capture falls below 75%), and distance correction[5]. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3. Note that the concentration data presented in Table A.3 represents the concentration

[4] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[5] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

Levels of NO2 between 9.9 & 25.7 µg/m^3 have been recorded in 2019 at 2 background sites.

The majority of monitoring carried out within the District of Sevenoaks is at locations classified as being roadside, and consideration should be given that these results do not indicate the levels of exposure at the nearest receptor to the pollution source. Monitored levels have been corrected for distance to the nearest residential receptor where appropriate. This is displayed in table B1 and full details of the calculations can be found in Appendix C.

Monitored levels of NO_2 have decreased at the majority of sites across the borough. Only 5 out of the 49 monitoring sites breached the annual objective level, all of these are already within the declared AQMA's.

The diffusion tube monitoring location with the highest recorded value in 2019 was DT32 which recorded a value of 41.3 µg/m^3 (40.5 µg/m^3 at closest receptor). This is below the threshold for where a risk of a breach of the 1-hour mean objective may be present.

There were no occasions where the hourly mean level exceeded the 200 µg/m^3 threshold at any of the three automatic monitoring stations.

Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

Particulate matter is monitored in the form of PM_{10} at one roadside monitoring station and one background station. As was seen in previous years there were no breaches of either the annual mean or the 24 hour mean objectives at the three automatic monitoring station. The annual mean levels recorded at these stations has been fairly constant over the past few years.

Appendix A: Monitoring Results

Table A.1 - Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CM1	Greatness	Urban Background	553603	156774	NOx, NO, NO2, PM10, O3	NO	Chemiluminescent / Teom	Y	46m	1.8
CM2	Bat & Ball	Roadside	553044	156690	NOx, NO, NO2, PM10	YES	Chemiluminescent / Teom	N - (30m)	8m	1.8

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 (Easting)	Y OS Grid Ref (Northing)	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)
DT2	High Street South 1 (Guitar) Sevenoaks	Roadside	553157	154415	NO2	Y	Y	1	N	2m
DT3	Garvock Drive Sevenoaks	Urban Background	552467	154167	NO2	N	Y	0	N	2m
DT27	High Street South 2 (Sev School) Sevenoaks	Roadside	553139	154259	NO2	Y	Y	3	N	2.5m
DT28	High Street North 2 (Sev Sennockian) Sevenoaks	Kerbside	553043	154890	NO2	Y	N (2m)	0.5	N	2.5m
DT29	High Street North 3 (Water Trough) Sevenoaks	Roadside	553073	155026	NO2	Y	N (3m)	2	N	2.5m
DT48	73 London Road(Brunch) Sevenoaks	Roadside	552863	154873	NO2	Y	Y	1.5	N	2m
DT49	20 London Road (Butchers) Sevenoaks	Roadside	553018	154654	NO2	Y	Y	2	N	2m

DT51	130 London Road (Opp Car Sales) Sevenoaks	Kerbside	552662	155153	NO2	Y	N (3m)	0.5	N	2.5m
DT52	142 London Road (Lulworth) Sevenoaks	Roadside	552506	155272	NO2	Y	N (6m)	2	N	2.5m
DT77	Montreal Cott/ Amherst Hill Sevenoaks	Roadside	551529	155967	NO2	Ny	N (4m)	2	N	2.5m
DT87	Bradbourne Vale Road South	Roadside	551640	156335	NO2	Y	N (10m)	2.5	N	2.5m
DT88	Bradbourne Vale Road North	Roadside	552963	156583	NO2	Y	N (20m)	1.5	N	2.5m
DT90	4a St Johns Hill Sevenoaks	Roadside	553140	155898	NO2	N	N (4m)	1.5	N	2.5m
DT23	Bat & Ball 1 Sevenoaks (Ferrari)	Roadside	553059	156624	NO2	Y	Y	4	N	2.5m
DT30	Bat & Ball 2 Otford Road Sevenoaks	Roadside	553019	155692	NO2	Y	N (7m)	3	N	2.5m
DT31	Bat & Ball 3 Seal Road Sevenoaks	Roadside	553165	156685	NO2	Y	N (1.5m)	1.5	N	2.5m
DT32	Bat & Ball 4 St Johns Sevenoaks	Roadside	553151	156558	NO2	Y	Y	1.5	N	2.5m
DT5	Riverhead 2 (Laundry) North West	Kerbside	551414	156197	NO2	Y	N (1.5m)	0.5	N	2.5m

DT6	Riverhead 3 (Opp shops) East	Roadside	551440	156165	NO2	Y	N (6m)	3	N	2.5m
DT42	62 London Road Riverhead	Roadside	551318	156373	NO2	Y	N (2m)	2	N	2.5m
DT76	Worships Hill/ Witches Lane, Riverhead	Roadside	551026	155710	NO2	Y	N (36m)	2	N	2.5m
DT7	High Street East 1 (Road Sign) Seal	Roadside	555092	156694	NO2	Y	Y	1	N	2.5m
DT8	High Street West 1 (Garage) Seal	Roadside	554991	156726	NO2	Y	N (3m)	3	N	2.5m
DT33	High Street East 2 (Pizza) Seal	Roadside	555068	156711	NO2	Y	Y	1.5	N	2m
DT34	16 Main Road, Sundridge Dunbrik	Roadside	549427	155691	NO2	N			N	
DT35	Seal Hollow Road/ A25	Roadside	554093	156798	NO2	Y	N (18m)	2.5	N	2.5m
DT43	Miners Arms, London Road, Dunton Green	Roadside	551281	156860	NO2	Y	N (2.5m)	2	N	2.5m
DT54	57 London Road, Dunton Green	Roadside	551216	157007	NO2	Y	N (8m)	2	N	2.5m
DT74	Westerham Road, (Devon Cott) Bessels Green	Roadside	550768	155584	NO2	Y	N (8m)	2	N	2.5m
DT86	59 Westerham Road, Bessels Green	Roadside	550308	155593	NO2	Y	Y	1.5	N	2m

DT71	204 Main Road, Sundridge	Roadside	548239	155353	NO2	Y	N (1.5m)	1	N	2.5m
DT12	Station Road (M25) Brasted	Roadside	546816	155851	NO2	Y	N (42m)	7m to M25	N	2m
DT84	West End Brasted	Roadside	546802	155000	NO2	Y	Y	1	N	2.5m
DT85	Chart Lane Brasted	Roadside	547097	155099	NO2	Y	Y	1	N	2.5m
DT24	High Street, (Wells Close) Westerham	Roadside	544415	153914	NO2	Y	N (3m)	1	N	2.5m
DT25	Vicarage Hill, Westerham	Roadside	544770	154000	NO2	Y	N (3m)	1	N	2.5m
DT36	Market Square, Westeham	kerbside	544594	154025	NO2	Y	N (3m)	1	N	2.5m
DT13	Wested Lane, Swanley	Roadside	552504	167700	NO2	Y	N (14m)	5	N	2.5m
DT14	Wadard Terrace, Button St Swanley	Roadside	553107	167868	NO2	Y	N (15m)	115m to M25	N	2.5m
DT39	Bartholomew Way, Swanley	Roadside	551492	168695	NO2	Y	N (13m)	2	N	2.5m
DT40	London Road 1(traffic lights) Swanley	Kerbside	551575	168508	NO2	Y	N (2m)	0.5	N	2.5m
DT41	London Road 2 (Bus) Swanley	Roadside	552174	168162	NO2	Y	N (6m)	1.5	N	2.5m
DT81	Farningham Hill Road, Swanley	Urban	553416	167615	NO2	Y	N (17m)	27m to M20	N	2.5m
DT83	Jessamine Terrace, Birchwood Road Swanley	Roadside	550297	169682	NO2	Y	N (0.5m)	1	N	2.5m

DT93	Pucknells, Birchwood Road, Swanley	Roadside	550283	169743	NO2	N	N (10m)	2	N	2.5m
DT94	Birchwood Road Junction London Road	Roadside	550258	169575	NO2	Y	N (10m)	2	N	2m
DT95	Malvern, Birchwood Road, Swanley	Roadside	550351	169499	NO2	Y	N (20m)	2	N	2.5m
DT26	Farningham Hill (A20)	Roadside	554217	167252	NO2	Y	Y	5m to A20/ 90m to M20	N	2m
DT96 (1)	Sevenoaks Station 1	Roadside	552371	155345	NO2	N	1.8	2.9	N	2.5m
DT96 (2)	Sevenoaks Station 2	Roadside	552371	155345	NO2	N	1.8	2.9	N	2.5m
DT96 (3)	Sevenoaks Station 3	Roadside	552371	155345	NO2	N	1.8	2.9	N	2.5m
BC1	Greatness AQ Station 1	Urban Background	553603	156774	NO2	N	Y	46	Y	2m
BC2	Greatness AQ Station 2	Urban Background	553603	156774	NO2	N	Y	46	Y	2m
BC3	Greatness AQ Station 3	Urban Background	553603	156774	NO2	N	Y	46	Y	2m
BC4	Bat & Ball AQ Station 1	Roadside	553044	156690	NO2	Y	N (30m)	8	Y	2m
BC5	Bat & Ball AQ Station 2	Roadside	553044	156690	NO2	Y	N (30m)	8	Y	2m
BC6	Bat & Ball AQ Station 3	Roadside	553044	156690	NO2	Y	N (30m)	8	Y	2m

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.3 – Annual Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3) (4)				
							2015	2016	2017	2018	2019
CM1: Greatness	553603	156774	Urban Background	Automatic		98	17	17	16	15	14
CM2 : Bat & Ball	553044	156690	Roadside	Automatic		97	31.8	31	28	25	23
DT02 High Street South 1 (Guitar) Sevenoaks	553157	154415	Roadside	Diffusion Tube		100%	**53.6**	**54.7**	**48.1**	**49.9**	**40.9**
DT03 Garvock Drive Sevenoaks	552467	154167	Urban Background	Diffusion Tube		92%	10.8	12.7	11.1	11.8	10.0
DT05 Riverhead 2 (Laundry) North West	553139	154259	Kerbside	Diffusion Tube		92%	**42.8**	**47**	**42.7**	39.3	34.9
DT06 Riverhead 3 (Opp shops) East	553043	154890	Roadside	Diffusion Tube		92%	**44.1**	**47.1**	**40.2**	**41.7**	35.3
DT07 High Street East 1 (Road Sign) Seal	553073	155026	Roadside	Diffusion Tube		83%	**44.3**	**46.8**	**42.7**	**41.3**	37.1
DT08 High Street West 1 (Garage) Seal	552863	154873	Roadside	Diffusion Tube		92%	31.1	35.2	26.9	28.3	24.0
DT12 Station Road (M25) Brasted	553018	154654	Roadside	Diffusion Tube		83%	**46.5**	**43.1**	**40**	39.8	33.6

DT13 Wested Lane, Swanley	552662	155153	Roadside	Diffusion Tube		100%	31.4	36.5	30.5	32.9	28.1
DT14 Wadard Terrace, Button St Swanley	552506	155272	Roadside	Diffusion Tube		83%	32.4	32.6	30.1	27.6	25.6
DT23 Bat & Ball 1 Sevenoaks (Ferrari)	551529	155967	Roadside	Diffusion Tube		100%	35.6	**40.5**	34.3	39.2	33.5
DT24 High Street, (Wells Close) Westerham	551640	156335	Roadside	Diffusion Tube		83%	32.7	35.3	30.4	35.8	28.6
DT25 Vicarage Hill, Westerham	552963	156583	Roadside	Diffusion Tube		50%	28.3	29.8	25.9	26.1	18.7
DT26 Farningham Hill (A20)	553140	155898	Roadside	Diffusion Tube		92%	**41.7**	**45.8**	**41.8**	**42.7**	35.3
DT27 High Street South 2 (Sev School) Sevenoaks	553059	156624	Roadside	Diffusion Tube		100%	37.2	39.8	38.2	37.7	33.6
DT28 High Street North 2 (Sev Sennockian) Sevenoaks	553019	155692	Kerbside	Diffusion Tube		100%	**42.4**	**44.1**	36.7	36.8	31.9
DT29 High Street North 3 (Water Trough) Sevenoaks	553165	156685	Roadside	Diffusion Tube		100%	27.8	31.5	28	28.2	24.1
DT30 Bat & Ball 2 Otford	553151	156558	Roadside	Diffusion Tube		100%	32.2	36.1	32.4	35.1	31.2

Road Sevenoaks										
DT31 Bat & Ball 3 Seal Road Sevenoaks	551414	156197	Roadside	Diffusion Tube		100%	**46.9**	**57.9**	**51.2**	**51.1**	**44.2**
DT32 Bat & Ball 4 St Johns Sevenoaks	551440	156165	Roadside	Diffusion Tube		92%	**49.9**	**56.3**	**47.6**	**51.9**	**41.3**
DT33 High Street East 2 (Pizza) Seal	551318	156373	Roadside	Diffusion Tube		83%	**42.5**	**48.1**	**40.5**	**40.5**	35.1
DT34 16 Main Road, Sundridge Dunbrik	551026	155710	Roadside	Diffusion Tube		100%	30.9	31.7	27.5	26.1	23.8
DT35 Seal Hollow Road/ A25	555092	156694	Roadside	Diffusion Tube		100%	36.3	39.6	32.5	33.7	30.4
DT36 Market Square, Westeham	554991	156726	Kerbside	Diffusion Tube		83%	**44.6**	**45.1**	39.6	**40.1**	34.0
DT39 Bartholomew Way, Swanley	555068	156711	Roadside	Diffusion Tube		100%	34.7	**40.9**	34.5	36.4	35.3
DT40 London Road 1(traffic lights) Swanley	549427	155691	Kerbside	Diffusion Tube		100%	**42.3**	**51.5**	**40.9**	**45.6**	38.0
DT41 London Road 2 (Bus) Swanley	554093	156798	Roadside	Diffusion Tube		100%	37.5	**42.7**	**40.1**	38.6	33.0
DT42 62 London Road Riverhead	551281	156860	Roadside	Diffusion Tube		75%	37.1	39.3	35.5	34.5	27.8
DT43 Miners Arms, London	551216	157007	Roadside	Diffusion Tube		100%	28	34.1	29.5	28.5	26.9

Road, Dunton Green											
DT48 73 London Road(Brunch) Sevenoaks	550768	155584	Roadside	Diffusion Tube		75%	25.6	27.7	**40.7**	23.9	20.2
DT49 20 London Road (Butchers) Sevenoaks	550308	155593	Roadside	Diffusion Tube		92%	30.4	33.7	28.2	29.1	25.4
DT51 130 London Road (Opp Car Sales) Sevenoaks	548239	155353	Kerbside	Diffusion Tube		100%	36.1	**40.4**	35.1	39.0	30.6
DT52 142 London Road (Lulworth) Sevenoaks	546816	155851	Roadside	Diffusion Tube		92%	37.9	38.3	33.1	34.0	29.9
DT54 57 London Road, Dunton Green	546802	155000	Roadside	Diffusion Tube		100%	35.6	36	33.8	32.7	29.2
DT71 204 Main Road, Sundridge	547097	155099	Roadside	Diffusion Tube		75%	29.8	33.5	30	31.3	26.0
DT74 Westerham Road, (Devon Cott) Bessels Green	544415	153914	Roadside	Diffusion Tube		100%	35.5	37.1	35.4	35.9	31.1
DT76 Worships Hill/ Witches Lane, Riverhead	544770	154000	Roadside	Diffusion Tube		100%	35.6	**40**	33.9	37.9	33.8
DT77 Montreal Cott/ Amherst Hill Sevenoaks	544594	154025	Roadside	Diffusion Tube		75%	**40.7**	**40**	38.8	38.7	32.1

DT81 Farningham Hill Road, Swanley	552504	167700	Urban Background	Diffusion Tube		83%	32.2	32.9	30.9	28.6	26.1
DT83 Jessamine Terrace, Birchwood Road Swanley	553107	167868	Roadside	Diffusion Tube		100%	**55.6**	**60.5**	**49.8**	**46.7**	**43.0**
DT84 West End Brasted	551492	168695	Roadside	Diffusion Tube		100%	32.8	35.4	31.2	32.5	26.9
DT85 Chart Lane Brasted	551575	168508	Roadside	Diffusion Tube		100%	**45**	**51.1**	**43.9**	**43.7**	36.2
DT86 59 Westerham Road, Bessels Green	552174	168162	Roadside	Diffusion Tube		92%	36.7	**40.8**	36	34.7	31.2
DT87 Bradbourne Vale Road South	553416	167615	Roadside	Diffusion Tube		100%	**48.1**	**51.7**	**45.7**	**47.0**	**42.9**
DT88 Bradbourne Vale Road North	550297	169682	Roadside	Diffusion Tube		42%	29.1	32.9	28.7	30.3	23.1
DT90 4a St Johns Hill Sevenoaks	550283	169743	Roadside	Diffusion Tube		100%	32.4	36.9	31.5	34.5	29.9
DT93 Pucknells, Birchwood Road, Swanley	550258	169575	Roadside	Diffusion Tube		100%	29.3	32.4	27.2	28.8	26.2
DT94 Birchwood Road Junction London Road	550351	169499	Roadside	Diffusion Tube		100%	33.7	36.9	32.2	33.8	29.0

DT95 Malvern, Birchwood Road, Swanley	554217	167252	Roadside	Diffusion Tube		100%	34.1	38	33.6	33.0	30.6
DT96 Sevenoaks Rail Station	552371	155345	Roadside	Diffusion Tube						34.5	30.9
DT96 Sevenoaks Rail Station	552371	155345	Roadside	Diffusion Tube							30.9
DT96 Sevenoaks Rail Station	552371	155345	Roadside	Diffusion Tube							30.9

☒ **Diffusion tube data has been bias corrected**

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

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance adjustment**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

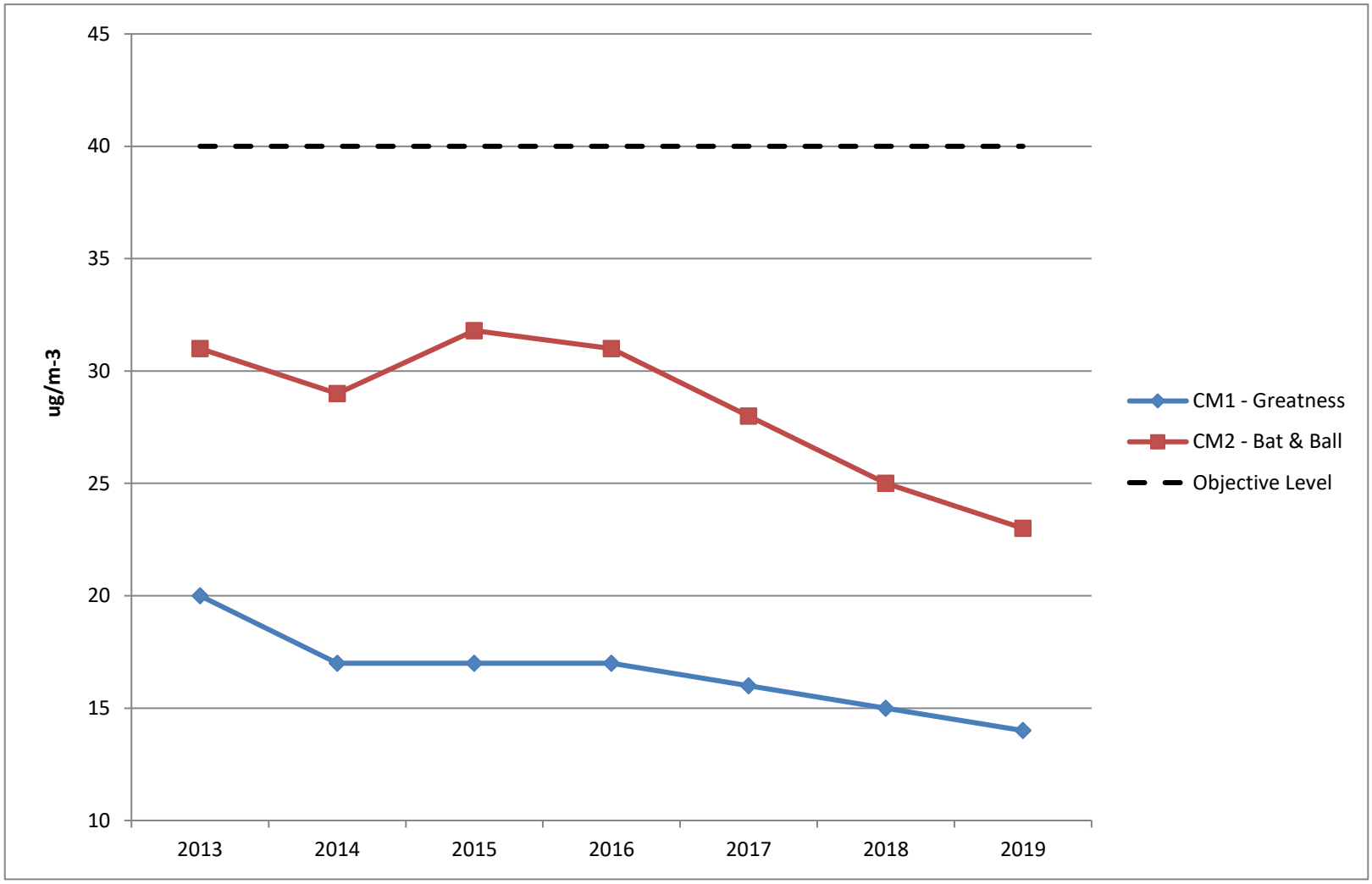
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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%).

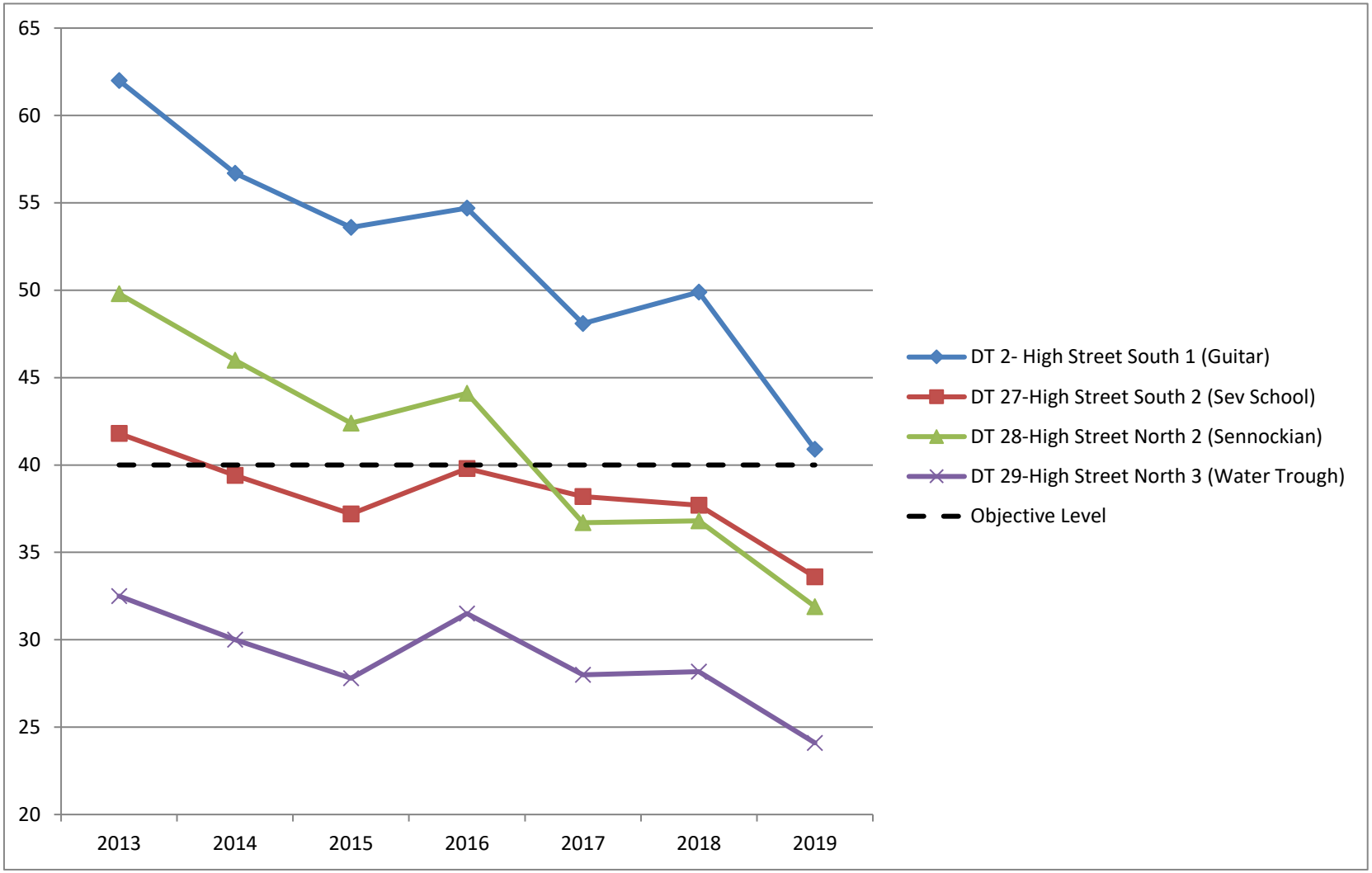
(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(4) Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

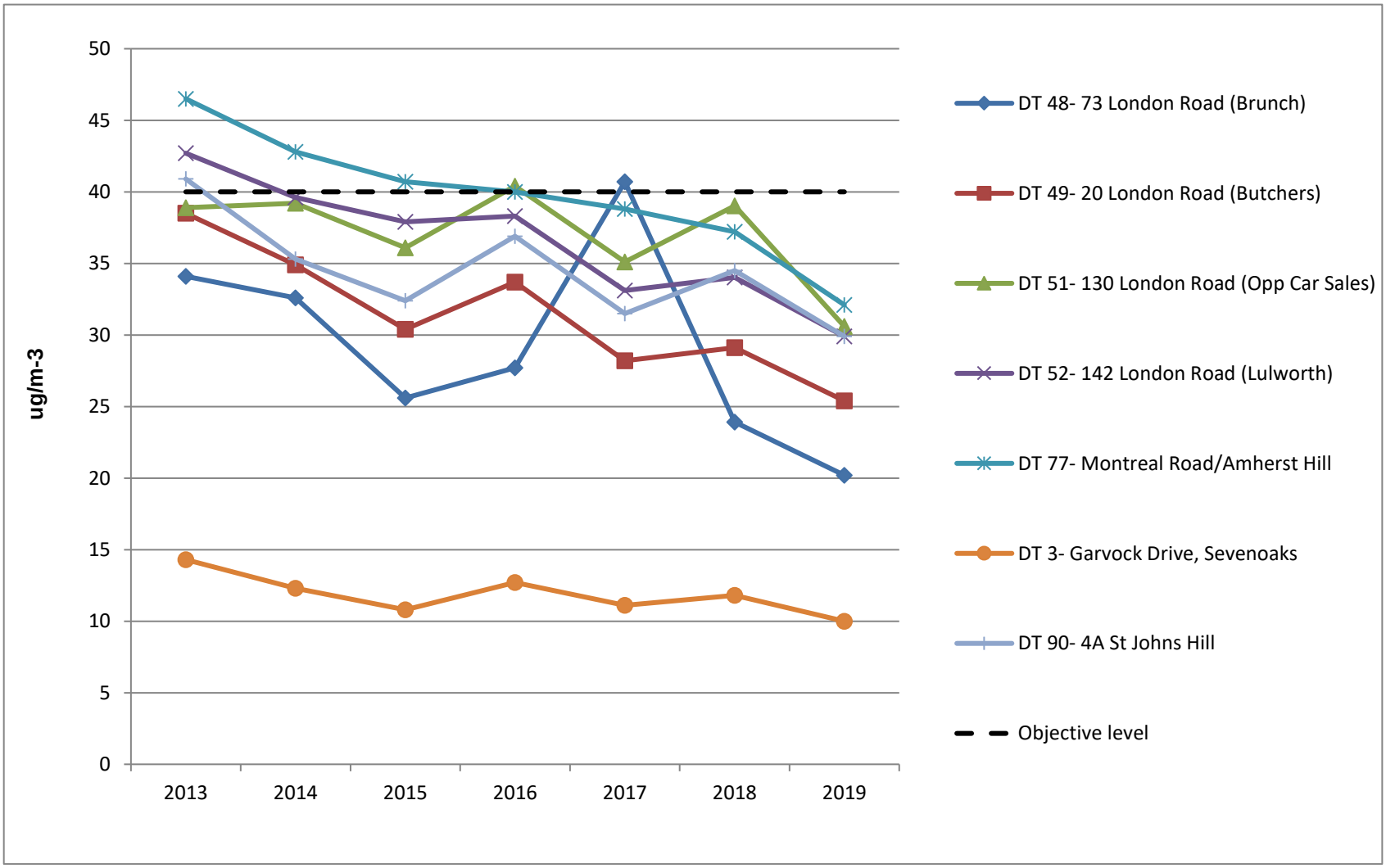
Figure A.1 – Trends in Annual Mean NO_2 Concentrations - Automatic Monitoring Stations



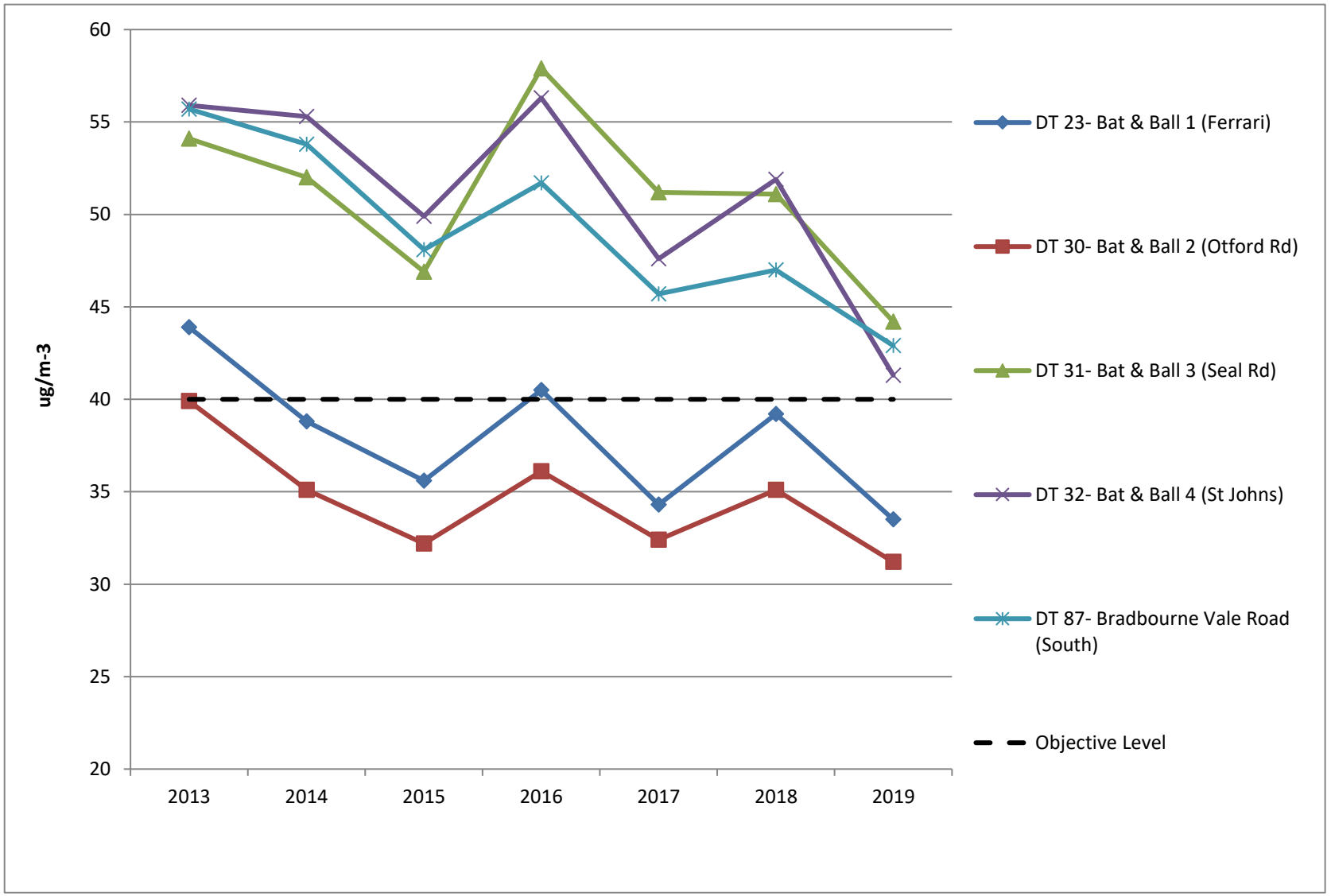
Diffusion Tube Network - Nitrogen Dioxide Diffusion tubes in the vicinity of Sevenoaks High Street



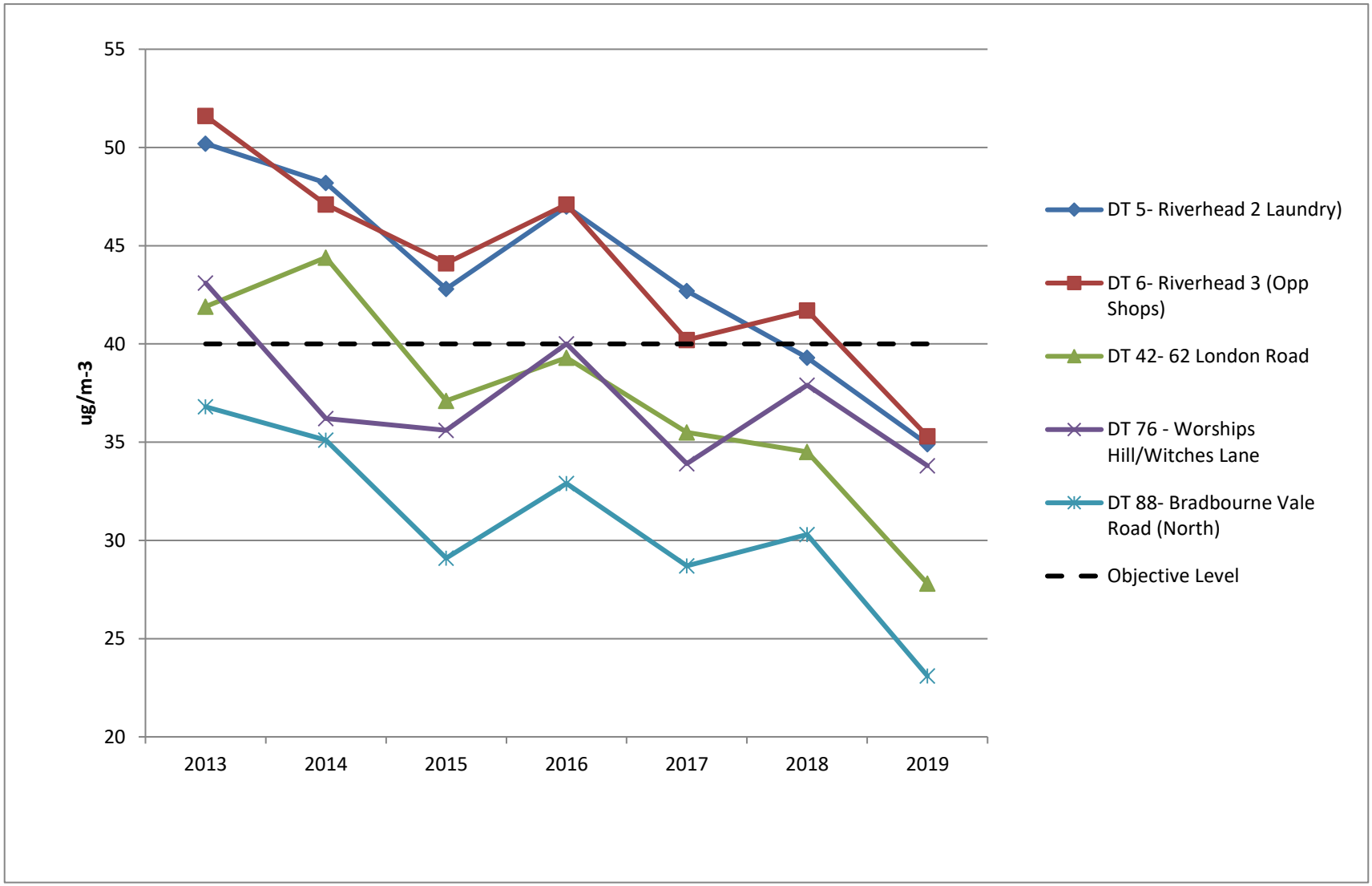
Nitrogen Dioxide Diffusion tubes in Sevenoaks



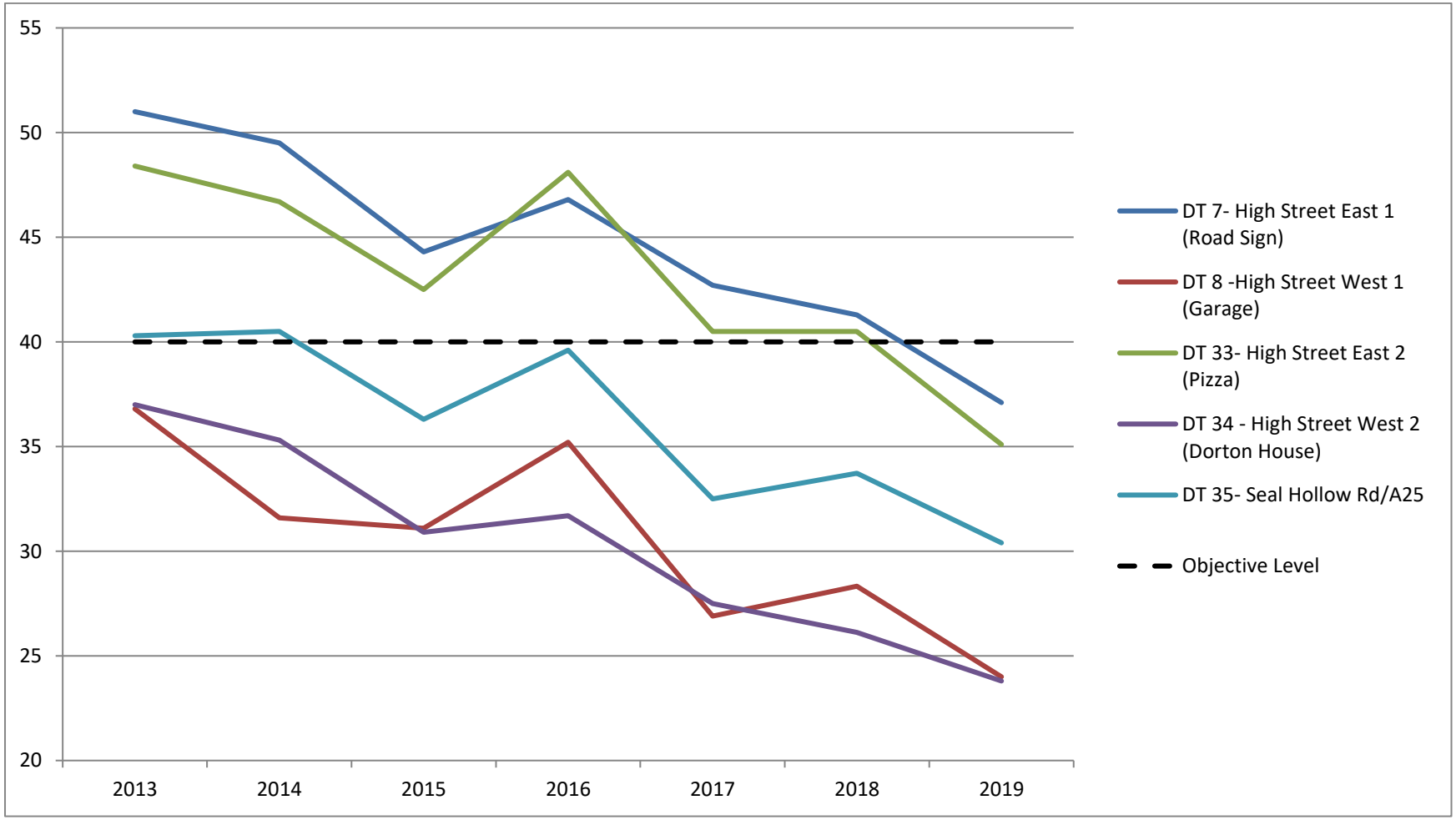
Nitrogen Dioxide Diffusion tubes in the vicinity of Bat & Ball



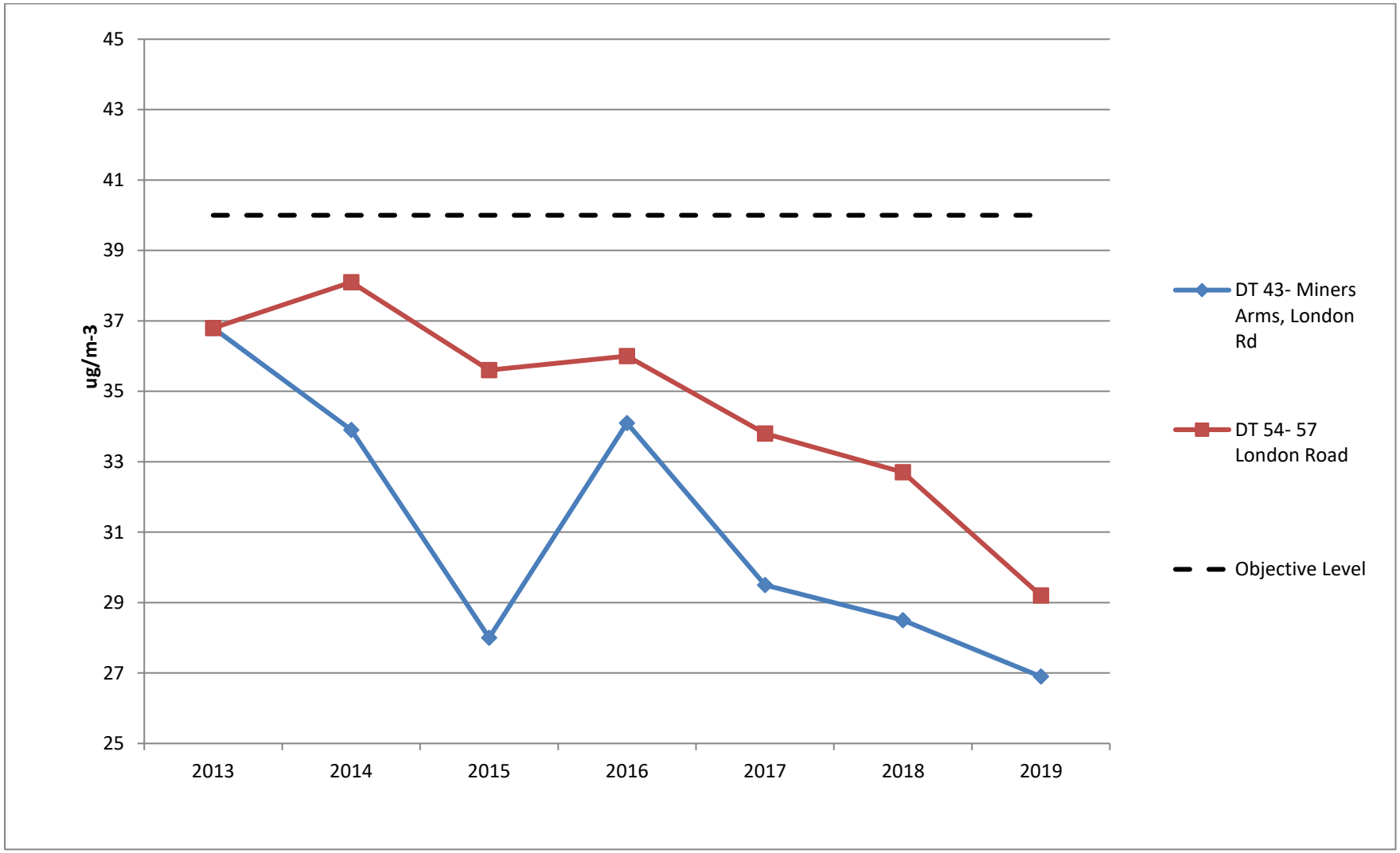
Nitrogen Dioxide Diffusion tubes in the vicinity of Riverhead



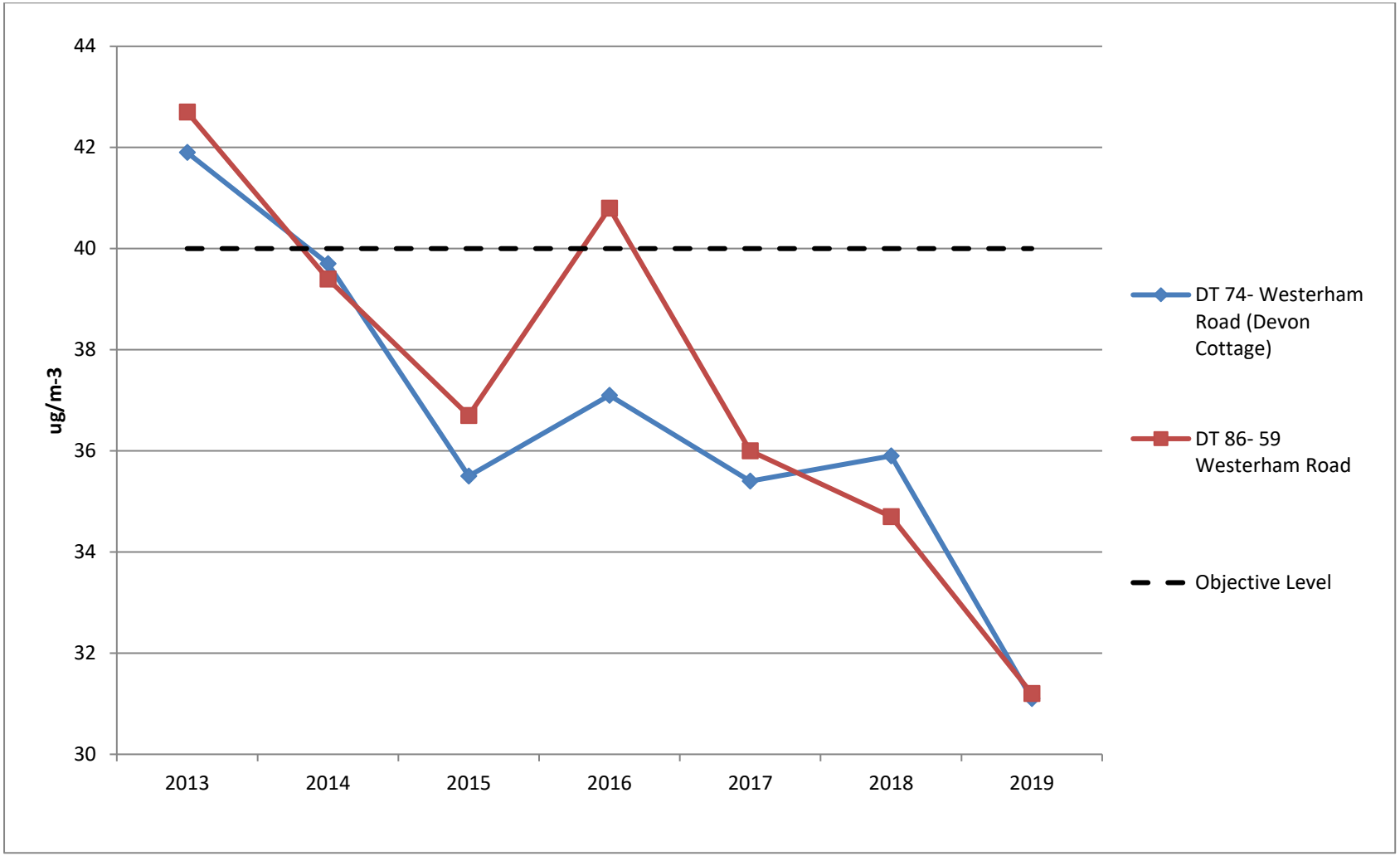
Nitrogen Dioxide Diffusion tubes in the vicinity of Seal



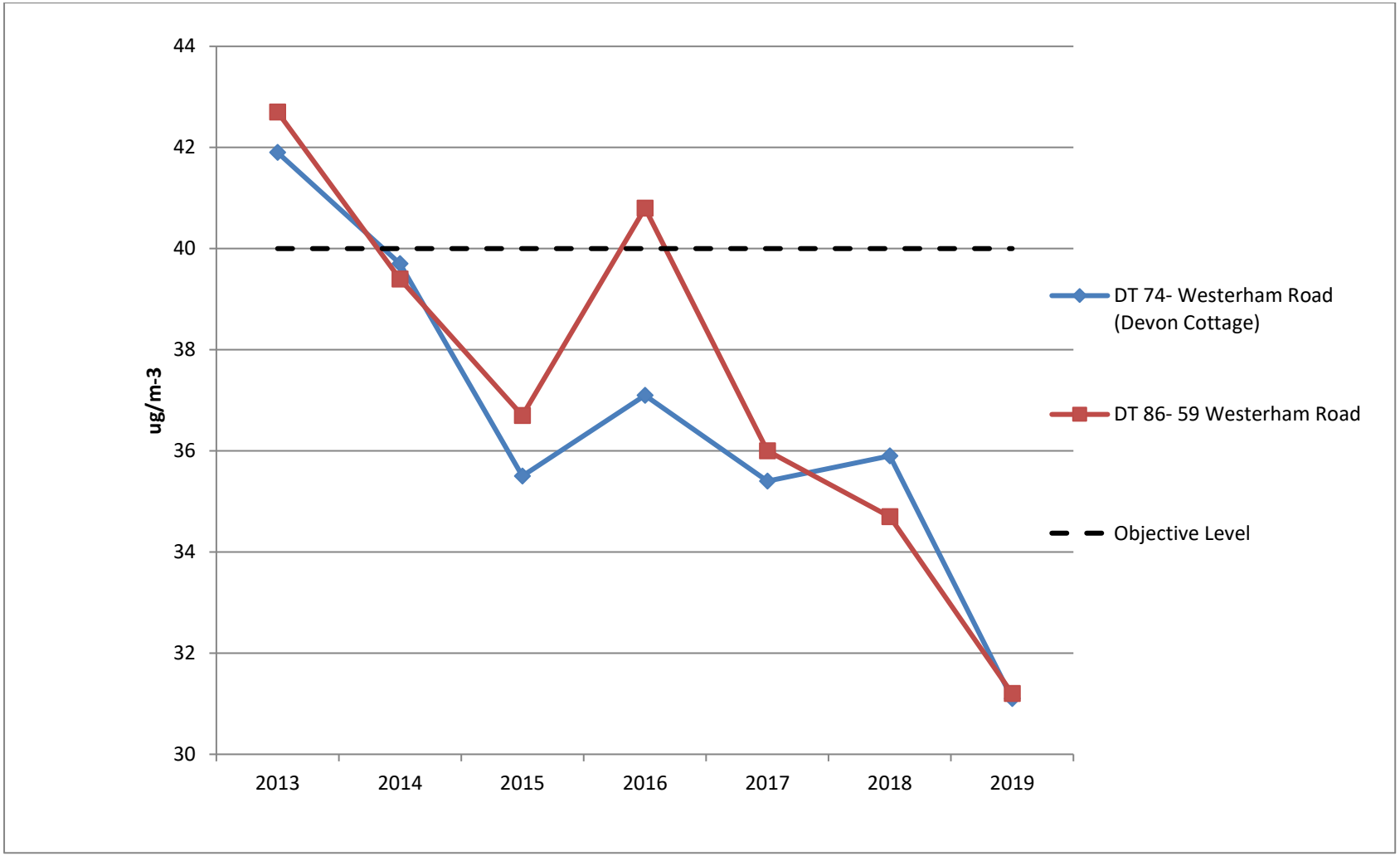
Nitrogen Dioxide Diffusion tubes in the vicinity of Dunton Green



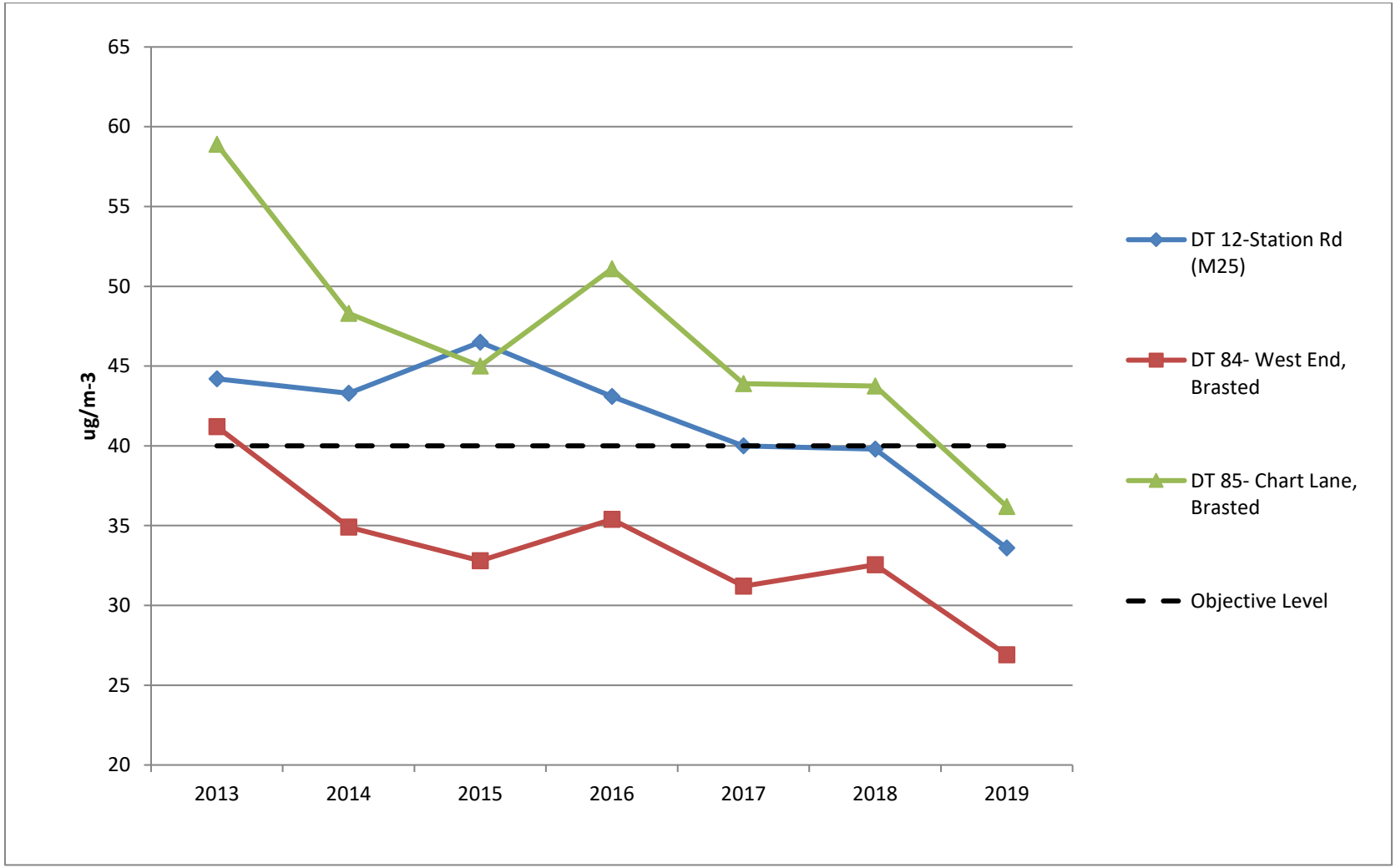
Nitrogen Dioxide Diffusion tubes in the vicinity of Dunton Green



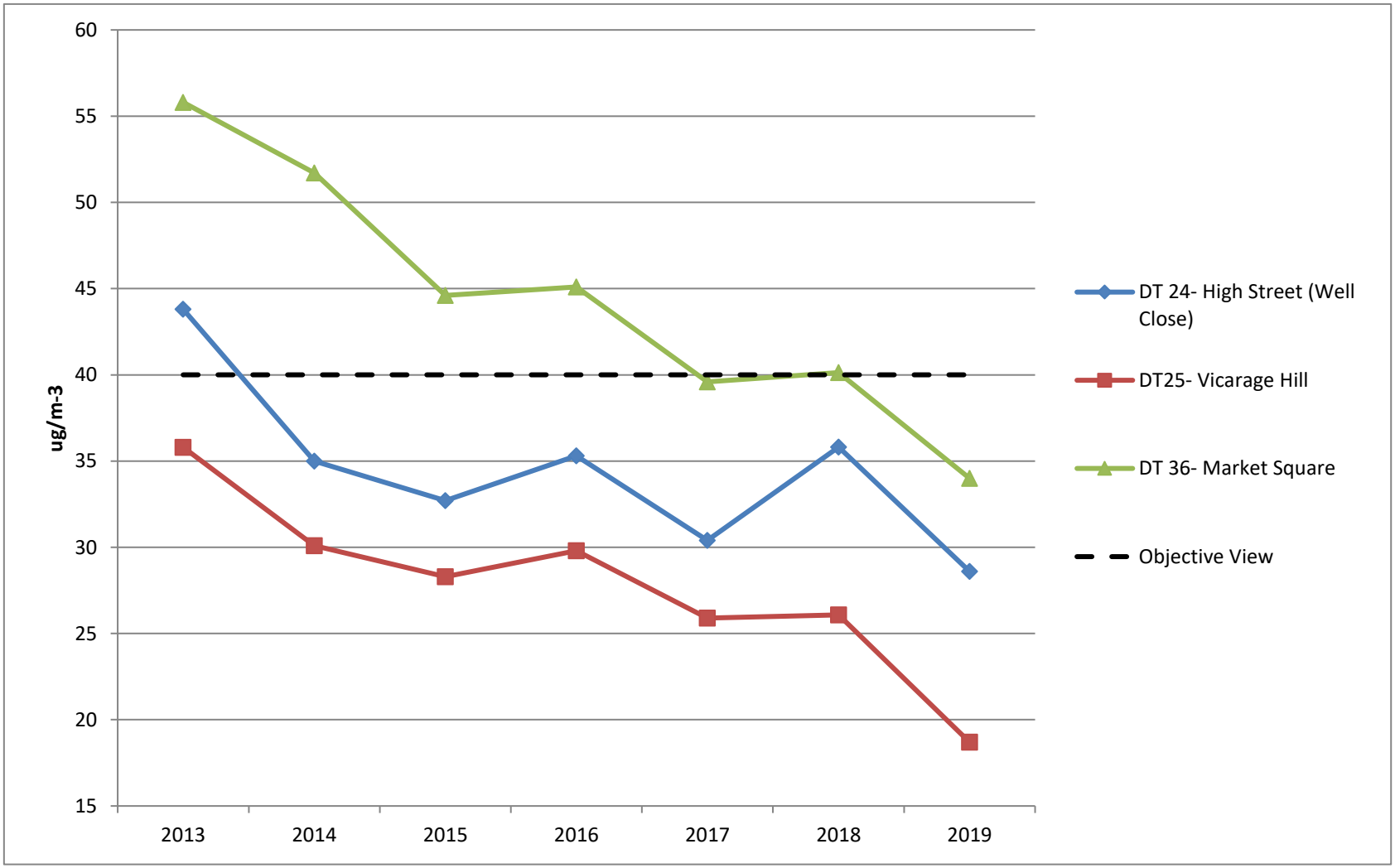
Nitrogen Dioxide Diffusion tubes in the vicinity of Bessels Green



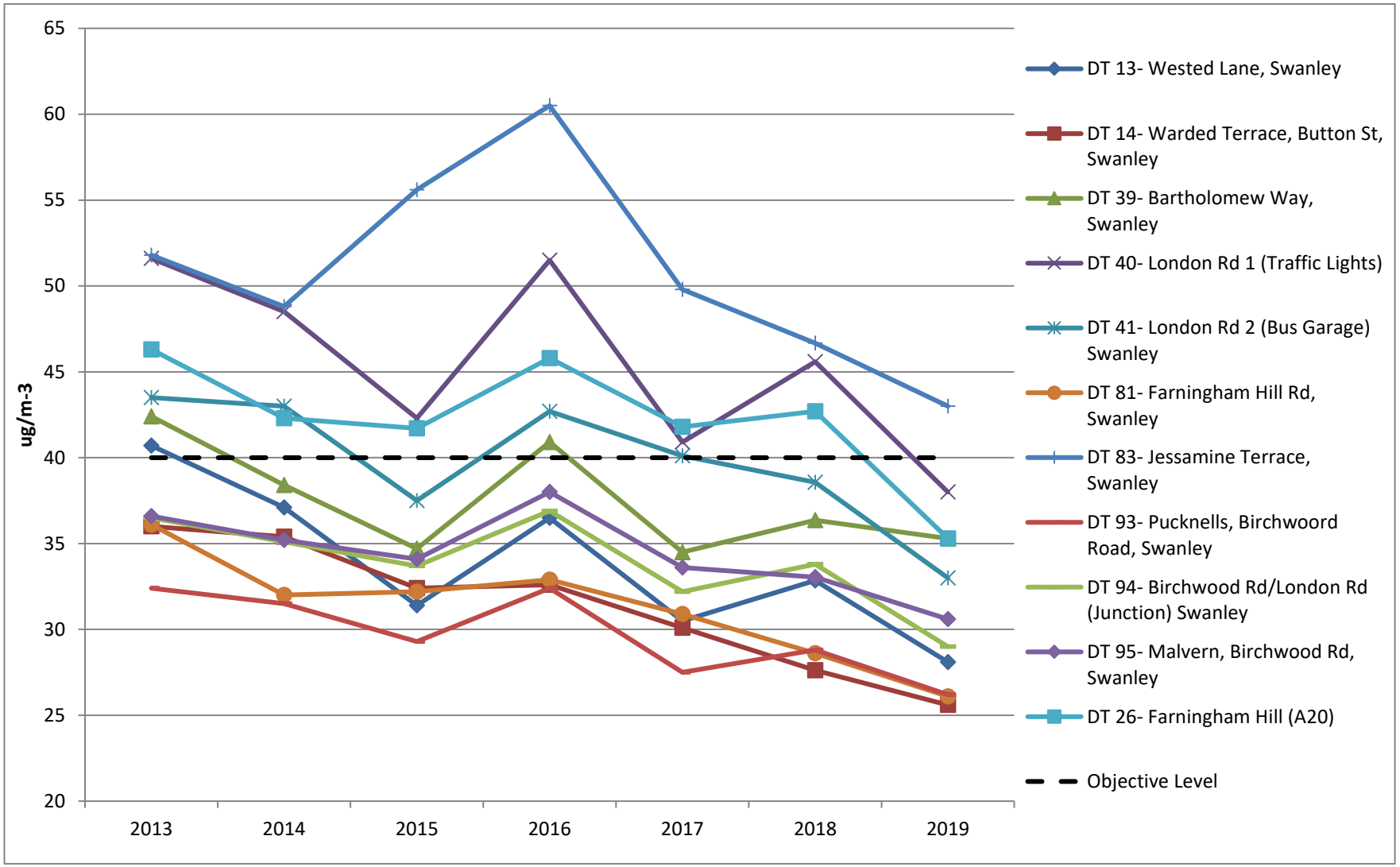
Nitrogen Dioxide Diffusion tubes in the vicinity of Brasted



Nitrogen Dioxide Diffusion tubes in the vicinity of Westerham



Nitrogen Dioxide Diffusion tubes in the vicinity of Swanley



Nitrogen Dioxide Diffusion tubes in the vicinity of Sundridge

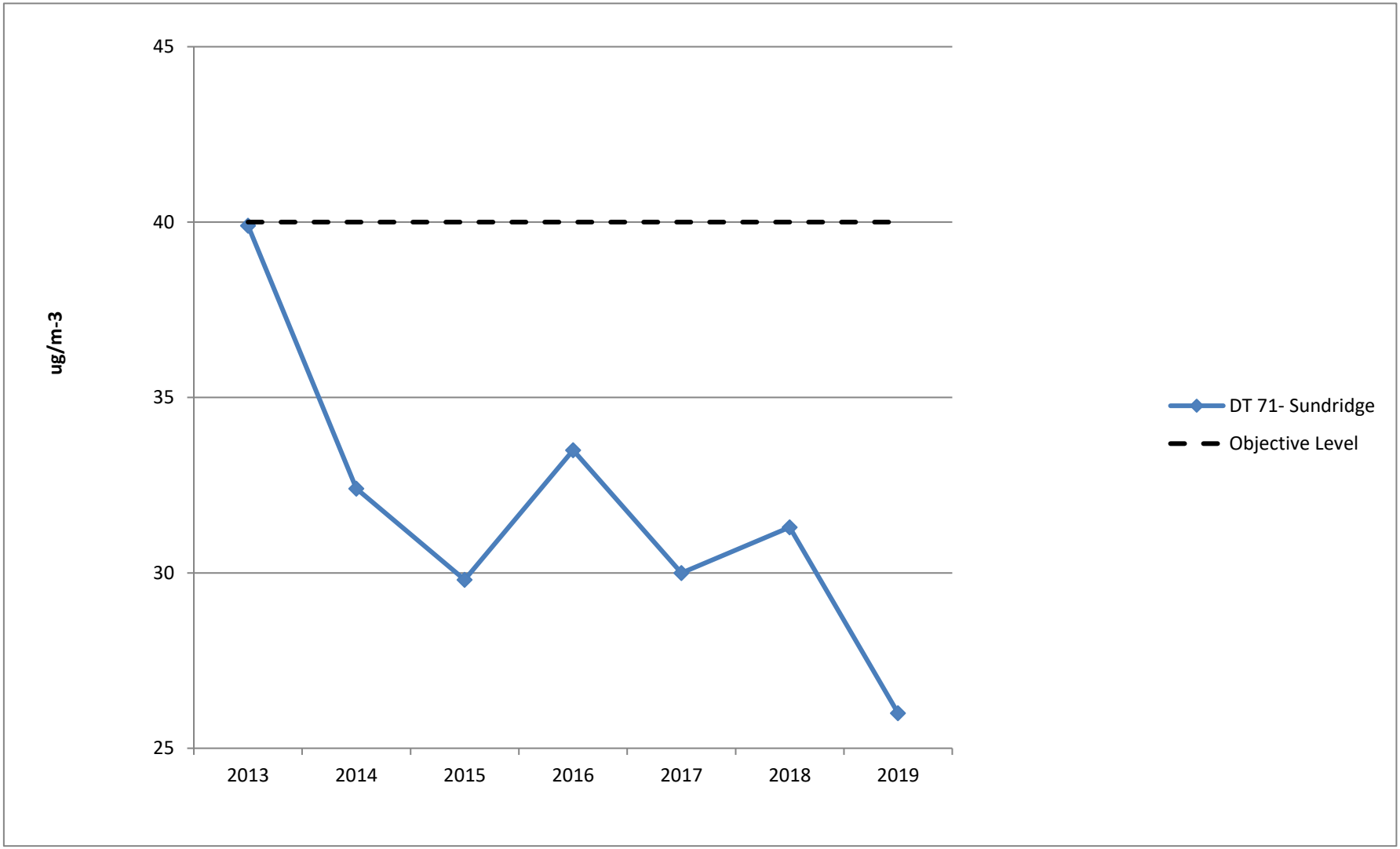


Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
							2015	2016	2017	2018	2019
CM1	553603	156774	Urban Background	Automatic		98	0	0	0	0	0
CM2	553044	156690	Roadside	Automatic		97	1	3	0	0	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 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 PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} Annual Mean Concentration ($\mu g/m^3$) (3)				
						2015	2016	2017	2018	2019
CM1: Greatness	553603	156774	Urban Background		99	21	18	18	19	20
CM2: Bat & Ball	553044	156690	Roadside		98	21	21	20	21	20

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

Notes:

Exceedances of the PM_{10} annual mean objective of 40µg/m^3 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.

Figure A.2 – Trends in Annual Mean PM_{10} Concentrations

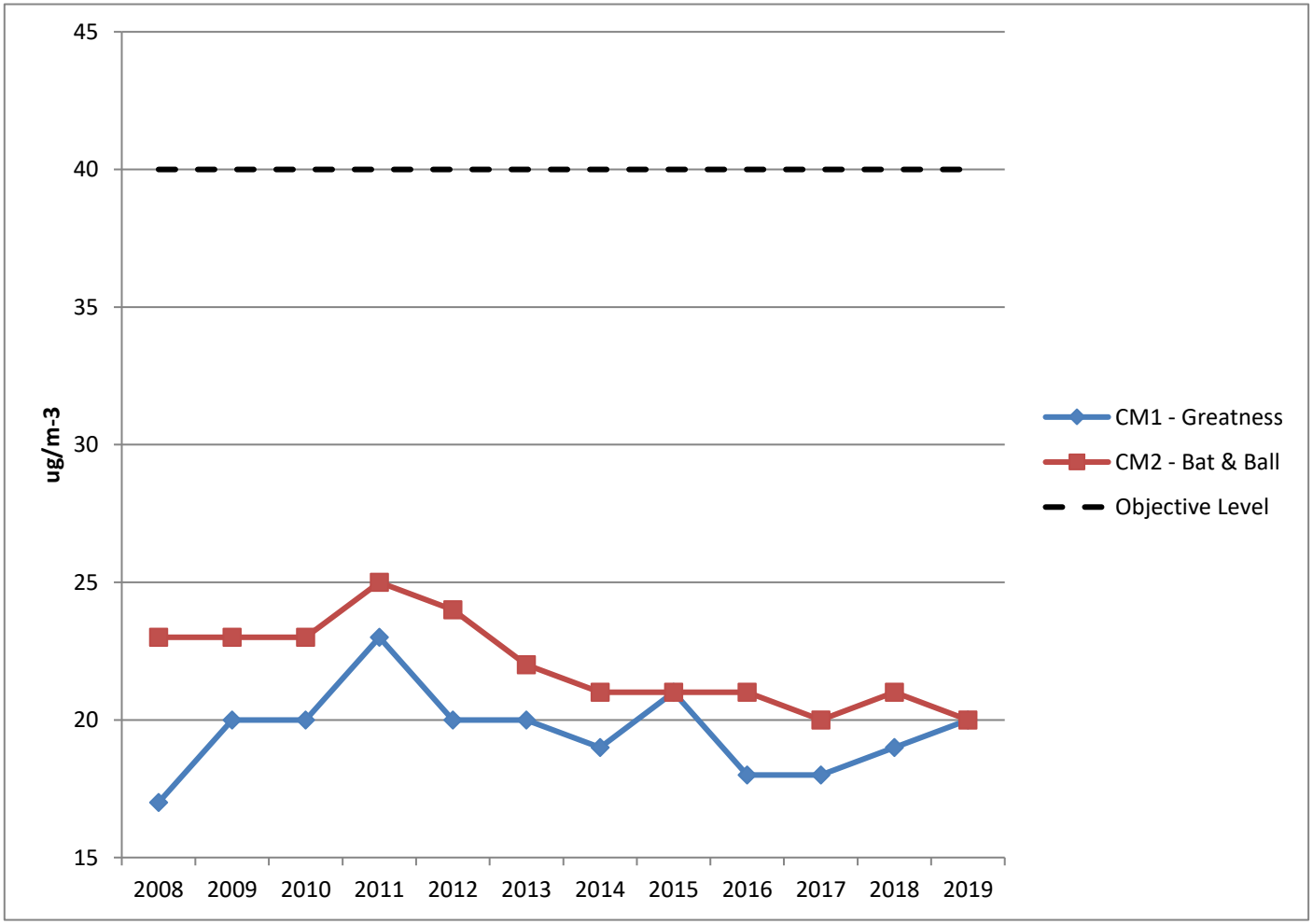


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
						2015	2016	2017	2018	2019
CM1: Greatness	553603	156774	Urban Background		99	2	0	4	1	9
CM2 : Bat & Ball	553044	156690	Roadside		98	3	7	5	8	8

Notes:

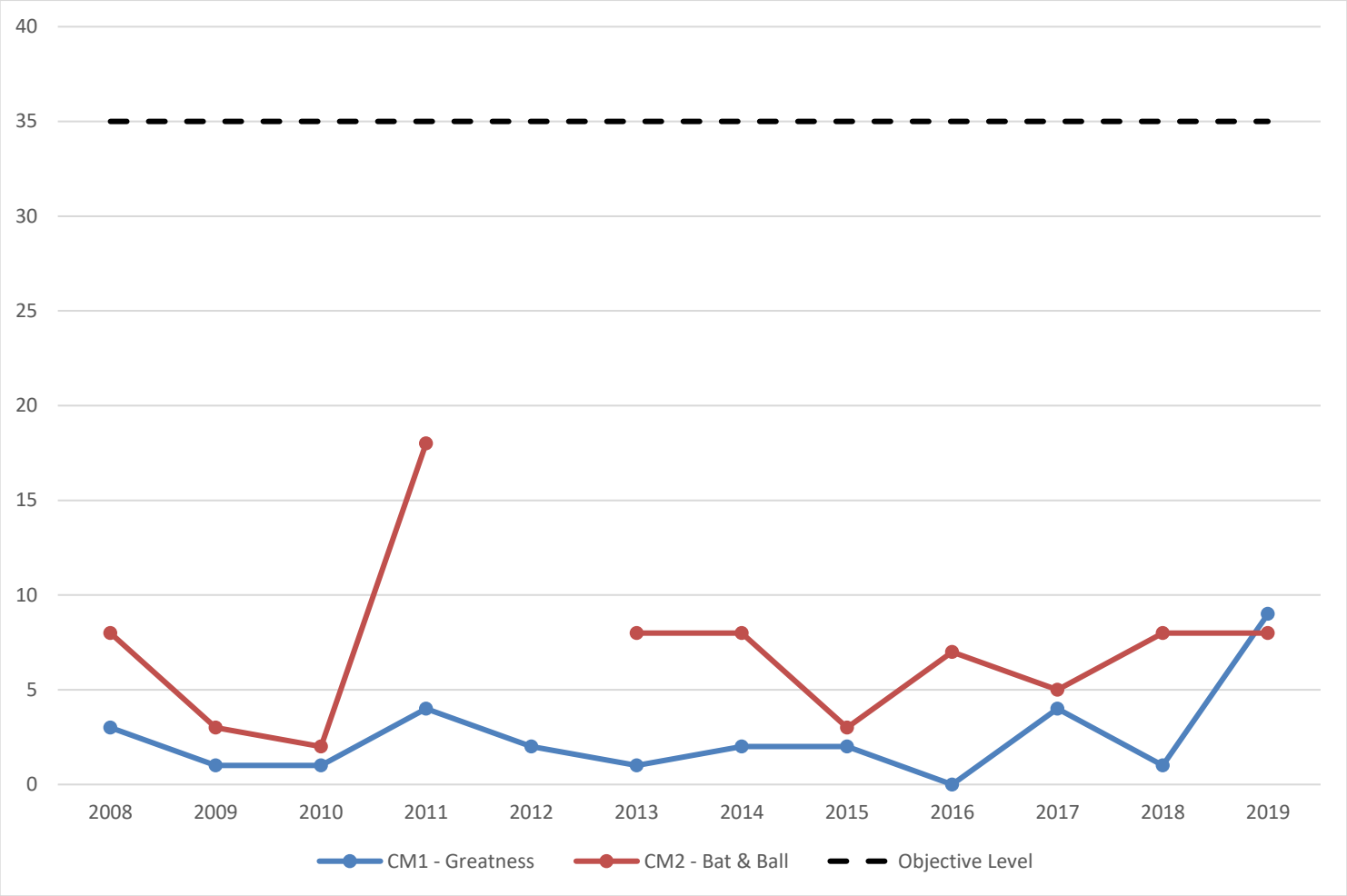
Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold.**

(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.

Figure A.3 – Trends in Number of 24-Hour Mean PM_{10} Results >50µg/m^3



Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.75) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DT02	553157	154415	73.4	59.1	62.3	60.4	54.2	52.4	49.7	47.0	53.8	55.8	49.6	36.7	54.5	**40.9**	38.0
DT03	552467	154167	20.6	14.2	13.6	15.5	11.0	10.0	8.5		11.1	10.6	19.4	12.6	13.4	10.0	
DT05	551414	156197	50.2	52.5	51.5	47.8	46.0	44.4	43.5	40.6	45.6	44.9		44.7	46.5	34.9	
DT06	551440	156165	47.9	50.3	44.4	61.7	46.1	49.5	46.3	39.0	46.4	45.6		39.9	47.0	35.3	
DT07	555092	156694	52.7	59.0	53.0	43.4	44.6		48.6		43.6	49.3	58.6	42.2	49.5	37.1	35.7
DT08	554991	156726	39.0	33.7	35.2	34.1		30.3	26.3	21.5	30.1	30.7	39.8	31.6	32.0	24.0	
DT12	546816	155851	55.6	34.3	51.4	51.8	44.0	38.6	39.3		41.7		50.2	41.7	44.9	33.6	
DT13	552504	167700	45.4	38.4	40.3	48.1	33.6	34.3	31.6	26.3	33.7	34.5	51.6	32.1	37.5	28.1	
DT14	553107	167868	43.7	44.1	38.2	33.9	26.7	21.4	25.4			29.2	43.6	34.9	34.1	25.6	
DT23	553059	156624	47.5	44.3	48.7	53.0	39.7	43.7	40.3	34.0	40.5	44.7	60.2	38.6	44.6	33.5	
DT24	544415	153914			38.6	53.8	33.2	40.6	37.4	27.9	31.7	40.2	49.3	28.6	38.1	28.6	
DT25	544770	154000	38.6	35.1	33.0	17.3							38.0	28.2	31.7	18.7	
DT26	554217	167252	59.5	55.4	48.0	27.1	45.4	45.9	44.5	41.3		46.1	62.7	41.7	47.1	35.3	
DT27	553139	154259	47.4	49.1	52.6	41.7	44.4	36.8	33.9	34.5	38.3	40.6	70.0	48.8	44.8	33.6	
DT28	553043	154890	56.6	48.8	44.8	38.5	39.6	35.7	38.6	33.7	38.4	41.6	52.3	41.6	42.5	31.9	

DT29	553073	155026	45.4	36.8	33.8	37.1	27.5	27.9	24.8	22.4	28.9	33.5	38.0	28.7	32.1	24.1	
DT30	553019	155692	52.0	41.4	44.5	45.8	37.3	36.3	34.5	33.0	37.9	41.3	57.2	38.0	41.6	31.2	
DT31	553165	156685	45.5	70.9	59.6	56.3	58.8	57.3	57.7	53.8	55.5	54.3	80.2	56.5	58.9	**44.2**	36.0
DT32	553151	156558	55.0	61.8		48.1	54.0	50.6	51.6	43.8	54.4	58.5	75.7	51.7	55.0	**41.3**	40.5
DT33	555068	156711	51.2	46.2		59.1	46.1	47.7		35.9	42.7	40.7	59.3	39.2	46.8	35.1	
DT34	549427	155691	40.4	38.6	28.5	34.2	25.6	27.9	26.6	25.2	28.2	32.3	42.7	30.1	31.7	23.8	
DT35	554093	156798	40.7	43.7	36.6	42.4	38.1	40.0	40.3	38.7	42.6	42.2	49.9	30.5	40.5	30.4	
DT36	544594	154025	47.1	57.9	44.3	49.3	36.9	42.2	44.1	34.6	40.6		56.3		45.3	34.0	
DT39	551492	168695	53.8	49.7	48.8	51.7	38.2	41.6	42.0	39.6	45.3	45.0	62.4	46.1	47.0	35.3	
DT40	551575	168508	59.9	51.1	50.3	65.1	52.6	45.5	48.9	38.4	50.4	43.2	68.9	34.2	50.7	38.0	28.3
DT41	552174	168162	52.8	54.1	49.6	43.5	37.8	36.8	38.1	38.3	41.2	42.1	54.7	39.1	44.0	33.0	
DT42	551318	156373	16.4	45.8		33.1			35.4	34.8	36.9	41.8	51.1	38.0	37.0	27.8	
DT43	551281	156860	72.3	36.7	34.9	31.6	28.9	29.9	26.8	27.2	30.5	34.3	44.0	33.4	35.9	26.9	
DT48	552863	154873	35.1			29.4	22.9	24.5	20.8	20.9		27.9	35.4	25.8	27.0	20.2	
DT49	553018	154654	42.2	38.2	33.8	39.3	28.6	30.7	27.0		27.1	30.9	49.1	26.0	33.9	25.4	
DT51	552662	155153	50.6	47.9	40.4	44.4	39.7	34.9	35.3	31.4	36.0	41.5	54.5	32.7	40.8	30.6	
DT52	552506	155272	48.8	43.1		41.5	40.6	41.1	36.1	29.8	36.6	38.8	49.8	32.5	39.9	29.9	
DT54	551216	157007	53.4	43.1	43.4	38.0	33.2	33.8	30.0	35.1	35.3	39.0	48.3	34.5	38.9	29.2	
DT71	548239	155353	46.7	44.0		37.5	28.8	30.1	30.9	27.2	31.3			34.9	34.6	26.0	
DT74	550768	155584	48.7	46.1	46.4	42.8	36.2	37.4	37.1	35.1	35.8	37.6	54.7	39.5	41.5	31.1	
DT76	551026	155710	48.7	41.0	50.2	49.0	46.2	43.6	38.1	37.9	47.0	45.8	52.7	40.4	45.1	33.8	
DT77	551529	155967	64.3	35.1			43.1	44.3	37.0	33.6	39.3	41.7	46.5		42.8	32.1	
DT81	553416	167615	42.1	45.5	34.2	30.6	27.4	26.6	29.0		32.9		44.3	35.2	34.8	26.1	
DT83	550297	169682	69.6	68.5	63.9	54.2	53.5	49.6	52.4	57.4	51.2	57.0	53.1	57.8	57.4	**43.0**	38.2
DT84	546802	155000	38.9	38.2	34.5	42.7	9.0	37.4	37.6	34.0	36.6	40.4	46.9	33.5	35.8	26.9	
DT85	547097	155099	38.6	59.5	53.9	54.7	38.7	46.7	48.6	42.5	47.1	47.8	57.2	43.9	48.3	36.2	35.6
DT86	550308	155593	44.7	50.4	45.5	42.5	36.6	35.4	36.2	32.6	38.9		53.8	40.3	41.5	31.2	

DT87	551640	156335	46.1	55.9	59.9	54.0	59.0	55.5	56.7	57.7	55.8	61.8	67.5	55.8	57.1	**42.9**	36.4
DT88	552963	156583	41.5	38.0	37.1	42.6								30.9	38.0	23.1	
DT90	553140	155898	47.0	47.4	35.8	43.7	40.3	35.8	34.2	25.7	38.4	40.2	55.7	33.5	39.8	29.9	
DT93	550283	169743	43.1	36.2	36.6	40.0	32.8	28.9	29.4	27.1	30.3	32.6	50.3	32.6	35.0	26.2	
DT94	550258	169575	37.1	47.7	40.5	43.1	33.4	31.8	30.7	31.7	35.4	36.5	56.2	39.1	38.6	29.0	
DT95	550351	169499	41.6	46.2	37.9	49.2	34.3	34.0	36.8	37.0	39.8	36.9	54.7	41.7	40.8	30.6	
DT96	552371	155345	54.3	50.9	37.8	35.9	33.5		36.1	35.0	39.2	37.1	48.1	44.9	41.2	30.9	
DT96	552371	155345	54.3	50.9	37.8	35.9	33.5		36.1	35.0	39.2	37.1	48.1	44.9	41.2	30.9	
DT96	552371	155345	51.6	54.3	0.0	37.2	33.1		35.2	36.5	37.2	36.1	48.2	45.1	41.2	30.9	
BC1	553603	156774	27.5	22.6	19.5	18.8	13.6		11.5	11.1	16.1	18.2	24.2	*2.9	18.3	13.7	
BC2	553603	156774	20.2	20.7	17.6	18.7	12.5	11.0		11.0	15.5	17.7	26.6	12.0	16.7	12.5	
BC3	553603	156774	27.3	22.9	20.3	18.7	12.2	11.8	11.8	11.9	16.4	17.6	26.7	19.9	18.1	13.6	
BC4	553044	156690	33.9	38.6	36.0	31.2	26.5	28.2	27.4	31.3	30.5	33.6	42.5	29.4	32.4	24.3	
BC5	553044	156690	37.8	41.7	35.4	28.4	28.5	29.3	28.5	28.8		33.4	42.1	30.6	33.1	24.9	
BC6	553044	156690	39.8	40.4	35.4	33.2	32.5	29.0	29.3	29.7	32.0	30.1	43.8	34.2	34.1	25.6	

☐ **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 in the final column**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 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 where pre distance corrected concentration is 36 µg/m^3 or greater.

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

Distance Correction Calculations

	Tube Location	Distance from Kerb to measurement (in metres)	Distance from Kerb to receptor (in metres)	Local mean background NO2 concentration (µ/m3)	measured annual mean NO2 concentration (µ/m3)	The predicted annual mean NO2 concentration (in µg/m3) at receptor
DT02	High Street South 1 (Guitar) Sevenoaks	1.6	2.5	11.73	40.9	38.0
DT03	Garvock Drive Sevenoaks			11.72	10.0	10.0
DT05	Riverhead 2 (Laundry) North West	0.6	2.1	13.67	34.9	30.0
DT06	Riverhead 3 (Opp shops) East	2.5	10.3	13.67	35.3	27.7
DT07	High Street East 1 (Road Sign) Seal	0.6	0.8	11.12	37.1	35.7
DT08	High Street West 1 (Garage) Seal	2.4	6.1	11.7	24.0	21.2
DT12	Station Road (M25) Brasted	19	50	18.65	33.6	26.4
DT13	Wested Lane, Swanley	3.8	18.6	21.74	28.1	25.3
DT14	Wadard Terrace, Button St Swanley	114	108	18.55	25.6	27.3
DT23	Bat & Ball 1 Sevenoaks (Ferrari)	5.7	20.1	13.4	33.5	25.6
DT24	High Street, (Wells Close) Westerham	2	7.8	11.04	28.6	23.0
DT25	Vicarage Hill, Westerham	1	7.3	18.38	18.7	18.6
DT26	Farningham Hill (A20)	5	23.4	17.73	35.3	27.2
DT27	High Street South 2 (Sev School) Sevenoaks	4	3.9	11.73	33.6	33.8
DT28	High Street North 2 (Sev Sennockian) Sevenoaks	2.7	3.5	11.73	31.9	30.6
DT29	High Street North 3 (Water Trough) Sevenoaks	2.7	7.1	12.51	24.1	21.3
DT30	Bat & Ball 2 Otford Road Sevenoaks	2	12.6	12.6	31.2	23.2
DT31	Bat & Ball 3 Seal Road Sevenoaks	2.1	6.5	13.4	44.2	36.0
DT32	Bat & Ball 4 St Johns Sevenoaks	1.3	1.5	13.4	41.3	40.5
DT33	High Street East 2 (Pizza) Seal	2.3	3.2	11.12	35.1	33.2
DT34	16 Main Road, Sundridge Dunbrik	2.5	19.8	12.33	23.8	17.9
DT35	Seal Hollow Road/ A25	2.8	23.1	11.7	30.4	20.4
DT36	Market Square, Westeham	0.7	4.7	18.38	34.0	28.4
DT39	Bartholomew Way, Swanley	2.8	16.9	16.46	35.3	26.7
DT40	London Road 1(traffic lights) Swanley	0.2	3.8	16.46	38.0	28.3
DT41	London Road 2 (Bus) Swanley	1.6	8.8	17.95	33.0	27.3
DT42	62 London Road Riverhead	3.2	5.1	13.67	27.8	26.1
DT43	Miners Arms, London Road, Dunton Green	2.3	5.8	13.67	26.9	23.9
DT48	73 London Road(Brunch) Sevenoaks	2.8	2.9	11.72	20.2	20.1
DT49	20 London Road (Butchers) Sevenoaks	2.9	3	11.73	25.4	25.3
DT51	130 London Road (Opp Car Sales) Sevenoaks	2.2	4.3	12.74	30.6	27.7
DT52	142 London Road (Lulworth) Sevenoaks	2.5	9.8	12.74	29.9	24.1
DT54	57 London Road, Dunton Green	1.8	10.9	14.74	29.2	23.2
DT71	204 Main Road, Sundridge	1.9	9.2	11.7	26.0	20.8
DT74	Westerham Road, (Devon Cott) Bessels Green	1.4	18.2	14.58	31.1	21.9
DT76	Worships Hill/ Witches Lane, Riverhead	1.3	42	12.8	33.8	18.3
DT77	Montreal Cott/ Amherst Hill Sevenoaks	1.7	2	12.8	32.1	31.4
DT81	Farningham Hill Road, Swanley	51.2	51.8	18.55	26.1	26.0
DT83	Jessamine Terrace, Birchwood Road Swanley	1.1	2.6	16.09	43.0	38.2
DT84	West End Brasted	1.5	7.4	18.65	26.9	24.0
DT85	Chart Lane Brasted	1.8	2	12.71	36.2	35.6
DT86	59 Westerham Road, Bessels Green	1.9	10.7	14.58	31.2	24.6
DT87	Bradbourne Vale Road South	2.1	5.4	13.67	42.9	36.4
DT88	Bradbourne Vale Road North	1.7	12.5	13.06	23.1	18.6
DT90	4a St Johns Hill Sevenoaks	0.2	2.7	12.6	29.9	23.0
DT93	Pucknells, Birchwood Road, Swanley	2	12.4	16.09	26.2	21.9
DT94	Birchwood Road Junction London Road	2.5	3.7	16.09	29.0	27.7
DT95	Malvern, Birchwood Road, Swanley	2.3	16.9	16.09	30.6	23.6
DT96	Sevenoaks Station	1.8	4.7	12.74	30.9	26.9

Diffusion Tubes:

NO2 diffusion tubes are supplied and analysed by SOCOTEC Didcot. This laboratory is UKAS accredited. The tubes were prepared by spiking acetone: triethanolamine (50:50) on to grids prior to the tubes being assembled. The laboratory confirms it follows the procedures set out in the Harmonisation Practical Guidance and that it is ranked 'Good' in the WASP inter-comparison scheme.

The tubes have been compared with the reference method by a triplicate co-location study with the chemiluminescent NOX analysers at Greatness Park and Bat & Ball, Sevenoaks. Using data from the Greatness and Bat & Ball automatic stations which are both part of colocation studies.

Greatness		**Bat & Ball**	
Automatic Mean	= 14.0	Automatic Mean	= 23
Triplicate Tube Means	= 17.7	Triplicate Mean	= 33.2
Correction Factor	= $\frac{14.0}{17.7}$ = **0.79**	Correction Factor	= $\frac{23}{33.2}$ = 0.69

Greatness Correction Factor + Bat & Ball Correction Factor

= 0.79 + 0.69 = $\frac{1.6}{2}$ = **0.74**

The nationally derived diffusion tube bias adjustment factor for 2019 is 0.75 as detailed below. The national factor was therefore used as it was more conservative.

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 06/20

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of September 2020
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data [2]

Step 4:

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

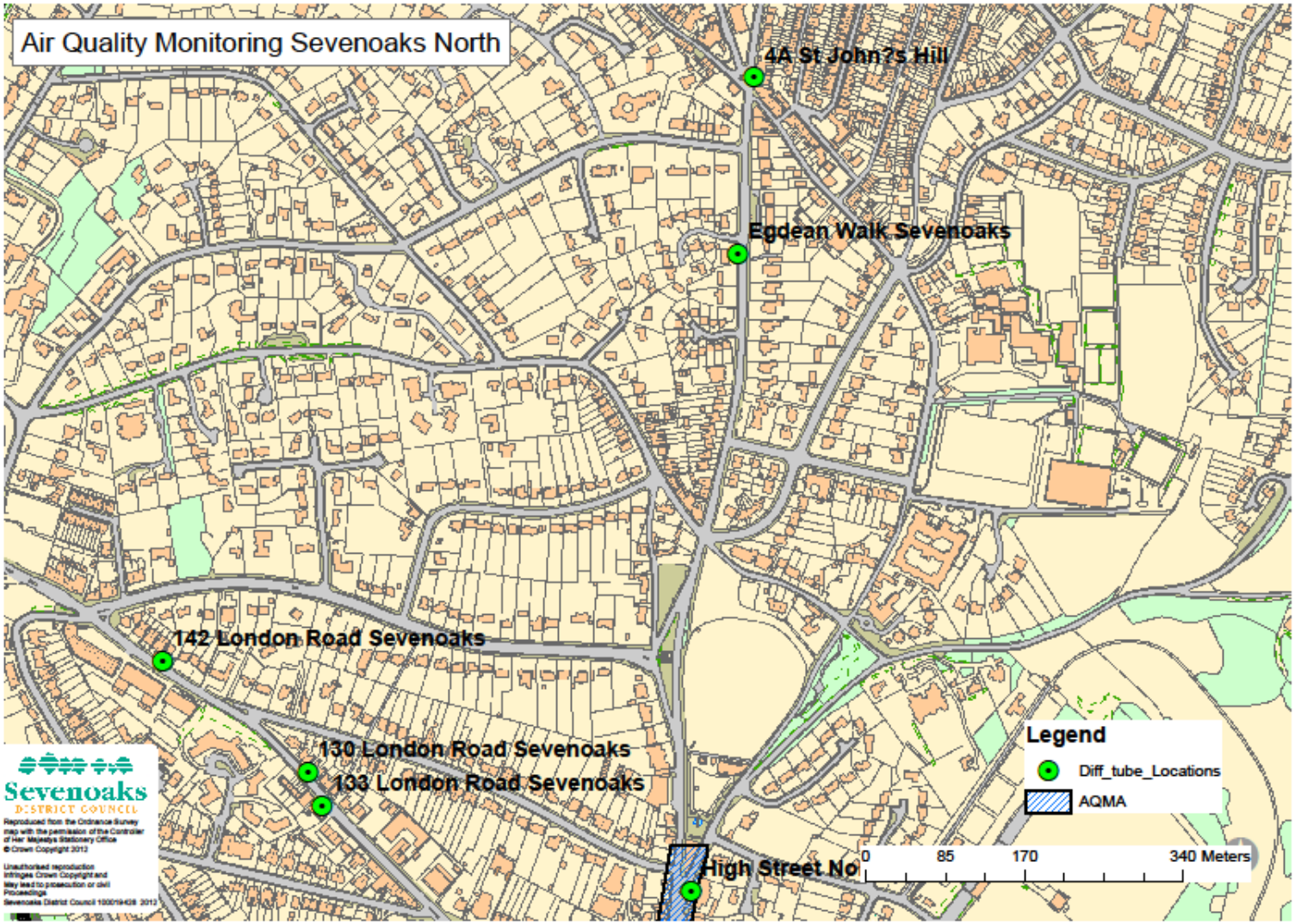
If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

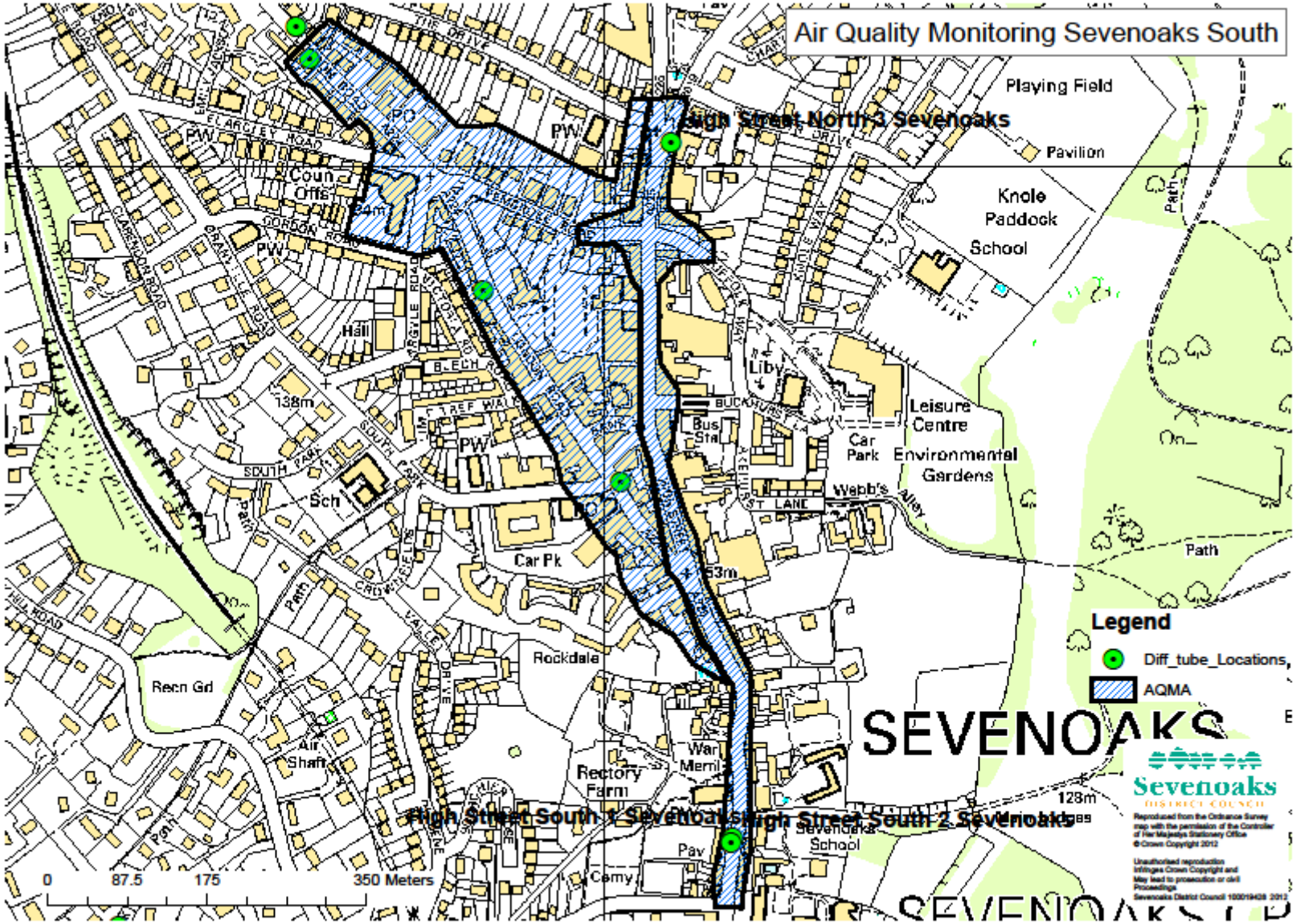
Analysed By[1]	Method To make your selection, choose [All] from the pop-up list	Year[2] To make your selection, choose [All]	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	50% TEA in acetone	2019	R	Medway Council	12	33	24	35.1%	G	**0.74**
Socotec Didcot	50% TEA in acetone	2019	R	Waverley Borough Council	10	38	30	27.5%	G	**0.78**
Socotec Didcot	50% TEA in acetone	2019	R	Waverley Borough Council	12	35	24	44.7%	G	**0.69**
Socotec Didcot	50% TEA in acetone	2019	KS	Caerphilly CBC	12	90	63	42.4%	G	**0.70**
Socotec Didcot	50% TEA in acetone	2019	R	Caerphilly CBC	11	42	27	54.1%	G	**0.65**
Socotec Didcot	50% TEA in acetone	2019	KS	Caerphilly CBC	11	34	24	41.5%	G	**0.71**
Socotec Didcot	50% TEA in acetone	2019	R	Cambridge City Council	11	42	28	47.1%	G	**0.68**
Socotec Didcot	50% TEA in acetone	2019	UB	Canterbury City Council	12	16	12	27.6%	G	**0.78**
Socotec Didcot	50% TEA in acetone	2019	R	Canterbury City Council	12	34	25	35.5%	G	**0.74**
Socotec Didcot	50% TEA in acetone	2019	R	Dacorum Borough Council	11	31	24	30.2%	G	**0.77**
Socotec Didcot	50% TEA in acetone	2019	R	Derry City and Strabane District Council	12	39	32	20.1%	G	**0.83**
Socotec Didcot	50% TEA in acetone	2019	UB	Derry City and Strabane District Council	12	15	11	40.4%	G	**0.71**
Socotec Didcot	50% TEA in acetone	2019	B	Gravesham Borough Council	12	36	29	24.5%	G	**0.80**
Socotec Didcot	50% TEA in acetone	2019	B	Gravesham Borough Council	12	27	25	10.9%	G	**0.90**
Socotec Didcot	50% TEA in acetone	2019	R	Slough Borough Council	11	39	32	22.5%	G	**0.82**
Socotec Didcot	50% TEA in acetone	2019	SU	Slough Borough Council	11	32	22	46.7%	G	**0.68**
Socotec Didcot	50% TEA in acetone	2019	UB	Slough Borough Council	10	38	31	25.6%	G	**0.80**
SOCOTEC Didcot	50% TEA in acetone	2019		**Overall Factor[3] (38 studies)**				**Use**		**0.75**

Annualisation Summary

Diffusion Tube ID	Annualisation Factor SDC Greatness	Annualisation Factor Bexley	Annualisation Factor	Annualisation Factor	Average Annualisation Factor	Raw Data Simple Annual Mean (µg/m3)	Annualised Data Simple Annual Mean (µg/m3)	Comments
DT25	0.7901	0.7807			0.7854	31.7	24.9	Bias adjusted to 18.7 µg/m3
DT88	0.8156	0.8045			0.8101	38.0	30.8	Bias adjusted to 23.1 µg/m3

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




Air Quality Monitoring Sevenoaks South
High Street North 3 Sevenoaks
High Street South 1 Sevenoaks
High Street South 2 Sevenoaks
Playing Field
Pavilion
Knole Paddock
School
Leisure Centre
Car Park
Environmental Gardens
Webb's Alley
Path
Car Pk
Rockdale
Recn Gd
Air Shaft
Rectory Farm
War Memi
Sevenoaks School
Pav
Cemy
Hall
Sch
Liby
Bus Sta
138m
128m
53m
Legend
Diff_tube_Locations
AQMA
SEVENOAKS
Sevenoaks
DISTRICT COUNCIL
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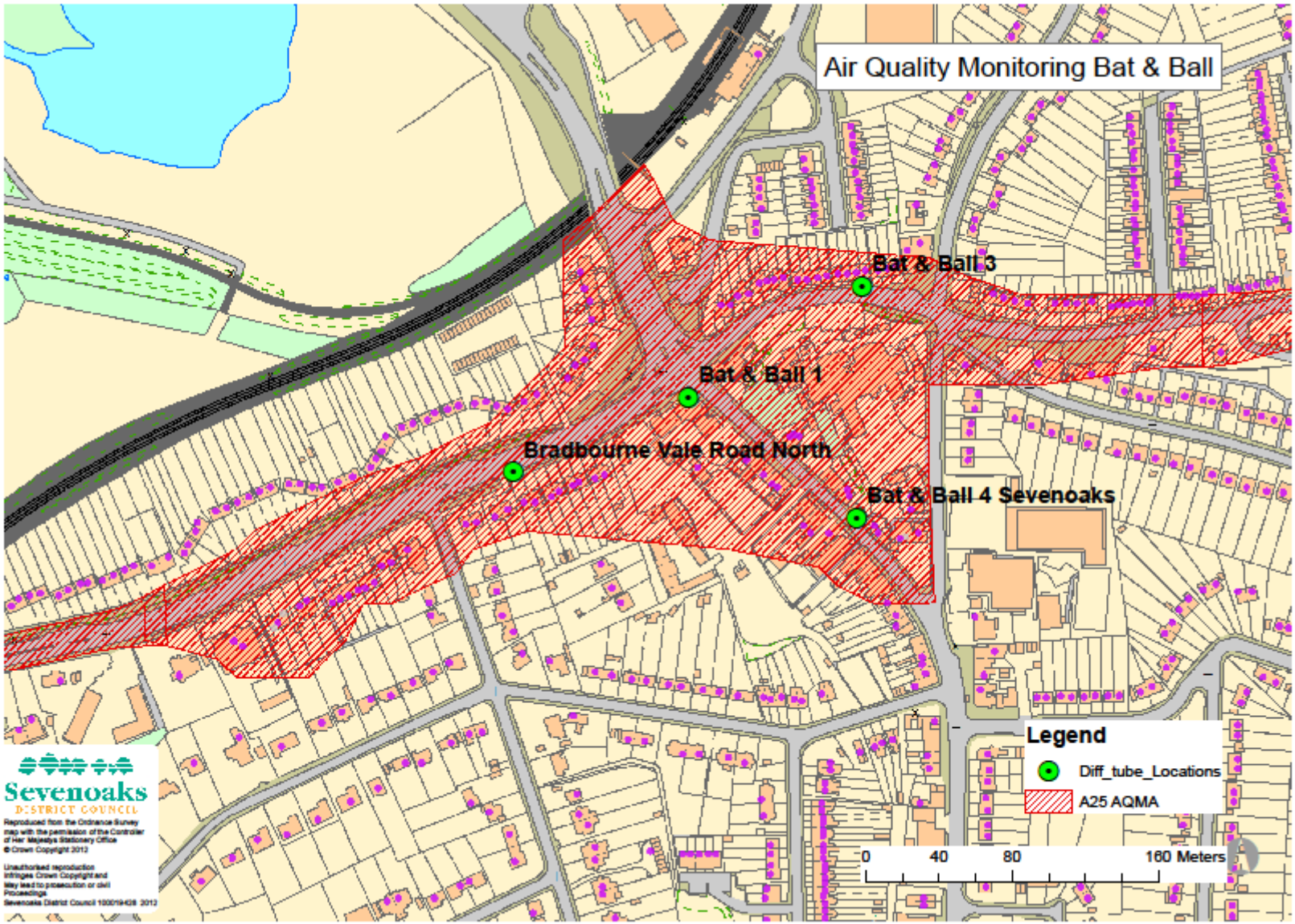
87.5
175
350 Meters


Air Quality Monitoring Bat & Ball
Bat & Ball 3
Bat & Ball 1
Bradbourne Vale Road North
Bat & Ball 4 Sevenoaks
Legend
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A25 AQMA
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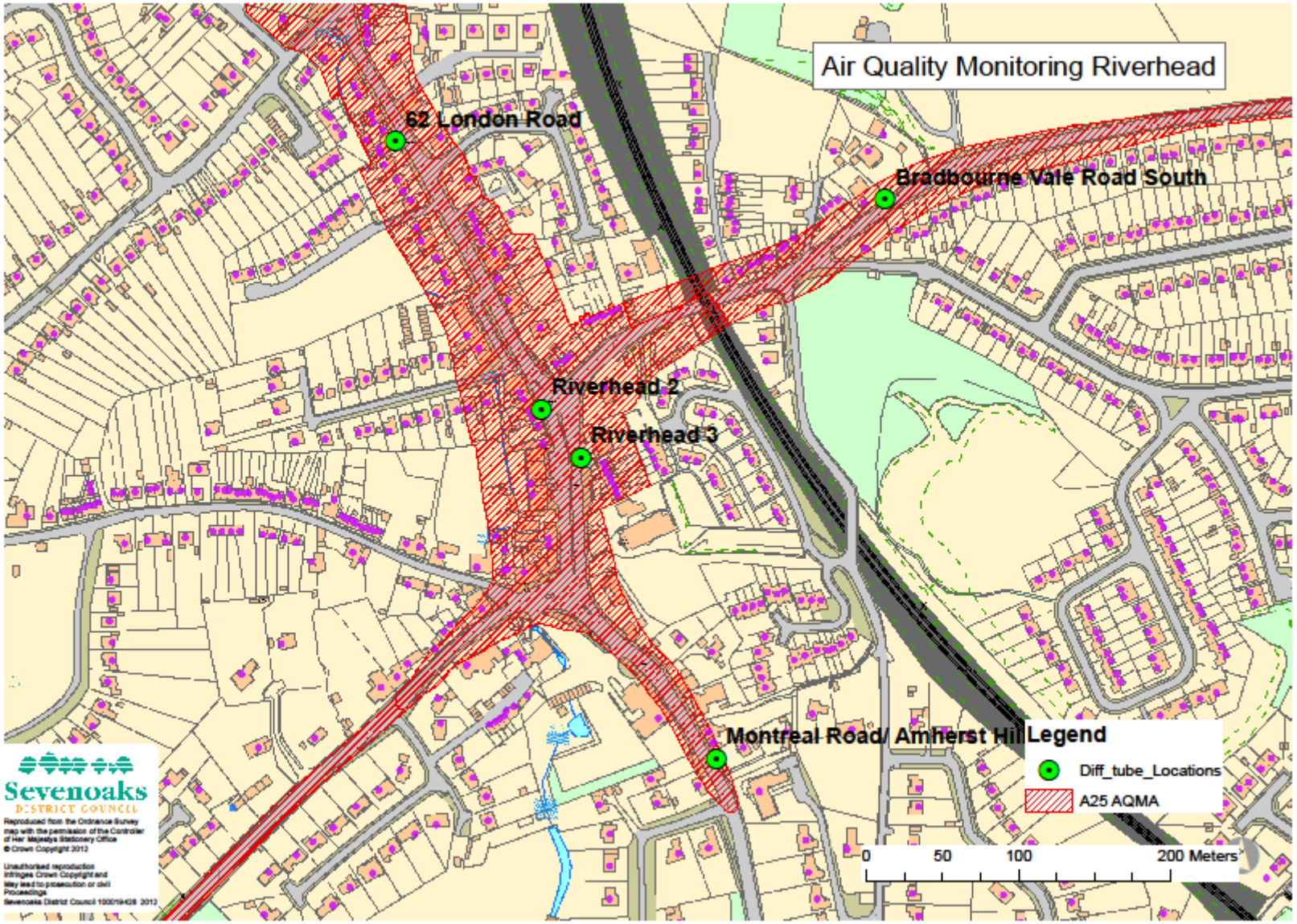
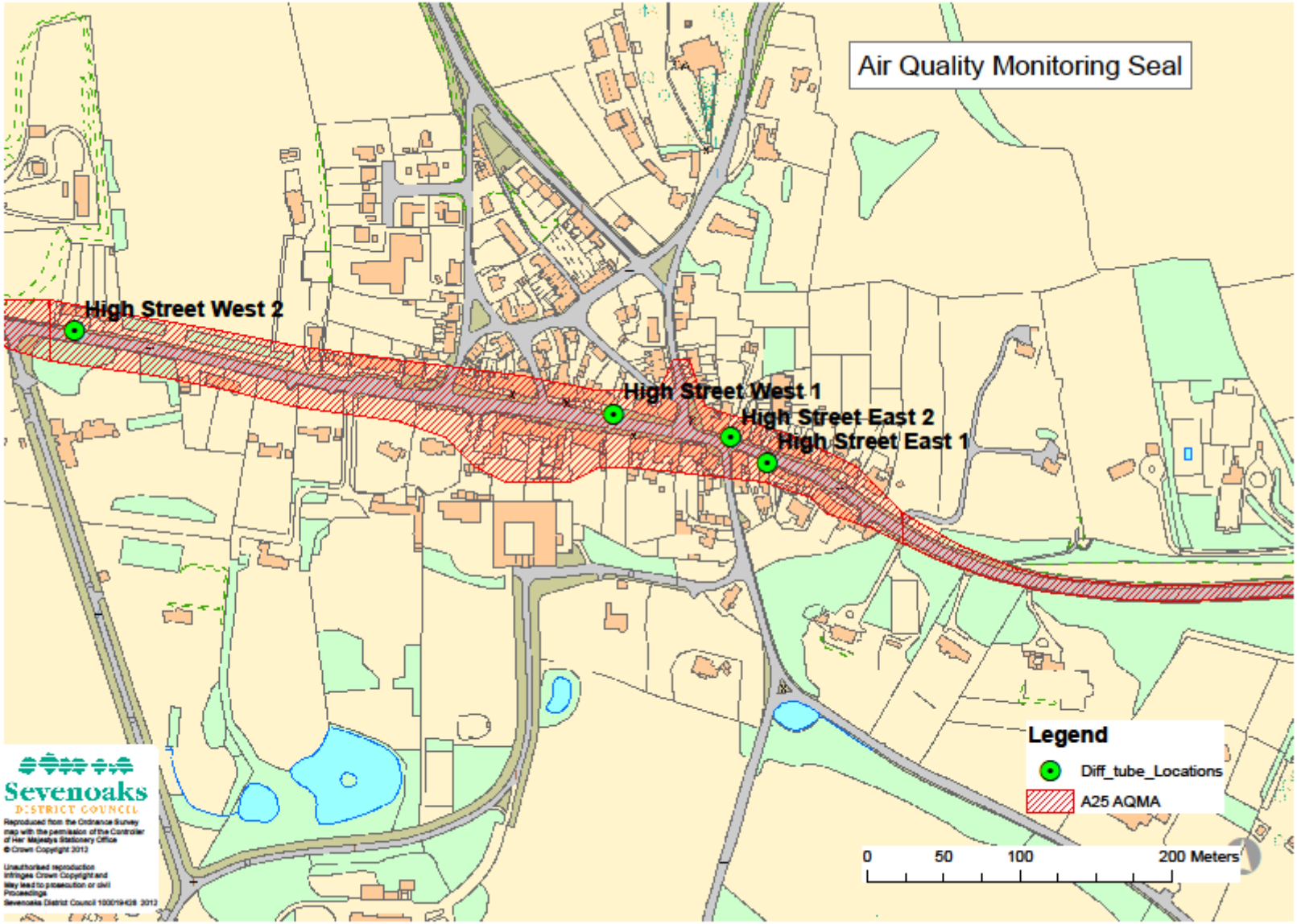
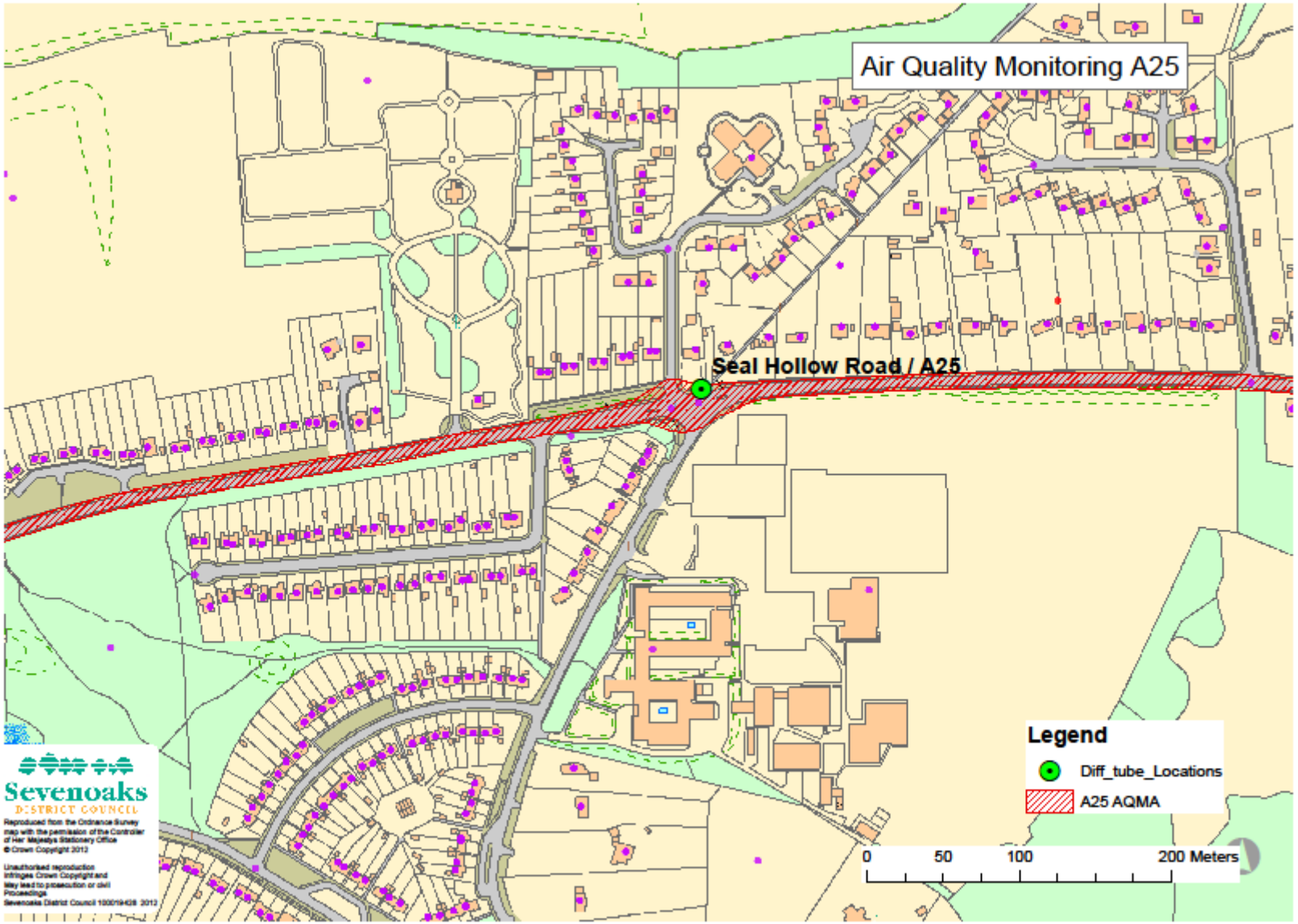
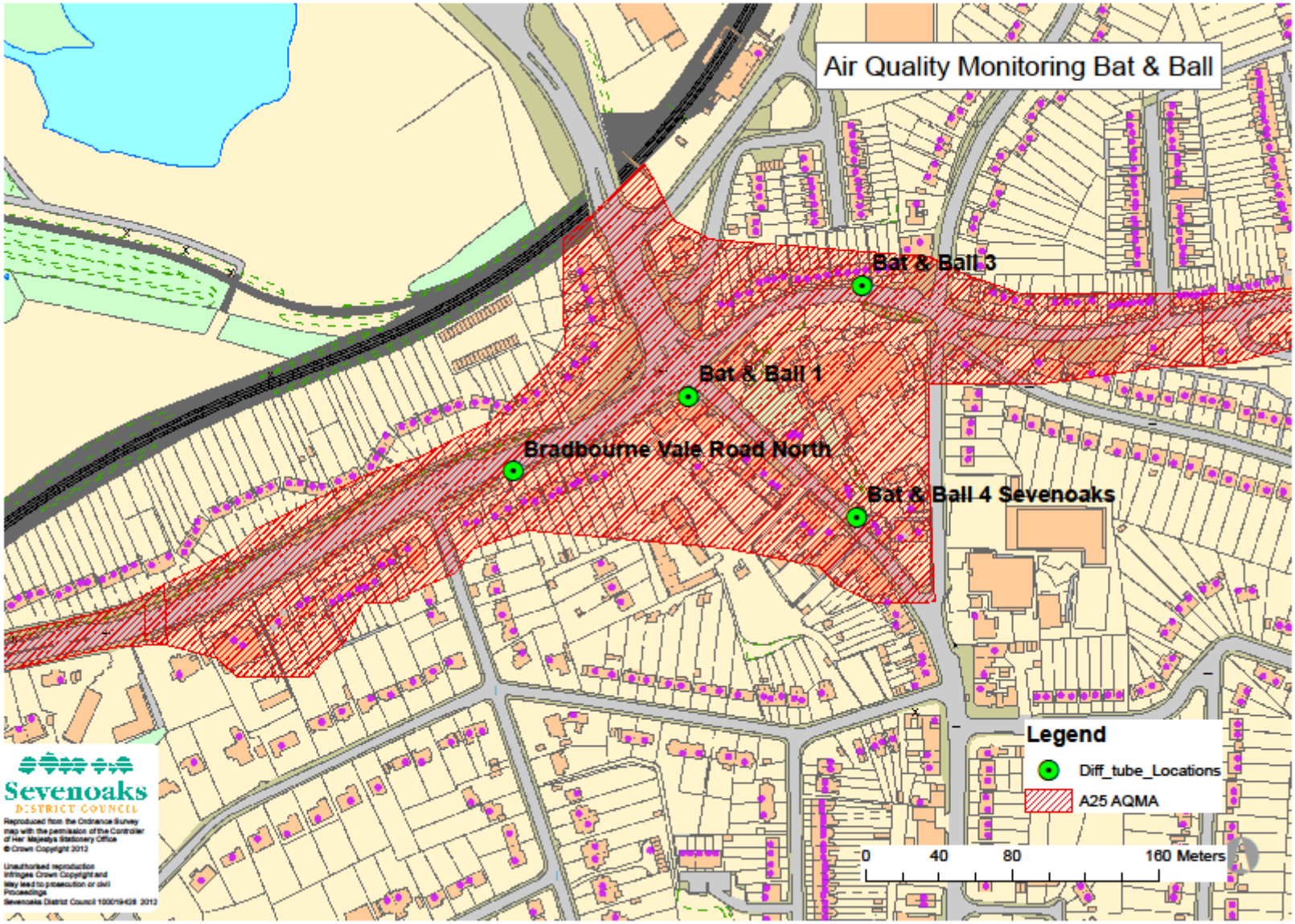
40
80
160 Meters
Sevenoaks
DISTRICT COUNCIL


Air Quality Monitoring Riverhead
62 London Road
Bradbourne Vale Road South
Riverhead 2
Riverhead 3
Montreal Road/ Amherst Hill
Legend
Diff_tube_Locations
A25 AQMA
0
50
100
200 Meters
Sevenoaks
DISTRICT COUNCIL


Air Quality Monitoring Seal
High Street West 2
High Street West 1
High Street East 2
High Street East 1
Legend
Diff_tube_Locations
A25 AQMA
0
50
100
200 Meters
Sevenoaks
DISTRICT COUNCIL


Air Quality Monitoring A25
Seal Hollow Road / A25
Legend
Diff_tube_Locations
A25 AQMA
0
50
100
200 Meters
Sevenoaks
DISTRICT COUNCIL


Air Quality Monitoring Bat & Ball
Bat & Ball 3
Bat & Ball 1
Bradbourne Vale Road North
Bat & Ball 4 Sevenoaks
Legend
Diff_tube_Locations
A25 AQMA
0
40
80
160 Meters
Sevenoaks
DISTRICT COUNCIL

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[6]	
	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

[6] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

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_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
…	…

References

Defra - Local Air Quality Management Technical Guidance (TG16) (2016)

Defra - Local Air Quality Management Policy Guidance (PG16) (2016)

Kent County Council - Local Transport Plan: Delivering Growth without Gridlock (2016)

NO2 Concentration and Distance from Roads AQC consultants Ltd (2008)