East Herts District Council

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 East Herts

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].

East Herts is the most rural district in the County and has a great deal of natural and built heritage in the combination of villages and market towns. Although the district's countryside character means it has an important agricultural base, the local economy is dominated by the service sector with the majority of the firms being small and medium sized enterprises.

There are 3 areas in East Herts where a combination of traffic congestion and road layout had led to Nitrogen Dioxide (NO_2) concentrations being in exceedance of the UK annual mean air quality objective. These areas are known as Air Quality Management Areas (AQMA). East Herts Council has prepared a joint Air Quality Action Plan (AQAP) with Herts County Council to identify measures that can be taken to improve the air quality in these areas. The locations of the AQMAs can be found in Appendix D, and the AQMAs are also included within the national list of AQMAs that can be found at http://ukair.defra.gov.uk/aqma/list .

East Herts Council have been monitoring air pollution at various locations around the district since the LAQM regime began in 1995. Diffusion tubes are predominantly used for monitoring and in 2016 a new continuous monitoring site was commissioned at Gascoyne Way, Hertford (measuring oxides of Nitrogen and $PM_{2.5}$). https://www.airqualityengland.co.uk/local-authority/?la_id=408

[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

Trend of pollutants across East Herts Council since 2014

Over the last five years, on average, annual mean NO_2 concentration at monitoring locations have decreased between 2014 and 2020. In 2014 and 2015 there was a slight increase in the concentrations of NO_2 at most diffusion tube monitoring locations followed by a slight reduction in 2016 and a further general reduction in 2017 and 2018. This could due to several reasons including the number of interventions implemented by the council, general people's behavioural change to toward cleaner vehicle or sustainable travel, a result of a reduction in traffic emissions or other environmental factors such as weather.

East Herts Council will continue to monitor NO_2 at these locations to determine whether this is the beginning of a longer term improvement in air pollution. Within the AQMA hotspots there were a few further slight increases in pollution levels seen in 2016 so the AQMA's will remain in place. No new AQMA's have been identified.

The concentration of $PM_{2.5}$ has also reduced from 14μgm^{-3} to 10μgm^{-3}.

The council and relevant internal and external stakeholders will continue to consider and implement actions to reduce air emissions.

Actions to Improve Air Quality

Electric vehicles

Further electric vehicle (EV) charging points and an EV car club are currently being rolled out in Bishop's Stortford and Hertford, following a successful bid for £163,100 from central governments air quality fund. The car clubs will be for exclusive use of council staff during working hours and open to the public on evenings and weekends.

Clean air day 2019

Clean air day 2019 saw a promotional campaign take place which focussed on social media, local radio and local advertising as well as more prominent messages on highways digital road signs, pushing the clean air message.

Joint working

The Hertfordshire and Bedfordshire Air Quality Forum, which meets quarterly includes representatives from Hertfordshire District Councils, public health professionals in addition to HCC transport professionals.

The group works on identifying and addressing local priorities and challenges and this year East Herts feeding into Hertfordshires' local transport plan which was completed in 2018.

Public awareness

The council continue to disseminate pollution alerts through the Herts and Beds alert system as well as supporting and promoting alert services. We are working to expand the reach of these messages, to ensure they are getting to the people who need them most, especially the most vulnerable via local public health channels.

Behavioural Change

East Herts have continued to run its 'bike breakfast' at the council offices;

- The breakfast invited East Herts and HCC walkers and cyclists to a free healthy breakfast as part of encouraging green active travel
- A bike repair specialist was present to service and address any cycling issues for those attending
- HR at East Herts actively promoted the Bike to work payroll scheme where a new bike could be bought tax-free.
- Hertfordshire Health Walks attended providing information on their walk programme locally and across Hertfordshire
- Herts Police and PCSO's attended to offer security post code marking on bikes to help with preventing theft and tracing stolen bikes
- East Herts Healthy Lifestyles contributed about £250 to fund the bike breakfast and any associated costs

The Hertford Cycle Hub was launched in 2013-2014 as a place to access the Hartham Common council supported leisure facilities and also aid cycling along the routes and canal paths linking Hertford to Ware.

- The initial facility with around 10 metal cycle hoops was stylised with Hertford Cycle Hub signage and was originally funded with around £5000 from the Hertfordshire County Council Public Health District Offer fund which enabled East Herts as one of the Districts to receive £100, 000 over a two year period to assist local partners in enabling community health and wellbeing programmes and reducing health inequalities.

- Themed mental health and physical activity “Year of” themed events took place broadly promoting healthy lifestyles and increased participation via community engagement.
- From around 2014 to 2016 East Herts also promoted Breeze rides with British Cycling to encourage women back into cycling encouraging confidence and female only sessions. Also opportunities with local cycling businesses were pursued to see how this could add to the vision of the originally funded Hertford Cycle Hub.
- We commissioned Active in the Community to run physical activity programmes in East Herts over the last five years. During this time and since 2018 Active in the Community have delivered a number of cycle events, forming their vision of the Cycle Hub and what it was intended to be based on research about the Watford Cycle Hub.
- Currently Active in the Community have pursued various funding sources and successfully applied for planning permission to install a substantial cycle area for enabling bike-ability courses and training for children and adults including encouraging women back into cycling.

Likely future impacts on air quality

There have not been any new major sources of emissions introduced in to East Hertfordshire during 2018, however the District Plan sets out a framework to deliver a minimum of 18,458 dwellings and the associated infrastructure by 2033. Neighbouring districts also need to accommodate similar levels of growth and there is a proposal for the expansion of Stanstead Airport (located on the Eastern boundary of East Hertfordshire) from 28million passengers per annum (mppa) with agreement already to increase this to 35mppa and the planned extension taking this to 43mppa. Therefore, the cumulative impact of this scale of developments is likely to generate an increase in road traffic within and through East Hertfordshire and so potentially increase the emission of air pollution. This represents the only currently foreseeable major future source of air pollution in the district that could impact upon the air quality particularly in Bishops Stortford the nearest town to the airport which already has an AQMA.

Conclusions and Priorities

No exceedances of the objectives were found outside of the AQMA’s however exceedances were found in each of the AQMA’s meaning that none of the AQMA’s can be revoked at this time. Exceedances were only found in 6 of the monitoring

locations with all other locations throughout the District showing a general decrease in pollution levels, a trend which was also seen in the previous year.

The main developments that are likely to impact air quality levels in the district moving forward is the need the deliver over 18,000 homes within the district by 2033 and the proposed expansion of Stanstead airport which borders the town of Bishop Stortford.

Our main priority over the coming year is to deliver the electric pool car scheme, deliver a further successful clean air day campaign and to work towards some of our action plan measures as resources allow.

Local Engagement and How to get Involved

There are many ways in which the public can get involved in helping to improve air quality in their area, from using your car less, driving more efficiently when you do have to drive or considering a cleaner vehicle when you choose to upgrade your car. Making use of the councils EV pool cars on evenings or weekends to make your journey more sustainable. Many smart travel choices and other tips to reduce air pollution can be found in the links below:

https://liftshare.com/uk/community/hertfordshire

https://www.environmental-protection.org.uk/national-clean-air-day/

https://www.traveline.info/

https://www.goultralow.com/

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1 Local Air Quality Management

This report provides an overview of air quality in East Herts 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 East Herts to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by East Herts council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=89 full list at http://uk-air.defra.gov.uk/aqma/list. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

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 Hockerill Junction,	2007	NO_2 annual mean	Bishops Stortford	An area encompassing properties at crossroads known as Hockerill Junction	No	54	ugm3	61	ugm3	East Herts AQAP 2017-2020	2017	http://www.eastherts.gov.uk/article/9550/Air-Quality
AQMA 2 Gascoyne Way	2010	NO_2 annual mean	Hertford	Residential properties along the A414 from the junction with Mimram Road to the junction with Railway Place. Also includes properties along London Road, Parliament square, St Andrew's Street,	No	46	ugm3	46	ugm3	East Herts AQAP 2017-2020	2017	http://www.eastherts.gov.uk/article/9550/Air-Quality

				North Road, Old Cross and Cowbridge..								
AQMA 3 London Road	2015	NO_2 annual mean	Sawbridgeworth	Residential Properties along Cambridge Road from and including The Bull public house including properties along London Road and Bonk Hill up to the junction with High Wych Road.	No	45	ugm3	44	ugm3	East Herts AQAP 2017-2020	2017	http://www.eastherts.gov.uk/article/9550/Air-Quality

☒ **East Herts 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 East Herts

East Herts has taken forward a number of direct measures during the current reporting year of 2018 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 https://www.eastherts.gov.uk/airquality. Key completed measures are:

Enable / Promote Uptake of Electric Vehicles

- In 2017, the council was granted a DEFRA air quality grant project for a pilot electric pool car scheme at the council offices in Hertford which would be for both East Herts and Herts County council staff to utilise within working hours and would turn to a public car cub outside of office hours. Along with charging points in the town centres of Hertford and Bishops Stortford.
- Work on the electric vehicle pool car scheme is nearing completion and will soon be up and running.

Clear Air Days- Anti-idling Campaign- School actions

- The previous years clean air day campaign was extended carried out promoting an Anti-idling, the strap line was "Turn Your Key – Be Idle Free". And Check your tyres save fuel. This was accompanied by a media campaign and included messages on traffic information boards throughout the district.
- We continue to increase the size of the clean air day campaign by expanding membership and setting up a project board, increasing on the work done this year
- Continue the promotion of secondary school teaching packs (to encourage modal shift) – for air quality science lessons. Teaching packs developed with the London Sustainability Exchange first distributed to all East Herts secondary Schools.

Sustainable travel

- Herts Cycle Hub was launched in June of 2018 aiming to increase and support active travel, offering services such as bicycle maintenance, learn to cycle, lead rides, cycle hire and much more.
- Worked with the canal and river trust to carry out a feasibility study to upgrade the current tow paths to better walking and cycling paths.
- Improve the councils green staff travel incentives – a review has taken place and a consultation into charging for staff car parking is underway.
- Continue to work closely with Stansted airport to identify the potential for air quality improvements and sustainable transport options especially in light of the proposed airport growth of an additional 13million ppa
- Promoted and expand East Herts Council's Liftshare scheme for staff and additionally raise awareness of scheme among councillors, the aim was to double number of active Liftshare users to 40 by March 2018 which was achieved

Air quality monitoring

- We undertook a review of current diffusion tube locations and ensure appropriate locations are monitored both in line with the new district plan and anticipated growth, this involved the addition of some 15 new locations bringing the total number of locations to 36.

Planning and air pollution

- The new air quality policies in the local plan are being used to strengthen air quality planning responses.

Priorities for 2019

East Herts council expects the following measures to be completed over the course of the next reporting year:

East Herts' priorities for the coming year are;

- Finalising the electric pool car scheme and rolling out of additional EV chargers.
- Continuation of the successful Clean Air Day campaigns
- Continue to promote and expand East Herts Council's Liftshare scheme

The principal challenges and barriers to implementation that East Herts anticipates facing are resources, funding and conflicting political priorities along with the increasing number of private diesel cars on local roads and within our towns.

The impact of new development on air quality is also a factor in addressing air quality problems.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, East Herts anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the AQMA's in Hertford, Bishop Stortford and Sawbridgeworth.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Reduce queuing traffic at Hockerill Junction	Traffic Management	UTC, Congestion management, traffic reduction	Herts County Council	Model options including turning bans etc.	2007	2007		Completed Modelling identified that the junction could not be improved.	This was completed in 2018	SCOOT traffic signal equipment installed at the Hockerill junction in Bishop's Stortford. Marked as completed previously as modelling showed it could not be improved and signals were installed
2	Support the Goods Yard Link Road	Transport Planning and Infrastructure	Public transport improvements interchanges stations and services	East Herts council		2007			The East Herts Transport Plan 2007 includes a strategy for pursuing the goods yard link	This was completed in 2018	Good Yard Planning application has been submitted. However the link road has not been included.
3	Develop a bid for Bishop's Stortford station to be part of pilot station travel plan programme	Promoting Travel Alternatives	Promote use of rail and inland waterways	Herts County Council					A bid has been submitted to DfT.	This was completed in 2018	This was completed in 2018

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4	Investigate better signage for the bypass with a view to reducing the impact of through traffic.	Traffic Management	UTC, congestion management and traffic reduction	Herts County Council			Reduction in traffic flows especially HGVs			2019	Use of VMS has been included as part of the interventions identified in the Bishop Stortford Transport Plan for congestion issues.
5	Consider options for Park and Ride scheme	Alternatives to Private Vehicle Use	Bus based Park and Ride	East Herts Council	The Eastern Plan 2007 includes a strategy for Park and Rice facilities	Studies undertaken so far have indicated that it would not be viable to introduce park and ride to Bishop's Stortford or Hertford			Completed		Studies undertaken so far have indicated that it would not be viable to introduce park and ride to Bishop's Stortford or Hertford
6	Undertake improvements to signal equipment with a view to improving efficiency e.g. investigate the use of an Urban Traffic Control System	Transport Planning and Infrastructure			The Eastern Herts Transport Plan 2007 includes strategies for ITS including VMS signs and an internet site (congestion, parking availability) Town Centre urban traffic control including signalised junctions/SCOOT cells.		Reduction in Traffic Flows		Completed	Marked as completed previously as signage was installed.	SCOOT traffic signal equipment installed at the Hockerill junction in Bishop's Stortford.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
7	Investigate the opportunities to improve bus infrastructure along the bus routes through each AQMA	Transport planning and infrastructure	Public transport improvements interchanges stations and services		East Herts Quality Bus Stop works		Could have positive impact upon accessibility and bus patronage			2008	Completed. Could have positive impact upon accessibility and bus patronage.
8	Check status of school travel plans for those schools located in the vicinity of each AQMA	Promoting Travel Alternatives	School Travel Plans	East Herts council	Assess the existing travel plans to 5 schools in the Herts and Beds region (Morgan's School, Hertford)	Use this information to devise a calculator to assess the effects of school travel on AQMAs and demonstrate the effects of modal shift	Reduction in NO_x		Completed		

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
9	Devise a toolkit for 16 – 18 year olds to raise awareness of air pollution whilst working towards a British Science Association Crest Award	Promoting Travel Alternatives	School Travel Plan	East Herts Council			Increase in sustainable travel to school		This is ongoing		Worked with two Secondary schools in the Hertford and Sawbridgeworth AQMAs in partnership with the London Sustainability Exchange. Air Quality Toolkits for secondary school students have been developed which can be used in some classes and linked to curriculum and BSA Crest Award progress. Contact has been made with Hockerill Anglo-European School to see how the toolkit can be used there to raise awareness. They are keen to be more involved in the air quality remit.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
10	Promote the Benefits of Cycling	Promoting Travel alternatives	Promotion of cycling	East Herts Council	Install Cycle/scooter storage at 3 schools near the AQMA. Also upgrade the bicycle racks at East Herts Council as Staff were uncomfortable using it for security reasons.		Increased sustainable travel to school and work		Implementation on-going. Cycle and Walk to Work Day organised between EHC and HCC with annual Bike Breakfast at EHDC with active travel promotion and cycle support. ongoing since 2015. See action 13	2013	Cycle/scooter Storage installed at all sites. Cycle Hub installed in Herford.
11	Travel Stall in Hertford market. This was a one-off stall at the Hertford weekly market, to promote eco-friendly travel. Visitors to the stall were able to pick up the Hertford Travel Leaflet, and details on local health walks, and cycling information. Free fluorescent rucksack covers were given away.	Promoting Travel Alternatives	Intensive active travel campaign and infrastructure	Herts County Council and East Herts Council			Increased sustainable travel to school and work		Complete	2017	Maps are still available at public buildings

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
12	Consider further improvements to the bypass with a view to reducing the impact of through traffic			Herts County Council	Little Hadham By pass has been shortlisted as part of the Local Transport Body list of priority schemes. This, if successful would receive funding for 2015/19	Little Hadham By-Pass is going through the planning application stage. EHC to discuss implications on the AQMA with the traffic modelling team.	Reduction in traffic through the Hockerill Junction		Subject to landowner agreement, some early works are planned to take place towards the end of 2018 and into 2019 which may include environmental mitigation and utility diversion works. Some advanced enabling works are already underway for the scheme at the A1184/ A120 roundabout.	2018	Starts 2018 between Standon and the Tesco roundabout near Bishop's Stortford.
13	Hertfordshire Year of Cycling ran from May 2014 to late summer 2015 and will see a massive boost in the awareness of cycling and how the people of Hertfordshire can better integrate it with their lives.	Promoting Travel Alternatives	Promotion of Cycling	Herts County Council	The Year of Cycling comprised a fantastic range of events and cycling promotions so be sure to get involved and let us know how we can help you use a bike to improve your quality of life.	Hertfordshire Cycling website including dates of events, cycling routes and details of clubs and guided cycle rides.	Increase in number of people cycling		Hertford Cycle Hub launched June 2014. Active-In are seeking to build the number of people using the hub and the related activities including organised rides and bike repair and confidence training courses.	Ongoing	Hertford Cycle Hub launched June 2014

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
14	Hertfordshire Year of Walking ran throughout 2015 and beyond. The project aims to inspire and motivate more people in the county to walk, whether that's for exercise, to explore the countryside or simply getting from A to B.	Promoting Travel Alternatives	Promotion of Walking	Herts County Council	Working with schools, businesses and existing walking groups, as well as organising exciting walking events across the county, to get more people on their feet!	Hertfordshire Year of walking website including dates of events, walking programmes and maps.	Increase in number of people walking		Ongoing	Ongoing	Two walk to schools weeks (Sawbridgeworth & Hertford) led by HCC Sustainable Travel Team. Supported by EH Councillors in Sawbridgeworth and with funding provided by East Herts to support the Hertford Week.
15	Encourage the use of Euro 6 engines in buses that run in Bishop's Stortford.`			Herts County Council	Herts County Council to find out what Euro rating the HCC contract buses have that run in Bishop's Stortford.		Cleaner buses travelling through AQMA		Ongoing	Ongoing	Two of three Trustybus services pass through an AQMA area and meet the highest emission standards. Arriva 310, 508, 509, 510 also meet the standard. Unsuccessful CBTF for 724 route. .

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.

East Herts District Council is taking the following measures to address $PM_{2.5}$:

- all the actions in our action plan serve not only to help reduce NO_2 emissions but also those of $PM_{2.5}$,
- the council are also engaging with the local health and well-being board to help raise the profile of air quality with a view to link in more closely with the health agenda in the future.
- the council working with public health annually review the $PM_{2.5}$ monitoring results from our Hertford which should provide invaluable data to help inform future action.

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.

East Herts council undertook automatic (continuous) monitoring at 1 site during 2018 Table A.1 in Appendix A shows the details of the site.. National monitoring results are available at https://www.airqualityengland.co.uk/local-authority/data?la_id=408

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

East Herts Council undertook non- automatic (passive) monitoring of NO_2 at 36 sites during 2018. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the majority 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.

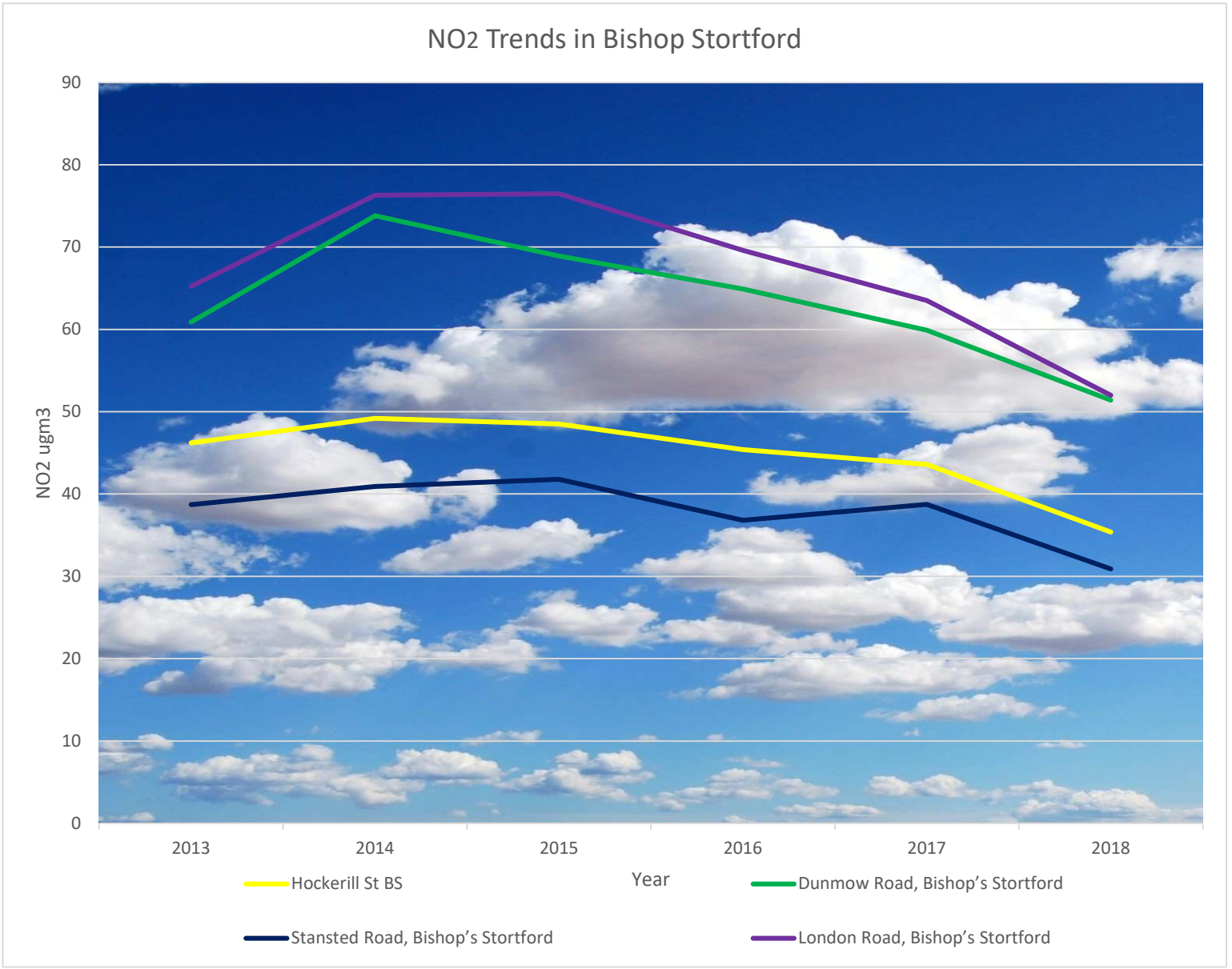
3.2 Individual Pollutants

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_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.

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


NO2 Trends in Bishop Stortford
NO2 ugm3
90
80
70
60
50
40
30
20
10
0
2013
2014
2015
2016
2017
2018
Year
Hockerill St BS
Dunmow Road, Bishop's Stortford
Stansted Road, Bishop's Stortford
London Road, Bishop's Stortford

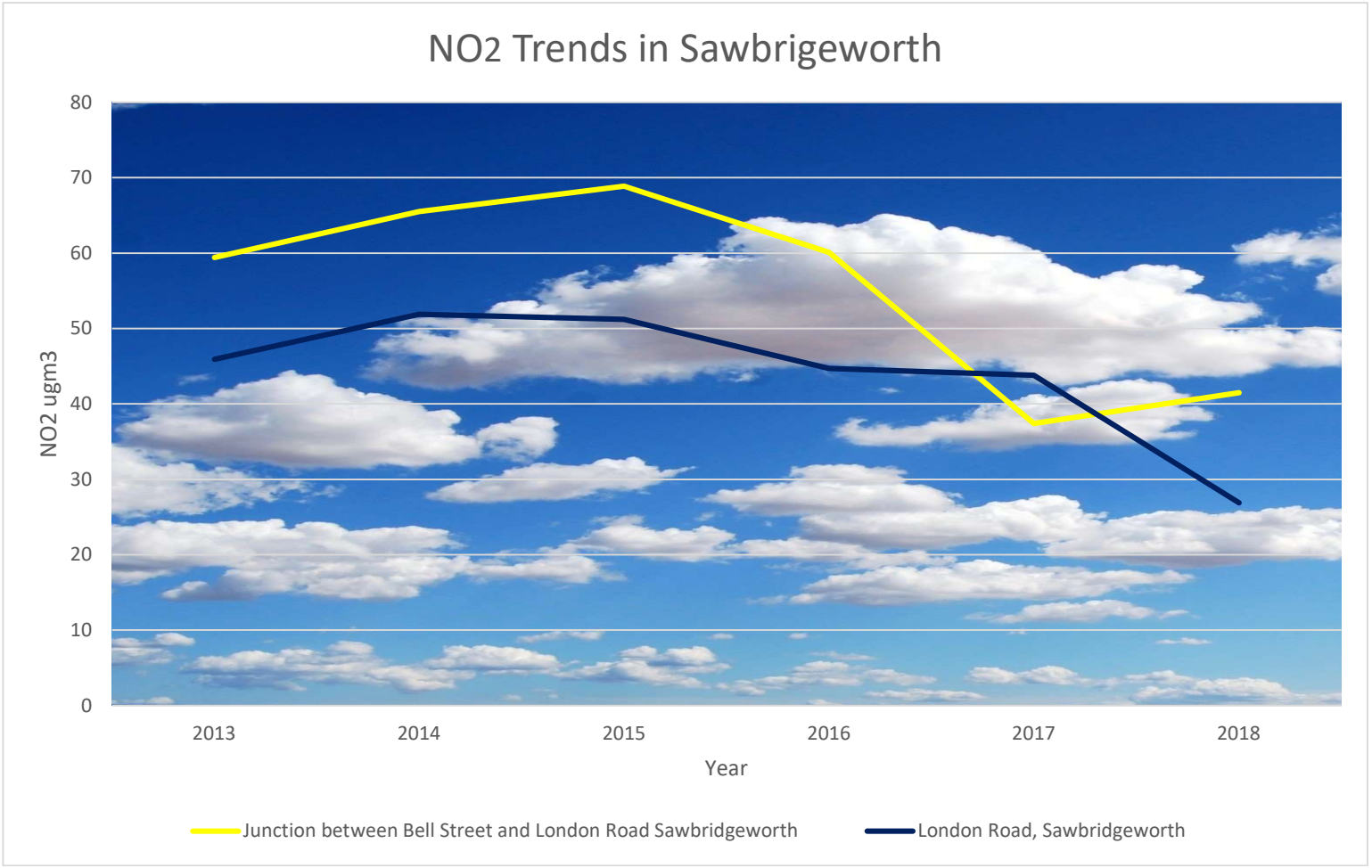

NO2 Trends in Sawbrigeworth
80
70
60
50
40
30
20
10
0
NO2 ugm3
2013
2014
2015
2016
2017
2018
Year
Junction between Bell Street and London Road Sawbridgeworth
London Road, Sawbridgeworth

Table A.4 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.

There is a general downward pollution trend seen in the NO_2 results since 2014 with the exception of a few hotspots within each of the AQMA's where slight increases in pollution levels were seen. It is thought that general fleet improvements that are filtering through are the most likely reason for the widespread general decline in levels seen for 4 consecutive years in a row.

No exceedcences of the hourly mean were found.

The exceedences mean that no changes are planned for any of the AQMA's this year and monitoring will continue at these sites.

3.2.2 Particulate Matter ($PM_{2.5}$)

Table A.5 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past 5 years.

The annual mean$PM_{2.5}$ results mirror that of 2016, however as the monitor was only installed part way through 2016 we can't really draw any trends from that year. There is however a reduction noted between 2017-2018.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
EH79	Gascogyne Way	Roadside	532464	212338	NO2, PM2.5	Y	Chemiluminescent, BAM	3	2.5	1.5

Notes:

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

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
EH12 EH31 EH32	Hockerill Street, Bishop's Stortford	Kerbside	549154	221242	NO_2	Y	Y (0.9)	1.38	N	2.5
EH14 EH55 EH56	London Road, Sawbridgeworth	Kerbside	548065	214711	NO_2	Y	Y (0.6)	2.6	N	2.5
EH17 EH35 EH36	Dunmow Road, Bishop's Stortford	Kerbside	549364	221215	NO_2	Y	Y (7.4)	1.8	N	2.5
EH18 EH37 EH38	Stansted Road, Bishop's Stortford	Kerbside	549298	221313	NO_2	N	Y (2.7)	1.43	N	2.5
EH19 EH39 EH40	London Road, Bishop's Stortford	Kerbside	549250	221200	NO_2	Y	Y (0.4)	1.05	N	2.5
EH25	Old Cross, Hertford	Kerbside	532446	212669	NO_2	Y	Y (3.1)	0.92	N	2.5
EH28 EH48 EH49	Castle Street, Hertford	Kerbside	532542	212370	NO_2	Y	Y (12.5)	2.39	N	2.5
EH30 EH50 EH51	Downey Cottage, Hertford	Kerbside	532023	212550	NO_2	Y	Y (1.8)	0.5 $	N	2.5
EH41	Ware Road, Hertford	Roadside	533101	212755	NO_2	Y	Y (2.1)	1.08	N	2.5
EH42 EH43 EH44	West Street Hertford	Roadside	532408	212371	NO_2	Y	Y (4.8)	2.75	N	2.5
EH52	Cowbridge, Hertford	Roadside	532307	212814	NO_2	Y	Y (1.5)	3.2	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) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
EH53	Viaduct Road, Ware	Roadside	536068	214120	NO_2	N	Y (3.1)	1.83	N	2.5
EH54	Station Road, Ware	Roadside	536085	214077	NO_2	N	Y (20.7)	1.75	N	2.5
EH57 EH58	Junction between Bell Street and London Road Sawbridgeworth	Roadside	548123	214903	NO_2	N	Y (0.6)	2.75	N	2.5
EH62 EH63	Northgate End B/S Jct Yew Tree Court	Roadside	548723	221719	NO_2	N	Y (6.0)	2.5	N	2.5
EH64 EH65	79 Rye Street Bishops Stortford	Roadside	548741	222109	NO_2	N	Y (3.9)	1.5	N	2.5
EH66 EH67	209 Rye Street Bishops Stortford	Roadside	549163	222731	NO_2	N	Y (0.5)	1.2	N	2.5
EH68 EH69	9 Hadham Road Bishops Stortford	Roadside	548611	221541	NO_2	N	Y (0.5)	1.5	N	2.5
EH70 EH71 EH72	Outside 38 High Street Buntingford	Roadside	536205	229558	NO_2	N	Y (0.5)	1.5	N	2.5
EH73 EH74 EH75	Opposite Horseshoe Cottages Buntingford	Roadside	536186	229430	NO_2	N	Y (0.5)	1.5	N	2.5
EH79 EH80 EH81	Gascoyne Way hertford	Roadside	532464	212338	NO_2	Y	3 (Y)	2.5	Y	1.5
EH82	10 Bullocks	Roadside	532186	211739	NO_2	N	Y (0.5)	1.5	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) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
	Lane, Hertford									
EH83	Port Hill Hertford	Roadside	532355	213032	NO_2	N	Y (0.5)	1.5	N	2.5
EH84	North Road, Hertford	Roadside	532113	212604	NO_2	N	Y (0.5)	1.5	N	2.5
EH85	Sele House North Road, Hertford	Roadside	531911	212711	NO_2	N	Y (0.5)	1.5	N	2.5
EH86	78 North Road, Hertford	Roadside	531577	213073	NO_2	N	Y (0.5)	1.5	N	2.5
EH87	Viaduct Road, Ware	Roadside	536060	214128	NO_2	N	Y (0.5)	1.5	N	2.5
EH88	Santander High Street, Ware	Roadside	535793	214312	NO_2	N	Y (0.5)	1.5	N	2.5
EH89	Coffee Lab, 84-88 High Street, Ware	Roadside	535743	214348	NO_2	N	Y (0.5)	1.5	N	2.5
EH90	Pye Corner, Gilston	Roadside	544885	212254	NO_2	N	Y (0.5)	1.5	N	2.5
EH91	14 London Road, SBW	Roadside	548012	214579	NO_2	Y	Y (0.5)	1.5	N	2.5
EH92	Gourmet Oriental, South Street, B/S	Roadside	548865	220981	NO_2	N	Y (0.5)	1.5	N	2.5
EH93	Sarfood, Station Road, B/S	Roadside	548904	221020	NO_2	N	Y (0.5)	1.5	N	2.5
EH94	Cancer Research UK, Potter Street,B/S	Roadside	548778	221308	NO_2	N	Y (0.5)	1.5	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) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
EH95	Stortford Road, Little Hadham	Roadside	543996	222731	NO_2	N	Y (0.5)	1.5	N	2.5
EH96	Standon Road, Little Hadham	Roadside	543944	222725	NO_2	N	Y (0.5)	1.5	N	2.5

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period 18 (%) [1]	Valid Data Capture 18 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]					
					2013	2014	2015	2016	2017	2018
EH12 EH31 EH32	Kerbside	Diffusion Tube	90.6	90.6	**46.2**	**49.2**	**48.5**	**45.4**	43.6	35.4
EH14 EH55 EH56	Kerbside	Diffusion Tube	22.6	22.6	**45.9**	**51.9**	**51.2**	**44.7**	43.8	26.9
EH17 EH35 EH36	Kerbside	Diffusion Tube	90.6	90.6	**60.9**	**73.8**	**68.9**	**64.9**	59.9	51.4
EH18 EH37 EH38	Kerbside	Diffusion Tube	90.6	90.6	38.7	**40.9**	**41.8**	36.8	38.73	30.9
EH19 EH39 EH40	Kerbside	Diffusion Tube	90.6	90.6	**65.2**	**76.3**	**76.5**	**69.6**	63.5	52.0
EH25	Kerbside	Diffusion Tube	83.0	83.0	38.1	**43.5**	**41.3**	37.3	45.4	35.1
EH28 EH48 EH49	Roadside	Diffusion Tube	90.6	90.6	37.5	**47.5**	**43.0**	36.7	35.6	28.4
EH30 EH50 EH51	Roadside	Diffusion Tube	90.6	90.6	39.2	**45.3**	**45.1**	39.3	38.5	29.9
EH41	Roadside	Diffusion Tube	90.6	90.6	**46.6**	**52.3**	**54.6**	**44.3**	43	31.9
EH42 EH43 EH44	Roadside	Diffusion Tube	90.6	90.6	**58.2**	**64.0**	**69.2**	**60.5**	43.2	32.9
EH52	Roadside	Diffusion Tube	83.0	83.0	31.2	32.1	31.0	27.3	29.5	23.7

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period 18 (%) (1)	Valid Data Capture 18 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)					
					2013	2014	2015	2016	2017	2018
EH53	Roadside	Diffusion Tube	0.0	0.0	37.2	39.8	38.4	35.2	36.4	-
EH54	Roadside	Diffusion Tube	83.0	83.0	28.7	30.2	31.7	26.6	29.7	21.0
EH57 EH58	Roadside	Diffusion Tube	90.6	90.6	**59.4**	**65.5**	**68.9**	**60.1**	37.4	41.5
EH62 EH63	Roadside	Diffusion Tube	81.1	81.1	-	39.2	36.7	33.5	31.2	27.6
EH64 EH65	Roadside	Diffusion Tube	90.6	90.6	-	38.9	39.6	34.0	31.1	26.8
EH66 EH67	Roadside	Diffusion Tube	90.6	90.6	-	21.8	22.3	19.6	22.9	15.9
EH68 EH69	Roadside	Diffusion Tube	90.6	90.6	-	38.5	38.4	33.1	31.9	27.7
EH70, EH71, EH72	Roadside	Diffusion Tube	90.6	90.6	-	21.8	22.3	19.6	24.2	19.5
EH73 EH74 EH75	Roadside	Diffusion Tube	83.0	83.0	-	38.5	38.4	33.1	30.8	24.4
EH79, EH80, EH81	Roadside	Diffusion Tube	90.6	90.6	-	-	-	**44.4**	36.8	31.8
EH82	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	24.8
EH83	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	21.7
EH84	Roadside	Diffusion Tube	49.1	49.1	-	-	-	-	-	27.2
EH85	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	32.2
EH86	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	22.5
EH87	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	35.0
EH88	Roadside	Diffusion Tube	49.1	49.1	-	-	-	-	-	35.2
EH89	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	28.1
EH90	Roadside	Diffusion Tube	49.1	49.1	-	-	-	-	-	25.9
EH91	Roadside	Diffusion Tube	50.9	50.9	-	-	-	-	-	36.7
EH92	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	23.3
EH93	Roadside	Diffusion Tube	41.5	41.5	-	-	-	-	-	35.8
EH94	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	27.9

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period 18 (%) (1)	Valid Data Capture 18 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)					
					2013	2014	2015	2016	2017	2018
EH95	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	22.6
EH96	Roadside	Diffusion Tube	58.5	58.5	-	-	-	-	-	22.1

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

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

Notes:

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

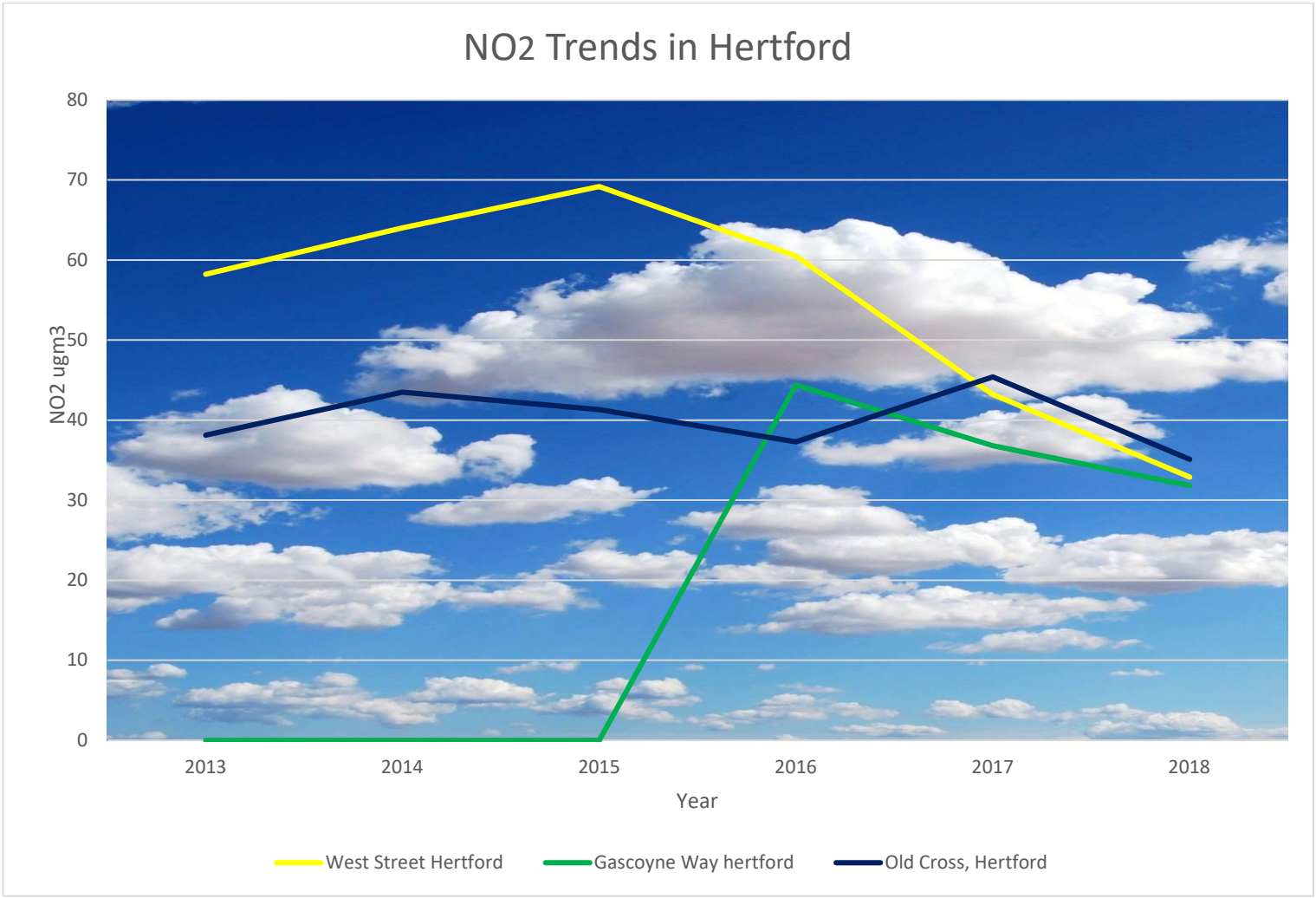
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

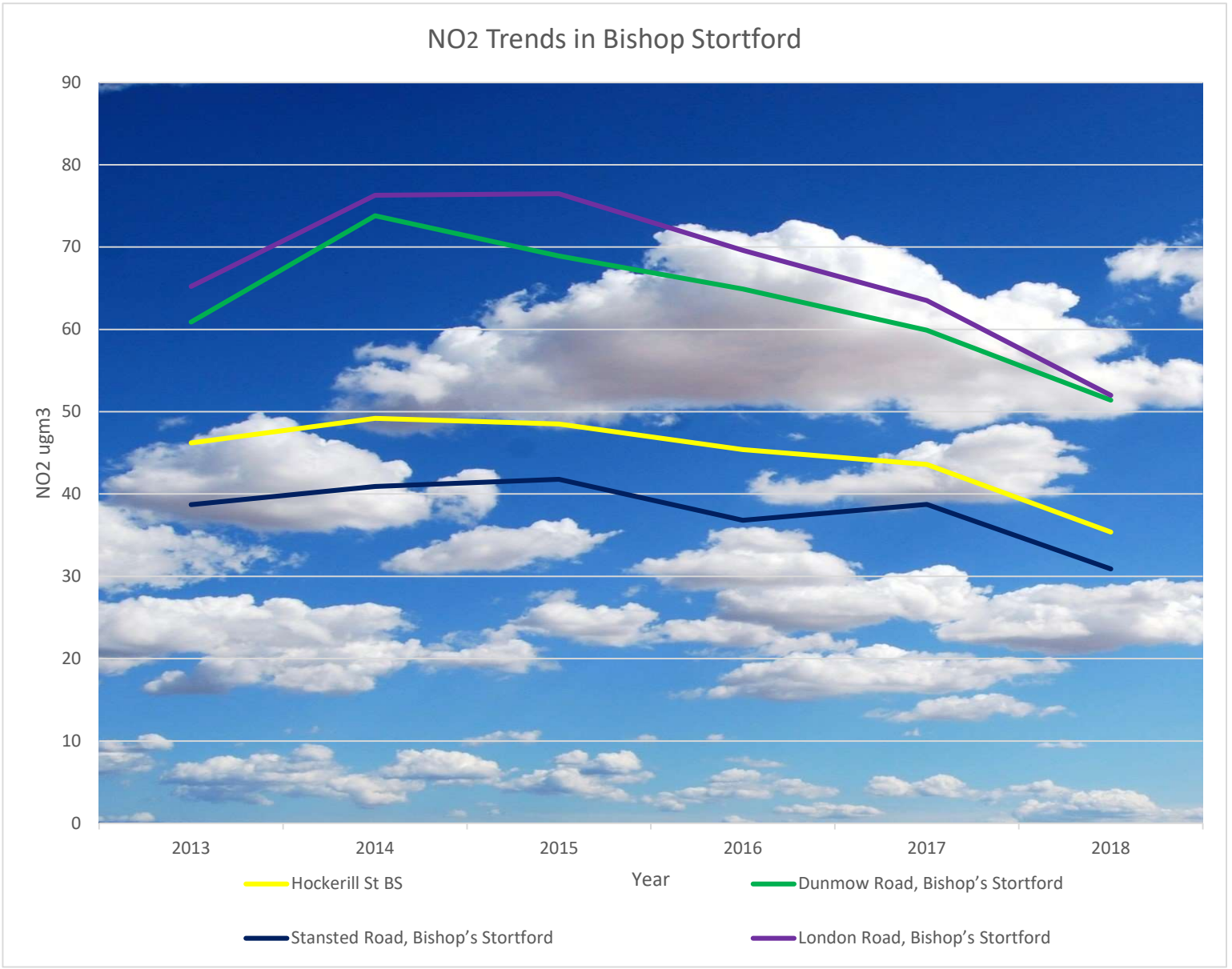
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations




NO2 Trends in Bishop Stortford
NO2 ugm3
90
80
70
60
50
40
30
20
10
0
2013
2014
2015
2016
2017
2018
Year
Hockerill St BS
Dunmow Road, Bishop's Stortford
Stansted Road, Bishop's Stortford
London Road, Bishop's Stortford

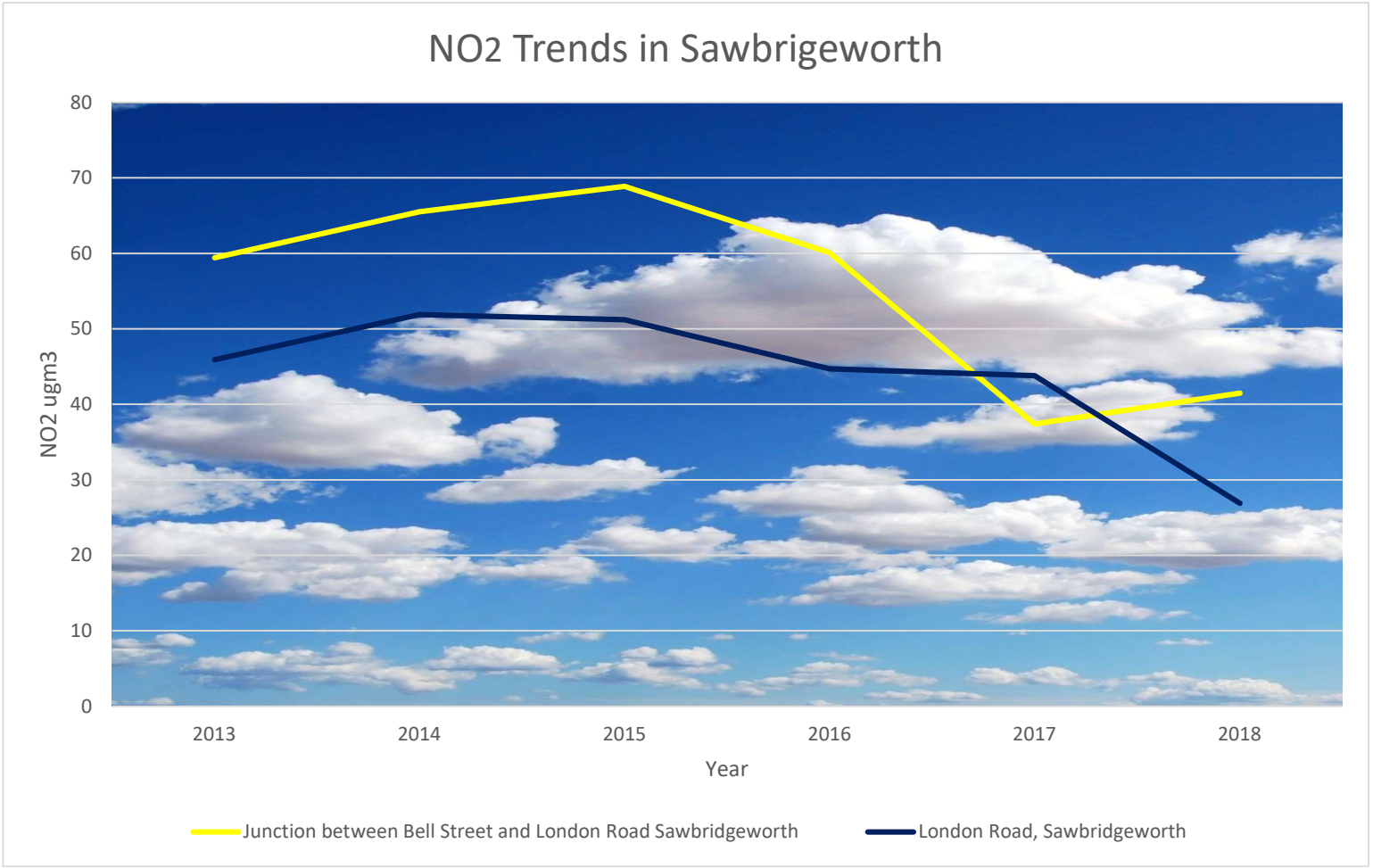

NO2 Trends in Sawbrigeworth
80
70
60
50
40
30
20
10
0
NO2 ugm3
2013
2014
2015
2016
2017
2018
Year
Junction between Bell Street and London Road Sawbridgeworth
London Road, Sawbridgeworth

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

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2014	2015	2016	2017	2018
EH79	Gascogyne Way	Roadside					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 – $PM_{2.5}$ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2018 (%) (2)	$PM_{2.5}$ Annual Mean Concentration (µg/m^3) (3)				
				2014	2015	2016	2017	2018
Gascogyne Way	Roadside	91.0	91.0	-	-	14	14	10.2

☒ **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_2 Monthly Diffusion Tube Results - 2018

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.92) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
EH12	58	52	58	44				29	47		49	45	**47.75**	**43.93**	
EH31	65	55	57	48				22	14	54	49	45	**45.4**	**41.76**	
EH32	61	55	61	53				26	43		48	44	**48.9**	**44.98**	
EH14	65	59	56	51	54			20	39	47	51	32	**47.4**	**43.61**	
EH55	69	56	56	46	54			25	44	41	50	44	**48.5**	**44.62**	
EH56	60	54	55	51	55			24	44	36	49	40	**46.8**	**43.05**	
EH17	79	75	75	84	70			30	76	57	67	52	**66.5**	**61.18**	
EH35	84	75	67	81	83			33	61	52	71	57	**66.4**	**61.08**	
EH36	86	76	81	80	66			28	29	64	62	56	**62.8**	**57.55**	
EH18	56	49	46	45	41			19	40	33	45	39	**41.3**	39.65	
EH37	54	46	47	45	40			20	39	39	42	40	**41.2**	37.9	
EH38	55	45	43	46	41			19	39	44	46	42	**42**	38.64	
EH19	88	84	72	82	74			31	63	64	86	60	**70.4**	**64.76**	
EH39	88	79	78	76	74			30	57	58	77	60	**67.7**	**62.28**	
EH40	88	79	77	80	77			29	65	60	76	58	**68.9**	**63.38**	

EH25	65	63	59	56	48			14	41	43	62	42	**49.3**	**45.35**	
EH28	57	51	49	36	36			13	38	35	40	33	**38.8**	35.69	
EH48	59	52	47	36	38			14	35	33	42	33	38.9	35.78	
EH49	54	51	48	36	33			19	35	34	38	37	38.5	35.42	
EH30	52	49	53	38	45			22	39	42	44	38	**42.2**	38.82	
EH50	53	50	52	38	48			25	39	39	45	39	**42.8**	39.37	
EH51	51	45	50	41	45			12	41	40	45	37	**40.7**	37.44	
EH41	65	59	56	45	46			20	41	44	48	43	**46.7**	**42.96**	
EH42	75	55	55	63					38	33	51	27	**49.6**	**45.63**	
EH43	69	54	58	49				16	39	40	48	38	**45.7**	**42.04**	
EH44	72	57	49	49	48			17	35	37	51	40	**45.5**	**41.86**	
EH52	43	41	37	29	29			13	29	31	38	31	32.1	29.53	
EH53	57	47	45	41	35			15	37	35	46	38	39.6	36.43	
EH54	45	40	36	31	25			13	27	31	41	34	32.3	29.71	
EH57	79	65	71	72	61			26	52	57	70	58	**61.1**	**56.21**	
EH58	68	67	73	65	62			25	57	58	74	61	**61**	**56.12**	
EH62	48	44	42	28	34			16	26	32	39	34	34.3	31.56	
EH63	50	43	41	28	33			14	25	33	38	30	33.5	30.82	
EH64	52	42	42	33	31			13	20	30	42	30	33.5	30.82	
EH65	54	42	40	30	31			11	20	33	43	36	34	31.28	
EH66	35	29	25	16	24					20		22	24.4	22.45	
EH67	35	28	27	18	24					21		24	25.3	23.28	
EH68	51	40	40	31	38			12	30	34	38	35	34.9	32.11	
EH69	53	38	39	31	38			13	30	32	37	33	34.4	31.65	
EH70	41	29	31	23	24			11	23	26	30	28	26.6	24.47	
EH71	39	31	30	23	24			11	22	25	31	26	26.2	24.1	
EH72	41	28	30	24	25			9	23	25	29	28	262	24.1	

EH73	48	32		31	31			11	27	29	39	33	35.1	32.29	
EH74	43	36	38	32	29			11	28	31	41	31	32	29.44	
EH75	51	36	40	33	29			11	26		39	35	33.3	30.63	
EH79	67	46	46	36	43			25	32	35	41	32	**40.3**	37.07	
EH80	64	46	46	37	45			24	33	35	39	34	**40.3**	37.07	
EH81	60	44	46	38	45			19	34	36	40	31	39.3	36.16	

☒ **Local bias adjustment factor used**

☐ **National bias adjustment factor used**

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

☒ **Where applicable, data has been distance corrected for relevant exposure**

Notes:

Exceedances of the NO_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.

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

QA/QC of Diffusion Tube Monitoring

Diffusion tubes are purchased from Gradko. Gradko participates in the AIR proficiency testing (PT) scheme operated by LGC Standards and supported by the Health and Safety Laboratory (HSL), which provides a Quality Assurance/Quality Control (QA/QC) framework for local authorities carrying out diffusion tube monitoring as a part of their local air quality management process.

The AIR PT scheme tests laboratories' analytical performance on a quarterly basis. Table C1.0 shows the results of the AIR PT testing 2018. As can be seen from the results below, 100% of the samples analysed by Gradko were determined to be 'satisfactory';

Round	AIR PT	AIR PT	AIR PT	AIR PT
Period	Jan – Feb 2018	April-May 2018	July-Aug 2018	Sept-Oct 2018
Gradko International	100%	100%	100%	100%

Diffusion Tube Bias Adjustment Factors

East Herts Council purchases all of its diffusion tubes from Gradko. The preparation method is 20% TEA in water, All of the data presented in this report has been bias adjusted using the locally derived bias factor of 0.82 (see below)

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	06/12/2017	03/01/2018	40.0	36.0	40.0	39	2.3	6	5.7	37.13	99.7	Good	Good
2	03/01/2018	31/01/2018	45.0	44.0	51.0	47	3.8	8	9.4	38.97	98.96	Good	Good
3	31/01/2018	28/02/2018	52.0	52.0		52	0.0	0	0.0	37.62	100	Good	Good
4	28/02/2018	28/03/2018								39.23	99.7		Good
5	28/03/2018	02/05/2018	41.0	36.0	41.0	39	2.9	7	7.2	34	100	Good	Good
6	02/05/2018	06/06/2018	49.0	52.0	51.0	51	1.5	3	3.8	25	99.88	Good	Good
7	06/06/2018	04/07/2018	32.0	32.0	33.0	32	0.6	2	1.4	23	99.85	Good	Good
8	04/07/2018	01/08/2018	28.0	30.0	28.0	29	1.2	4	2.9	28	99.26	Good	Good
9	01/08/2018	05/09/2018	28.0	29.0	28.0	28	0.6	2	1.4	25	99.88	Good	Good
10	05/09/2018	03/10/2018	39.0	39.0	26.0	35	7.5	22	18.6	28	100	Poor Precision	Good
11	03/10/2018	31/10/2018	44.0	46.0		45	1.4	3	12.7	29.9	99.7	Good	Good
12	31/10/2018	05/12/2018	33.0	35.0	35.0	34	1.2	3	2.9	41.54	99.76	Good	Good
13	05/12/2018	09/01/2019	38.0	39.0	37.0	38	1.0	3	2.5	35.28	99.88	Good	Good
											Overall survey -->	Good precision	Good Overall

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

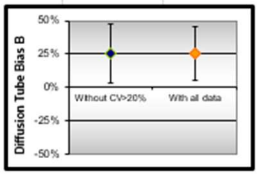
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision: 11 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 11 periods of data	
Bias factor A	0.82 (0.69 - 1)
Bias B	22% (0% - 44%)
Diffusion Tubes Mean:	39 µgm^{-3}
Mean CV (Precision):	4
Automatic Mean:	32 µgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	32 (27 - 39) µgm^{-3}

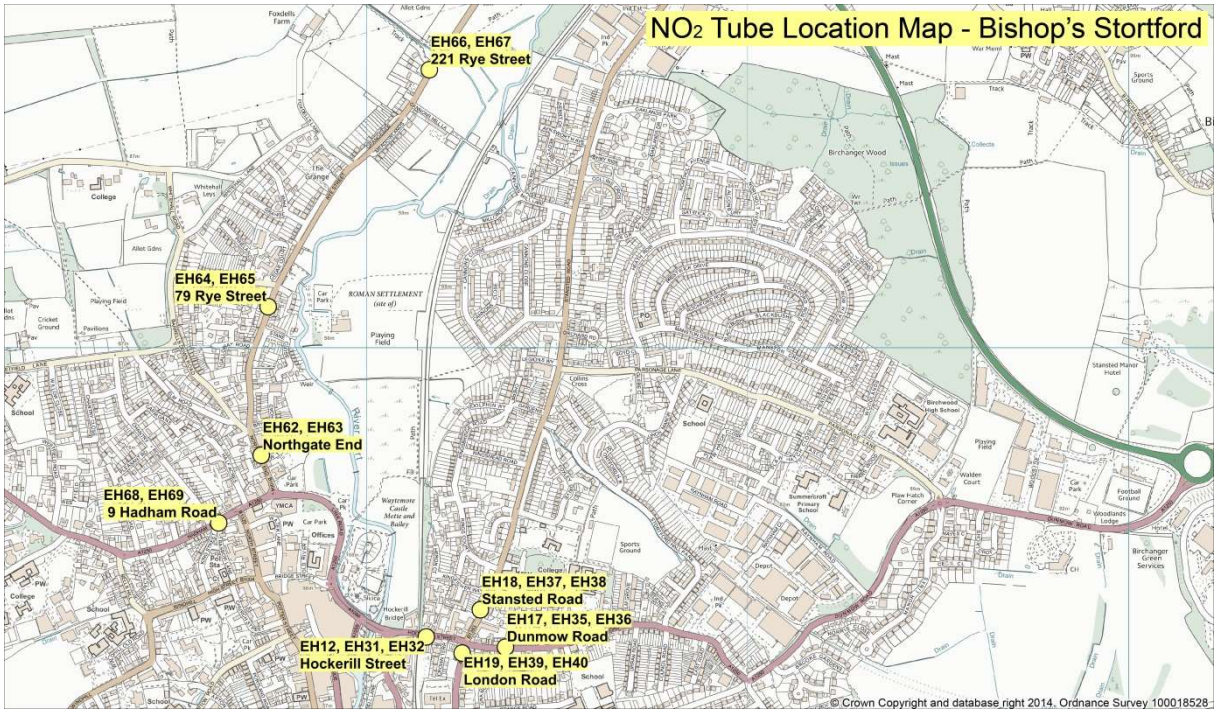
Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	0.82 (0.7 - 0.98)
Bias B	22% (2% - 42%)
Diffusion Tubes Mean:	39 µgm^{-3}
Mean CV (Precision):	5
Automatic Mean:	32 µgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	32 (27 - 38) µgm^{-3}

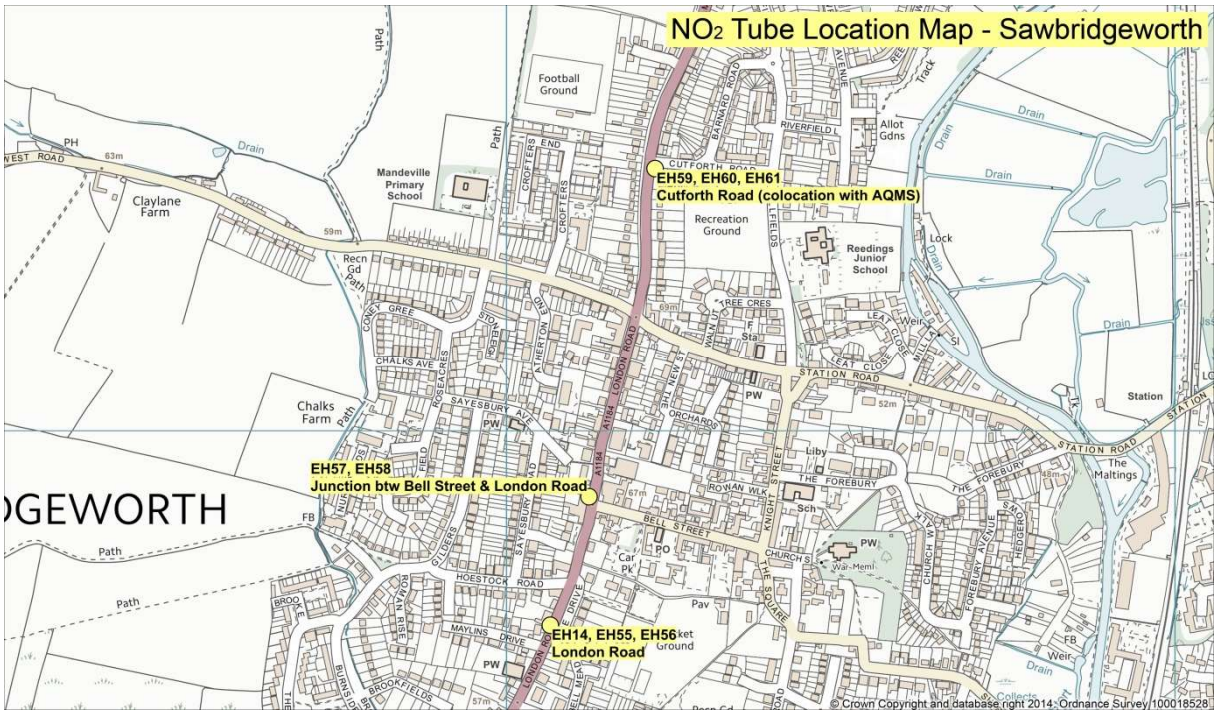


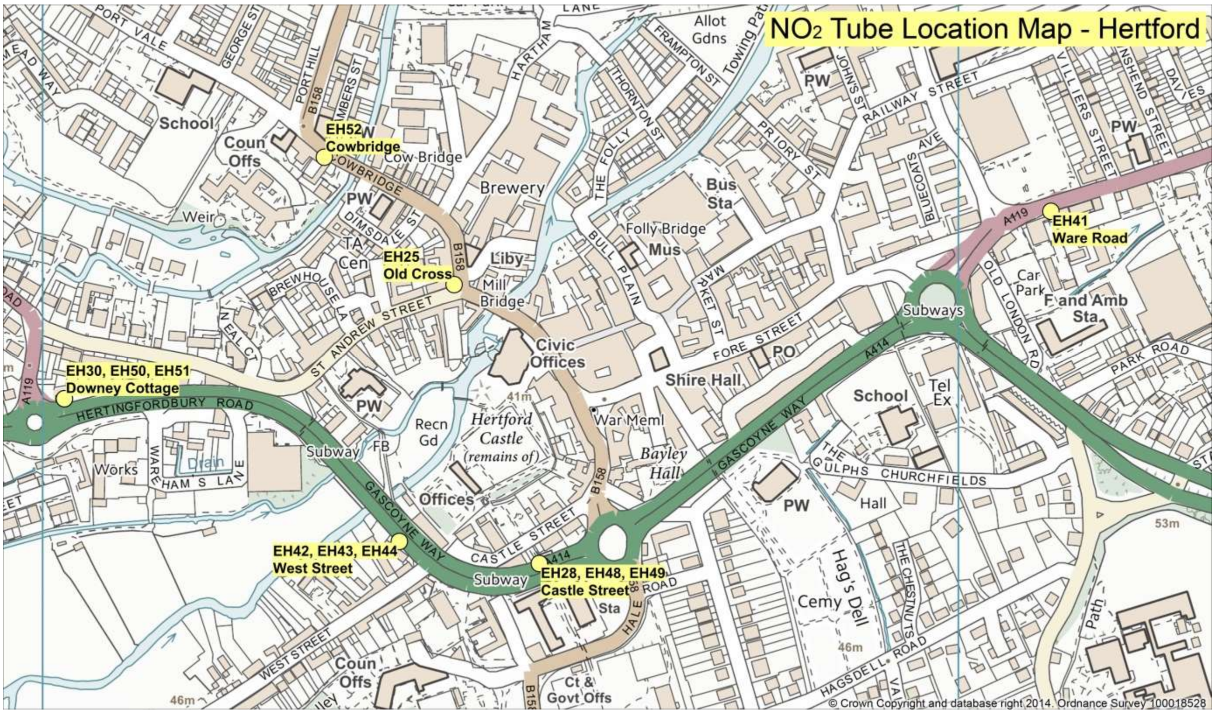
Jaume Targa, for AEA
Version 04 - February 2011

If you have any enquiries about this spreadsheet please contact the LAQM Helpdesk at: LAQMHelpdesk@uk.bureauveritas.com

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






NO2 Tube Location Map - Hertford
EH52
Cowbridge
EH25
Old Cross
EH30, EH50, EH51
Downey Cottage
EH42, EH43, EH44
West Street
EH28, EH48, EH49
Castle Street
EH41
Ware Road
HERTINGFORDBURY ROAD
GASCOYNE WAY
CASTLE STREET
ST ANDREW STREET
FORE STREET
RAILWAY STREET
PARK ROAD
CHURCHFIELDS
HAGSDELL ROAD
WEST STREET
Hertford
Castle
(remains of)
Civic
Offices
Shire Hall
Bayley
Hall
Brewery
Folly Bridge
Mill
Bridge
Cow Bridge
Bus
Sta
Subways
Subway
Hag's Dell
School
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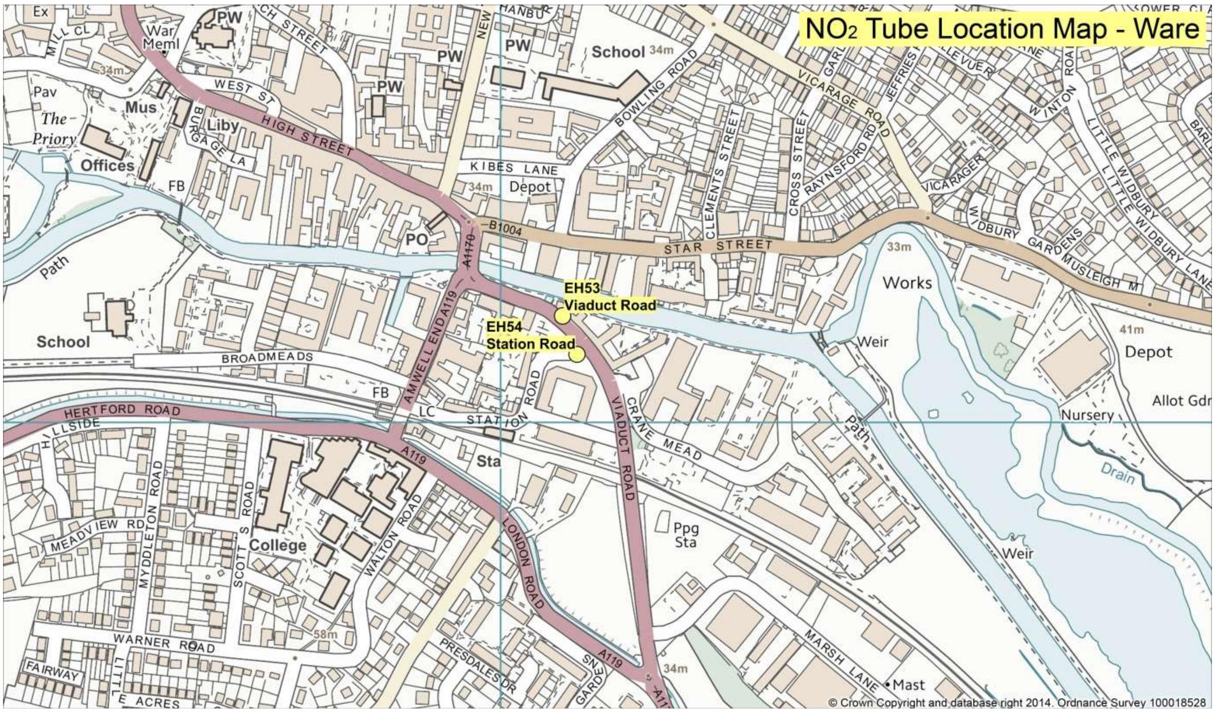
NO2 Tube Location Map - Ware
EH53
Viaduct Road
EH54
Station Road
HIGH STREET
STAR STREET
KIBES LANE
BROADMEADS
HERTFORD ROAD
AMWELL END
VIADUCT ROAD
LONDON ROAD
STATION ROAD
BOWLING ROAD
VICARAGE ROAD
WARNER ROAD
MARSH LANE
College
School
Works
Depot
Sta
Weir
The
Priory
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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[4] The units are in microgrammes of pollutant per cubic metre of air (µg/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

No additional references