



## 2017 Air Quality Annual Status Report (ASR)

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

July 2017

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Report Reference number	ASR_2017
Date	July 2017

## 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<sup>1,2</sup>.

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

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<sub>2</sub>) 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.

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<sub>2.5</sub>). The data from the continuous analyser is managed by an external data management company.

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

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

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

Each year the company carries out analysis of the data including long term monitoring trends and presents the results in an annual report. These can be found on the Herts and Beds Air Quality Monitoring website<sup>4</sup>.

In 2014 and 2015 there was a slight increase in the concentrations of NO<sub>2</sub> at most diffusion tube monitoring locations followed by a slight reduction in 2016. However, the changes in annual mean are not significant and therefore at this time no conclusions could be drawn as to why the reduction in concentrations has occurred. This could be as a result of a reduction in traffic emissions or other environmental factors such as weather. East Herts Council will continue to monitor NO<sub>2</sub> at these locations to determine whether this is the beginning of a longer term improvement in air pollution.

## **Actions to Improve Air Quality**

As discussed previously the three AQMAs in East Herts are as a consequence of congestion on very busy roads. The concentrations at the Hockerill Junction AQMA in Bishop's Stortford are increased by the street canyon affect provided by the road being flanked by buildings which are taller than its width. This has led to the conclusion that very little can be done to the road network within the area itself and the air can only be improved by reducing the amount of traffic that passes through the AQMA. Therefore a number of projects have been implemented to reduce road traffic and encourage modal shift and East Herts Council will work with partners (internally and externally to the Council) to deliver these projects.

## **Defra Funded Grant Projects**

East Herts Council has applied for a number of Defra grants over the past five years to determine best methods of reducing air pollution and also put in place measures to encourage modal shift from cars to more sustainable modes of travel such as walking and cycling. Details of the Actions taken since 2012 are provided below:

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<sup>4</sup> [www.hertsbedsair.net](http://www.hertsbedsair.net)

- In 2012 TRL was commissioned by Herts and Beds Air Quality Network to study the effect of 5 schools on nearby AQMAs. The information gained from the study was used to devise a calculator. Each school can now determine the consequence of their school journeys on air quality locally and how changing their parents' mode of travel could reduce pollution.
- In 2014 Herts County Council in partnership with East Herts Council held a sustainable travel campaign. The purpose of the campaign was to encourage sustainable behaviour change to a large number of employees at Herts County Council and East Herts Council as well as three local schools. This involved installing bike/scooter racks at three schools and Hartham leisure centre. The East Herts Council bike rack was made more secure as staff were afraid to use it as bikes had been stolen in the past. A number of public and staff leaflets and fluorescent rucksack covers were handed out and events were used to highlight the sustainable transport message.
- East Herts Council and Herts County Council have worked together to improve 2 of the underpasses which link the town severed by the A414. The existing underpasses are underused because they are perceived as being unsafe, drab and dirty. The council commissioned community clean to install a full colour wall wrap system to the subway utilising artwork from local school children. The new subway wrap has only been in place for just over a year therefore final conclusions cannot yet be drawn without more qualitative and quantitative evidence. It is too early to say yet whether there are likely to be reductions in pollutant concentrations, as this study is looking at behaviour change from using the car for local journeys to replacing journeys with walking and cycling journeys to work, school and other essential services. Early indications show that pedestrian footfall has increased and anecdotal evidence shows that everyone who has seen the artwork is very impressed with the improvement in the journey experience, and they will change their journey patterns to sustainable mode.

- Working with the London Sustainability exchange and 2 local secondary schools on developing a teaching pack for secondary schools. Cleaner Air 4 Secondary Schools (CA4SS) is a multiple-disciple project designed alongside the school curriculum, with the aim of raising awareness and stewardship of air quality among the school community. With students learning the skills and behaviours they need for an independent, healthy lifestyle, schools are an ideal environment for creating lasting change in people's attitudes towards air quality. CA4SS can be easily integrated into science and geography programmes, enriching the schools' approach to the national curriculum to boost further education and future employment prospects. It is our intention to continue this project at another school, probably one next to the AQMA in Bishop's Stortford.
- In 2016 East Herts Council published a study on Car Park Based Low Emission Options to Support East Herts Air Quality Action Plan. This study was concerned with examining how road transport emissions can be reduced by influencing the type and performance of vehicles accessing car parks in Hertford and Bishop's Stortford. If measures to improve emissions and air quality are pursued, it is hoped that these will complement car parking initiatives already reported in documents such as Hertfordshire County Council's Local Transport Plan 2011 – 2031, Hertfordshire County Council's County & District Air Quality Action Plan and Parking and Transport Strategy.

Local and national media coverage and high profile cases have increased the profile of air pollution nationally and within the East Herts Council district itself. There are a number of priorities for East Herts Council over the next few years to help improve air quality, these include:

### **Implementing the new Air Quality Action Plan**

The Air Quality Action Plan (AQAP) has been reviewed as the previous plan was out of date. The main priority for East Herts will be to implement measures in the new Plan published in June 2017 covering the period 2017/18 to 2019/20. This plan include making walking and cycling routes more attractive and working with local

school children to foster a better understanding of how air pollution can be reduced. It also includes interventions that will have a longer lead-in period, including using funding from the Defra to set up and promote electric vehicle car pools in Hertford and Bishop's Stortford. At the same time East Herts Council will continue to work with Hertfordshire County Council colleagues to identify and promote road and junction improvements to reduce concentrations of traffic and the pollution from idling engines that can result.

### Working with Planning Policy

East Herts Environmental Health has been working with the Planning Policy team to ensure that an Air Quality Policy is included in the Local Plan. The Council is preparing an Air Quality Planning Guidance document which defines the Council's expectations of developers to ensure a consistent approach and sets criteria for when an Air Pollution Assessment is required and a range of mitigation options. In some cases it may be necessary to place conditions where permission is granted in order to ensure mitigation is delivered.

The emerging Local Plan includes a new policy which seeks to minimise the impacts of new development on air quality:

#### ***Policy EQ4 Air Quality***

*I. Development and land uses should minimise potential impacts on local air quality both during construction and operation including the operation of heating, cooling and extraction units. Applications should be supported by Air Pollution Assessment in line with the Council's Air Quality Planning Guidance Document.*

*II. Development within designated Air Quality Management Areas (AQMAs), or development which may have an impact on these areas, must have regard to the Council's latest strategy and action plan for the reduction of pollutants in the defined catchment, maintaining acceptable levels of air quality. Evidence of mitigation measures will be required.*

*III. New developments should make provision for electric vehicle charging points in safe and accessible locations in accordance with Policy DES3 Design of Development.*

*IV. In order to minimise the impact of travel on local air quality, where major developments involve the introduction of new bus routes or significant changes to existing routes, service providers will be required, in agreement with Hertfordshire County Council's Transport, Access and Safety Unit, to ensure that the vehicles serving these locations will either be of 'hybrid' type or meet the latest 'Euro' emissions regulations.*

## **Conclusions and Priorities**

In summary, the 2016 ASR has indicated some minor improvements in air quality, however it is too early to say whether this is the beginning of a trend or whether other factors such as the weather have caused this improvement. In 2016 there were seven sites exceeding the UK annual mean objective for nitrogen dioxide, compared to eleven in 2014 and 2015. There has been a general downward trend across all monitoring locations and monitoring will continue to establish whether this is a longer term trend. All of the locations currently in exceedance of the air quality objective are already within an AQMA.

East Herts Council has updated the AQAP in June 2017. Therefore the priorities for the coming year are to begin implementing the Action Plan measures. Some of the measures require external funding to be obtained and therefore this will be the main barrier to implementing some of the Action Plan.

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

East Herts Council is working with other organisations to improve air quality but we can all make small changes to help make a big difference. East Herts Council residents can get involved by considering whether or not they can make small changes to their lifestyle that would help the environment.

Ideas to consider are:

- Driving more smoothly and turning our engines off when stationary for longer than a minute or so, e.g. at traffic lights or in traffic;
- For a short journey, consider walking or cycling. Even if this is only carried out on days where the weather is fair, it will contribute to lowering emissions and also improve health and wellbeing;

- Families with more than one car could consider a smaller second or even an electric car;
- Consider whether or not you can take public transport.

Websites to explore for further information are:

- <http://www.energysavingtrust.org.uk/travel/driving-advice>. Web page on fuel efficient driving
- <https://www.goultralow.com/> a central government website about low emission vehicles
- <http://www.travelinesoutheast.org.uk> a journey planner that can plan door-to-door journeys across the whole of England, Scotland and Wales by public transport. An app is also available from the Apple App Store or Google Play Store as appropriate
- Maps and routes for walking and cycling are available from Hertfordshire County Council. [www.hertsdirect.gov.uk](http://www.hertsdirect.gov.uk)

# Table of Contents

<b>Executive Summary: Air Quality in Our Area</b>	<b>i</b>
Air Quality in East Herts	i
Actions to Improve Air Quality	ii
Conclusions and Priorities	vi
Local Engagement and How to get Involved	vi
<b>1 Local Air Quality Management</b>	<b>1</b>
<b>2 Actions to Improve Air Quality</b>	<b>2</b>
2.1 Air Quality Management Areas	2
2.2 Progress and Impact of Measures to address Air Quality in East Herts	5
2.3 PM <sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations	23
<b>3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance</b>	<b>27</b>
3.1 Summary of Monitoring Undertaken	27
3.1.1 Automatic Monitoring Sites	27
3.1.2 Non-Automatic Monitoring Sites	27
3.2 Individual Pollutants	27
3.2.1 Nitrogen Dioxide (NO <sub>2</sub> )	27
3.2.2 Particulate Matter (PM <sub>10</sub> )	28
3.2.3 Particulate Matter (PM <sub>2.5</sub> )	28
<b>Appendix A: Monitoring Results</b>	<b>29</b>
<b>Appendix B: Full Monthly Diffusion Tube Results for 2016</b>	<b>37</b>
<b>Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC</b>	<b>39</b>
<b>Appendix D: Map(s) of Monitoring Locations and AQMAs</b>	<b>41</b>
<b>Appendix E: Summary of Air Quality Objectives in England</b>	<b>46</b>
<b>Glossary of Terms</b>	<b>47</b>

## List of Tables

Table 2.1 – Declared Air Quality Management Areas	3
Table 2.2 – Progress on Measures to Improve Air Quality	8
Table A.1 – Details of Automatic Monitoring Sites	29
Table A.2 – Details of Non-Automatic Monitoring Sites	30
Table A.3 – Annual Mean NO <sub>2</sub> Monitoring Results	32

Table A.4 – 1-Hour Mean NO <sub>2</sub> Monitoring Results.....	35
Table A.5 – PM <sub>2.5</sub> Monitoring Results.....	36
Table B.1 – NO <sub>2</sub> Monthly Diffusion Tube Results – 2016.....	37
Table C.1 - Results of the AIR PT Scheme for Gradko 2016.....	40
Table E.1 – Air Quality Objectives in England.....	46

## List of Figures

Figure A.1 Trends in Annual Mean NO <sub>2</sub> Concentration.....	34
Figure D.1 Bishops Stortford AQMA.....	41
Figure D.2 Map of Hertford AQMA.....	42
Figure D.3 Map of Sawbridgeworth AQMA.....	43
Figure D.4 Nitrogen Dioxide Diffusion Tubes Bishops Stortford.....	44
Figure D.5 Nitrogen Dioxide Diffusion Tubes Sawbridgeworth.....	44
Figure D.6 Nitrogen Dioxide Diffusion Tubes Hertford.....	45
Figure D.7 Nitrogen Dioxide Diffusion Tubes Ware.....	45

## 1 Local Air Quality Management

This report provides an overview of air quality in East Herts Council's area during 2016. 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 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.2 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 [www.eastherts.gov.uk/airquality](http://www.eastherts.gov.uk/airquality). Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides maps of air quality monitoring locations and AQMAs.

**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 (inc. date of publication)
						At Declaration	Now	
AQMA 1 Hockerill Junction,	Declared 14th February 2007	NO2 Annual Mean	Bishop's Stortford	An area encompassing a number of properties at crossroads known as Hockerill Junction	NO	48.13	69.6	<a href="https://www.eastherts.gov.uk/airquality">https://www.eastherts.gov.uk/airquality</a>
AQMA 2 Gascoyne Way	Amended 21st August 2012	NO2 Annual Mean	Hertford	Residential properties by the A414 from the junction with Mimram Road to the junction with Railway Place. Also includes properties along the first 450m of London Road and along the road beginning with Parliament square up to and including St Andrew's Street and approximately half of North Road. It also extends up Old Cross and Cowbridge until the junction with Port Vale.	NO	58.2 (West Street)	60.5	<a href="https://www.eastherts.gov.uk/airquality">https://www.eastherts.gov.uk/airquality</a>

## East Herts Council

AQMA 3 London Road	Declared 5th February 2015	NO2 Annual Mean	Sawbridge worth	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	76.5	69.6	<a href="https://www.eastherts.gov.uk/airquality">https://www.eastherts.gov.uk/airquality</a>
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☒ East Herts 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

Defra's appraisal of last year's ASR concluded it would be helpful to include more historic data (5 years where available) across the longer term monitoring sites. This has been included within this report. The appraisal also request more information be in Table 2.2, specifically regarding progress and expected completion dates across the action plan. The new Action Plan has now been produced and details of the Actions for all AQMAs, progress and expected completion dates have been included. Finally, details of QA/QC were requested and have been provided including confirmation of the bias adjustment factor used and where data has been annualised or corrected for distance to the nearest receptor.

East Herts Council has taken forward a number of direct measures during the current reporting year of 2016 in pursuit of improving local air quality. This primarily consists of reviewing the East Herts AQAP and introducing new measures to improve air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in the Action Plan available from the East Herts Council website<sup>5</sup>.

Since the publication of the 2016 East Herts Annual Status Report the following measures have been completed:

- A steering group was set to prepare the AQAP for the AQMA in Sawbridgeworth and to improve the AQAP for the AQMAs in Hertford and Bishop's Stortford. The steering group first met in October 2016 and the new and improved AQAP was published in June 2017.
- East Herts Environmental Health has worked with Planning Policy colleagues to produce a planning guidance document to support policy EQ4 of the Local Plan.

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

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<sup>5</sup> [www.eastherts.gov.uk/airquality](http://www.eastherts.gov.uk/airquality)

- Using our Defra/DfT Air Quality grant award, work to deliver a pilot public electric car scheme in Hertford and Bishops Stortford
- Using our Defra/DfT Air Quality grant award to initiate pilot staff electric pool car scheme in Hertford, for use by both EHC and HCC Environment staff, to reduce need for officers' personal vehicles
- Investigate opportunities to change courier vehicle to electric operation
- Keep under review the potential for East Herts Council's lease vans to move to electric vehicle operation if feasible as leases expire
- Implement annual audit of number of East Herts Council staff and members using electric/hybrid vehicles
- Seek potential funding to clean-up and banner wrap pedestrian subways under the A414 in Hertford to encourage more journeys on foot
- Continue to promote and expand East Herts Council's Liftshare scheme for staff and additionally raise awareness of scheme among councillors Aim to double number of active Liftshare users to 40 by March 2018
- Continue 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 in December 2016
- Take air quality matters into consideration on all planning applications, particularly when these are within or closely adjoining an AQMA
- Investigate the potential of a route through the Bishop's Stortford Goods Yard site for buses, taxis and bicycles, including the relocation of the bus station closer to the railway station
- Continue to develop close working liaison with Stansted Airport to identify potential for air quality improvements and sustainable transport projects wherever possible
- Undertake improvements to the traffic signal equipment at Hockerill junction and in the vicinity to improve efficiency

All of these measures are expected to positively impact on air quality within the wider area as well as at specific locations/junctions where air quality is exceeding the NO<sub>2</sub> annual mean objective. East Herts Council's priorities for the coming year are to commence implementing the actions listed above and to complete as many as possible in 2017. In particular implementation and completion of the Defra/DfT grant funded projects are imperative as the funding is time limited.

The principal challenges and barriers to implementation that East Herts Council anticipates facing are the increasing number of private diesel cars on local roads and within our towns. Emissions from these vehicles are known to be higher in real-world driving conditions and have led to problem meeting air quality objectives across the UK. The impact of new development on air quality is also a factor in addressing air quality problems, with additional vehicle trips impacting on already congested areas. The proposed air quality policy in the New Local Plan will help to ensure that the impact of new development is adequately addressed and mitigated where necessary.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, East Herts Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the Hockerill Junction, Gascoyne Way and London Road AQMAs.

Table 2.2 – Progress on Measures to Improve Air Quality

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
Clean Air Day												
CA 1	Participate in National Clean Air Day June 2017, aiming to develop wider participation among schools in East Herts, together with further enhancing campaign aimed at public	Public Information	Other	EHC – Comms team & Environment Manager; HCC – TARS				x	n/a	Completed	17/18	
CA 2	Work with partner agencies regarding future Clean Air Days	Public Information	Other	EHC – Comms team & Environment Manager				x	n/a	To commence 2018	17/18 onwards	
Enable / promote uptake of electric vehicles												
EV1	Using our Defra/DfT Air Quality grant award, work to deliver a pilot public electric car scheme in Hertford	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low	EHC – Environment Manager (Defra/DfT grant funded)	X		X	X	Reduced vehicle emissions	Ongoing	17/18 & 18/19	

East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
	and Bishops Stortford		emission vehicles									
EV2	Using our Defra/DfT Air Quality grant award to initiate pilot staff electric pool car scheme in Hertford, for use by both EHC and HCC Environment staff, to reduce need for officers' personal vehicles	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	EHC – Environment Manager (Defra/DfT grant funded)	X			X	Reduced vehicle emissions	Ongoing	17/18	
EV3	Look to deliver enhanced electric vehicle car charging points in Sawbridgeworth and Ware, using Defra/DfT grant funding	Promoting Low Emission Transport	Other	EHC – Environment Manager (Defra/DfT grant funded)		X		X	Reduced vehicle emissions	To commence 2018	18/19	Funding to be obtained
EV4	Work with the University of Hertfordshire to prepare an academic report on the value of pilot e-car club scheme using our	Other	Other	EHC – Environment Manager (Defra/DfT grant funded)				X	n/a	To commence 2018	18/19	

# East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
	Defra/DfT grant funding x											
EV5	Develop programme of potential projects in readiness for potential future national funding schemes for air quality and low emission vehicles	Other	Other	EHC – Environment Manager & EHC Environmental Health; HCC				X	n/a	To commence 2019	19/20	Funding to be obtained
EV6	Investigate opportunities to change courier vehicle to electric operation	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	EHC – Environment Manager				X	Reduced vehicle emissions	Ongoing	17/18 & ongoing	Funding to be obtained
EV7	Keep under review the potential for East Herts Council's lease vans to move to electric vehicle operation if feasible as leases expire	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	EHC – Environment Manager				X	Reduced vehicle emissions	Ongoing	17/18	

East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
EV8	Implement annual audit of number of East Herts Council staff and members using electric/hybrid vehicles	Promoting Low Emission Transport	Other	EHC – HR payroll				X	n/a	Ongoing	17/18 & ongoing	Affordability of vehicles for staff
EV9	Investigate opportunity to encourage establishment of electric taxi project in Hertford and Bishop's Stortford	Promoting Low Emission Transport	Taxi emission incentives	EHC – Environment Manager & EHC Service Manager – Licensing & Enforcement	X		X	X	n/a	To commence 2018	18/19	
EV10	Deliver public electric car chargers in Old River Lane Car park Bishop's Stortford, once site becomes available	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	EHC – Environment Manager & EHC Car Park Manager			X		Reduced vehicle emissions	To commence 2018	18/19 onwards	

East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
EV1 1	Further expand electric charging points for electric vehicles, through utilisation of national grant funding should it be available / s106 monies. Ensuring that all AQMAs have at least two set of charging points located within their boundaries, including at least one rapid charger	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	EHC – Environment Management				X	Reduced vehicle emissions	To commence 2018	18/19 & ongoing	Funding to be obtained
EV1 2	Investigate the potential to encourage the use of electric vehicles within existing local authority taxi contracts	Promoting Low Emission Transport	Taxi emission incentives	EHC Environment Manager & Service Manager – Licensing & Enforcement				X	Reduced vehicle emissions	n/a	After 17/18 (to be scheduled)	
Support residents to reduce their contributions to air pollution												

# East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
SP1	Enhance air quality pages on East Herts Council's website, to include more detailed information with additional links	Public Information	Via the Internet	EHC – Comms team				X	n/a	Ongoing	17/18	
SP2	Seek potential funding to clean-up and banner wrap pedestrian subways under the A414 in Hertford to encourage more journeys on foot	Promoting Travel Alternatives	Promotion of walking	HCC	X				Reduced vehicle emissions	Ongoing	2017/18 onwards	Funding to be obtained
SP3	Encourage families to take up sustainable travel-to-school options and improve health/fitness, for example, annual Schools' Walking Weeks and the like	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	EHC – Environment Manager & Healthy Lifestyles Programme Officer	X				Reduced vehicle emissions	Ongoing	2017/18 & future years if continued positive feedback	
SP4	Continue to promote and expand East Herts Council's Liftshare scheme for staff and additionally raise awareness of scheme among	Alternatives to private vehicle use	Car & lift sharing schemes	EHC Healthy Lifestyles Programme Officer				X	Reduced vehicle emissions	Ongoing	17/18 & ongoing	

# East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
	councillors. Aim to double number of active Liftshare users to 40 by March 2018											
SP5	Continue 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 in December 2016	Public Information	Other	EHC Healthy Lifestyles Programme Officer	X	X		X	Reduced vehicle emissions	Ongoing	2017/18 & ongoing	
SP6	Take air quality matters into consideration on all planning applications, particularly when these are within or closely adjoining an AQMA	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	EHC Development Control; HCC	X	X	X	X	Reduced vehicle emissions	Ongoing	17/18 onwards	

East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
SP7	Personalised travel planning for residents of Hertford Proposed as part of 2050 Transport Vision (Hertford Sustainable Travel Town) and to be funded from s106 developer contributions	Promoting Travel Alternatives	Personalised Travel Planning	HCC – Highways, Development Management & TARS	X				Reduced vehicle emissions	n/a	After 17/18 (to be scheduled)	Funding/s 106 contributions to be obtained
SP8	Develop personalised travel planning for residents of the new Bishop's Stortford North Development s106 funding for Bishop's Stortford North Development has been identified to support a personal travel planning initiative for Bishop's Stortford North	Promoting Travel Alternatives	Personalised Travel Planning	HCC – TARS, Development Management & Highways			X		Reduced vehicle emissions	n/a	After 17/18 (to be scheduled)	Funding/s 106 contributions to be obtained
SP9	Ensure that developers have taken sufficient steps to minimise	Policy Guidance and Development	Air Quality Planning and Policy Guidance	EHC Development Control; HCC	X	X	X	X	n/a	n/a	After 17/18 (to be scheduled)	

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
	any increase in air pollution (includes an assessment of air quality implications where applicable)	ent Control									d)	
SP10	Potential repairs/improvements to towpaths from Ware to Hertford and between Sawbridgeworth and Bishop's Stortford	Alternatives to private vehicle use	Other	HCC – Countryside Access Officer, TARS and Rights of Way team; Canal and River Trust	X	X	X		Reduced vehicle emissions	n/a	After 17/18 (to be scheduled)	
Redesign services to tackle air pollution												
RE1	Investigate the potential of a route through the Bishop's Stortford Goods Yard site for buses, taxis and bicycles, including the relocation of the bus station closer to the railway station	Transport Planning and Infrastructure	Other	HCC; EHC Development Management team			X		Reduced vehicle emissions	Ongoing	17/18	

# East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
RE 2	Continue to develop close working liaison with Stansted Airport to identify potential for air quality improvements and sustainable transport projects wherever possible	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	HCC – Environment; EHC – Environmental Health				X	Reduced vehicle emissions	Ongoing	17/18 & ongoing	
RE 3	Continue to take active role in Herts and Beds Air Quality Officer Group	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	EHC – Environmental Health				X	n/a	Ongoing	17/18 & ongoing	
RE 4	Carry out Little Hadham bypass improvements with a view to reducing the impact of through traffic	Transport Planning and Infrastructure	Other	HCC – Highways			X		Reduced vehicle emissions	To commence 2018	18/19	

East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
RE 5	Work with Hertfordshire Sustainability Forum to deliver Air Quality Conference in 2018 to promote air quality activity and best practice across Hertfordshire	Other	Other	EHC – Environment Manager; Hertfordshire Sustainability Forum; HCC				X	n/a	To commence 2018	18/19	
RE 6	Investigate & research potential benefits for use of specific tree planting/ vegetative barriers to reduce effects of air pollution in key areas	Other	Other	EHC; HCC				X	Reduced/captured emissions	n/a	After 17/18 (to be scheduled)	
RE 7	Work with local bus operators to encourage the use of Euro 6 engines in buses that run in Bishop's Stortford/Sawbridgeworth and/or to investigate retrofit opportunities where appropriate East Herts and	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	HCC – Environment; Intalink; bus operators		X	X		Reduced vehicle emissions	n/a	After 17/18 (to be scheduled)	Funding to be obtained

East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
	HCC will continue to explore funding opportunities in relation to bus retrofit technology should such Government funding be made available in the future											
RE 8	Incorporate and consider appropriate links to air quality as they arise from new actions developed from the emerging East Herts Council report of the Sustainable Transport Task and Finish Group, and review of Climate Change Resilience	Other	Other	EHC – Environment Manager				X	n/a	n/a	After 17/18 (to be scheduled)	
RE 9	Investigate potential of roadside signage to promote air quality messages and alerts	Traffic Management	Other	EHC – Environmental Health; HCC – Environment				X	Reduced vehicle emissions	n/a	After 17/18 (to be scheduled)	

East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
RE 10	Investigate wider use of variable message signing for car parking and other congestion issues	Traffic Management	UTC, Congestion management, traffic reduction	HCC – Highways	X		X		Reduced vehicle emissions	n/a	After 17/18 (to be scheduled)	
RE 11	Cole Green Way improvement – project to improve the commuter infrastructure for non-motorised users between Welwyn Garden City and Hertford and villages along the route. Promotion to encourage use	Transport Planning and Infrastructure	Cycle network	HCC's Countryside Management Service & Rural Estates team	X				Reduced vehicle emissions	To commence 2018	2018/19 & longer term	
RE 12	Hartham Common – project to improve the commuter infrastructure for non-motorised users between Hertford residential areas and transport nodes, significant Hertford greenspace, retail and employment	Transport Planning and Infrastructure	Cycle network	EHC; HCC's Countryside Management Service & Rights of Way team	X				Reduced vehicle emissions	To commence 2019	2019/20 & longer term	

East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
	locations. Routes to be improved along public rights of way and through green space. Promotion to encourage use											
RE 13	Grange Paddocks – project to improve the commuter infrastructure for non-motorised users between Bishop's Stortford residential areas and transport nodes, significant Bishop's Stortford greenspace, retail and employment locations. Routes to be improved along public rights of way and routes through green space. Promotion to encourage use	Transport Planning and Infrastructure	Cycle network	EHC; HCC's Countryside Management Service & Rights of Way team			X		Reduced vehicle emissions	To commence 2019	2019/20 & longer term	
RE 14	Undertake improvements to the traffic signal equipment at	Traffic Management	UTC, Congestion management, traffic	HCC – Highways			X		Reduced vehicle emissions	Ongoing	2017/18	

# East Herts Council

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	AQMA specific / district-wide?				Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Barriers to completion
					Hertford	Sawb'worth	B' Stortford	District wide				
	Hockerill junction and in the vicinity to improve efficiency		reduction									

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7)<sup>6</sup>, local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Air pollution affects mortality from cardiovascular and respiratory conditions, including lung cancer. In its report on 'The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom', published in 2010, the Committee on the Medical Effects of Air Pollutants (COMEAP)<sup>7</sup> estimated the mortality burden of existing levels of air pollution on the population of the UK as being equivalent to 29,000 deaths and an associated loss to the population of 340,000 life-years<sup>8</sup>.

The Public Health Outcomes Framework (PHOF)<sup>9</sup> is a Department of Health data tool for England, intended to focus public health action on increasing healthy life expectancy and reducing differences in life expectancy between communities. The tool uses indicators to assess improvements. Recognising the significant impact that poor air quality can have on health, the PHOF includes an indicator relating to fine particulate matter (PM<sub>2.5</sub>). The current PHOF Indicator is shown in Table 2.3 below.

<sup>6</sup> <https://laqm.defra.gov.uk/supporting-guidance.html>

<sup>7</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/304641/COMEAP\\_mortality\\_effects\\_of\\_long\\_term\\_exposure.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304641/COMEAP_mortality_effects_of_long_term_exposure.pdf)

<sup>8</sup> The loss of life attributable to population exposure to a particular factor (i.e. the years of lost life expectancy associated with attributable deaths)

<sup>9</sup> <https://www.gov.uk/government/publications/healthy-lives-healthy-people-improving-outcomes-and-supporting-transparency>

Table 2.3 – Public Health Outcomes Framework Indicator for PM<sub>2.5</sub>

PHOF Indicator 3.1 Health Protection	
Fraction of all-cause adult mortality attributable to anthropogenic particulate air pollution (measured as fine particulate matter, PM <sub>2.5</sub> ).	The estimates of mortality burden are based on modelled annual average concentrations of fine particulate matter (PM <sub>2.5</sub> ) in each local authority area originating from human activities. Local data on the adult population and adult mortality rates is also used. Central estimates of the fraction of mortality attributable to long-term exposure to current levels of human-made particulate air pollution range from approx. 2.5% to 5% in some local authorities in rural areas, to over 8% in some London boroughs.

In East Herts, the fraction of all-cause adult mortality attributable to PM<sub>2.5</sub> is 5.6%, or around 1024 premature deaths each year.

The indicator is intended to enable Directors of Public Health to prioritise action on reducing the mortality burden associated with PM<sub>2.5</sub> exposure. To help with this Defra have introduced a PM<sub>2.5</sub> role for local authorities so that alongside measures to tackle other pollutants, they also consider action if necessary to address PM<sub>2.5</sub> issues in their area, aligning their interests with those of public health colleagues.

The indicator can also have co-benefits for other Public Health Indicators such as encouraging healthy and active lifestyles and activities such as walking and cycling.

East Herts Council has recently published an Air Quality Action Plan which includes measures that will help to address PM<sub>2.5</sub>:

- EV1: Using our Defra/DfT Air Quality grant award, work to deliver a pilot public electric car scheme in Hertford and Bishops Stortford EHC – Environment Manager
- EV2: Using our Defra/DfT Air Quality grant award to initiate pilot staff electric pool car scheme in Hertford, for use by both EHC and HCC Environment staff, to reduce need for officers' personal vehicles

- EV3: Look to deliver enhanced electric vehicle car charging points in Sawbridgeworth and Ware, using Defra/DfT grant funding
- EV6: Investigate opportunities to change courier vehicle to electric operation
- EV7: Keep under review the potential for East Herts Council's lease vans to move to electric vehicle operation if feasible as leases expire
- EV8: Implement annual audit of number of East Herts Council staff and members using electric/hybrid vehicles
- EV9: Investigate opportunity to encourage establishment of electric taxi project in Hertford and Bishop's Stortford
- EV10: Deliver public electric car chargers in Old River Lane Car park Bishop's Stortford, once site becomes available
- EV11: Further expand electric charging points for electric vehicles, through utilisation of national grant funding should it be available / s106 monies. Ensuring that all AQMAs have at least two set of charging points located within their boundaries, including at least one rapid charger
- SP3: Encourage families to take up sustainable travel-to-school options and improve health/fitness, for example, annual Schools' Walking Weeks and the like
- SP4: Continue to promote and expand East Herts Council's Liftshare scheme for staff and additionally raise awareness of scheme among councillors Aim to double number of active Liftshare users to 40 by March 2018
- SP7: Personalised travel planning for residents of Hertford Proposed as part of 2050 Transport Vision (Hertford Sustainable Travel Town) and to be funded from s106 developer contributions
- SP8: Develop personalised travel planning for residents of the new Bishop's Stortford North Development s106 funding for Bishop's Stortford North Development has been identified to support a personal travel planning initiative for Bishop's Stortford North
- RE7 Work with local bus operators to encourage the use of Euro 6 engines in buses that run in Bishop's Stortford/Sawbridgeworth and/or to investigate retrofit opportunities where appropriate East Herts and HCC will continue to

explore funding opportunities in relation to bus retrofit technology should such Government funding be made available in the future

In addition East Herts Council has commenced monitoring of PM<sub>2.5</sub>. Hertfordshire County Council's public health department provided funding to all 10 district council's to purchase a monitor to measure PM<sub>2.5</sub> in their area. East Herts Council has purchased a Beta Attenuation Monitor (BAM) and it is located in the new Air Quality Monitoring Station next to the car park on Gascoyne Way within the AQMA in Hertford. It has been envisaged that these network of monitors would be able to inform both public health and East Herts Council of any improvements made to PM<sub>2.5</sub> levels in their area. Monitoring results are reported in Appendix A.

## 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 undertook automatic (continuous) monitoring at one site during 2016. As reported in the 2016 ASR, East Herts Council previously undertook automatic (continuous) monitoring at 3 sites however due to equipment failure, financial reasons and other circumstances beyond our control it was decided to close the 3 continuous monitoring stations (2 in Sawbridgeworth and 1 in Anstey) and open 1 continuous monitoring station in Hertford. Table A.5 in Appendix A shows the details of the current monitoring sites. 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<sub>2</sub> at 21 sites during 2016. Table A.6 in Appendix A shows the details of the sites.

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

### 3.2 Individual Pollutants

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

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

Table A.7 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B, and adjusted to the nearest sensitive receptor where applicable.

Table A.8 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

In 2016 seven of the diffusion tube monitoring locations exceeded the annual mean air quality objective of 40µg/m<sup>3</sup>, however two sites were over 37µg/m<sup>3</sup> indicating these were still at risk of exceeding the annual mean objective. Of the exceeding sites, four locations were higher than 60µg/m<sup>3</sup> indicating that the hourly air quality objective could be at risk of being exceeded in these locations. In 2014 and 2015 eleven locations were exceeding the annual mean objective and of these four locations were also at risk of exceeding the hourly objective. Of the seven locations exceeding the annual mean objective in 2016, all are within AQMAs.

At the present time the exceedences have reduced compared to 2014 and 2015, however it is too early to say whether air quality is improving. Longer term monitoring will indicate whether any trends are developing.

At the new continuous monitoring station in Gascoyne Way, Hertford the limited data obtained in 2016 indicates that the annual mean objective is being exceeded (44.4µg/m<sup>3</sup>) in this location, however at this time the hourly objective does not appear to be at risk of being exceeded.

### **3.2.2 Particulate Matter (PM<sub>10</sub>)**

East Herts Council does not monitor PM<sub>10</sub>.

### **3.2.3 Particulate Matter (PM<sub>2.5</sub>)**

East Herts Council installed a new Beta Attenuation Monitor (BAM) at Gascoyne Way, Hertford in 2016. Table A. in Appendix A presents the ratified and adjusted monitored PM<sub>2.5</sub> annual mean concentrations for the past year.

Data capture was only 31.2% for the year as monitoring commenced part way through the year. However, at the present time the annual mean for 2016 was 13.9µg/m<sup>3</sup>.

## Appendix A: Monitoring Results

**Table A.5 – Details of Automatic Monitoring Sites**

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
EH79	Gascoyne 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.6 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
EH12	Hockerill St	Kerbside	549154	221242	NO2	Yes	0.9	1.38	No	2.5
EH14	London Road	Kerbside	548065	214711	NO2	Yes	0.6	2.6	No	3
EH17	Dunmow Road	Kerbside	549364	221215	NO2	Yes	7.4	1.8	No	2.75
EH18	Stansted Road	Kerbside	549298	221313	NO2	Yes	2.7	1.43	No	2.7
EH19	London Road	Kerbside	549250	221200	NO2	Yes	0.4	1.05	No	2.5
EH25	Old Cross	Kerbside	532446	212669	NO2	Yes	3.1	0.92	No	3
EH28	Castle St	Kerbside	532542	212370	NO2	Yes	12.5	2.39	No	2.35
EH30	Downey Cottage Hertingfordbury Rd	Kerbside	532023	212550	NO2	Yes	1.8	0.5	No	2.35
EH41	Ware Rd	Roadside	533101	212755	NO2	Yes	2.1	1.08	No	2.3
EH42	West St	Roadside	532408	212371	NO2	Yes	4.8	2.75	No	2.75
EH52	Cowbridge	Roadside	532307	212814	NO2	No	1.5	3.2	No	2.65
EH53	Viaduct Road	Roadside	536060	214129	NO2	No	3.1	1.83	No	2.9
EH54	Station Road	Roadside	536085	214077	NO2	No	20.7	1.75	No	2.6
EH57	Opp Bell St at crossing	Roadside	548123	214903	NO2	Yes	0.6	2.75	No	2.8
EH62	Northgate End Jct Yew Tree Court	Roadside	548723	221719	NO2	No	6	2.5	No	2.6
EH64	Rye St, outside 79	Roadside	548741	222109	NO2	No	3.9	1.5	No	2.25

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
EH66	Rye St, outside 209	Roadside	549134	222676	NO2	No	0.5	1.2	No	2.5
EH68	Hadham Rd, outside 9	Roadside	548611	221541	NO2	No	0.5	1.5	No	2.35
EH70	Outside 38 High St	Roadside	536205	229558	NO2	No	0	1.5	No	2.5
EH73	opp Horseshoe Cott's	Roadside	536186	229430	NO2	No	0	1.5	No	2.5
EH79	Gascoyne Way	Roadside	532464	212338	NO2	Yes	3	2.5	Yes	1.5

**Notes:**

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

(2) N/A if not applicable.

Table A.7 – Annual Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2016 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2012	2013	2014	2015	2016
EH12	Kerbside	Diffusion Tube	100%	100%	<b>46.2</b>	<b>46.2</b>	<b>49.2</b>	<b>48.5</b>	<b>45.4</b>
EH14	Kerbside	Diffusion Tube	100%	100%	<b>45.9</b>	<b>45.9</b>	<b>51.9</b>	<b>51.2</b>	<b>44.7</b>
EH17	Kerbside	Diffusion Tube	94%	94%	<b><u>60.9</u></b>	<b><u>60.9</u></b>	<b><u>73.8</u></b>	<b><u>68.9</u></b>	<b><u>64.9</u></b>
EH18	Kerbside	Diffusion Tube	100%	100%	38.7	38.7	<b>40.9</b>	<b>41.8</b>	36.8
EH19	Kerbside	Diffusion Tube	100%	100%	<b><u>65.2</u></b>	<b><u>65.2</u></b>	<b><u>76.3</u></b>	<b><u>76.5</u></b>	<b><u>69.6</u></b>
EH25	Kerbside	Diffusion Tube	92%	92%	38.1	38.1	<b>43.5</b>	<b>41.3</b>	37.3
EH28	Kerbside	Diffusion Tube	100%	100%	37.5	37.5	<b>47.5</b>	<b>43.0</b>	36.7
EH30	Kerbside	Diffusion Tube	100%	100%	39.2	39.2	<b>45.3</b>	<b>45.1</b>	39.3
EH41	Roadside	Diffusion Tube	92%	92%	<b>46.6</b>	<b>46.6</b>	<b>52.3</b>	<b>54.6</b>	<b>44.3</b>
EH42	Roadside	Diffusion Tube	100%	100%	<b>58.2</b>	<b>58.2</b>	<b><u>64.0</u></b>	<b><u>69.2</u></b>	<b><u>60.5</u></b>
EH52	Roadside	Diffusion Tube	92%	92%	31.2	31.2	32.1	31.0	27.3
EH53	Roadside	Diffusion Tube	100%	100%	37.2	37.2	39.8	38.4	35.2
EH54	Roadside	Diffusion Tube	100%	100%	28.7	28.7	30.2	31.7	26.6
EH57	Roadside	Diffusion Tube	100%	100%	<b>59.4</b>	<b>59.4</b>	<b><u>65.5</u></b>	<b><u>68.9</u></b>	<b><u>60.1</u></b>
EH62	Roadside	Diffusion Tube	100%	100%	0.0	0.0	39.2	36.7	33.5
EH64	Roadside	Diffusion Tube	100%	100%	0.0	0.0	38.9	39.6	34.0
EH66	Roadside	Diffusion Tube	100%	100%	0.0	0.0	21.8	22.3	19.6
EH68	Roadside	Diffusion Tube	100%	100%	0.0	0.0	38.5	38.4	33.1
EH70	Roadside	Diffusion Tube	100%	100%	0.0	0.0	0.0	0.0	24.4
EH73	Roadside	Diffusion Tube	100%	100%	0.0	0.0	0.0	0.0	25.2
EH79	Roadside	Diffusion Tube	100%	100%	0.0	0.0	0.0	0.0	<b>41.6</b>

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2016 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2012	2013	2014	2015	2016
EH79	Roadside	Automatic	100%	36%	0.0	0.0	0.0	0.0	<b>44.4</b>

- ☒ Diffusion tube data has been bias corrected  
☒ Annualisation has been conducted where data capture is <75%  
☐ If applicable, all data has been distance corrected for relevant exposure

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

(1) 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<sub>2</sub> Concentrations

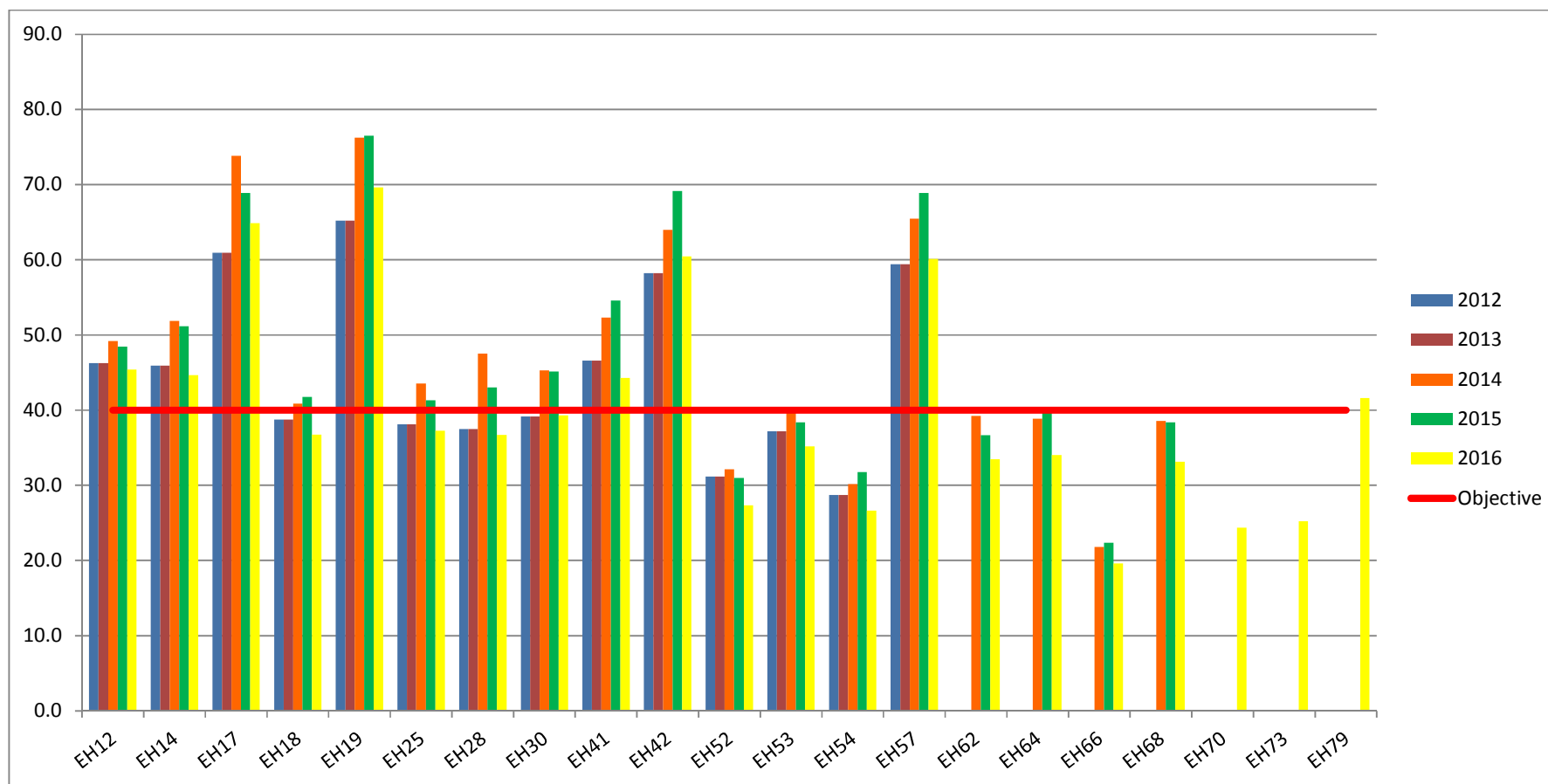


Table A.8 – 1-Hour Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2016 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2012	2013	2014	2015	2016
EH79	Roadside	Automatic	99.8%	36.0%					<b>0</b>

**Notes:**

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

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

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

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

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

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2016 (%) <sup>(2)</sup>	PM <sub>2.5</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2012	2013	2014	2015	2016
EH79	Roadside	86.5%	31.2%					13.9

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

**Notes:**

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

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

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

## Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.2 – NO<sub>2</sub> Monthly Diffusion Tube Results - 2016

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.92) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
EH12	64.0	57.0	38.7	43.3	49.7	45.7	52.3	41.3	53.3	40.3	43.0	60.3	49.1	46.1	42.3
EH14	55.7	60.0	52.3	54.0	48.0	50.0	46.0	41.3	52.0	56.3	47.7	58.3	51.8	48.7	46.8
EH17	96.0	84.3	76.0	77.0	79.7	75.7	75.0	65.7	84.0	83.3	75.0	72.7	78.4	73.7	51.6
EH18	53.3	50.0	37.3	40.0	39.0	36.3	40.7	32.7	43.7	39.3	41.7	47.3	41.8	39.3	33.5
EH19	86.3	89.0	75.0	74.7	72.7	76.0	79.7	62.7	84.7	78.7	66.0	81.3	77.2	72.6	68.8
EH25	52.0	48.0	42.0	47.0	40.0	38.0	42.0	33.0	44.0	0.0	39.0	46.0	42.8	40.2	33.6
EH28	48.0	51.0	38.3	41.3	41.7	32.0	36.0	33.0	44.0	41.0	38.0	51.3	41.3	38.8	29.4
EH30	54.0	49.0	42.7	40.0	43.0	41.0	41.0	36.0	47.7	43.0	43.7	42.3	43.6	41.0	34.7
EH41	61.0	60.0	46.0	47.0	45.0	0.0	49.0	39.0	54.0	45.0	48.0	54.0	49.8	46.8	40.4
EH42	84.7	75.0	60.7	68.0	63.0	56.0	62.7	52.3	62.0	55.0	51.0	63.7	62.8	59.1	48.5
EH52	45.0	34.0	29.0	30.0	0.0	27.0	26.0	23.0	33.0	26.0	34.0	40.0	31.5	29.7	28.4
EH53	57.0	51.0	39.0	33.0	32.0	29.0	35.0	31.0	38.0	34.0	36.0	47.0	38.5	36.2	31.7
EH54	47.0	44.0	29.0	27.0	25.0	25.0	27.0	23.0	33.0	28.0	37.0	38.0	31.9	30.0	22.1
EH57	81.5	77.0	64.0	64.0	59.5	58.5	74.5	56.0	69.0	56.5	59.0	63.5	65.3	61.3	58.9
EH62	46.0	43.0	36.5	35.0	35.0	34.0	31.0	28.0	39.5	39.0	39.0	45.5	37.6	35.4	29.0

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.92) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
EH64	50.0	47.0	38.5	39.0	34.0	34.0	34.5	29.0	43.0	38.0	40.0	46.0	39.4	37.1	29.8
EH66	46.5	28.0	19.0	19.0	19.0	18.0	16.0	14.5	24.0	21.5	25.5	37.0	24.0	22.6	21.8
EH68	31.5	45.5	36.0	38.0	37.5	31.5	29.5	26.5	38.0	36.5	36.0	44.5	35.9	33.8	32.5
EH70	33.3	30.0	22.5	24.3	21.0	19.7	18.3	17.0	26.0	24.0	29.3	36.7	25.3	23.7	23.7
EH73	38.7	39.3	32.0	33.7	28.3	30.3	30.3	24.7	35.7	34.7	38.3	43.0	34.1	32.0	32
EH79	42.7	50.0	45.7	48.0	44.7	41.3	30.0	30.0	48.7	51.0	45.0	55.7	44.3	41.6	34.1

☐ Local bias adjustment factor used

☒ National bias adjustment factor used

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

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

### Diffusion Tube Bias Adjustment Factors

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 national adjustment database available on the LAQM Support website.

The data is adjusted using version 03/17 of the spreadsheet giving a factor of 0.94 for all tubes.

### Discussion of Choice of Factor to Use

The national Bias Adjustment Factor has been used as diffusion tubes are sited in a range of locations which would not be represented by one local co-location site. At the present time there is no full year co-located data set for East Herts Council for 2016 and therefore a local bias adjustment factor could not be used.

### QA/QC of Automatic Monitoring

The continuous monitoring site at Gascoyne Way, Hertford is supported by Ricardo Energy & Environment. All data collected at the Gascoyne Way, Hertford site is ratified by Ricardo Energy and Environment.

### 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. AIR PT is a new scheme, started in April 2014, which combines two long running PT schemes: LGC Standards, STACKS PT scheme and HSL WASP PT scheme. Prior to April 2014, Gradko participated in the WASP scheme. The AIR PT scheme tests laboratories' analytical performance on a quarterly basis and continues the format used in the preceding WASP PT scheme

Table C1.0 shows the results of the AIR PT testing 2016. As can be seen

from the results, 100% of the samples analysed by Gradko were determined to be 'satisfactory' in their results.

**Table C.1 Results of the AIR PT Scheme for Gradko 2016**

<b>Round</b>	<b>AIR PT AR012</b>	<b>AIR PT AR013</b>	<b>AIR PT AR015</b>	<b>AIR PT AR016</b>
<b>Period</b>	Jan – Feb 2016	Apr – May 2016	Jul – Aug 2016	Sep – Oct 2016
<b>Gradko International</b>	100 %	100 %	100 %	100 %

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

### Maps of Air Quality Management Areas

Figure D.1 Bishops Stortford AQMA



Figure D.2 Map of Hertford AQMA

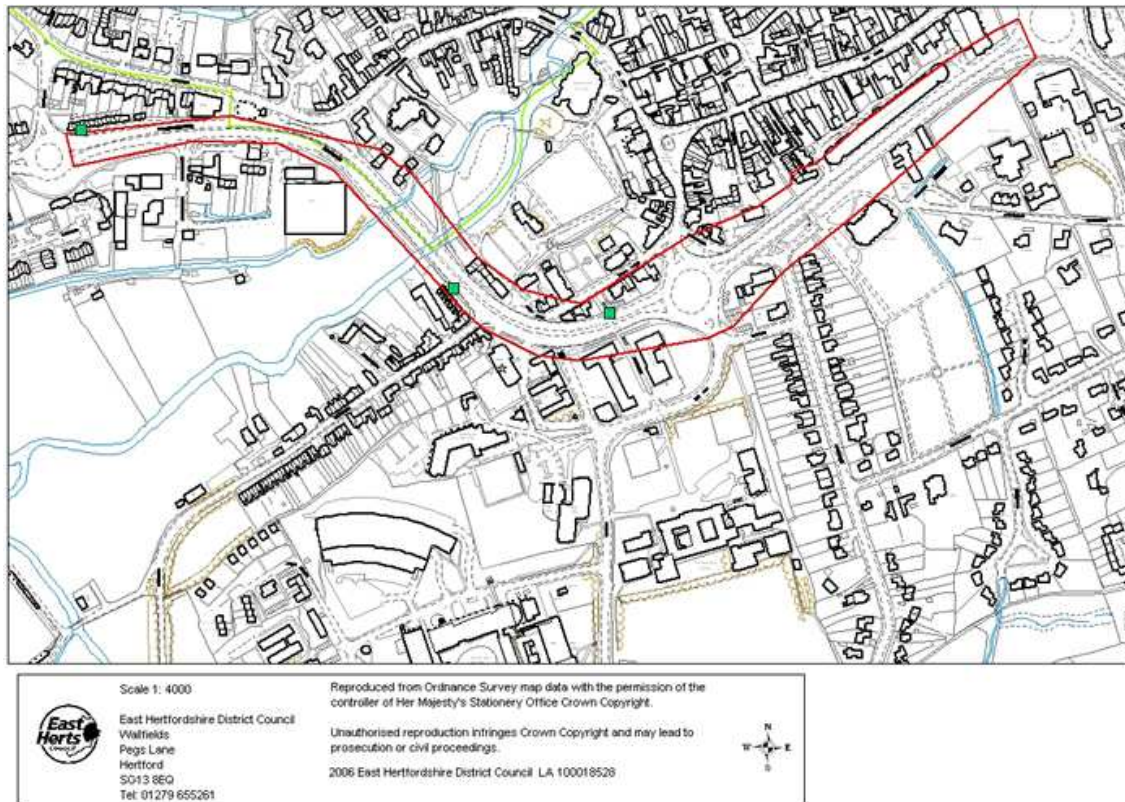
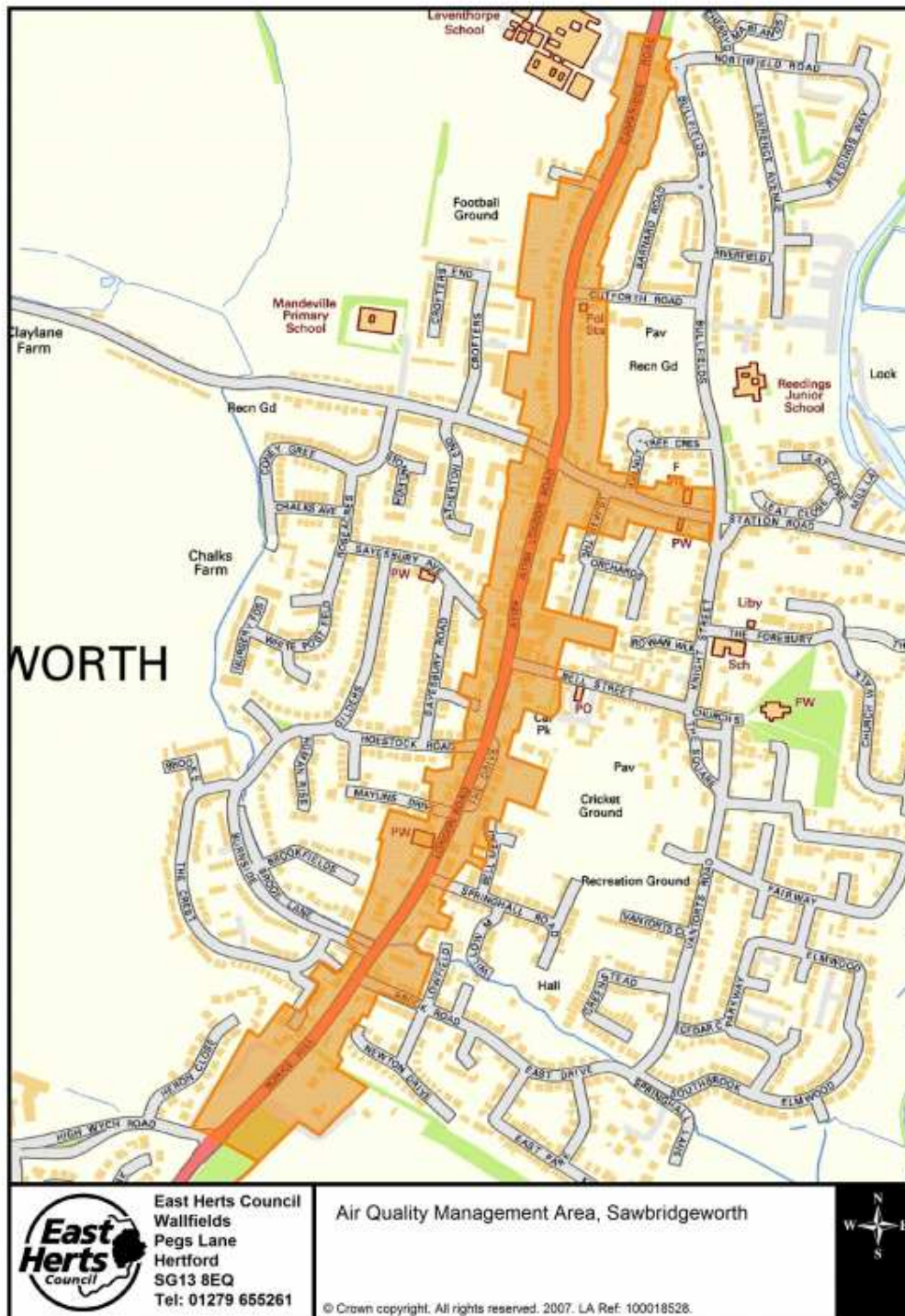


Figure D.3 Map of Sawbridgeworth AQMA



## Maps of Diffusion Tube and continuous Monitoring Locations

Figure D.4 Nitrogen Dioxide Diffusion Tubes Bishop's Stortford

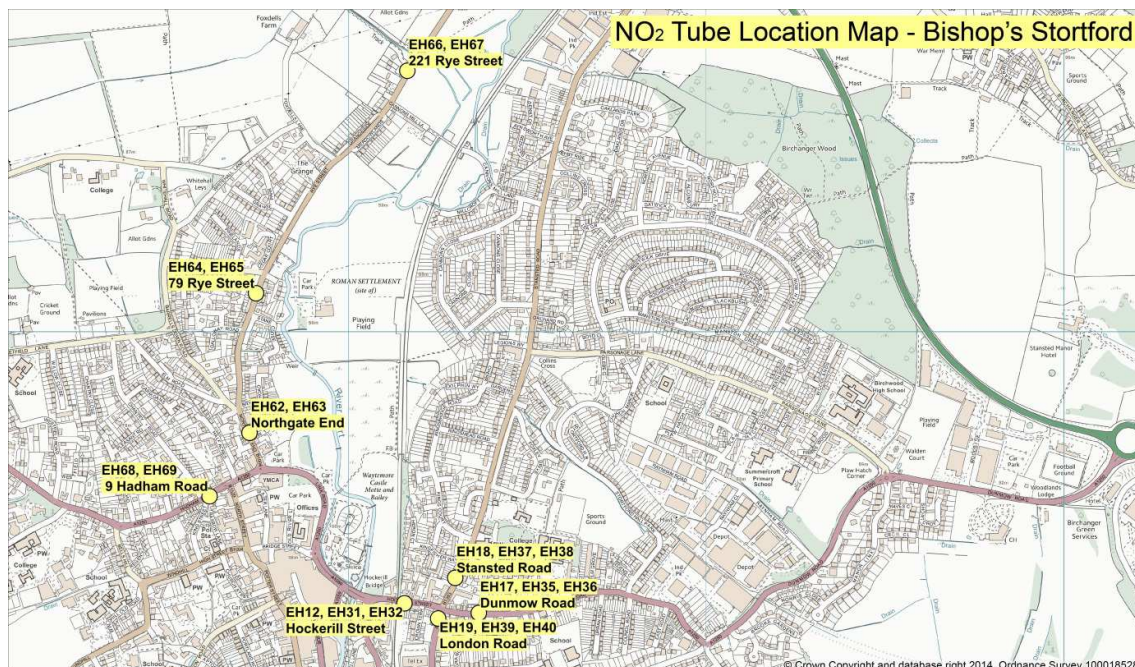


Figure D.5 Nitrogen Dioxide Diffusion Tubes Sawbridgeworth



Figure D.6 Nitrogen Dioxide Diffusion Tubes Hertford

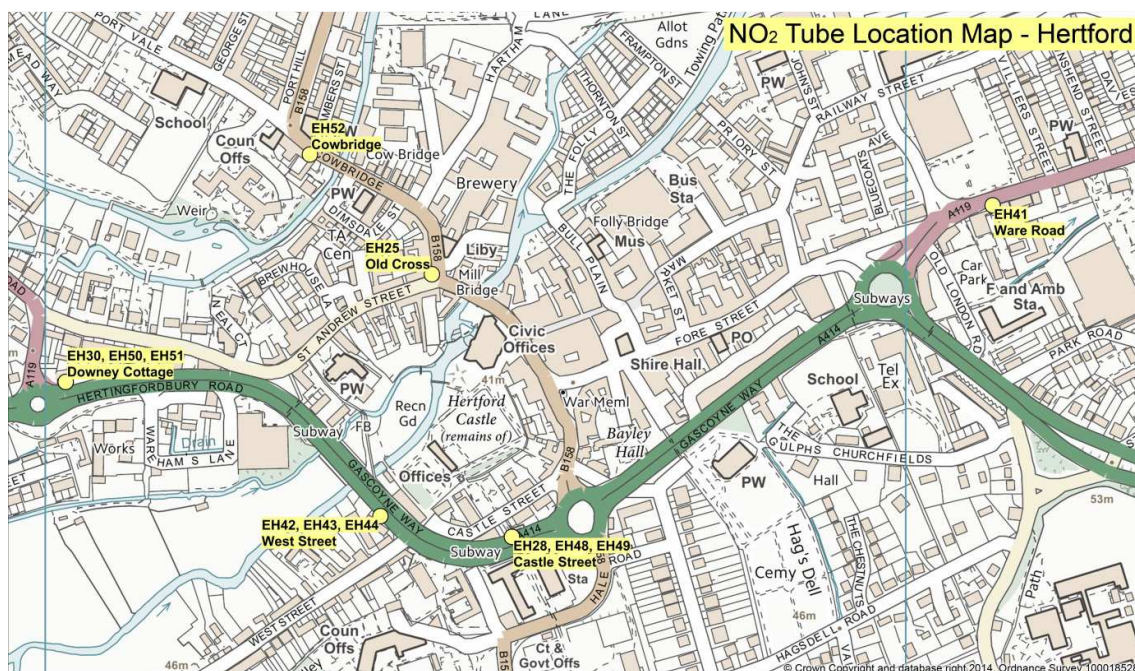
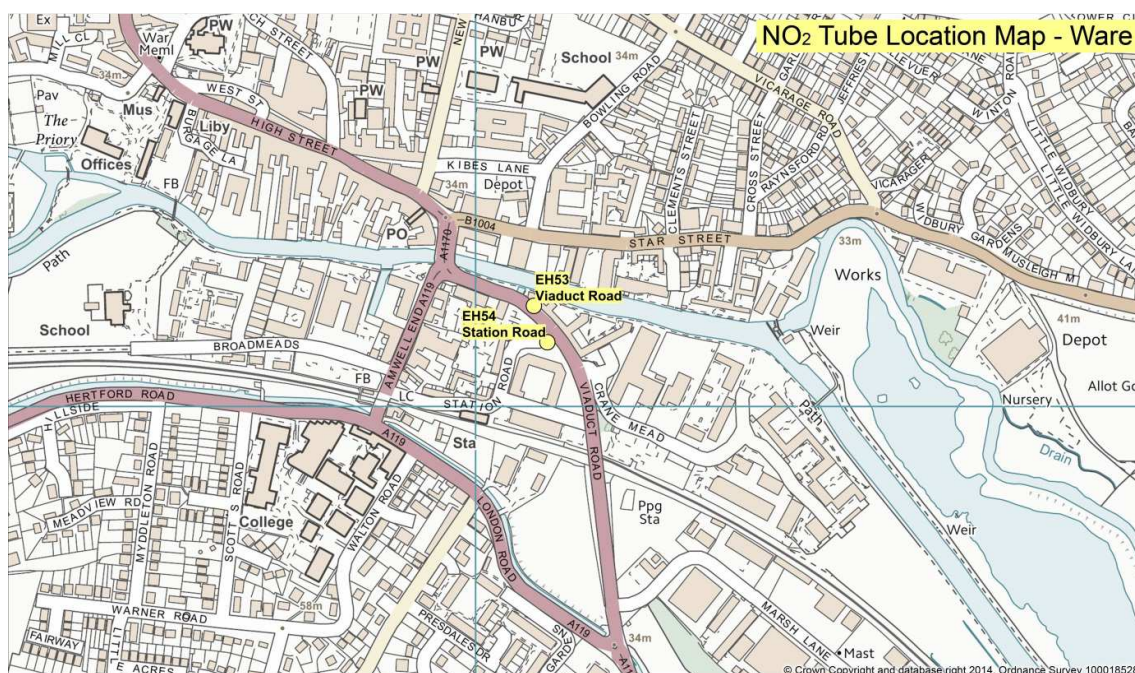


Figure D.7 Nitrogen Dioxide Diffusion Tubes Ware



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

Table E.2 – Air Quality Objectives in England

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

<sup>10</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
BAM	Beta Attenuation Monitor
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide