2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

This report provides a detailed overview of air quality in the East Herts District Council during 2021

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1 Executive Summary: 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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[5].

The council's key priorities in 2022 changed as a result of the pandemic, however we used the opportunity where possible to encourage residents to reduce car use and make walking, cycling and public transport their preferred choice of travel. We have worked to reduce children`s exposure to poor air quality and building on school air quality and idling programmes.

Analysis of measurements for all locations show that mean levels (i.e. concentrations) of NO_2 were similar to those recorded in 2020, with some seeing a slight rise and some a slight decline, this still illustrates a significant overall reduction across the district when comparing to pre covid years. The decrease is due to a continuation of national restrictions on travel by the government to address the ongoing COVID-19 pandemic for part of the

[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, July 2020

[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

[5] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

year and the large portion of workers still working from home or hybrid working which is a change in their normal working pattern and causing a reduction in car use.

EHDC will continue to monitor NO_2 at all these locations going forward as no decisions can be made based on the reductions in either 2020 or 2021 as these are not likely to continue in the coming years. No new AQMA's have been identified.

Air Quality in East Herts

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). The locations of the AQMAs can be found in Appendix D, and the AQMAs are also included within the national list of AQMAs.

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 Particular matter ($PM_{2.5}$))[6] alongside the existing NO_2 monitor.

[6] https://www.airqualityengland.co.uk/local-authority/?la_id=408

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[7] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[8] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Core actions being taken by EHDC to target sources of pollution within our area over the past reporting year are presented in our air quality action plan and include working with different partners to increase and promote ultra-low emission vehicles and infrastructures and carrying out air pollution promotion campaigns during Clean Air days for example. A summary of progress on any grant funded projects have been presented in Table 2.2.

Air quality monitoring: We continued to maintain our continuous monitoring station and diffusion tube monitoring networks because there are critical for understanding where pollution is most acute, and what measures are effective to reduce pollution. Our hourly readings can be viewed from Herts Air Quality Network's pollution analysers [9] online. Our air quality forecasting services is available via uBreathe[10] App. This app provides air pollution health advice where and when its needed most via the colour-coded UK map that locates where you are and provides you instant access to current and forecast air pollution information.

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[7] Defra. Clean Air Strategy, 2019

[8] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

[9] http://www.ricardo-aea.com/ubreathe/.

Policies & Planning: Our new taxi licensing policy has been approved, which will see no taxis older than 5 years old getting licences and all taxis will meet a minimum of Euro VI emissions. This will come into force after 2022 and is the most stringent taxi licensing policy in Hertfordshire.

Through our planning system we have secured section 106 monies from developments towards improvements such as: As part of the Bishop's Stortford North development, the developer will pay £20,000 towards monitoring and mitigation measures in Bishop's Stortford. This is payable prior to the occupation of the 1,000th dwelling, which is anticipated in early 2024. This funding will feed directly into the new Air Quality Action Plan.

Other Section 106 financial contributions have been earmarked for projects such as new pathways and cycle route from Bishop's Stortford North to the town centre via Castle Park.

2021 Clean air Day Campaign

In 2020 East Herts Council organised a completion for poster design that is a breath of fresh air as part of its drive to protect the environment.

The Gold Brush who are a group of three Stansted Airport cabin crew workers; Carlo Simula, Valentina Lupi and Margherita Schiavone – was set up in July when lockdown grounded their day jobs won the competition.

This artwork was used in 2021 to create signs asking drivers not to leave their vehicle engines running were erected in council-run car parks across East Herts to mark Clean Air Day

Transport is the single largest contributor to carbon emissions across the district and has a big impact on air quality, especially in congested areas.

The aim of the 26 signs – designed by Bishop's Stortford art collective The Gold Brush – is to decrease engine idling ho The Hertfordshire Growth and Transport Plans for East Herts identified that 63% of all car trips in the district are less than five miles. A significantly larger proportion of journeys are less than two miles and only 6% of people cycle to work if they live in the same town.

East Herts Council has been working closely with Sawbridgeworth Town Council and residents' group Sustainable Sawbridgeworth on this and other air quality initiatives such as providing anti-idling posters to schools and posters in shop windows.

Cllr Graham McAndrew, EHC's executive member for environment and public space, said, "I'm really pleased that we were able to work on this initiative alongside Sawbridgeworth Town Council. Now that Covid-19 restrictions are lifting there are

increasing numbers of vehicles on the road and it's a great time to change old habits."t spots in car parks.

Cllr Greg Rattey, mayor of Sawbridgeworth, said: "I greatly support Clean Air Day and East Herts Council's involvement in it.

"Clean Air Day brings our schools and communities together. Together we can all improve our understanding of air pollution and the sometimes simple changes that can be made to improve our environment. Let's work together and make this happen."

Anti idling signs

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.

Joint working

The Hertfordshire and Bedfordshire Air Quality Forum, continue to meet quarterly (virtually). The group 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.

Hertfordshire County Council are liaising with the District Authorities in the development of a draft EV Charging Strategy for on-street charging which is expected to be finalised towards the end of 2022

The council works closely with Stansted Airport to help the airport reduce the impact of its operations on the air quality in and around Bishop's Stortford. Notably, conditions applied to the approved 2021 planning permission included the installation of rapid electric vehicle charging points at the airport. Stansted is moving forward with the delivery of an EV charging facility at land off Thremhall Avenue, to the south of the airport. It has been designed to allow for the progressive installation of EV chargers as demand increases, as EV ownership increases. The capacity of the site is for approximately 70 vehicles to lay-over at any one time and if required, for each of those spaces to be served by charging infrastructure.

The airport is continuing to work with transport operators, local authorities and the Transport Forum as part of the Section 106 commitments to contribute to kick start funding to services and the investment in newer vehicles. By encouraging staff to travel via public transport and improving the service to get to the airport, there is a continued notion that this will result in less traffic using Hockerill Junction.

Stansted Airport had achieved a public transport mode share of above 51% which is one of the best in the UK and Europe. Some examples of their work, provided by Stansted Airport, include their long-term partnership with Arriva in developing the 510/509/508 services that operate Harlow – Sawbridgeworth – Bishop's Stortford - Stansted Airport. They have grown this service which was an hourly Monday to Saturday services that operated 7am to 7pm, to now operating 24 hours a day, 7 days a week, up to every 12 minutes. They have also contributed to new Euro 6 vehicles. Not only does this provide connections to the airport, but also significantly benefit the local area as provides high frequency, low emissions connections for people connecting between Harlow and Bishop's Stortford.

Stansted Airport have also introduced strict criteria for taxis requiring all vehicles to be under three years old.

In July 2019, the Council unanimously approved a Climate Change declaration in recognition of the climate emergency we are all facing his declaration commits the council to take action to address the causes and impacts of climate change across the district. As a council we have put sustainability at the heart of everything we do. As part of this a new climate change strategy is being prepared to cover the years 2022-2026.

We continue to work closely with HCCSP developed following the 2019 declaration, as we recognise many measures to address climate change can be considered in tandem with measures to address air pollution, and vice-versa

Air quality action plan

Work on our AQAP has stalled due to resource issues in the pandemic, however we focused on awareness campaigns where possible, such as our successful clean air day campaign below;

Likely future impacts on air quality

There have not been any new major sources of emissions introduced in to East Hertfordshire since 2017; 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

The 2022 Air Quality Status Report is based on the most up-to-date full year validated statistics from 2021.

Three exceedances of the objectives were found this year 2 in Bishop Stortford and 1 in Sawbridgeworth both within the AQMA's. The 1 in Sawbridgeworth and 1 of the Bishop Stortford exceedences were found not to exceed at the receptor location once they had been distance corrected, leaving just 1 exceedence in Bishops Stortford. The reduction has been as a result of the significant reductions in vehicle trip due to the pandemic. This has been a national trend and means we are unable to use 2021 data to analyse any meaningful trends in pollution levels within the district, however it provides a good base line to indicate the NO_2 levels that can be achieved with reductions in vehicle trips.

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 remain to increase electric vehicle infrastructure in the district, deliver a further successful clean air day campaign, raise awareness on the impact of air quality on health, increase uptake of our 'air alert system' 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. Many smart travel choices and other tips to reduce air pollution can be found in the links below:

https://liftshare.com/uk/community/hertfordshire = Hertfordshire liftshare scheme

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

https://www.traveline.info/ = public transport journey planning

https://www.goultralow.com/ = Central Government website about low emission vehicles

https://www.airqualityengland.co.uk/local-authority/?la_id=408. = East Herts live monitoring data

https://www.airqualityengland.co.uk/local-authority/hnb-diffusion-tubes = Diffusion tube locations

https://uk-air.defra.gov.uk/aqma/maps/?t=635861666056569563 = AQMA maps

https://www.zap-map.com/live/ = Locations of EV charging points across UK

http://www.hertsdirect.org/services/transtreets/ltplive/ = HCC Local Transport Plan

Table of Contents

Figures

Tables

2 Local Air Quality Management

This report provides an overview of air quality in Air Quality in East Herts during the year 2019. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Air Quality in East Herts to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

3 Actions to Improve Air Quality

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 should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by EHDC can be found in Table 3.1. The table presents a description of the number of designated AQMAs that are currently designated within EHDC. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMA(s). The air quality objective pertinent to the current AQMA designation(s) is NO_2 annual mean;

$PM_{2.5}$ 24-hour mean is now pertinent for all locations across the district due the new and stricter WHO target.

Table 3.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration Ugm-3	Level of Exceedance: Current Year 2021 (Average) Ugm-3	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 1Hockerill Junction, bishop`s Stortford (516)	2007	NO_2 annual mean	An area encompassing a number of properties around the junction of Dunmow Road, Hockerill Street, London Road and Stanstead Road in Bishops Stortford.	No	**54**	**45.8**	East Herts AQAP 2017-2020	http://www.eastherts.gov.uk/article/9550/Air-Quality
AQMA 2 Gascoyne Way, Hertford (663)	2010 Amended 21/08/2012	NO_2 annual mean	A number of properties in central Hertford. .	No	**46**	32.3	East Herts AQAP 2017-2020	http://www.eastherts.gov.uk/article/9550/Air-Quality
AQMA 3 London Road Sawbridgeworth (1590)	2015	NO_2 annual mean	London Rd and Cambridge Rd and the adjoining roads.	No	**45**	40.9	East Herts AQAP 2017-2020	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.**

☒ **East Herts District Council confirm that all current AQAPs have been submitted to Defra**

The Sawbridgeworth AQMA Order 2001 was declared on 06/08/2001 and the relevant order was revoked in 2004.. The area included properties adjacent to the A1184 from the junction with The crest to the junction with Station Road and West Road, On both east and west sides of the road, and from that same junction north to 98 Cambridge Road on the east side of the road Only.

Progress and Impact of Measures to address Air Quality in East Herts District Council

The progress that East Herts District Council has made during the reporting year of 2021 has stalled in some areas due to the pandemic and officer maternity leave however Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 3.2.

More detail on these measures can be found in our 2017/18 – 2019/20, Air Quality Action Plan[11]. The plan include things we can do right now, such as 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. At the same time we 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.

Key completed measures this year include;

Continuation of the scheme to identify suitable locations and roll out additional EV chargers, with some 54 proposed and agreed in East Herts new car park in Bishop stortford due to be installed next year.

- Continuation of the successful Clean Air Day campaigns which have now expanded to uniform communications pack disseminated to all Hertfordshire authorities for use.
- Behaviour Change – collaborative marketing and training provided for key events and activations; development of communications officer working groups; strategic overview of regional activity to align messages to audiences

[11] https://cdn-eastherts.onwebcurl.com/s3fs-public/documents/East_Herts_Air_Quality_Action_Plan_2017-18_-_2019-20_3_final.pdf

- Low emission friendly licencing taxi policies have now been aligned so after 2022 there will be no licensing of new taxis above 5 years old and taxis will have to meet Euro VI

The principal challenges and barriers to implementation this year were increased resource issues due to the Covid-19 pandemic, general challenges are anticipated to remain include staff resources, funding and conflicting political priorities along with the increasing number of private diesel cars on local roads and within our towns as a result of new developments.

Whilst the measures stated above and in Table 3.2 will help to contribute towards compliance, EHDC anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of relevant AQMA.

Table 3.2 – Progress on Measures to Improve Air Quality

N	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date 2021	Comments / Barriers to Implementation
1	Support the Goods Yard	Transport Planning and Infrastructure	Public transport improvements interchanges stations and services	2007	2018	East Herts District Council	TBC	No	TBC	TBC	Completed	ND	ND	ND	ND
2	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	2017	2018	Herts County Council	TBC	No	TBC	TBC	Completed	ND	ND	ND	ND
3	Investigate the opportunities to improve bus infrastructure along the bus routes through each AQMA	Traffic Management	UTC, congestion management and traffic reduction	2017	2018	Herts County Council	TBC	No	Not Funded	TBC	Completed	ND	Reduction in traffic flows especially HGVs	Could have positive impact upon accessibility and bus patronage.	ND
4	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	Traffic Management	2017	2018	Herts County Council and East Herts Council	TBC	No	TBC	TBC	Completed	Reduced vehicle emissions	Reduction in Traffic Flows	Marked as completed previously as signage was installed.	Marked as completed previously as signage was installed. SCOOT traffic signal equipment installed at the Hockerill junction in Bishop's Stortford.
5	Check status of school travel plans for those schools located in the vicinity of each AQMA	Promoting Travel Alternatives	School Travel Plans	2017	2018	East Herts Council	TBC	No	TBC	TBC	Completed	Reduced vehicle emissions	Reduction in NOx	Completed	Completed
6	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	Promoting Travel Alternatives	Intensive active travel campaign and infrastructure	2017	2018	Herts County Council and East Herts Council	TBC	No	TBC	TBC	Completed	Reduced vehicle emissions	Increased sustainable travel to school and work	Completed	Completed

N	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date 2021	Comments / Barriers to Implementation
	rucksack covers were given away.														
7	Consider further improvements to the bypass with a view to reducing the impact of through traffic	Transport Planning and Infrastructure	Other	2015	2021	Herts County Council	TBC	No	Funded	TBC	Completed	Reduced vehicle emissions	Reduction in traffic through the Hockerill Junction and measured Concentration at z…	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.	Marked as completed previously as modelling showed it could not be improved and signals were installed.
8	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 / Promotion of cycling	2016	2020	East Herts Council, Herts County Council	Defra, East Herts Council, Herts County Council	Partial	Partially Funded	TBC	Completed	Reduced vehicle emissions	Increased use of subways for local travel	Banner wrapping complete on 4 subways within the Hertford AQMA at the end of August 2017.	2 further subways banner wrapped with community artwork/ community art gallery and improved pedestrian signage to encourage active pedestrian/cyclist cross town movement under A414.
9	Investigate better signage for the bypass with a view to reducing the impact of through traffic.	Traffic Management	UTC, Congestion management, traffic reduction	2017	2019	East Herts Council	East Herts District Council	No	Not Funded	TBC	Completed/ongoing	2%	% of x..	Use of VMS has been included as part of the interventions identified in the Bishop Stortford Transport Plan for congestion issues. No permanent signs allowed as not permitted on highway	
10	Consider options for Park and Ride scheme	Alternatives to Private Vehicle Use	Bus based Park and Ride	2015	2021	East Herts Council	TBC	No	Funded	TBC	completed	Reduced vehicle emissions	Reduction in Traffic Flows in AQMA	.Studies undertaken so far have indicated that it would not be viable to	Post-scheme surveys arranged by HCC to examine whether some of the rat-

N	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date 2021	Comments / Barriers to Implementation
														introduce park and ride to Bishop's Stortford or Hertford	running issues during scheme construction have been alleviated.
11	Promote the Benefits of Cycling	Promoting Travel Alternatives	Promotion of cycling	2013	2021	East Herts Council	TBC	No	Funded	£50k/£50k	Completed / ongoing	0.2µg/m3 and reduction in use of private vehicles	Increased sustainable travel to school and work # of y..	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	Cycle/scooter Storage installed at schools near the AQMA. Also upgrade the bicycle racks at East Herts Council as Staff were uncomfortable using it for security reasons. New shower block facilities to encourage council staff to cycle or run to work were completed
12	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	2018	2021	East Herts Council	TBC	No	Funded	< £10k/£10k	completed	Reduced vehicle emissions	Increase in sustainable travel to school	Worked with two Secondary schools in AQMAs in partnership with the London Sustainability Exchange. Air Quality Toolkits have been developed which can be linked to curriculum and BSA Crest Award progress.	ND
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	2014	2021	Herts County Council, East Herts Council	TBC	No	Funded	< £10k/£10k	Completed / ongoing	Reduced vehicle emissions	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	ND
14	Hertfordshire Year of Walking ran throughout 2015	Promoting Travel Alternatives	Promotion of Walking	2015	2022	Herts County Council, East Herts Council	TBC	No	TBC	TBC	complete	Reduced vehicle emissions	Increase in number of people	Two walk to schools weeks (Sawbridgeworth	Local campaigns with schools and supported by EH

N	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date 2021	Comments / Barriers to Implementation
	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.												walking	& 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. Walk to school week is now an annual event	councillors took place. Clean Air Day supported by EHC with HCC and various campaign channels covered with promotional materials and banners including "turn your key and be idle free".
15	Encourage the use of Euro 6 engines in buses that run in Bishop's Stortford.	Vehicle Fleet Efficiency	Other	2018	Not defined	Herts County Council	TBC	No	TBC	TBC	Implementation	Reduced vehicle emissions	Cleaner buses travelling through AQMA	Two of three Trusty bus services pass through an AQMA area and meet the highest emission standards. Arriva 310, 508, 509, 510 also meets the standard. Unsuccessful CBTF for 724 routes.	ND.
16	Using our Defra/DfT Air Quality grant award, work to deliver a pilot public electric car scheme in Hertford and Bishops Stortford.	Alternatives to Private Car Use / Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2016	2019	East Herts Council	DEFRA/East Herts District Council	Yes- for pilot phase	Funded	TBC	Completed / ongoing	Reduced vehicle emissions	Number of members of the public using the electric vehicles	Two chargers and designated spaces for public electric car scheme installed at Council offices in Hertford. The updates to chargers in Hertford AQMA underway. Scheme fully delivered and in operation: 5 fully electric cars have now been deployed for over 2 years following grant award- 2 cars in Stortford/3 cars in Hertford. All vehicles are joint use public/council staff with public use out of	.

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														business hours and at weekends	
17	Expand electric charging points for electric vehicles - 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	2016	2023	East Herts Council	East Herts Council	Partial	Partially Funded	TBC	Completed / ongoing	Reduced vehicle emissions	Number of electric charging points in district	60 council owned EV charging units now available Currently all units offer free electricity and charging to encourage take up of EV by public across East Herts.	Plans for at least 2 rapid charging sites are in preparation . There is a view to pursue s106 money for some chargers. Aim to install chargers at new Old River Lane site in Bishops Stortford has been delayed due to insufficient grid capacity.
18	Investigate opportunity to encourage establishment of electric taxi project in Hertford and Bishop's Stortford	Promoting Low Emission Transport	Taxi emission incentives / Other	2018	2023	East Herts Council	East Herts Council	No	TBC	TBC	Implementation	Reduced vehicle emissions	TBC	East Herts is supporter of Herts 2025 Electric Taxi scheme which is an ERDF funded project to encourage take of EV taxis by drivers through a subsidised lease period and promotion of rapid charging infrastructure. ERDF funding bid for electric taxi project secured by LA/Private Operator Partnership following approval by MHCLG.	Changes in vehicle age and emissions policy set the standards for any vehicles licenced by EHC. Project roll out in East Herts is being assessed and will be dependent on provision of dedicated rapid EV chargers for taxi use.
19	Ensure that developers have taken sufficient steps to minimise any increase in air pollution (includes an assessment of air quality implications where applicable)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2018	2022	East Herts Council	S106	NO	TBC	TBC	completed	Reduced vehicle emissions	Not defined	New SPD adopted and being used	New air quality policy incorporated in district plan that is significantly more stringent on requiring consideration of air quality in all planning apps
20	Develop personalised travel planning for	Promoting Travel Alternatives	Personalised Travel Planning	2017	2023	Herts County Council, East Herts Council	S106 contributions	NO	Funded	TBC	Implementation	Reduced vehicle emissions	Number of travel plans for residents	A Bishop Stortford Town wide travel plan	This will provide both North and South

N	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date 2021	Comments / Barriers to Implementation
	residents of Hertford and for residents of the new Bishop's Stortford North development.													(including Personalised Travel Planning) is being developed.	Developments with range of travel choice materials and additional walking, cycling and public transport infrastructure to encourage more sustainable travel choices within and across the Town.
21	Work with Hertfordshire Sustainability Forum to deliver Air Quality Conference in 2018 to promote air quality activity and best practice across Hertfordshire	Public Information	Other	2018?	Ongoing	East Herts Council	TBC	No	TBC	TBC	completed	Reduced vehicle emissions	Not defined	Successful forum has been held and was well attended, there is now a permanent sustainability coordinator, to enable this work to continue	HSF is now replaced by Hertfordshire Climate Change and Sustainability Partnership. No current plans for specific AQ conference. Some AQ measures are included in evolving Transport Action plan being developed by the Partnership
22	Projects to improve the commuter infrastructure for non-motorised users between residential areas and towns. Promotion to encourage use	Promoting Travel Alternatives	Promotion of cycling	2019	2021 and Onwards	Herts County Council	TBC	NO	Funded	TBC	Implementation	Reduced vehicle emissions	Use of commuter infrastructure	Plans are underway for works to begin and funding has been secured for the works.	.
23	Air Quality Notification System. System will allow users to make better informed decisions around their health and air pollution	Public Information	Other	2021	Ongoing	East Herts, other Herts local authorities & Herts County Council Public Health	TBC	No	Funded	< £10k/£10k	Implementation	Decrease ill health impacts from air pollution	Numbers of members of the Notification System	System up and running with > 60 users in East Herts so far	Ongoing work with public health to try and get better promotion of the scheme to increase uptake
24	Install anti-idling guidance /advisory signage in council carparks	Public Information	Other	2019	2021	East Herts Council	East Herts Council	NO	Funded	< £10k	complete	TBC	TBC	Community competition to design anti- idling signage held in 2020 as part of Clean Air Day. Roll out of signs in idling	Project to deliver anti-idling posters for use in shop windows in Sawbridgeworth in June 2021.

N	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date 2021	Comments / Barriers to Implementation
														"hotspots" in council car parks in June 2021.	
25	Assess evidence-base for benefits of green walls	Other	Other	2019	2020	East Herts Council	TBC	NO	Not Funded	TBC	complete	TBC	TBC	DEFRA refused aq grant bid for these works stating no evidence of benefits.	Included in formally agreed Environmental Sustainability SPD guidance (March 2021).
26	Keep under review the potential for East Herts Council's own fleet to move to electric vehicle operation if feasible as leases expire	Vehicle Fleet Efficiency	Other	2018	2021	East Herts Council	TBC	NO	TBC	TBC	implementation	TBC	Number of diesel vans in council fleet reduced.	Work still ongoing to overcome the barriers faced	Delays due to internal HR issues, delays in procurement due to shortages from covid impact

Note: TBC= to be confirmed and ND= Not determined.

$PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

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

The Air Quality Expert Group (2015) estimate that UK emissions contribute to approximately 50-55% of the total annual average PM2.5 in the UK. The European Environment Agency estimates that road transport sources contribute to 13% of European emissions of PM2.5 in 2013. Data presented by the Air Quality Expert Group (2015) estimated the contribution from traffic to be 7% in the UK. This emphasises that a large proportion of airborne PM2.5 originate from other sources, including sea-salt, inorganic aerosols, organic aerosols and non-traffic generated rural and urban particulates including biomass burning both domestic and commercial. There is clear evidence that PM2.5 has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases. The obligation placed upon local authorities in respect of PM2.5 is that they are expected to work towards reducing emissions and concentrations of PM2.5 in their local area as practicable and consider action if necessary to address PM2.5 issues in their area, and aligning those interests with those public health officers.

However policy guidance LAQM.PG16 does not prescribe what the local authority role should be; it is for the local authority in consultation with its public health officials and others to consider how it wishes to define this role.

Whilst there are no numerical limit values prescribed for PM2.5 for England and no statutory obligations on local authorities in respect of monitoring concentrations of PM2.5 in the ambient air, the EU Ambient Air Quality Directive has identified 25ug/m3 as a limit value to be met by 2020 and the World Health Organisation (WHO) has set an air quality guideline of 10ug/m3 as an annual mean for PM2.5.

The only specific indicator for PM2.5 is included within the Public Health Outcomes Framework (Public Health Outcome Indicator (PHOI) 3.01) which is stated as: ‘The fraction of annual all-cause mortality attributable to long-term exposure to current levels of anthropogenic particulate pollution.’ This indicator is based on an estimated amount of

PM2.5 derived by Defra modelling from local measurement, including one site in Borehamwood, Hertfordshire and another in Bedfordshire. That data has been adjusted by way of population to give a population weighted figure before its use in deriving the PHOI. The PM2.5 focused PHOI reflects the adverse impact that this type of air pollution can have on public health as a result of the fine particles being carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases.

Within Hertfordshire joint working on air quality issues between the local authorities and Hertfordshire County Council for PM2.5 as part of the Herts and Beds air quality group has included a local monitoring project. The aim has enabled the collection of real-time direct measurements of PM2.5 concentrations from multiple locations within Hertfordshire in order to address the paucity of PM2.5 data available within the County.

The Hertfordshire Local Authorities Report on Particulate Matter (PM2.5) in Ambient Air in 2021 for Hertfordshire County Council Public Health
PM2.5_Report_for_PH_2021_final.pdf (airqualityengland.co.uk)

identifies that it is important to recognise that the figures published for PHOI 3.01 are estimates and therefore cannot be used for performance monitoring; they can only provide an indication of the scale of the issue. Further information on the use of health related air quality data is available at:

PH Briefing Note - Air Quality: FAQs about the data (hertshealthevidence.org)

It is for this reason that the report does not make direct reference to the PHOI figures, but uses the population weighted Defra modelled PM2.5 concentrations in their place.

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 have now got $PM_{2.5}$ monitoring equip installed in one of our AQMAs in Hertford which should provide invaluable data to help inform future action and

4 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2021 by East Herts District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2021 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

4.1.1 Automatic Monitoring Sites

East Herts District Council undertook automatic (continuous) monitoring at one site during 2019. Table A.1 in Appendix A shows the details of the automatic monitoring sites. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The automatic monitoring results [12]for East Herts District Council, with automatic monitoring results also available through the UK-Air website .

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.

4.1.2 Non-Automatic Monitoring Sites

East Herts District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 34 sites with 7 of those triplicate sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic 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.

[12] https://www.airqualityengland.co.uk/local-authority/data?la_id=408

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

4.1.3 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µgm-3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data includes distance corrected values, only where relevant.

No exceedances of the air quality objectives for annual mean and 1-hour (where applicable) objectives were recorded in 2020 as shown in Table A.5. No exceedences of 60µg/m^3 were recorded which indicates that no exceedance of the 1-hour mean objective were recorded.

4.1.4 Particulate Matter (PM_{10})

There are currently no PM_{10} monitors installed across East Herts District Council.

4.1.5 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes Framework (PHOF) indicator is based. Therefore, although not covered by the LAQM regulations, Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

The current results are below the WHO guidance of 10µg m^{-3}.

4.1.6 Sulphur Dioxide (SO2)

There are currently no SO_2 monitors installed across East Herts District Council.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which 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	NO_2, $PM_{2.5}$	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 2021 Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
EH12 EH31 EH32	Hockerill St BS	Kerbside	549154	221242	NO_2	Y	0.9	1.4	No	2.5
EH17 EH35 EH36	Dunmow Rd	Kerbside	549364	221215	NO_2	Y	7.4	1.8	No	2.5
EH18 EH37 EH38	Stanstead Rd	Kerbside	549298	221313	NO_2	N	2.7	1.4	No	2.5
EH19 EH39 EH40	London Rd	Kerbside	549250	221200	NO_2	N	0.4	1.1	No	2.5
EH25	Old Cross Hertford	Kerbside	532446	212669	NO_2	y	3.1	0.9	No	2.5
EH28 EH48 EH49	Castle Street Hertford	Roadside	532542	212370	NO_2	Y	12.5	2.4	No	2.5
EH42 EH43 EH44	West St Hertford colocated with EH29	Roadside	532408	212371	NO_2	Y	4.8	2.8	No	2.5
EH79 EH80 EH81	Gascoyne Way, Hertford	Roadside	532464	212338	NO_2	Y	3	2.5	Yes	2.5
EH30	Downey CottageHertingfordbury RdHertford	Kerbside	532023	212550	NO_2	Y	1.8	0.5	No	2.5
EH41	Ware Rd Hertford	Roadside	533101	212755	NO_2	Y	2.1	1.1	No	2.5
EH52	Cowbridge Hertford	Roadside	532307	212814	NO_2	Y	1.5	3.2	No	2.5
EH53	Viaduct Road Ware	Roadside	536068	214120	NO_2	y	3.1	1.8	No	2.5
EH54	Station Road Ware	Roadside	536085	214077	NO_2	N	20.7	1.8	No	2.5
EH57	Opp Bell St SBW at crossing	Roadside	548123	214903	NO_2	N	0.6	2.8	No	2.5
EH62	Northgate End B/S Jct Yew Tree Court	Roadside	548723	221719	NO_2	N	6.0	2.5	No	2.5
EH64	Rye St, B/S outside 79	Roadside	548741	222109	NO_2	N	3.6	1.5	No	2.5
EH66	221 Rye Street Bishops Stortford	Roadside	549134	222676	NO_2	N	0	1.5	No	2.5
EH68	Hadham Rd, B/S outside 9	Roadside	548611	221541	NO_2	N	0.5	1.5	No	2.5
EH70	Outside 38 High St, Buntingford.	Roadside	536205	229558	NO_2	N	0	1.5	No	2.5
EH73	opp Horseshoe Cott's, Buntingford	Roadside	536186	229430	NO_2	N	0	1.5	No	2.5
EH82	10 Bullocks Lane, Hertford	Roadside	532186	211739	NO_2	Y	0	1.5	No	2.5
EH83	Port Hill Hertford	Roadside	532355	213032	NO_2	N	0	1.5	No	2.5
EH84	North Road, Hertford	Roadside	532113	212604	NO_2	N	0	1.5	No	2.5
EH85	Sele House North Road, Hertford	Roadside	531911	212711	NO_2	N	0	1.5	No	2.5
EH86	78 North Road, Hertford	Roadside	531577	213073	NO_2	N	0	1.5	No	2.5
EH87	Viaduct Road, Ware	Roadside	536060	214128	NO_2	N	0	1.5	No	2.5
EH88	Santander High Street, Ware	Roadside	535793	214312	NO_2	N	0	1.5	No	2.5
EH89	Coffee Lab, 84-88 High Street, Ware	Roadside	535743	214348	NO_2	N	0	1.5	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
EH90	Pye Corner, Gilston	Roadside	544885	212254	NO_2	N	0	1.5	No	2.5
EH91	14 London Road, SBW	Roadside	548012	214579	NO_2	Y	0	1.5	No	2.5
EH92	Gourmet Oriental, South Street, B/S	Roadside	548865	220981	NO_2	N	0	1.5	No	2.5
EH93	Stortford Flooring, 4 Station Road B/S	Roadside	548904	221020	NO_2	N	0	1.5	No	2.5
EH94	Cancer Research (now empty), Potter Street,B/S	Roadside	548778	221308	NO_2	N	0	1.5	No	2.5
EH95	Stortford Road, Little Hadham	Roadside	543996	222731	NO_2	N	0	1.5	No	2.5
EH96	Standon Road, Little Hadham	Roadside	543944	222725	NO_2	N	0.0	1.5	No	2.5

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.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period 2021 (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
EH79	532464	212338	Roadside	97.84	97.84	**34.7**	32.2	33	20	26

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

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

Notes:

The annual mean concentrations are presented as µg/m^3.

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

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

(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%).

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	2017	2018	2019	2020	2021
EH12 EH31 EH32	549154	221242	Kerbside	100	**46.3**	**40.1**	**43.8**	34.5	33.4
EH17 EH35 EH36	549364	221215	Kerbside	100	**63.3**	**58.1**	**59.5**	**46.9**	**47.3**
EH18 EH37 EH38	549298	221313	Kerbside	100	**40.3**	34.9	36.1	30.8	30.7
EH19 EH39 EH40	549250	221200	Kerbside	100	**66.9**	**58.9**	**59.1**	**48.9**	**48.3**
EH25	532446	212669	Kerbside	100	**47.8**	39.7	**41.8**	33.1	32.3
EH28 EH48 EH49	532542	212370	Roadside	100	37.6	32.2	34.7	28.0	28.1
EH30	532023	212550	Kerbside	100	**40.6**	33.8	37.3	31.3	30.0
EH41	533101	212755	Roadside	100	**45.3**	36.1	**40.8**	32.2	31.6
EH42 EH43 EH44	532408	212371	Roadside	100	**44.5**	37.2	**41.4**	31.8	32.1
EH52	532307	212814	Roadside	92.3	31.1	26.9	28.7	22.5	20.0
EH54	536085	214077	Roadside	100	31.3	23.7	27.0	20.3	19.5
EH57	548123	214903	Roadside	100	**46.5**	**47.0**	**50.4**	**40.5**	**40.9**
EH62	548723	221719	Roadside	100	32.9	31.2	30.7	24.4	25.4
EH64	548741	222109	Roadside	100	32.7	30.3	30.2	22.7	21.6
EH66	549134	222676	Roadside	100	21.1	18.0	19.0	14.8	14.1
EH68	548611	221541	Roadside	100	33.6	31.4	31.2	24.2	23.9
EH70	536205	229558	Roadside	100	19.6	21.1	23.7	18.9	18.2
EH73	536186	229430	Roadside	90.4	33.1	33.6	28.2	23.2	22.5
EH79 EH80 EH81	532464	212338	Roadside	100	39.1	36.0	32.0	25.6	26.1
EH82	532186	211739	Roadside	100	-	28.1	27.7	22.5	22.5
EH83	532355	213032	Roadside	100	-	24.6	25.9	21.4	19.5
EH84	532113	212604	Roadside	82.7	-	30.8	31.5	25.9	23.7
EH85	531911	212711	Roadside	100	-	36.4	39.7	30.2	31.5
EH86	531577	213073	Roadside	100	-	25.4	26.3	23.0	21.3
EH87	536060	214128	Roadside	100	-	39.6	35.4	30.1	31.1
EH88	535793	214312	Roadside	100	-	39.8	37.9	24.9	25.8
EH89	535743	214348	Roadside	100	-	31.8	29.5	21.3	21.7
EH90	544885	212254	Roadside	84.6	-	29.3	26.3	20.3	17.6
EH91	548012	214579	Roadside	100	-	**41.5**	39.5	32.7	33.6
EH92	548865	220981	Roadside	100	-	26.4	27.1	23.1	22.1
EH93	548904	221020	Roadside	82.7	-	**40.6**	**41.0**	30.3	27.1
EH94	548778	221308	Roadside	90.4	-	31.5	32.8	22.9	23.3
EH95	543996	222731	Roadside	100	-	25.6	22.8	17.2	18.7
EH96	543944	222725	Roadside	90.4	-	25.0	25.0	19.8	16.9

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☒ **Diffusion tube data has been bias adjusted.**

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

Notes:

The annual mean concentrations are presented as µg/m^3.

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**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

(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%).

Table A.5 –1-Hour Mean NO2 Monitoring Results, Number of 1-Hour Means > 200µg/m3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period 2021 (%) (1)	Valid Data Capture 2021(%) (2)	2017	2018	2019	2020	2021
EH79	532464	212338	Roadside	97.84	97.84	0	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

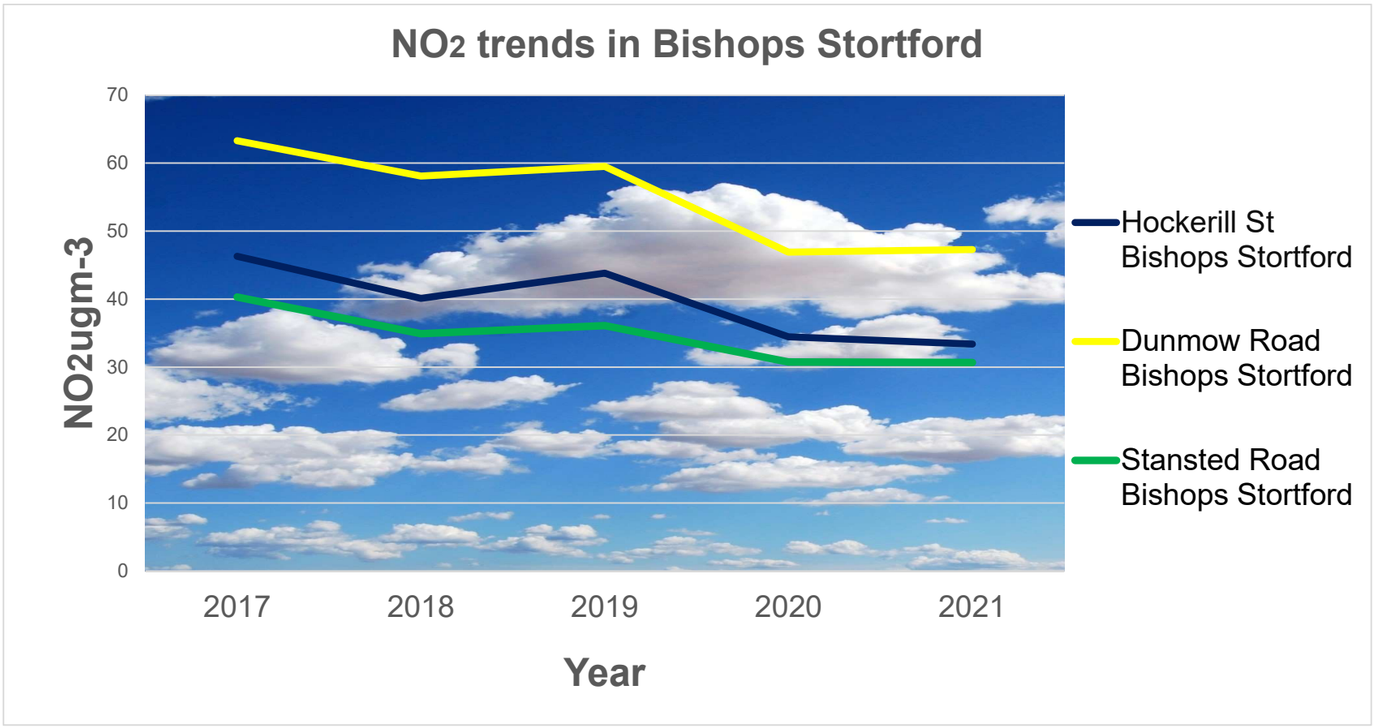
Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

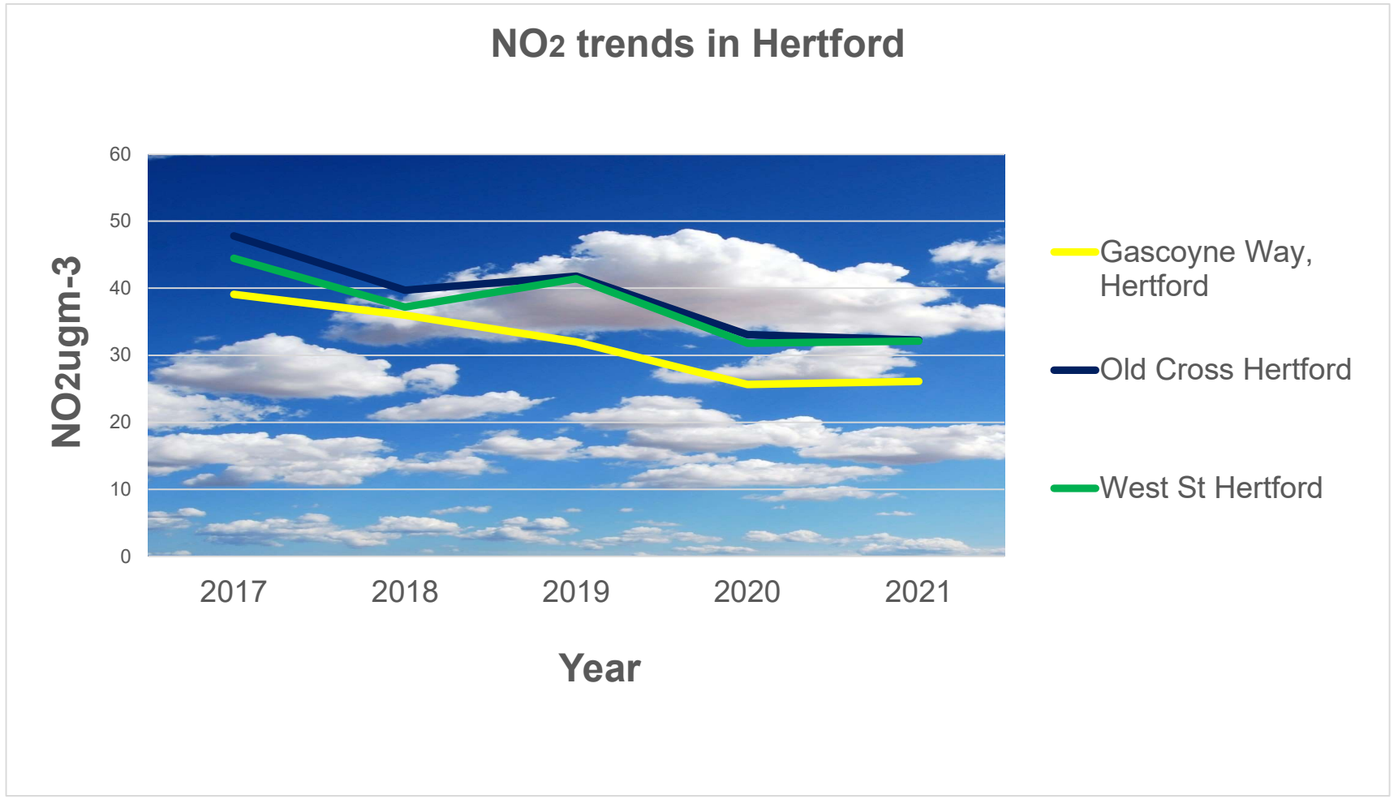
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations - Hockerill junction, Bishop's Stortford AQMA



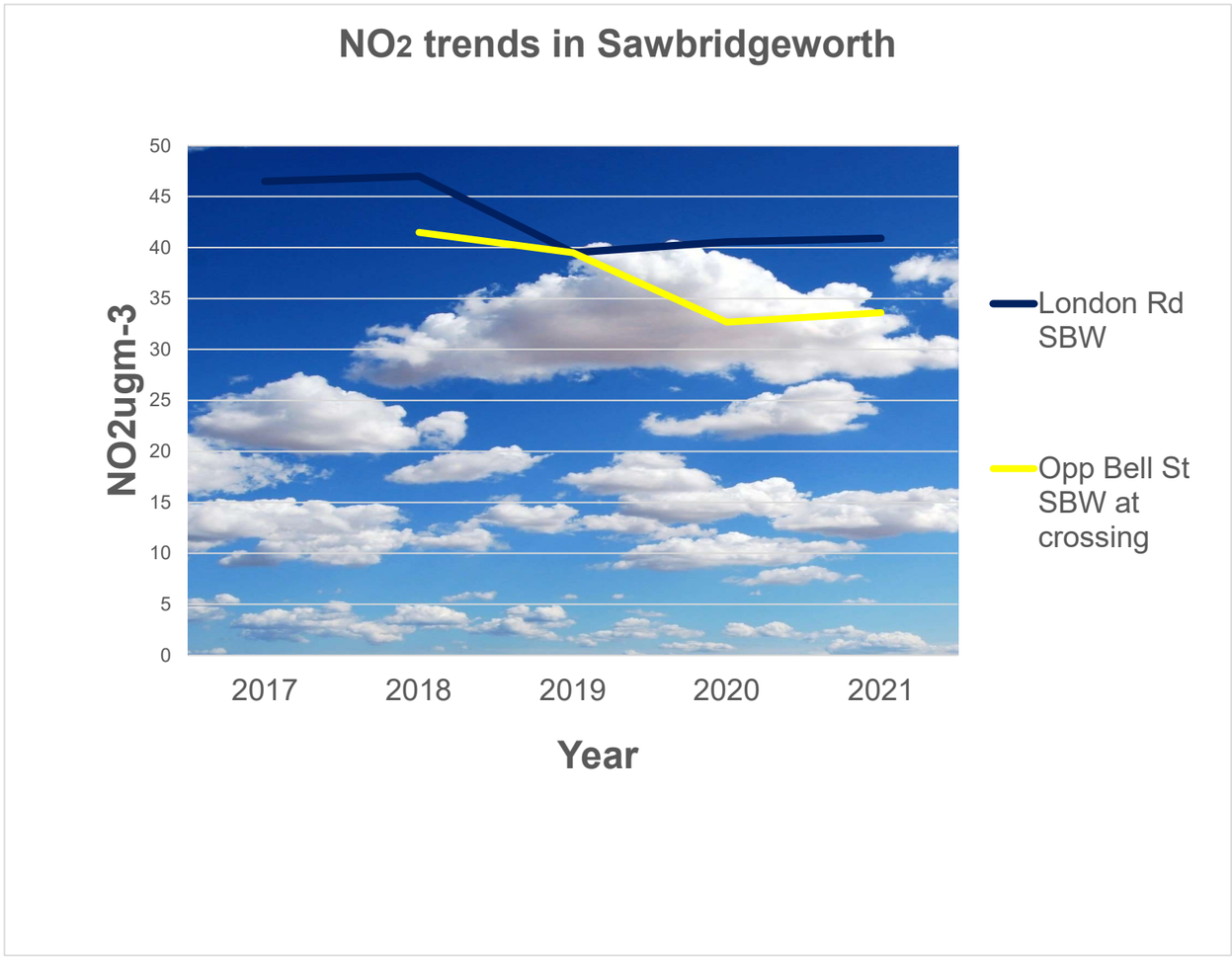
Note: the relevant Diffusion tubes are EH12/Hockerill Street, EH17 Dunmow Road, EH18/ Stansted Road and EH19/London Road

Figure A.2 – Trends in Annual Mean NO_2 Concentrations - Gascoyne Way, Hertford AQMA



Note: The relevant diffusion tubes are EH80/Gascoyne Way, EH25/Old Cross, EH28/Castle Street, EH30/Downey Cottage, Hertingfordbury Road and EH42/West Street

Figure A.3 – Trends in Annual Mean NO_2 Concentrations - London Road, Sawbridgeworth AQMA



Note: The relevant diffusion tubes are EH57/Crossing at Bell Street and EH91/London Road

Table A.6 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period 2021 (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
EH79	532464	212338	Roadside	96.56	96.56	14.0	10.2	8.1	10.6	12

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

Notes:

The annual mean concentrations are presented as µg/m^3.

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

Appendix B: Full Monthly Diffusion Tube Results

Table B.1 – NO_2 2021 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Local Bias Adjusted (0.96)	Annual Mean: Distance Corrected to Nearest Exposure Local	Comment
EH12 EH31 EH32	549154	221242	35.7	37.7	31.3	27.0	42.7	31.7	32.3	27.3	41.7	40.0	34.3	35.7	34.8	33.4		
EH17 EH35 EH36	549364	221215	51.7	51.0	49.7	51.0	55.3	51.7	40.7	43.7	53.3	46.3	50.7	46.3	49.3	**47.3**	33.2	
EH18 EH37 EH38	549298	221313	35.0	35.7	33.0	28.0	31.7	28.0	25.3	28.7	33.7	34.3	37.3	32.7	31.9	30.7		
EH19 EH39 EH40	549250	221200	54.0	52.3	52.3	45.3	52.0	50.3	46.0	48.0	55.3	52.0	51.0	45.0	50.3	**48.3**		
EH25	532446	212669	41.0	36.0	35.0	29.0	33.0	31.0	31.0	27.0	35.0	31.0	41.0	34.0	33.7	32.3		
EH30	532023	212550	36.0	36.0	31.0	26.0	32.0	28.0	29.0	26.0	35.0	33.0	34.0	29.0	31.3	30.0		
EH41	533101	212755	38.0	38.0	23.0	25.0	41.0	27.0	30.0	27.0	37.0	39.0	37.0	33.0	32.9	31.6		
EH42 EH43 EH44	532408	212371	39.7	40.3	32.3	29.7	37.3	32.7	29.7	25.7	35.7	29.0	37.0	32.7	33.5	32.1		
EH28 EH48 EH49	532542	212370	32.0	37.3	27.7	27.3	33.3	25.7	25.3	22.3	33.3	29.0	28.0	29.7	29.3	28.1		
EH52	532307	212814	17.0	27.0		18.0	22.0	18.0	17.0	16.0	21.0	24.0	24.0	25.0	20.8	20.0		
EH54	536085	214077	27.0	25.0	21.0	16.0	17.0	15.0	15.0	15.0	21.0	24.0	25.0	23.0	20.3	19.5		
EH57	548123	214903	46.0	40.0	47.0	38.0	44.0	43.0	38.0	39.0	41.0	45.0	50.0	40.0	42.6	**40.9**	39.3	
EH62	548723	221719	31.0	32.0	31.0	25.0	28.0	22.0	24.0	20.0	18.0	30.0	30.0	26.0	26.4	25.4		
EH64	548741	222109	25.0	25.0	23.0	19.0	21.0	16.0	19.0	18.0	25.0	26.0	27.0	26.0	22.5	21.6		
EH66	549134	222676	19.0	18.0	15.0	11.0	15.0	10.0	12.0	10.0	16.0	17.0	16.0	17.0	14.7	14.1		
EH68	548611	221541	28.0	21.0	18.0	24.0	26.0	24.0	24.0	19.0	32.0	29.0	25.0	29.0	24.9	23.9		
EH70	536205	229558	25.0	24.0	20.0	15.0	18.0	13.0	15.0	13.0	20.0	22.0	21.0	21.0	18.9	18.2		
EH73	536186	229430	22.0	25.0	25.0	22.0	24.0	22.0	20.0	18.0	25.0	25.0	30.0		23.5	22.5		
EH79 EH80 EH81	532464	212338	31.0	36.3	25.7	26.7	30.3	23.7	25.3	20.0	32.5	25.0	25.3	24.3	27.2	26.1		
EH82	532186	211739	28.0	30.0	20.0	20.0	25.0	20.0	22.0	17.0	23.0	25.0	26.0	25.0	23.4	22.5		
EH83	532309	212820	29.0	26.0	22.0	17.0	17.0	15.0	14.0	14.0	18.0	23.0	26.0	23.0	20.3	19.5		
EH84	531577	213073	32.0	29.0	25.0	20.0	24.0	15.0		19.0		27.0	30.0	26.0	24.7	23.7		
EH85	531911	212711	19.0	39.0	37.0	31.0	36.0	30.0	31.0	30.0	39.0	36.0	36.0	30.0	32.8	31.5		
EH86	531577	213073	28.0	28.0	32.0	18.0	20.0	17.0	17.0	15.0	21.0	24.0	23.0	23.0	22.2	21.3		
EH87	536060	214128	39.0	41.0	30.0	29.0	34.0	28.0	28.0	22.0	36.0	33.0	38.0	31.0	32.4	31.1		
EH88	535793	214312	27.0	24.0	22.0	17.0	23.0	26.0	26.0	23.0	33.0	33.0	35.0	33.0	26.8	25.8		
EH89	535743	214348	27.0	25.0	22.0	19.0	22.0	18.0	19.0	17.0	26.0	25.0	25.0	26.0	22.6	21.7		
EH90	531184	211869	24.0	20.0	22.0	16.0	19.0	13.0	13.0			21.0	14.0	21.0	18.3	17.6		
EH91	548012	214579	33.0	38.0	37.0	32.0	38.0	34.0	34.0	31.0	34.0	36.0	38.0	35.0	35.0	33.6		
EH92	548865	220981	29.0	27.0	24.0	18.0	22.0	18.0	18.0	17.0	24.0	25.0	27.0	27.0	23.0	22.1		
EH93	548904	221020	28.0	32.0	28.0	24.0	31.0			25.0	14.0	33.0	34.0	33.0	28.2	27.1		
EH94	548778	221308	25.0	23.0	23.0	15.0	20.0	19.0		22.0	25.0	29.0	36.0	30.0	24.3	23.3		
EH95	543996	222731	25.0	22.0	18.0	17.0	20.0	17.0	17.0	16.0	21.0	21.0	23.0	17.0	19.5	18.7		
EH96	543944	222725	22.0	23.0	18.0	12.0	18.0	11.0		12.0	18.0	21.0	22.0	17.0	17.6	16.9		

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **East Herts District Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

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**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within East Herts District Council during 2021

East Herts District Council has not identified any new sources relating to air quality within the reporting year of 2021

Additional Air Quality Works Undertaken by East Herts District Council during 2021

East Herts District Council has not completed any additional works within the reporting year of 2021. The summary of all works have been provided in Table 3.2.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes for NO_2 in EHDC are provided by Gradko International Ltd, using a preparation method of 50% Triethanolamine (TEA) in acetone.

Gradko participate in the AIR-PT scheme. AIR is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). The AIR-PT scheme started in April 2014, combining two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

AIR NO_2 PT forms an integral part of the UK NO_2 Network's QA/QC, and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). Defra and the Devolved Administrations advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the AIR-PT scheme.

The AIR PT scheme tests laboratories' analytical performance on a quarterly basis. The percentage of results submitted by Gradko International Ltd that were subsequently determined to be satisfactory as per the following AIR PT rounds in 2021:

Gradko International AIR PT 042 (Jan – Feb 2021) 25 %, AIR PT 043 (May-June 2021) 100 % AIR PT 044 (July-August 2021) 100 % AIR PT 045 (September-October 2021) 100%

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.

Diffusion Tube Annualisation

Where data capture is less than 75% of a full calendar year (less than 9 months), the mean should be "annualised" – i.e. adjusted using the methodology outlined in LLAQM.TG (16) before being compared to annual mean objectives. Data capture at all monitoring sites was greater than 75%, thus annualisation was not required.

All diffusion tube monitoring locations within East Herts District Council recorded data capture above 75% therefore it was not required to annualise any monitoring data for 2019. In addition, data capture below 25% was not recorded.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using local adjustment factors. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

East Herts District Council have applied a local bias adjustment factor of 0.96 to the 2021 monitoring data.

A summary of bias adjustment factors used by East Herts District Council over the past five years is presented in Table C.1.

The national bias adjustment factor is available from the Defra website[7]. The results of multiple co-location studies are collated, and the average bias adjustment factor is taken for studies using the 50% TEA/acetone preparation method, analysed by Gradko.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	Local	V1.0 April 2021	0.96
2020	Local	V1.0 April 2021	1.03
2019	Local	V1.0 April 2021	1.02
2018	Local		0.82
2017	Local		0.92

Discussion of Choice of Factor to Use

The local bias adjustment factors were chosen for the 2021, on the basis that these are higher than the national bias adjustment factors and to ensure consistency with the past 5 year trends of using the local factor.

Factor from Local Co-location Studies

EHDC has one co-location site, where triplicate EH79,EH80, EH81 diffusion tubes are co-located adjacent to the inlet of the continuous monitor, so that diffusion tube concentrations can adjusted for bias by comparing to the more accurate continuous monitoring dataset. A spreadsheet tool for calculating the locally derived bias adjustment factor for triplicate tubes co-located at a continuous monitor is available from the Defra website[13].

[13] Local bias adjustment factor tool available at: https://laqm.defra.gov.uk/bias-adjustment-factors/localbias.html

The local adjustment factor for 2021 is presented in Figure G.1. The Local Bias Adjustment Factor was 0.96 in 2021, which is higher than the National Bias Adjustment Factor of 0.82 for 2021.

Adjustments to the Ratified Monitoring Data

NO_2 Fall-off with Distance from the Road

Fall-off-with-distance calculations were required for some non-automatic monitoring sites, a summary of the sites has been provided here and the output data from the LAQM NO_2 fall-off with distance calculator, or output from the Diffusion Tube Data Processing Tool are presented in Table C.3.

Distance correction were considered at any monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account).

The correction was undertaken to ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure was estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in in Table C.3.

A small number of diffusion tubes are not located at relevant public exposure, such as on kerbside lampposts opposed to building facades. Distance corrected NO_2 concentrations at the nearest receptor have been calculated using the LAQM 'NO_2 Fall-off with Distance Calculator.

QA/QC of Automatic Monitoring

East Herts council undertook automatic (continuous) monitoring at one site during 2021 National monitoring results[14] are available at in Appendix G.

[14] https://www.airqualityengland.co.uk/local-authority/data?la_id=408

A map showing the location of the monitoring site is appended to this report. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix G.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The type of $PM_{2.5}$ monitor utilised within East Herts District Council do not required the application of a correction factor. East Herts District Council does not currently monitor PM_{10}.

Automatic Monitoring Annualisation

All automatic monitoring locations within East Herts District Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within East Herts District Council required distance correction during 2020. Table C3 presents the NO_2 fall off with distance calculations for the 2020 diffusion tubes.

Ratification of data

Ricardo has developed highly sophisticated state of the art air quality data management software, MODUS. The MODUS software is used to collect, check, scale, validate and ratify air quality data sets. It is proven in service and currently delivers ratified data in a cost-effective manner for all AURN sites. .

Table C.2 –Local Bias Adjustment Calculation

	Local Bias Adjustment Input 2021	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	12			
Bias Factor A	0.96 (0.89 - 1.05)			
Bias Factor B	4% (-5% - 12%)			
Diffusion Tube Mean (µg/m^3)	27.2			
Mean CV (Precision)	4.0%			
Automatic Mean (µg/m^3)	26.2			
Data Capture	98%			
Adjusted Tube Mean (µg/m^3)	26 (24 - 29)			

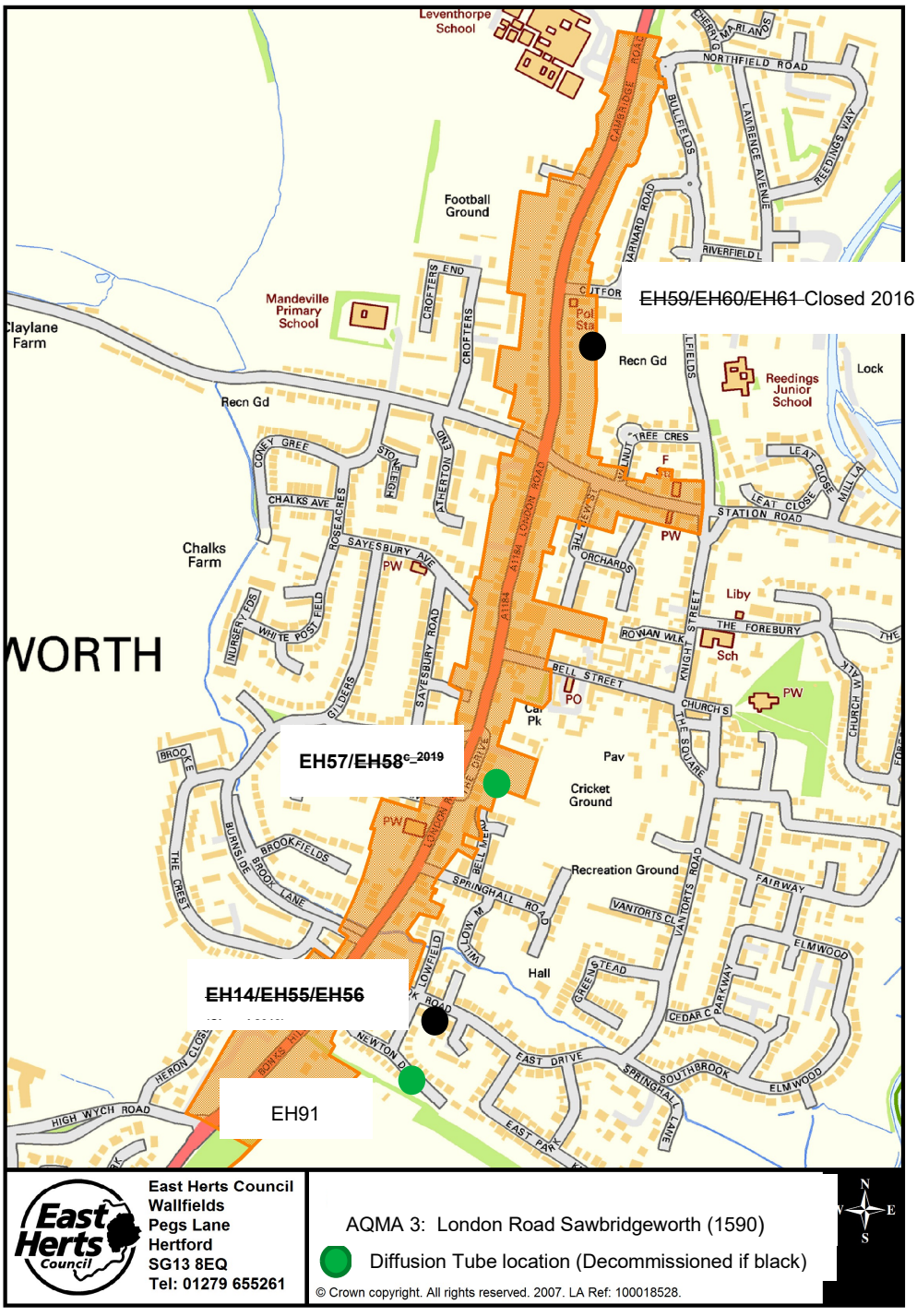
Notes: A local bias adjustment factor has been used to bias correct the 2021 data

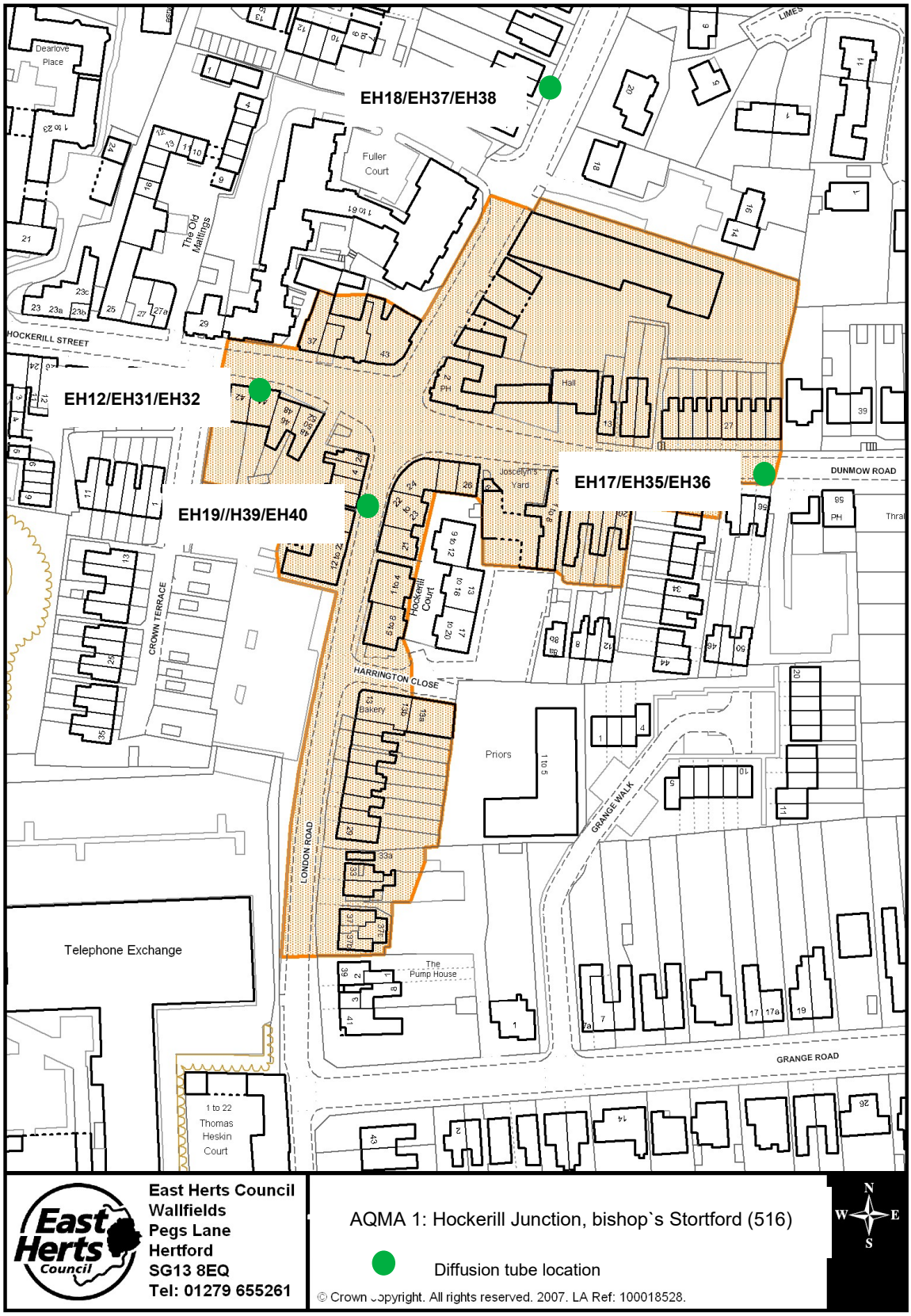
Table C.3 – 2020 NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

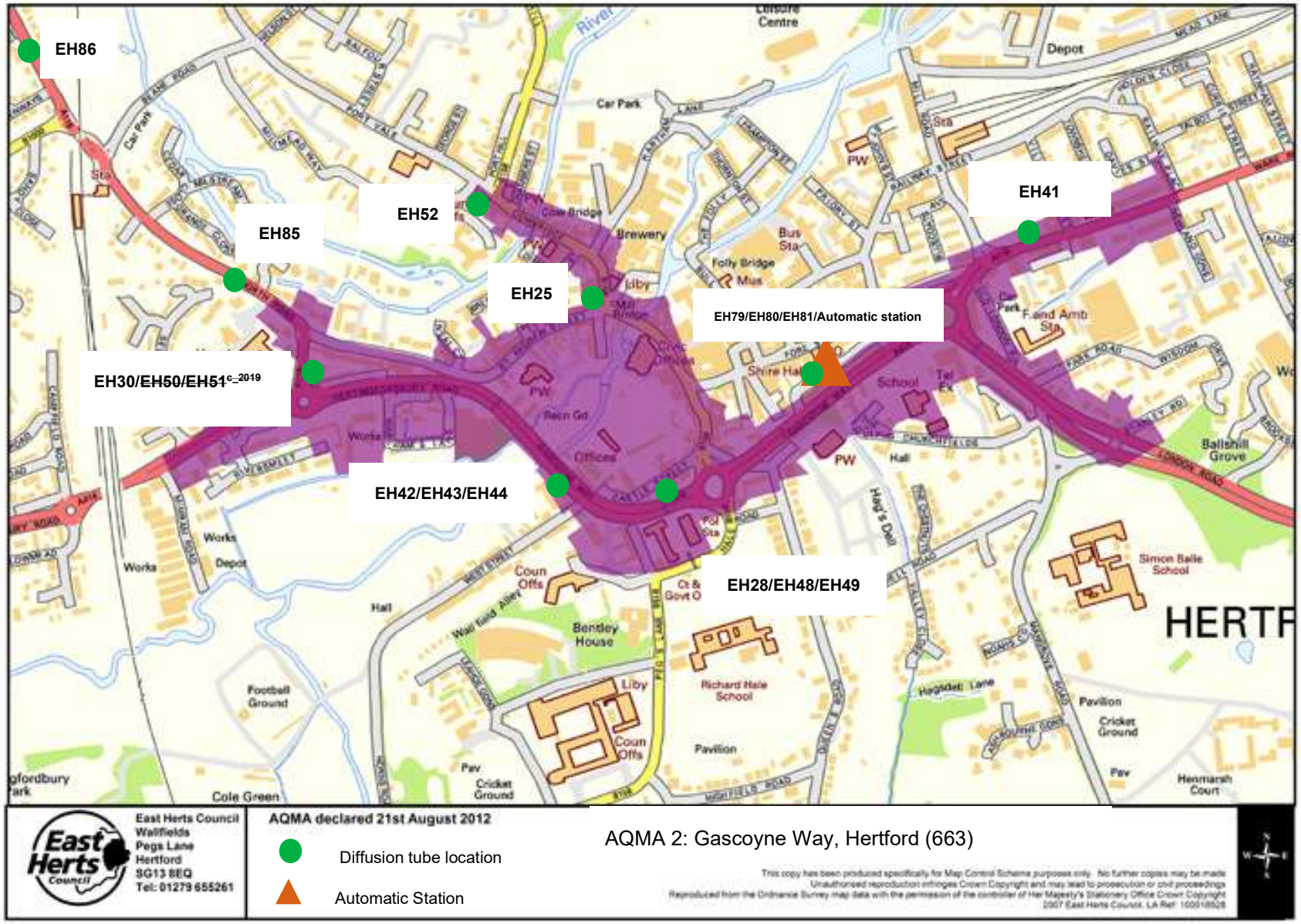
Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted Local bias	Background Concentration	Concentration Predicted at Receptor Local bias	Comments
EH17 EH35 EH36	1.8	9.2	**47.3**	9.4	33.2	*Predicted concentration at Receptor not above AQS objective.*
EH19 EH39 EH40	1.1	1.5	**48.3**	9.4	**45.8**	*Predicted concentration at Receptor above AQS objective.*
EH57	2.8	3.4	**40.9**	9.4	39.3	*Predicted concentration at Receptor within 10% of AQS objective*

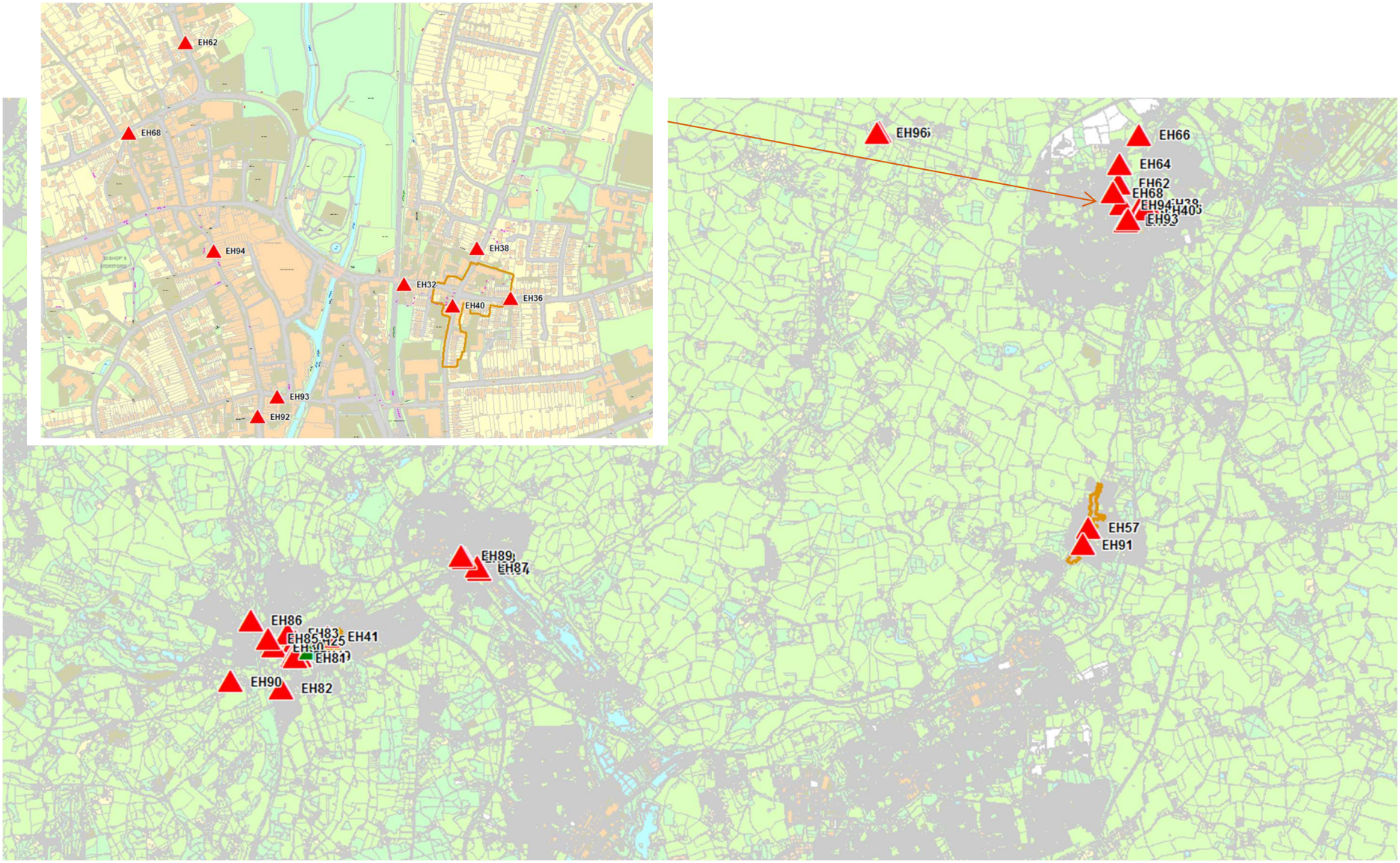
Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure D.1 – Maps of Non-Automatic Monitoring Site




EH18/EH37/EH38
EH12/EH31/EH32
EH19//H39/EH40
EH17/EH35/EH36
Dearlove Place
Fuller Court
The Old Maltings
HOCKERILL STREET
DUNMOW ROAD
CROWN TERRACE
Hockerill Court
HARRINGTON CLOSE
Bakery
Priors
1 to 5
LONDON ROAD
GRANGE WALK
GRANGE ROAD
Telephone Exchange
The Pump House
1 to 22 Thomas Heskin Court
East Herts Council
Wallfields
Pegs Lane
Hertford
SG13 8EQ
Tel: 01279 655261
AQMA 1: Hockerill Junction, bishop`s Stortford (516)
Diffusion tube location
© Crown Copyright. All rights reserved. 2007. LA Ref: 100018528.
N
W
E
S


EH86
EH85
EH52
EH25
EH41
EH79/EH80/EH81/Automatic station
EH30/EH50/EH51c–2019
EH42/EH43/EH44
EH28/EH48/EH49
East Herts Council
Wallfields
Pegs Lane
Hertford
SG13 8EQ
Tel: 01279 655261
AQMA declared 21st August 2012
Diffusion tube location
Automatic Station
AQMA 2: Gascoyne Way, Hertford (663)



Map showing all current diffusion tubes (in red), our automatic monitoring station (green) and also the three Air Quality Management Areas (Brown/orange).

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[15]

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

Pollutant	Air quality guidelines and their rationale: Concentration	Air Quality Objective: Measured as
Particulate Matter	10 µg/m3	Annual mean

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

Pollutant	Air quality guidelines and their rationale: Concentration	Air Quality Objective: Measured as
($PM_{2.5}$)		
Particulate Matter ($PM_{2.5}$)	25 µg/m3	24-hour mean

Figure G.1 – Screen National bias adjustment

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/23

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2023

LAQM Helpdesk Website

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

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

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

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

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

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

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

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

Step 4:

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

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

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m3)	Automatic Monitor Mean Conc. (Cm) (µg/m3)	Bias (B)	Tube Precision[5]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2021	R	Preston City Council	12	24	21	12.2%	G	0.89
Gradko	20% TEA in water	2021		Overall Factor[3] (34 studies)					Use	0.84
Gradko	50% TEA in acetone	2021		Overall Factor[3] (16 studies)					Use	0.82

[1] For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradko 50% TEA in Acetone.
For Casella Seal/GMSS/Casella CRE/Bureau Veritas Labs/Eurofins/ use Environmental Scientific Groups.
From 2011 for Environmental Scientific Groups use ESG Glasgow.
From 2011 for Harwell Scientific Services use ESG Didcot.
For 2017 for SOCOTEC use ESG Didcot, as name changed mid year.
For 2018 SOCOTEC entered as Didcot and Glasgow. Glasgow analysis lab moved to Didcot mid 2018.
For Staffordshire CC SS/Staffordshire County Analyst use Staffordshire Scientific Services.
For Bodycote Health Sciences and Clyde Analytical Laboratories use Exova.
For Rotherham MBC use South Yorkshire Labs.
For Dundee CC use Tayside SS.
For Leicester Scientific Services use Staffordshire Scientific Services.
For South Yorkshire Air Quality Samplers use South Yorkshire Labs. As of January 2010 sampler body changed. As of April 2010 sampler cap changed.
Lancashire County Analysts withdrew from the Field intercomparison at the end of 2010. No submissions were supplied in 2011.
Walsall MBC closed in March 2011.
Bristol Scientific Services closed at the end of 2011.
Somerset County Council did not start the Marylebone road intercomparison until June 2012.

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2022 reporting year. Recognising this, Defra provided various advice updates throughout 2021 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2022 to assist local authorities in preparing their 2022 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020-2021 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO_2) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[16] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM).

[16] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

The Air Quality Expert Group (AQEG)[17] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked than those of NO_2. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within East Herts

A summary of relevant information to detail COVID-19 related impacts to monitored concentrations combined to, traffic numbers or activity data for other emissions' sources within the district is as follows.

- Diffusion tube reading remain relatively unchanged since 2020 with some areas seeing a slight rise, this is likely due to the continued lockdowns in 2021 alongside the rising portion of hybrid working taking place. It is not possible to predict how much these trends will continue into 2022 post covid.
- Lockdown saw an immediate impact on travel behaviour leading to news articles[18][19].
- Hertfordshire's traffic levels have decreased significantly by 18.6% from 2019 to 2020, then rebounded up by 8.6% from 2020 to 2021.
- After pandemic, motor vehicle traffic in Hertfordshire has hovered between 5 and 10% below pre pandemic levels.

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[17] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

[18] https://www.gov.uk/government/publications/covid-19-travel-behaviour-during-the-lockdown

[19] https://www.bbc.com/future/article/20210312-covid-19-paused-climate-emissions-but-theyre-rising-again

- In Hertfordshire bus passenger journeys decreased by 69% between 2019/20 and 2020/21

There was an increase in the number of people walking and cycling at the start of lockdown, bike shortages continued intro 2021

In Hertfordshire bus passenger journeys decreased by 69% between 2019/20 and 2020/21.

In 2020/21 Hertfordshire's rail passenger journeys decreased by 77% from 2019/20

Changes in daily traffic volume mirror national trends as illustrated by the following figure mapping the traffic volumes over the pandemic.

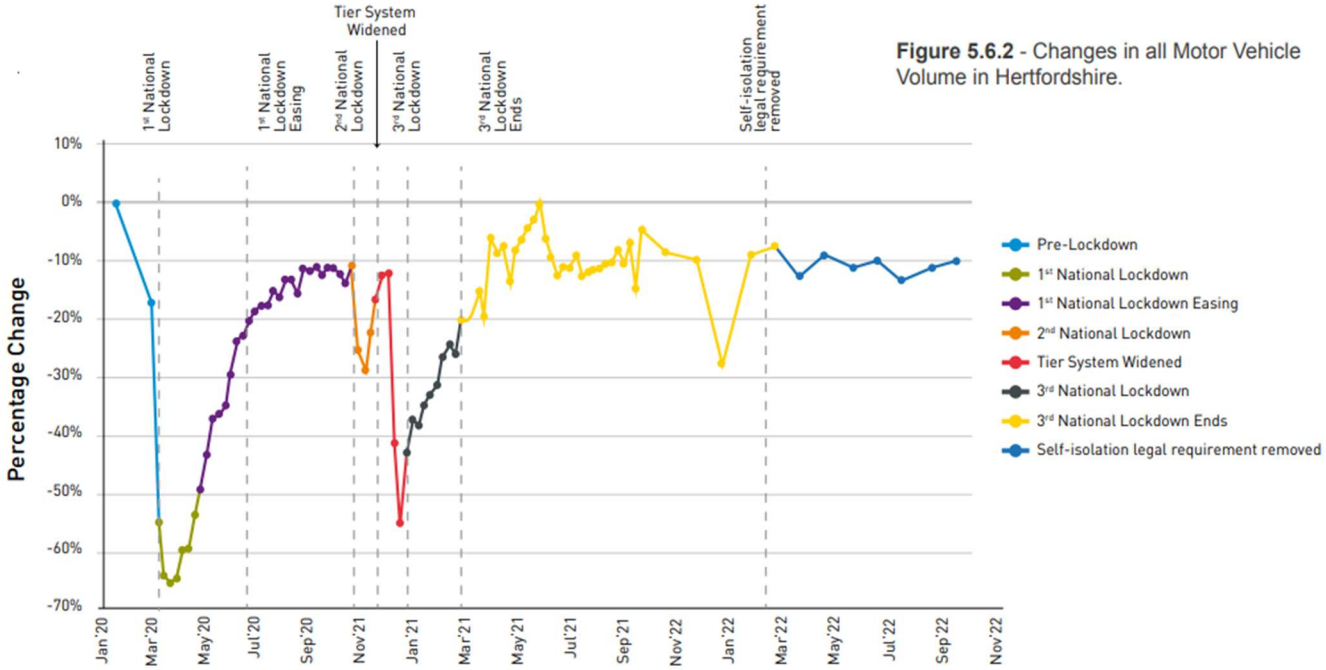

Figure 5.6.2 - Changes in all Motor Vehicle Volume in Hertfordshire.

Opportunities Presented by COVID-19 upon LAQM within East Herts

Engagement with support groups and individuals during 2021 has increased through the number of queries and ideas being received from the general public.

To gather an emissions baseline to see the impact of reduced vehicle numbers on the AQMA's.

Increases in cycling and walking have been seen throughout the pandemic.

Challenges and Constraints Imposed by COVID-19 upon LAQM within East Herts

Challenges and/or constraints that have been experienced in relation to LAQM within 2021 that can be attributed to the pandemic are as follows.

Like most local authorities, the principal challenges and barriers to implementation that EHDC anticipates facing are the impact of Covid-19 on resources and funding. Some of the projects proposed for the coming years include air quality promotion works to raise awareness on the impact on health among vulnerable receptors especially.

A push towards public transport has taken a huge impact as a result of the pandemic as illustrated in the figures above.

- A revised AQAP is being developed for the AQMA 1, AQMA 2 and AQMA 2. However, owing to the reallocation of Council resources during 2021, the development and implementation of the AQAP has been delayed. **Small Impact**

The impacts as presented above are aligned with the criteria as defined in Table F 1, with professional judgement considered as part of their application.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: Large
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

Table G 1 – Summary of Projects in AQMAs declared for NO2 annual mean

AQMA	One Line Description	NO_2 concentration via passive diffusion tube ($\mu g/m^3$)			Past /Current (2016-2021)	Proposed projects
		Location	2016	2021		
AQMA 1 Hockerill Junction (2007)	An area encompassing properties at crossroads known as Hockerill Junction	EH12-Hockerill St	**45.4**	33.4	• Investigate the opportunities to improve bus infrastructure along the bus routes through each AQMA • Undertake improvements to signal equipment with a view to improving efficiency e.g. investigate the use of an Urban Traffic Control System • Check status of school travel plans for those schools located in the vicinity of each AQMA • Consider further improvements to the bypass with a view to reducing the impact of through traffic • Investigate better signage for the bypass with a view to reducing the impact of through traffic • Encourage the use of Euro 6 engines in buses that run in Bishop's Stortford • Expand electric charging points for electric vehicles - ensuring that all AQMAs have at least two set of charging points located within their boundaries, including at least one rapid charger	• Expand monitoring network to include trilling sensors. Although associated with uncertainties, these will measure pollutants that we currently do not monitor in real time e.g. PM_{10} • Further New 20mph limits • Active air quality promotion work • Using planning conditions to reduce emission and impose monitoring around major developments • Investigate the use of planting and green walls around schools and other sensitive receptors • Increased electric vehicle infrastructure • Project to reduce emissions from combustion activities
		EH17-Dunmow Road	**64.9**	**47.3**		
		EH18-Stansted Road	36.8	30.7		
		EH19-London Road	**69.6**	**48.3**		

AQMA	One Line Description	NO_2 concentration via passive diffusion tube ($\mu g/m^3$)			Past /Current (2016-2021)	Proposed projects
		Location	2016	2021		
AQMA 2 Gascoyne Way, Hertford (2010)	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, North Road, Old Cross and Cowbridge	EH80-Gascoyne Way	**41.6**	26.1	• Investigate the opportunities to improve bus infrastructure along the bus routes through each AQMA • Check status of school travel plans for those schools located in the vicinity of each AQMA • Seek potential funding to clean-up and banner wrap pedestrian subways under the A414 in Hertford to encourage more journeys on foot • Expand electric charging points for electric vehicles - ensuring that all AQMAs have at least two set of charging points located within their boundaries, including at least one rapid charger	As above stated plus area specific measures
		EH25-Old Cross	37.3	32.3		
		EH30-Downey Cottage	39.3	30.0		
		EH42-West St	60.5	32.1		
		EH28-	36.7	28.1		

AQMA	One Line Description	NO_2 concentration via passive diffusion tube ($\mu g/m^3$)			Past /Current (2016-2021)	Proposed projects
		Location	2016	2021		
		Castle St				
AQMA 3 London Road, Sawbridgeworth (2015)	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	EH57-Bell Street	**60.1**	**40.9**	• Investigate the opportunities to improve bus infrastructure along the bus routes through each AQMA • Check status of school travel plans for those schools located in the vicinity of each AQMA • Devise a toolkit for 16 – 18 year olds to raise awareness of air pollution whilst working towards a British Science Association Crest Award • Expand electric charging points for electric vehicles - ensuring that all AQMAs have at least two set of charging points located within their boundaries, including at least one rapid charger	As above stated plus area specific measures
		EH91-London Road	-	33.6		

AQMA	One Line Description	NO_2 concentration via passive diffusion tube ($\mu g/m^3$)			Past /Current (2016-2021)	Proposed projects
		Location	2016	2021		
East Herts - District wide						Dissemination of public Information on the following: • Low emission plant/NRMM • Low emission vehicle • Alternatives to private vehicle use • Indoor pollution • School project and Idling campaign involving fleet /schools • More sustainable travel behaviours and infrastructure to be adopted post covid-19 • New taxi licensing policy

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	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 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

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.