

# Working together for Harlow

# 2021 Air Quality Annual Status Report (ASR)

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

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# **Executive Summary: Air Quality in Our Area**

The 2021 Annual Status Report is designed to provide the public with information relating to local air quality in Harlow, to fulfil Harlow Council's statutory duty to review and assess air quality within its area, and to determine whether or not the air quality objectives are likely to be achieved.

In 2020, Harlow Council measured no exceedances of the Air Quality Objectives.

## **Air Quality in Harlow**

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<sup>1,2</sup>.

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

Traffic emissions are the most significant source of air pollution in Harlow. The main roads in the District are the M11 and the A414. In addition, there a number of industrial processes. The majority of these are located in the two main industrial areas of the town: Templefields (to the North) and the Pinnacles (to the North West).

The Council recognises the importance of working with partnering Authorities such as with Essex County Council to make improvements to local transport infrastructure and also to fulfil its own regulatory responsibility towards industrial processes.

Air pollution is considered to be generally low in Harlow and monitoring of local Air Quality has measured no exceedances of air quality objective at relevant exposure. The trend of results across all monitored sites indicates that Air Quality is improving. A graph can be found in Appendix A that shows monitoring results from 2016 to 2020.

<sup>&</sup>lt;sup>1</sup> Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

<sup>&</sup>lt;sup>3</sup> Defra. Air quality appraisal: damage cost guidance, July 2020

<sup>&</sup>lt;sup>4</sup> Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

## 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<sup>5</sup> sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero<sup>6</sup> 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.

Air quality in Harlow meets the Air Quality Objectives. However, significant development around the Harlow means that investment in the town's infrastructure is required to manage congestion, maintain good air quality and support future local economic growth.

### **Conclusions and Priorities**

Harlow Council have concluded that:

- No air quality exceedances have been identified in 2020.
- Measured air pollution in 2020 has reduced significantly from previous years due to Covid-19 related national lockdowns and regional tiered restrictions because of the reduced traffic movements
- There are no new developments that will have an impact on air quality.

<sup>5</sup> Defra. Clean Air Strategy, 2019 6 DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

### Local Engagement and How to get Involved

Harlow Council is a member of the Essex Air Quality consortium. The Essex Air <u>web site</u> provides a daily forecast of air pollution which is based off <u>UK-AIR</u> data feeds. Also, the <u>@EssexAir</u> twitter feed provides localised weekly air pollution forecasts.

#### Figure i.1 Essex Air Twitter Air Quality Notifications



Links to Defra recommended actions and health advice are provided when air pollution is likely to be moderate or higher. This will enable those with heart or lung conditions, or other breathing problems to make informed judgements about their levels of activity or exposure.

The Essex Air twitter also promotes the <u>DVSA service</u> for reporting smoky lorries or buses. Particulate matter is usually not visible but when poorly maintained diesel engines can produce visible particles, appearing as smoke. Fine particles have an adverse effect on human health, particularly among those with respiratory and cardiovascular problem.

#### Figure i.2 - Essex Air Reporting Smoky Vehicle Tweets



Did you know that you can report a smoky lorry or bus to the @DVSAgovuk gov.uk/report-smoky-v... ... #dirtydiesels #airpollution

8:26 AM - 12 Apr 2017



Essex County Council has worked closely with <u>Liftshare</u> to develop the Essex Car Share scheme. This operates across Harlow and provides commuters with a car sharing service which could cut congestion and air pollution whilst saving money.

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# **1 Local Air Quality Management**

This report provides an overview of air quality in Harlow during 2020. 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 Harlow Council 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.

# 2 Actions to Improve Air Quality

### **Air Quality Management Areas**

Harlow Council currently does not have any declared AQMAs.

## **Progress and Impact of Measures to address Air Quality in Harlow**

Harlow Council and Essex County Council have a number of ongoing measures to improve air quality in Harlow. These are detailed in Table 2.1 below.

#### Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	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	Comments / Barriers to Implementation
1	Essex Carshare	Alternatives to private vehicle use	Car & lift sharing schemes	2014	Ongoing	Essex County Council	Essex County Council	No	Funded	< £10k	Implementation	Not quantified	N/A	Ongoing	
2	Travel Budi	Alternatives to private vehicle use	Car & lift sharing schemes	2007	Ongoing	Harlow Council	Harlow Council	No	Funded	< £10k	Implementation	Not quantified	N/A	Ongoing	
3	Member of Essex air	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	N/A	Ongoing	County Council / District & Borough Councils	N/A	No	Funded	< £10k	Implementation	Not quantified	N/A	Ongoing	
4	Environmental Permit Inspection & Enforcement	Environmental Permits	Measures to reduce pollution through IPPC Permits going beyond BAT	N/A	Ongoing	Harlow Council	Harlow Council	No	Funded	< £10k	Implementation	Not quantified	N/A	Ongoing	
5	M11 J7a and associated improvements	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2016	2022	Essex County Council	Essex County Council	No	Funded	£1 million - £10 million	Implementation	Not quantified	N/A	Public consultation / Approval of preferred route / Public enquiry / Construction has commenced	

#### Harlow Council

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of  $PM_{2.5}$  (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.

Harlow Council does not monitor  $PM_{2.5}$  concentrations however notes the Defra background mapping resource which for  $PM_{2.5}$  in 2020 models a maximum annual mean concentration of 10.82µg/m<sup>3</sup> in the Local Authority area.

The Public Health Outcomes Framework indicator 3.01 - Fraction of mortality attributable to particulate (PM<sub>2.5</sub>) air pollution which for 2019 gave a value of 5.7% which has improved from 6.1% in 2011. These values are broadly similar to other authorities within the region.

# Figure 2.3 – Public Health Framework Indicator 3.01 Fraction of all-cause adult mortality attributable to anthropogenic particulate air pollution



Harlow Council is taking the following measures to address PM<sub>2.5</sub>:

- Regular inspections of permitted industry where combustion and non-combustion processes could lead to anthropogenic emissions of PM<sub>2.5</sub>
- Working with Essex County Council (highway authority) to deliver Major Transport improvement <u>schemes</u> to alleviate congestion. In addition to reduced exhaust emissions, these schemes will reduce non-exhaust emissions from brake and tyre wear by making traffic flows smoother.

# 3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2020 by Harlow Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

No exceedances of the nitrogen dioxide air quality objectives have been identified and the long-term trend for monitored concentrations is downwards.

## **Summary of Monitoring Undertaken**

#### 3.1.1 Automatic Monitoring Sites

Harlow Council does not undertake automatic continuous monitoring.

#### 3.1.2 Non-Automatic Monitoring Sites

Harlow Council undertook non-automatic (i.e. passive) monitoring of NO<sub>2</sub> at 13 sites during 2020. **Error! Reference source not found.**1 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.

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.

# **Appendix A: Monitoring Results**

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.

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
HAR8	East Park	Suburban	546942	211186	NO <sub>2</sub>	No	11.0	23.2	No	2.5
HAR9	Gardiners	Urban Background	546888	209435	NO <sub>2</sub>	No	7.6	1.2	No	2.5
HAR10	Dadds Wood	Urban Background	544434	209709	NO <sub>2</sub>	No	12.5	33.4	No	2.5
HAR11	Town Centre	Kerbside	544680	210016	NO <sub>2</sub>	No	13.2	6.3	No	2.5
HAR13	Guilfords	Suburban	547524	212479	NO <sub>2</sub>	No	14.2	1.0	No	2.5
HAR15	Gilden Way	Roadside	548658	212004	NO <sub>2</sub>	No	14.0	1.5	No	2.5
HAR16	Chalk Lane	Rural	549466	211598	NO <sub>2</sub>	No	20.0	0.8	No	2.5
HAR17	Rivermill	Kerbside	544297	210988	NO <sub>2</sub>	No	0.0	4.7	No	2.5
HAR18	Station Approach	Urban Background	544640	211192	NO <sub>2</sub>	No	8.0	0.0	No	2.5
HAR19	Finchmoor	Roadside	544499	208326	NO <sub>2</sub>	No	2.0	1.0	No	2.5
HAR20	Broadley Road	Roadside	543085	207700	NO <sub>2</sub>	No	13.0	1.5	No	2.5
HAR21	Commonside Road	Roadside	546031	208039	NO <sub>2</sub>	No	8.0	1.5	No	2.5
HAR22	Challinor	Roadside	548307	209702	NO <sub>2</sub>	No	9.0	0.5	No	2.5

#### Table A.1 – Details of Non-Automatic Monitoring Sites

#### Notes:

(1) Om 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.

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	2016	2017	2018	2019	2020
HAR8	546942	211186	Suburban	50.00	50.00	24.95	25.24	21.91	22.58	17.36
HAR9	546888	209435	Urban Background	58.33	58.33	27.93	29.99	24.24	24.54	19.64
HAR10	544434	209709	Urban Background	58.33	58.33	26.19	27.50	24.58	24.43	19.48
HAR11	544680	210016	Kerbside	58.33	58.33	29.75	29.82	27.52	25.11	19.40
HAR13	547524	212479	Suburban	58.33	58.33	16.72	16.58	13.66	14.89	11.33
HAR15	548658	212004	Roadside	50.00	50.00	25.37	26.08	23.41	22.24	16.52
HAR16	549466	211598	Rural	50.00	50.00	20.36	18.89	18.65	17.31	12.38
HAR17	544297	210988	Kerbside	58.33	58.33	21.91	25.99	23.90	21.94	17.29
HAR18	544640	211192	Urban Background	58.33	58.33	<u>N/A</u>	30.77	24.42	27.48	20.82
HAR19	544499	208326	Roadside	33.33	33.33	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	19.36	14.03
HAR20	543085	207701	Roadside	58.33	58.33	N/A	N/A	N/A	18.08	14.51
HAR21	546031	208039	Roadside	50.00	50.00	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	23.26	18.67
HAR22	548307	209702	Roadside	58.33	58.33	N/A	N/A	N/A	21.52	17.96

#### Table A.2 – Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)

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  $\mu g/m^3$ .

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%).



#### Figure A.4 – Trends in Annual Mean NO<sub>2</sub> Concentrations

# Appendix B: Full Monthly Diffusion Tube Results for 2020

		Y OS Grid Ref (Northing)	NO <sub>2</sub> Mean Concentrations (μg/m <sup>3</sup> )													
															Annual	Mean (µg/m3)
Diffusion Tube ID	X OS Grid Ref (Easting)		Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.77) and Annualised
HAR8	546942	211186	35.9		Erroneous Data Removed			Missing	18.1	22.0	28.5	27.5	24.5	26.1	17.4	
HAR9	546888	209435	44.0		Erroneous Data Removed			11.9	19.3	24.6	31.3	35.3	29.2	27.9	19.6	
HAR10	544434	209709	39.8		Erroneous Data Removed			12.4	21.0	23.2	29.1	36.5	32.0	27.7	19.5	
HAR11	544680	210016	34.2		Erroneous Data Removed			17.1	21.5	26.1	27.9	35.6	30.8	27.6	19.4	
HAR13	547524	212479	26.9		Errone	eous Data Re	emoved		8.9	3.2	12.8	18.4	22.9	19.7	16.1	11.3
HAR15	548658	212004	35.3		Errone	eous Data Re	emoved		11.2	17.4	22.1	Missing	33.6	27.0	24.4	16.5
HAR16	549466	211598	27.4		Errone	eous Data Re	emoved		Missing	11.9	14.6	16.9	20.2	20.6	18.6	12.4
HAR17	544297	210988	30.4		Errone	eous Data Re	emoved		14.9	16.3	23.2	25.1	34.1	28.2	24.6	17.3
HAR18	544640	211192	47.1		Errone	eous Data Re	emoved		13.8	20.2	22.0	30.9	39.0	34.3	29.6	20.8
HAR19	544499	208326	Missing		Errone	eous Data Re	emoved		Missing	13.7	17.8	Missing	30.3	23.9	21.4	14.0
HAR20	543085	207700	28.3		Errone	eous Data Re	emoved		12.1	15.3	17.8	22.1	30.0	18.9	20.6	14.5
HAR21	546031	208039	36.8		Errone	eous Data Re	emoved		15.5	Missing	23.6	26.3	36.4	26.5	27.5	18.7
HAR22	548307	209702	36.5		Errone	eous Data Re	emoved		12.5	16.7	19.5	27.2	36.6	29.9	25.6	18.0

#### Table B.1 – NO<sub>2</sub> 2020 Diffusion Tube Results (µg/m<sup>3</sup>)

☑ All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1

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

☑ National bias adjustment factor used

Harlow Council confirms that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System

#### Notes:

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 Harlow During 2020

Harlow Council has not identified any new sources relating to air quality within the reporting year of 2020.

# Additional Air Quality Works Undertaken by Harlow Council during 2020

Harlow Council has not completed any additional works within the reporting year of 2020.

## **QA/QC of Diffusion Tube Monitoring**

#### **Diffusion Tubes QA/QC**

Harlow Council undertook monitoring at 13 nitrogen dioxide diffusion tubes sites in 2020.

The diffusion tubes were supplied and analysed by Socotec with a preparation method of 50% triethanolamine (TEA) in Acetone.

The AIR NO<sub>2</sub> proficiency testing scheme found that the laboratory achieved the following percentage of results determined as satisfactory for 2020:

#### Table C.1 – AIR PT Results 2020

AIR PT Round	AIR PT AR036	AIR PT AR037	AIR PT AR039	AIR PT AR040
Round conducted in the period	January – February 2020	April – May 2020	July – August 2020	September – October 2020
SOCOTEC	100%	No results reported	No results reported	100%

COVID-19 has impacted air quality monitoring in 2020. Diffusion tubes that were put out in February were not collected in March and remained out until July. Although results were obtained from the laboratory for these tubes, the recommended exposure time was exceeded and as such there is no guarantee of accuracy or precision off the results. The results for the period of February to June 2020 have been disregarded as erroneous and the process of annualisation has determined annual mean results.

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#### **Diffusion Tube Annualisation**

Annualisation was required for all of the diffusion tube monitoring sites and details of the calculation method undertaken is provided below in Table C.2. Annualisation is required for any site with data capture less than 75% but greater than 25%.

Site ID	Annualisation Factor Rochester Stoke	Annualisation Factor St Osyth	Annualisation Factor Southend-on- Sea	Average Annualisatio n Factor	Raw Data Annual Mean	Annualised Annual Mean	Bias Adjusted Annual Mean	Comments
HAR8	0.8674	0.8544	0.8709	0.8642	26.1	22.5	17.4	
HAR9	0.9168	0.9002	0.9215	0.9128	27.9	25.5	19.6	
HAR10	0.9168	0.9002	0.9215	0.9128	27.7	25.3	19.5	
HAR11	0.9168	0.9002	0.9215	0.9128	27.6	25.2	19.4	
HAR13	0.9168	0.9002	0.9215	0.9128	16.1	14.7	11.3	
HAR15	0.8807	0.8626	0.8904	0.8779	24.4	21.5	16.5	
HAR16	0.8674	0.8544	0.8709	0.8642	18.6	16.1	12.4	
HAR17	0.9168	0.9002	0.9215	0.9128	24.6	22.5	17.3	
HAR18	0.9168	0.9002	0.9215	0.9128	29.6	27.0	20.8	
HAR19	0.8530	0.8295	0.8689	0.8505	21.4	18.2	14.0	
HAR20	0.9168	0.9002	0.9215	0.9128	20.6	18.8	14.5	
HAR21	0.8846	0.8753	0.8843	0.8814	27.5	24.3	18.7	
HAR22	0.9168	0.9002	0.9215	0.9128	25.6	23.3	18.0	

#### Table C.2 – Annualisation Summary (concentrations presented in µg/m<sup>3</sup>)

#### **Diffusion Tube Bias Adjustment Factors**

The diffusion tube data presented within this 2021 ASR have been corrected for bias using an adjustment factor. 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<sub>x</sub>/NO<sub>2</sub> continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

As Harlow Council do not undertake automatic air quality monitoring it is not possible to calculate a local bias adjustment. The national bias adjustment factor of 0.77 has been applied to the 2020 monitoring data. A summary of bias adjustment factors used by Harlow Council over the past five years is presented in Table C.3. The same laboratory and preparation of diffusion tubes have been used over this time.

Year	Local or National	Diffusion Tube	Version of National Spreadsheet	Adjustment Factor	
2020	National	Socotec 50% TEA in Acetone	03/21	0.77	
2019	National	Socotec 50% TEA in Acetone	03/20	0.75	
2018	National	Socotec 50% TEA in Acetone	03/19	0.76	
2017	National	ESG Didcot 50% TEA in Acetone	03/18	0.77	
2016	National	ESG Didcot 50% TEA in Acetone	03/17v2	0.77	

#### Table C.3 – Bias Adjustment Factor

#### NO<sub>2</sub> Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO2 monitoring locations within Harlow required distance correction during 2020.

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# **Appendix D: Map of Monitoring Locations and AQMAs**



#### Figure D.5 – Map of Monitoring Locations in Harlow

# Appendix E: Summary of Air Quality Objectives in England

Table F	$1 - \Delta ir$	Quality	Objectives	in F	<sup>-</sup> ngland <sup>7</sup>
		quanty	0.5,000,000		Ingiana

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO2)	200µg/m³ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO <sub>2</sub> )	40µg/m³	Annual mean
Particulate Matter (PM <sub>10</sub> )	50µg/m³, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM <sub>10</sub> )	40µg/m³	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350µg/m³, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	125µg/m³, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	266µg/m³, not to be exceeded more than 35 times a year	15-minute mean

 $<sup>^7</sup>$  The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

# 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 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 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 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 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<sub>2</sub>) 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<sup>8</sup> 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<sub>x</sub>), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)<sup>9</sup> has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO<sub>2</sub> annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

<sup>&</sup>lt;sup>8</sup> Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

<sup>&</sup>lt;sup>9</sup> Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to  $20\mu g/m^3$  if expressed relative to annual mean averages. During this period, changes in PM<sub>2.5</sub> concentrations were less marked than those of NO<sub>2</sub>. PM<sub>2.5</sub> 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<sub>2.5</sub> concentrations during the initial lockdown period are of the order 2 to  $5\mu g/m^3$  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 Harlow

As described in Appendix C, COVID-19 impacted air quality monitoring in 2020. Diffusion tubes that were put out in February were not collected in March and remained out until July. As such, the recommended exposure time was exceeded and results are not considered to have been accurate or precise. The results for this period of have been disregarded as erroneous and the process of annualisation has determined annual mean results.

It should be noted that using either the results from the February – June exposure or by annualisation in the process to create annual mean results, no exceedances would have been measured.

# Opportunities Presented by COVID-19 upon LAQM within Harlow.

No LAQM related opportunities have arisen as a consequence of COVID-19 within Harlow.

# **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	
LAQM	Local Air Quality Management	
NO <sub>2</sub>	Nitrogen Dioxide	
NOx	Nitrogen Oxides	
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10μm or less	
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less	
QA/QC	Quality Assurance and Quality Control	
SO <sub>2</sub>	Sulphur Dioxide	

# References

- Defra Diffusion Tube Bias Adjustment Factors Spreadsheet available at; <u>https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html</u>
- Defra LAQM Summary of Laboratory Performance in AIR NO<sub>2</sub> PT Scheme available at; <u>https://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html</u>
- Essex Air Quality Consortium available at; <u>http://www.essexair.org.uk</u>
- EssexCarShare.com available at; <u>https://liftshare.com/uk/community/essex</u>
- Essex Air Twitter Feed available at; <u>https://twitter.com/essexair</u>
- Harlow Council 2020 ASR available at; https://essexair.org.uk/Reports/Harlow2020ASR.pdf
- Public Health Outcomes Framework Indicator 3.01 available at;
   <u>https://fingertips.phe.org.uk/profile/public-health-outcomes-framework</u>
- 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 available at; <u>https://laqm.defra.gov.uk/technical-guidance/</u>
- 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 available at; <u>https://laqm.defra.gov.uk/documents/LAQM-PG16-April-16-v1.pdf</u>