



# 2024 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995  
Local Air Quality Management, as amended by the  
Environment Act 2021

Date: 4<sup>th</sup> June 2024

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## Executive Summary: Air Quality in Our Area

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 29,000 to 43,000 deaths at typical ages<sup>3</sup>, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017<sup>4</sup>.

The Borough of Hartlepool is situated on the North East coast within the Tees Valley and has a population of 92,338 (0.3% increase from 92,000 in 2011)<sup>5</sup>. Hartlepool has a strong industrial heritage and, in the past, this has often made a significant contribution to poor air quality in the area and, early air quality monitoring within Hartlepool and neighbouring councils was specifically targeted to industrial sources of pollution. Many of the old industrial plants have now closed and regulation has improved significantly over the decades. In 2023 there were 18 permits in place for businesses in Hartlepool regulated by the Environmental Agency and a further 26 permits in place for businesses regulated by the Local Authority under The Environmental Permitting Regulations 2016. The closure of plants and better regulation has resulted in industrial air pollution at ground level being greatly reduced.

Please see both Public Registers at:

[https://www.hartlepool.gov.uk/downloads/file/6303/public\\_register\\_-\\_environmental\\_permits\\_and](https://www.hartlepool.gov.uk/downloads/file/6303/public_register_-_environmental_permits_and)  
[https://environment.data.gov.uk/public-register/industrial-installations/registration?\\_details=true&\\_postcode&address-search&dist=1&easting&local-authority=Hartlepool&name-search&northing&number-search](https://environment.data.gov.uk/public-register/industrial-installations/registration?_details=true&_postcode&address-search&dist=1&easting&local-authority=Hartlepool&name-search&northing&number-search)

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

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

<sup>3</sup> Defra. Air quality appraisal: damage cost guidance, January 2023

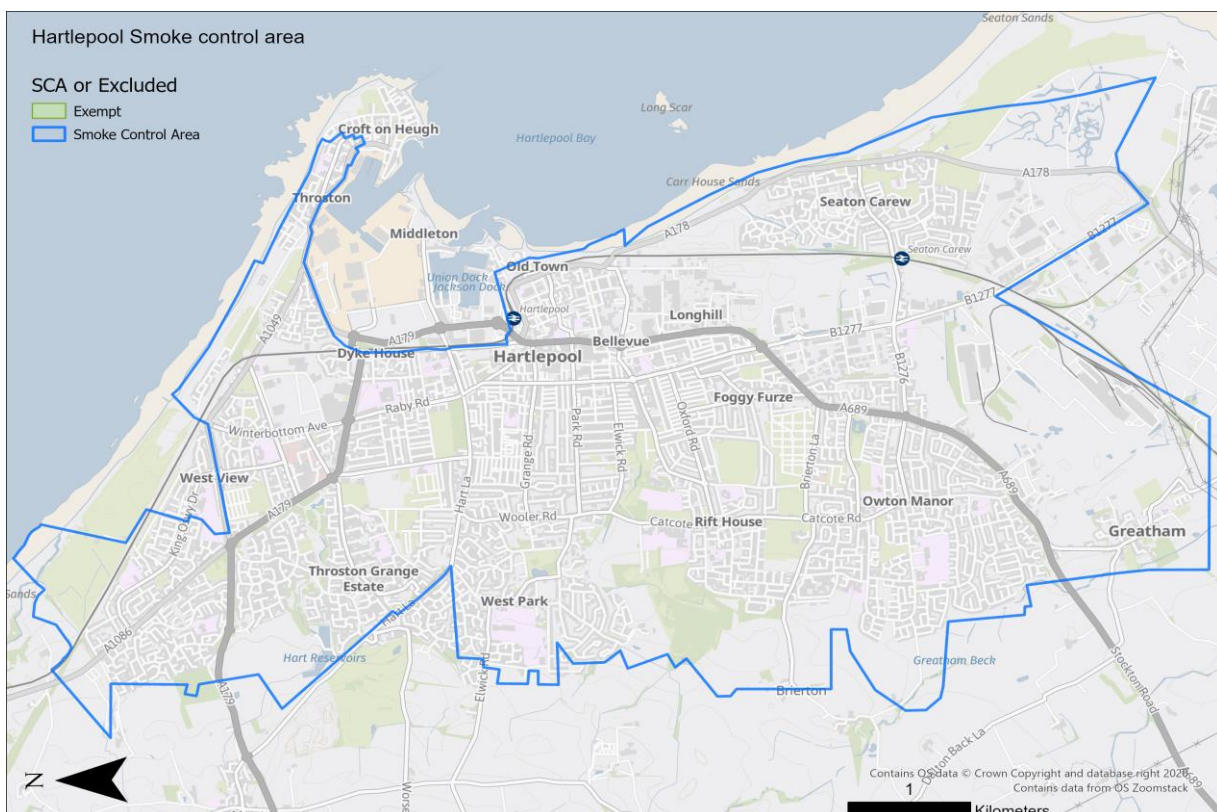
<sup>4</sup> Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

<sup>5</sup> Office for National Statistics (ONS). How life has changed in Hartlepool: Census 2021

Another source of air pollution within Hartlepool arises from construction sites and residential properties. Within 2023 there were three planning applications approved for substantial residential developments in Hartlepool which may affect local air quality.

Hartlepool has an extensive coastline and at times of strong north-easterly weather, there can be high levels of natural particulates which may have health effects for some members of the public. Although not frequent events, Hartlepool does experience foam storms. Sea foam can hold algal toxins or surface-active pollutants in its bubbles which, when released into the air can pose a health risk for individuals with pre-existing health conditions and may cause irritation to the eyes.

Most residential properties in the Borough of Hartlepool are included in a smoke control area (see map below) where the solid fuels used are restricted to those approved by DEFRA or fuels burned in a DEFRA approved appliance in order to reduce emissions to the atmosphere.



Notwithstanding this, Officers within the Environmental Protection team regularly receive reports, and investigate cases, where unauthorized fuels and/or appliances are being used within the smoke control areas.

Over recent years there has been an increase in the use of solid fuel stoves as a source of heating for domestic properties potentially further increasing the emission of harmful environmental pollutants. A resident can install a log burner or multi fuel stove provided it is on the DEFRA list of exempted appliances and is installed by a competent person registered under the HETAS scheme. In 2021, the Air Quality (Domestic Solid Fuel Standards) (England) Regulations 2020 came into force which tightened the standards relating to the sale of wood and other fuels which can be burnt in a domestic property and ensures that the sale of wood for combustion in domestic properties includes a 'ready to burn' mark.

Although there are several factors which affect air quality, it is pollution from road traffic, with its primary emissions at ground level, which is now of greatest concern to public health, and is the focus for air quality monitoring within Hartlepool.

Whilst road traffic has increased dramatically over recent decades in the United Kingdom, largely due to the increase in car ownership, Hartlepool still has a relatively low level of car ownership. The 2021 Office for National Statistics (ONS) Census<sup>6</sup> revealed that 29.6% of households in the Borough have no car. This compares with a National Figure of 23.5%.

Within Hartlepool through traffic is generally light and is channelled onto the main A689 and A179 through-route leading to the main A19 trunk road which passes well to the west of the town, through rural areas.



For Hartlepool, the main impact on public health is along commuter roads, and it is in this area that most action needs to be targeted to alleviate air pollution. Fortunately, most housing along these roads is low rise, and set back from kerbside so that there is good dispersion of air pollutants compared with older UK cities and towns.

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<sup>6</sup> Office for National Statistics, Census, 2021

## Air Quality in Hartlepool

Hartlepool Borough Council reviews and undertakes air quality assessments independently and also in co-operation with neighbouring Councils in the Tees Valley. The Council produces annual reports for the UK Government and, once finalised, these reports are available for the public and published on the Council's website.

Air quality monitoring is normally carried out via the use of three automatic sites at Stockton Road, the Headland and St Abbs Walk (Automatic Urban and Rural Network AURN) as well as diffusion tubes situated across the Borough. The pollutants measured are Particulate Matter 10 (PM<sub>10</sub>), Particulate Matter 2.5 (PM<sub>2.5</sub>) and Nitrogen Dioxide (NO<sub>2</sub>) at St Abbs Walk and PM<sub>10</sub> and NO<sub>2</sub> at Stockton Road and the Headland.

Hartlepool's annual report has consistently concluded that air quality in the Borough is generally good in areas where the public are regularly exposed to air pollution. As the results are below objective levels set by Government, there has been no need to declare any Air Quality Management areas in the Borough. Notwithstanding this, Hartlepool Borough Council has, through partnership-working, introduced a range of initiatives and actions as part of its commitment to improving air quality. The majority of these actions and initiatives are to reduce the environmental impact of traffic on the roads and encourage healthier, alternative methods of transport.

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

**Table ES 1 - Description of Key Pollutants**

Pollutant	Description
Nitrogen Dioxide (NO <sub>2</sub> )	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO <sub>2</sub> )	Sulphur dioxide (SO <sub>2</sub> ) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM <sub>10</sub> and PM <sub>2.5</sub> )	<p>Particulate matter is everything in the air that is not a gas.</p> <p>Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes.</p> <p>PM<sub>10</sub> refers to particles under 10 micrometres. Fine particulate matter or PM<sub>2.5</sub> are particles under 2.5 micrometres.</p>



## Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan<sup>7</sup> sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM<sub>2.5</sub>), the pollutant of most harmful to human health. The Air Quality Strategy<sup>8</sup> provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero<sup>9</sup> details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Hartlepool Borough Council works jointly with neighbouring authorities in the Tees Valley and other external agencies to implement actions to improve air quality. The Tees Valley Combined Authority has developed a joint strategic transport plan in collaboration with the five constituent Local Authorities, Darlington, Middlesbrough, Redcar & Cleveland, Stockton-on-Tees and Hartlepool. The plan covers the period 2020-2030 and has the vision "To provide a high quality, quick, affordable, reliable, low carbon and safe transport network for people and freight to move within, to and from Tees Valley".

Within the Council, Environmental Health professionals work closely with officers from various disciplines, including Public Health, Traffic and Transportation and Planning to improve air quality in the area.

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<sup>7</sup> Defra. Environmental Improvement Plan 2023, January 2023

<sup>8</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

<sup>9</sup> DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

## Conclusions and Priorities

The data collected from the St Abbs Walk automatic air quality monitoring station and the diffusion tube sites all indicate that the levels of NO<sub>2</sub> remain below 2019 (pre-pandemic) figures, however the levels are increasing again year on year and had increased slightly from those recorded in 2022. The levels are all well below the national objective levels.

Data for PM<sub>10</sub> was not available from the Stockton Road and Headland stations due to equipment failure. However, new data for PM<sub>10</sub> was available from the St Abbs Walk (AURN) site and the level at that site was 14 µg/m<sup>3</sup> with no exceedances (>50 µg/m<sup>3</sup>) during 2023.

PM<sub>2.5</sub> is now measured in Hartlepool at the St Abbs Walk (AURN) site when previously it was calculated based on PM<sub>10</sub> levels and using a nationally derived figure to calculate the likely level from verified levels in neighbouring Local Authorities. The actual level for Hartlepool measured in 2023 was 7 µg/m<sup>3</sup>.

By the end of 2040, to achieve a maximum Annual Mean Concentration Target (AMCT) of 10 micrograms of PM<sub>2.5</sub> or below per cubic metre (µg/m<sup>3</sup>.) There will also be an interim target 'The highest annual mean concentration in the most recent full calendar year must not exceed 12 µg/m<sup>3</sup> of PM<sub>2.5</sub>.' The Hartlepool level for 2023 of 7 µg/m<sup>3</sup> is well below the new targets.

There were still implications on air quality measurements and reporting in Hartlepool during 2023. This included the total breakdown of monitoring equipment which resulted in no data being available for 2 automatic monitoring sites during the year. A comprehensive review of monitoring equipment was undertaken within the department and agreement obtained for new software/ monitoring equipment to be purchased and installed. Five additional sites were identified for diffusion tubes which have now been installed and results are available for 2023. Despite the challenges, officers within the Local Authority continue to monitor and work to improve air quality within the Borough.



## Local Engagement and How to get Involved

There are many ways in which residents of Hartlepool can contribute to reducing the levels of air pollution within the Borough for example:

- Reducing the level of traffic on the roads by using alternative methods of transport such as walking or cycling which has benefits for health and wellbeing as well as the environment.

Hartlepool is part of the “Let’s Go Tees Valley” organisation which aims to change and improve the way members of the public travel around the region, making small changes to their everyday journeys. The organisation developed a Commuter Challenge during August 2018 to change the way you commute to work, encouraging car sharing, alternative modes of transport and health benefits of walking and cycling in the daily commute. Further information is available from:-

<https://www.letsgoteesvalley.co.uk/in-your-area/Hartlepool>

- If you need to travel by car, consider joining a car sharing scheme. For information on car sharing please use the following link: [www.liftshare.com](http://www.liftshare.com)
- Use public transport instead of private vehicles.
- If you intend to replace your existing vehicle then consider purchasing ‘greener’ vehicles such as hybrid and electric vehicles which will become more readily available in future years.
- Ensure that your vehicle is well maintained and keep tyre pressures properly inflated to manufacturer’s recommendation. Drive more smoothly and avoid excessive speed, excessive braking and prolonged idling.
- Residents may now have the opportunity to work from home either full time or on a hybrid basis which would lead to reduced traffic on our roads.
- Support local garden initiatives and plant more trees and greenery – and don’t burn garden waste/rubbish in the garden – take it to the waste recycling centre.

## Local Responsibilities and Commitment

This ASR was prepared by the Neighbourhoods and Regulatory Services Department (Environmental Protection Team) of Hartlepool Borough Council with the support and agreement of the following officers and departments:

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This ASR has not been signed by the Director of Public Health.

## Table of Contents

<b>Executive Summary: Air Quality in Our Area</b>	<b>i</b>
<b>Air Quality in Hartlepool</b>	iv
Actions to Improve Air Quality	v
Conclusions and Priorities	vi
Local Engagement and How to get Involved	vii
Local Responsibilities and Commitment	viii
<b>1 Local Air Quality Management</b>	<b>1</b>
<b>2 Actions to Improve Air Quality</b>	<b>2</b>
<b>2.1 Air Quality Management Areas</b>	<b>2</b>
<b>2.2 Progress and Impact of Measures to address Air Quality in Hartlepool</b>	<b>2</b>
<b>2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations</b>	<b>7</b>
<b>3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance</b>	<b>8</b>
<b>3.1 Summary of Monitoring Undertaken</b>	<b>8</b>
3.1.1 Automatic Monitoring Sites	8
3.1.2 Non-Automatic Monitoring Sites	9
<b>3.2 Individual Pollutants</b>	<b>9</b>
3.2.1 Nitrogen Dioxide (NO <sub>2</sub> )	9
3.2.2 Particulate Matter (PM <sub>10</sub> )	9
3.2.3 Particulate Matter (PM <sub>2.5</sub> )	10
3.2.4 Sulphur Dioxide (SO <sub>2</sub> )	10
<b>Appendix A: Monitoring Results</b>	<b>11</b>
<b>Appendix B: Full Monthly Diffusion Tube Results for 2023</b>	<b>23</b>
<b>Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC</b>	<b>24</b>
New or Changed Sources Identified Within Hartlepool Borough Council During 2023	24
Additional Air Quality Works Undertaken by Hartlepool Borough Council During 2023	25
QA/QC of Diffusion Tube Monitoring	25
Diffusion Tube Annualisation	25
Diffusion Tube Bias Adjustment Factors	25
NO <sub>2</sub> Fall-off with Distance from the Road	26
QA/QC of Automatic Monitoring	27
PM <sub>10</sub> and PM <sub>2.5</sub> Monitoring Adjustment	27
Automatic Monitoring Annualisation	Error! Bookmark not defined.
NO <sub>2</sub> Fall-off with Distance from the Road	27
<b>Appendix D: Map(s) of Monitoring Locations and AQMAs</b>	<b>29</b>
<b>Appendix E: Summary of Air Quality Objectives in England</b>	<b>30</b>

<b>Glossary of Terms</b> .....	<b>31</b>
<b>References</b> .....	<b>57</b>

## Figures

Figure A.1 – Trends in Annual Mean NO <sub>2</sub> Concentrations.....	15
Figure A.2 – Trends in Number of NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> .....	18
Figure A.3 – Trends in Annual Mean PM <sub>10</sub> Concentrations .....	20
Figure A.5 – Trends in Annual Mean PM <sub>2.5</sub> Concentrations .....	22
Figure D.1 – Map of Non-Automatic Monitoring Site.....	29

## Tables

Table 2.2 – Progress on Measures to Improve Air Quality.....	4
Table A.1 – Details of Automatic Monitoring Sites .....	11
Table A.2 – Details of Non-Automatic Monitoring Sites .....	12
Table A.3 – Annual Mean NO <sub>2</sub> Monitoring Results: Automatic Monitoring (µg/m <sup>3</sup> ) .....	13
Table A.4 – Annual Mean NO <sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m <sup>3</sup> ) ....	14
Table A.5 – 1-Hour Mean NO <sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m <sup>3</sup> .....	17
Table A.6 – Annual Mean PM <sub>10</sub> Monitoring Results (µg/m <sup>3</sup> ) .....	19
Table A.7 – 24-Hour Mean PM <sub>10</sub> Monitoring Results, Number of PM <sub>10</sub> 24-Hour Means > 50µg/m <sup>3</sup> .....	21
Table A.8 – Annual Mean PM <sub>2.5</sub> Monitoring Results (µg/m <sup>3</sup> ) .....	21
Table B.1 – NO <sub>2</sub> 2023 Diffusion Tube Results (µg/m <sup>3</sup> ) .....	23
Table C.2 – Bias Adjustment Factor .....	26
Table E.1 – Air Quality Objectives in England .....	30

# 1 Local Air Quality Management

This report provides an overview of air quality in Hartlepool during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Hartlepool Borough 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

### 2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

Hartlepool Borough Council currently does not have any declared AQMAs. A local Air Quality Strategy has been developed and implemented in 2023 to prevent and reduce polluting activities. The Local Air Quality Strategy is available at:

<https://www.hartlepool.gov.uk>

### 2.2 Progress and Impact of Measures to address Air Quality in Hartlepool

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided the information specified in the guidance. The data was also deemed to be up to date and accurate. Hartlepool Borough Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality.



Details of all measures completed, in progress or planned are set out in Table 2.1, with the type of measure and the progress Hartlepool Borough Council have made during the



reporting year of 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1.

Hartlepool Borough Council expects priority measures: replacement of air quality software/monitoring equipment and the Net Zero/Climate Change Strategy to be completed over the course of the next reporting year. The Public Health Strategy incorporating air quality issues has now been completed.

Hartlepool Borough Council worked to implement these measures in partnership with the following stakeholders during 2023:

- Tees Valley Combined Authority
- Tees Valley Local Authorities
- Local Councillors
- Local bus companies
- Local taxi companies
- General Public

The principal challenges and barriers to implementation that Hartlepool Borough Council anticipates facing are a lack of staff resources and adequate funding.

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

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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. Elwick Bypass /A19 Link Road	Provision of Bypass Road for village linking to A19	Transport Planning and Infrastructure	Other	2023	2025	HBC Planning and Highways Dept, Highways Agency	DfT, HBC	NO	Funded	£1 million - £10 million	Planning	Significantly reduce levels of vehicles through village, achievement of better air quality	Traffic Levels	A feasibility study has been completed and scheme has been agreed at planning stage ready for implementation	Awaiting final details and implementation date
2. Update of air quality monitoring software/ equipment	Update of air quality monitoring software/ equipment	Other	Other	2023	2025	HBC Environmental Health	HBC	NO	Funded	£10k - 50k	Planning	Effective and accurate measurement of pollutants	Software/equipment installed and operational controlled electric points	Agreement obtained for replacement software/ equipment and process to procure ongoing	Location for new equipment to be considered
3 Net Zero and Climate Change Strategy	Net Zero and Climate Change Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2024	HBC	HBC	NO	Funded	< £10k	Planning	Reduced Carbon emissions	Less fuel used in vehicles, building efficiency, less emissions generally	On going development of draft strategy	Awaiting final details and implementation date
4 Air Quality Strategy	Introduction of Air Quality Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2023	HBC and Key Stakeholders	HBC	NO	Funded	< £10k	Planning	Reduced vehicle emissions	Measured concentration at local monitoring stations	Draft Strategy approved for consultation on 13/03/23.	
5 Tees Valley Bus Improvement Plan.	Tees Valley Bus Improvement Plan.	Policy Guidance and Development Control	Low Emissions Strategy	2022	2027	TVCA, TVLA and bus companies	TVCA, Government	YES	Partially Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions	Measured concentration of pollutants at local monitoring stations	Implementation is ongoing	First phase completed second phase ongoing
6 Promotion of sustainable travel	Promoting sustainable travel alternatives	Promoting Travel Alternatives	Promotion of walking	2018	2030	HBC, TVCA and Middlesbrough Environment City (MEC)	HBC/TVCA Capability funding	NO	Partially Funded	£100k - £500k	Implementation	Reduced vehicle emissions	Further investment in promoting travel alternatives	HBC is committed to promotion of sustainable travel measures and various initiatives have been progressed over the last year	Ongoing process
7 Child pedestrian training delivered across all primary schools.	Child pedestrian training delivered across all primary schools.	Promoting Travel Alternatives	Promotion of walking	2012	2040	HBC, TVCA & MEC	Access/ Capability Funding	NO	Funded	£10k - 50k	Implementation	To encourage alternatives to vehicle use	To measure an increase in the number of participants	Implementation is ongoing and been in place since 2006	Ongoing process

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
8 Continue to promote sustainable travel	Continue to promote sustainable travel	Promoting Travel Alternatives	Promotion of cycling	2012	2040	HBC, TVCA and Middlesbrough Environment City (MEC)	HBC/TVCA Capability funding	NO	Partially Funded	£100k - £500k	Implementation	Reduced vehicle emissions	Further investment in promoting travel alternatives	HBC is committed to promotion of sustainable travel measures and various initiatives have been progressed over the last year	Ongoing process
9 Hybrid Working	Hybrid Working for employees	Promoting Travel Alternatives	Encourage / Facilitate home-working	2020	2040	HBC	HBC	NO	Not Funded	< £10k	Implementation	Potential 10% reduction in fuel consumption	Measured concentration of pollutants at local monitoring stations	A system of hybrid working is being incorporated into appropriate services	Hybrid working in place across all services that can utilise it and ongoing process
10 Environmental Health Promotions	Environmental Health Promotions	Other	Other	2022	2040	HBC	HBC	NO	Not Funded	< £10k	Implementation	Potential 10% reduction in fuel consumption	Measured concentration of pollutants at local monitoring stations	'Eco - driving tips' promotion. Leaflet produced and available on website	One project completed other topics being looked at
11 Active participation in annual Clean Air Days	Active participation in annual Clean Air Days	Public Information	Other	2023	2040	HBC	HBC	NO	Not Funded	< £10k	Planning	Public Awareness	Participation in annual Clean Air Days	To commence 2023	Officer time and resources
12 Domestic Burning in the garden and use of woodburners as heat for the home	Campaign to provide information about the impacts of domestic burning and good practice, including wood burners and burning of garden waste	Public Information	Other	2023	2024	HBC	HBC	NO	Not Funded	< £10k	Planning	Public Awareness	Reduction in number of domestic burning complaints received.  Measured concentration of pollutants	To commence when resources and time allow	Officer time and resources
13 Introduction of '20's Plenty' speed restriction zones to various areas and streets across the Borough	Introduction of '20's Plenty' speed restriction zones to various areas and streets across the Borough	Promoting Low Emission Transport	Other	2012	2040	HBC	HBC	NO	Not Funded	< £10k	Implementation	Consistent, smooth driving at lower speeds can reduce vehicle emissions	No of 20s Plenty Zones in the Borough  Measured concentration of pollutants at local monitoring stations	Proposal for 20mph scheme for Elwick Road being considered along with identifying other potential areas.	All proposed schemes require approval from Council following public consultation exercise.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
14 Licensed taxis to be minimum Euro 6 vehicles	Licensed taxis to be minimum Euro 6 vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	2021	2025	HBC/local taxi drivers and companies	HBC	NO	Funded	< £10k	Planning	Reduced vehicle emissions	Number of taxis compliant	Initial report to licensing Committee on 25th June 2021 proposed to introduce these measures on 1st April 2023 - the proposed implementation date has now been postponed until 2025	Resistance from taxi trade to upgrade to low emission vehicles. Ability to regulate has significantly reduced since government de-regulation and the ability for drivers to obtain licences at unconnected Las

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy<sup>10</sup>, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM<sub>2.5</sub>). There is clear evidence that PM<sub>2.5</sub> (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The latest data available on the Public Health England website states that the fraction of mortality attributed to particulate air pollution within Hartlepool is 4.5% which is lower than the overall value for England which is 5.5% and also lower than the North East Region (4.8%).

A new measure for 2021 (based on 2020 data) is fine particulate matter – concentrations of total PM<sub>2.5</sub>. Results shows that for this measure, levels within Hartlepool were 6.0µg/m<sup>3</sup> which is lower than the overall value for England (7.4µg/m<sup>3</sup>) and slightly lower than the rate for the North East Region (6.4µg/m<sup>3</sup>).

Further information on this data can be found on Public Health England's Website using the link below:

<https://fingertips.phe.org.uk/search/particulate%20air%20pollution#page/1/gid/1938132818/ati/502/iid/30101/age/230/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1/page-options/car-do-0>

Hartlepool Borough Council has been monitoring PM<sub>2.5</sub> since mid-2022 at its St Abbs Walk monitoring station and all government objectives have consistently been easily met where relevant public exposure exists and this is expected to continue. Hartlepool council will continue to work and co-operate with the four other Tees Valley councils in trying to identify in more detail sources of fine particles, and see if any local action can cost effectively reduce emissions / concentrations.

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<sup>10</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

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

This section sets out the monitoring undertaken within 2023 by Hartlepool Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

#### 3.1 Summary of Monitoring Undertaken

##### 3.1.1 Automatic Monitoring Sites

Hartlepool Borough Council has two continuous monitoring stations, one alongside the busy main A689 Stockton Road (Barra Grove) leading into Hartlepool and measuring nitrogen dioxide and particulate PM<sub>10</sub>, the other alongside the working port area on the Headland (Town Wall) measuring particulate PM<sub>10</sub> only. The Headland station is a site specific location for port activity. Hartlepool Borough Council was unable to undertake monitoring at either of these sites during 2023 due to breakdown of the monitoring equipment. However, an additional automatic monitoring site was installed by DEFRA in October 2017 at St Abbs Walk and measures continuous urban background NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> as part of the Automatic Urban Rural Network (AURN). Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. 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 Data Selector - DEFRA, UK page presents automatic monitoring results for Hartlepool Borough Council, with automatic monitoring results also available through the UK Air Website:

<https://uk-air.defra.gov.uk/networks/network-info?view=aurn>

A map showing the location of the monitoring sites is provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.



### 3.1.2 Non-Automatic Monitoring Sites

Hartlepool Borough Council undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at eight sites during 2023. 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.

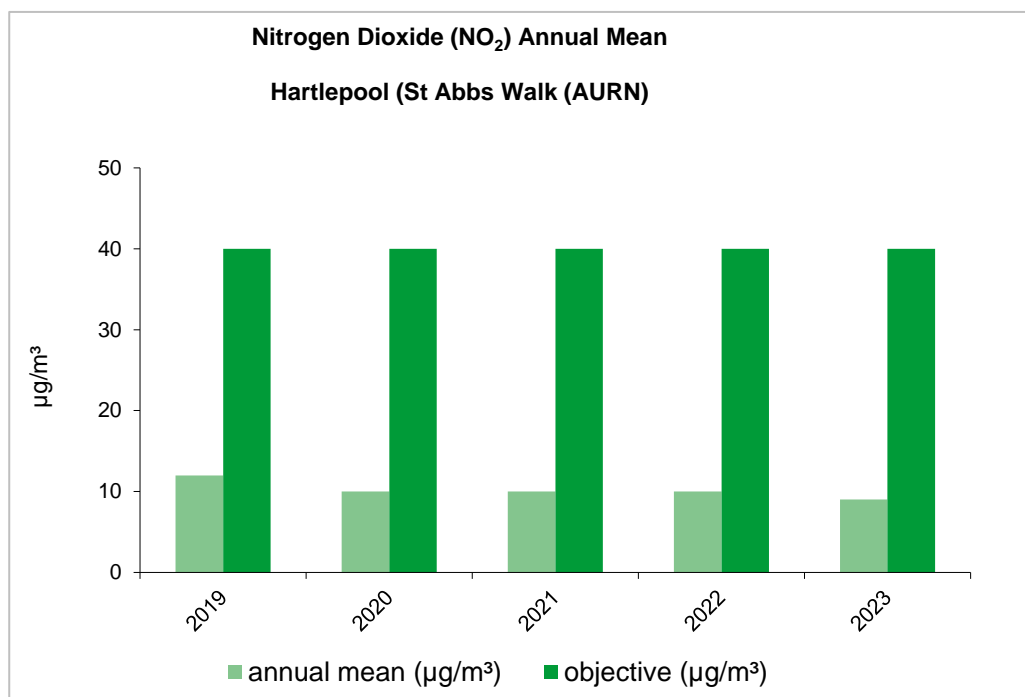
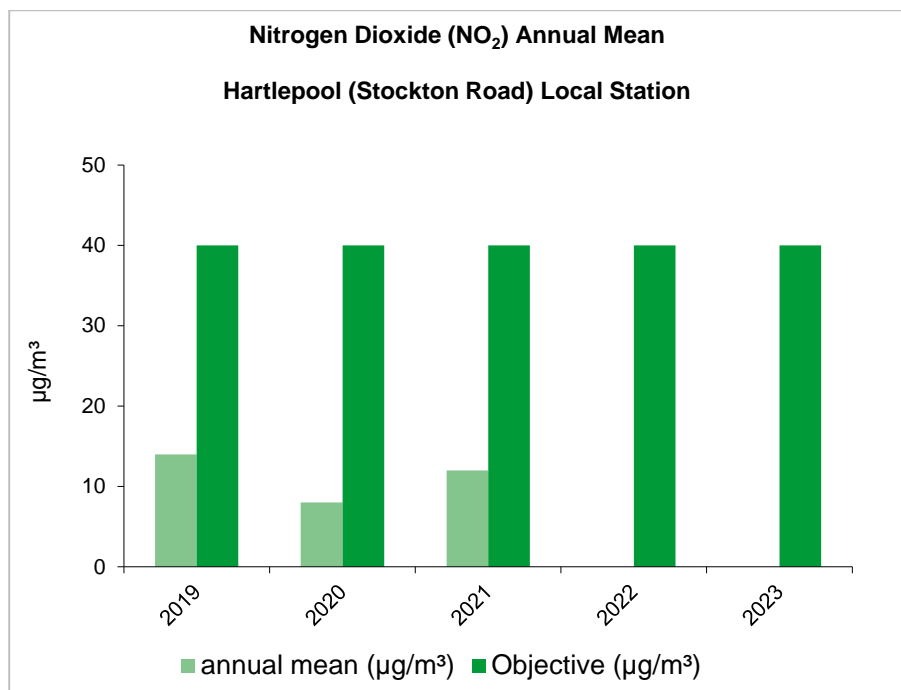
## 3.2 Individual Pollutants

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.

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

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>. 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 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.



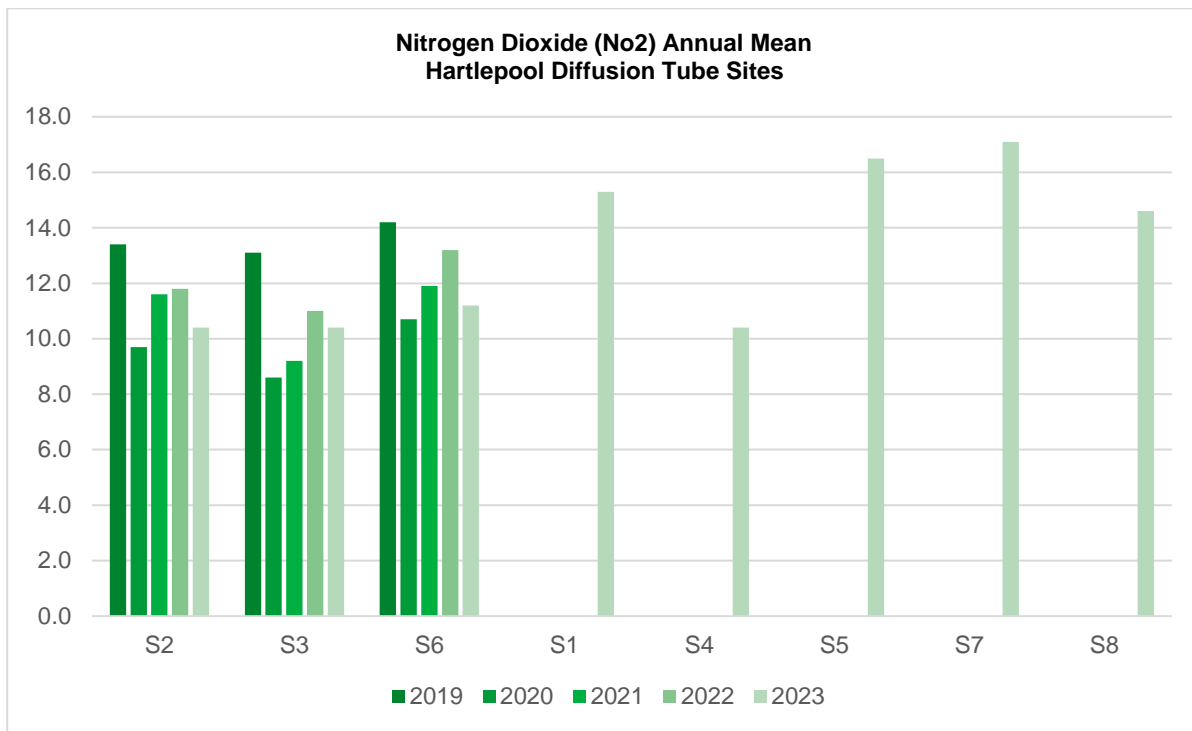


Table A.5 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past five years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

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

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM<sub>10</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>.

Table A.7 in Appendix A compares the ratified continuous monitored PM<sub>10</sub> daily mean concentrations for the past five years with the air quality objective of 50µg/m<sup>3</sup>, not to be exceeded more than 35 times per year.

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

Table A.8 in Appendix A presents the ratified and adjusted monitored PM<sub>2.5</sub> annual mean concentrations for the past five years.

This is the first measurement in Hartlepool that has not been calculated from a derived figure using neighbouring local Authorities data. The measured level was 7 µg/m<sup>3</sup>.

There is no national air quality objective for PM<sub>2.5</sub>.

### 3.2.4 Sulphur Dioxide (SO<sub>2</sub>)

Hartlepool Borough Council no longer monitors sulphur dioxide concentrations, and there is no requirement to do so in the absence of industrial sources or significant domestic coal burning. Hartlepool Borough Council did monitor sulphur dioxide concentrations at the Stockton Road station until 2007 and results were significantly and consistently below the air quality objective. Sulphur dioxide monitoring results from other Tees Valley Councils with significant emissions from the chemical and steel industries, consistently show the objectives being met, and this will also be the case within the Hartlepool area.

## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
A1	Stockton Road (Barra Grove)	Roadside	450300	529700	NO <sub>2</sub> , PM <sub>10</sub>	NO	Chemiluminescent, Beta attenuated	10	12	2
A2	Headland (Town Wall)	Other	452400	533600	PM <sub>10</sub>	NO	Beta Attenuated	10	5	2
A3	St Abbs Walk (AURN)	Urban Background	451429	532312	NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	NO	Chemiluminescent	6.5	6	2

**Notes:**

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

(2) N/A if not applicable

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

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)
S1	Cleveland Road	Roadside	451292	534303	NO <sub>2</sub>	NO	21	2.1	No	2.4
S2	Powlett Road	Roadside	450400	533900	NO <sub>2</sub>	NO	0	5	No	2.5
S3	Woodstock Way	Roadside	448395	535806	NO <sub>2</sub>	NO	4	2	No	2.5
S4	The Fens (Hart)	Roadside	447343	534962	NO <sub>2</sub>	NO	3	5	No	2.3
S5	Oxford Road	Roadside	449385	531076	NO <sub>2</sub>	NO	14	2.8	No	2.3
S6	Fens Crescent	Roadside	449600	529100	NO <sub>2</sub>	NO	0	5	No	2.5
S7	The Front Seaton Carew	Roadside	452502	529935	NO <sub>2</sub>	NO	1.5	1.6	No	2.2
S8	Blakelock Gardens	Roadside	450691	531839	NO <sub>2</sub>	NO	3	1.5	No	2.3

**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<sub>2</sub> Monitoring Results: Automatic Monitoring (µg/m<sup>3</sup>)**

Site 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 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
A1 Stockton Road	450300	529700	Roadside	0	0	13.9	7.6	12.1	0	0
A3 St Abbs Walk	451429	532312	Urban Background	99.14	99.14	12.3	9.9	10.3	10.4	9

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22 .

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

☐ Where exceedances of the NO<sub>2</sub> annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023.

#### Notes:

The annual mean concentrations are presented as µg/m<sup>3</sup>.

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

All means have been “annualised” as per LAQM.TG22 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<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)**

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 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
S1	451292	534303	Roadside	100	100	0	0	0	0	15.3
S2	450400	533900	Roadside	100	100	13.4	9.7	11.6	11.8	10.4
S3	448395	535806	Roadside	100	100	13.1	8.6	9.2	11.0	10.4
S4	447343	534962	Roadside	100	100	0	0	0	0	10.4
S5	449385	531076	Roadside	100	100	0	0	0	0	16.5
S6	449600	529100	Roadside	100	100	14.2	10.7	11.9	13.2	11.2
S7	452502	529935	Roadside	100	100	0	0	0	0	17.1
S8	450691	531839	Roadside	100	100	0	0	0	0	14.6

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

☒ 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<sup>3</sup>.

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

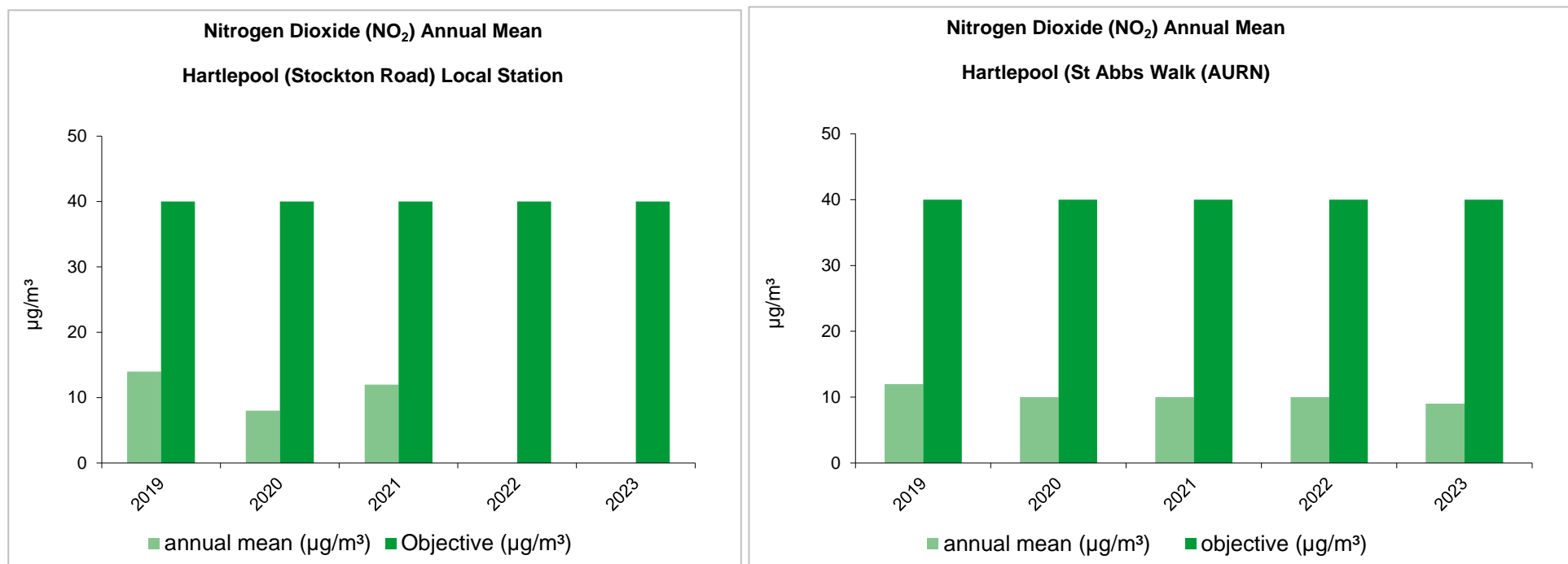
NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

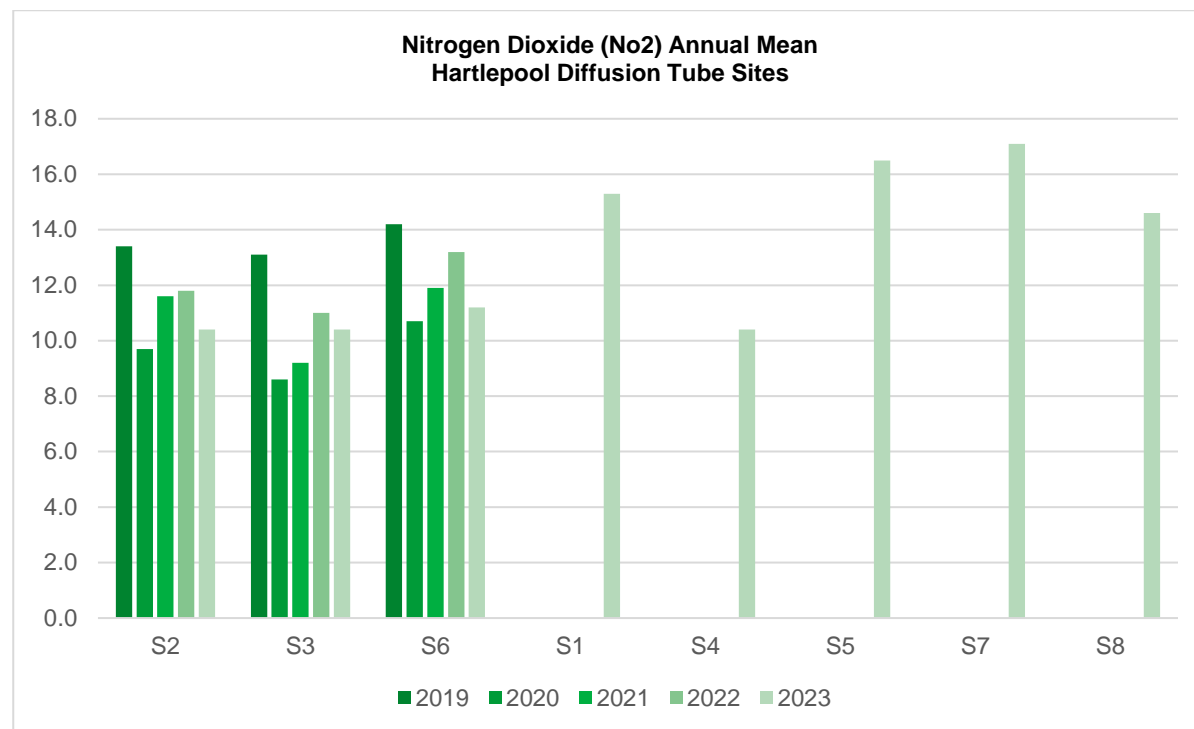
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations**



**Table A.5 – 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>**

Site 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 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
A1	450300	529700	Roadside	0	0	0	0	0	0	0
A3	451429	532312	Urban Background	99.14	99.14	0	0	0	0	0

**Notes:**

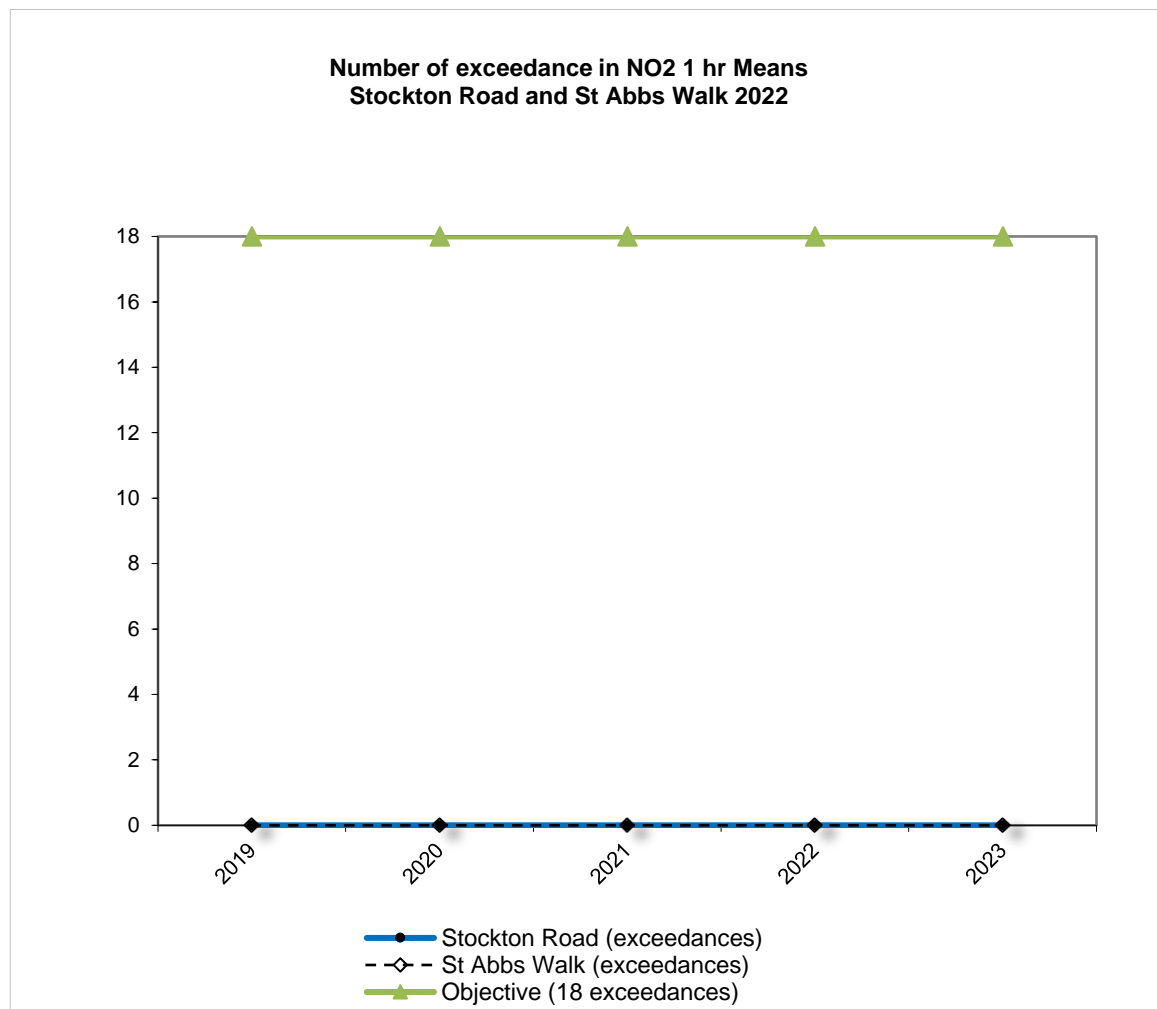
Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m<sup>3</sup> have been recorded.

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

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.2 – Trends in Number of NO<sub>2</sub> 1-Hour Means > 200µg/m<sup>3</sup>**



**Table A.6 – Annual Mean PM<sub>10</sub> Monitoring Results (µg/m<sup>3</sup>)**

Site 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 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
A1	450300	529700	Roadside	0	0	25.3	23.7	22.9	0	0
A2	452400	533600	Other	0	0	29.7	29.7	26.3	0	0
A3	451429	532312	Urban Background	99.02	99.02	0	0	0	11.6	14

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

**Notes:**

The annual mean concentrations are presented as µg/m<sup>3</sup>.

Exceedances of the PM<sub>10</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

All means have been “annualised” as per LAQM.TG22 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%).

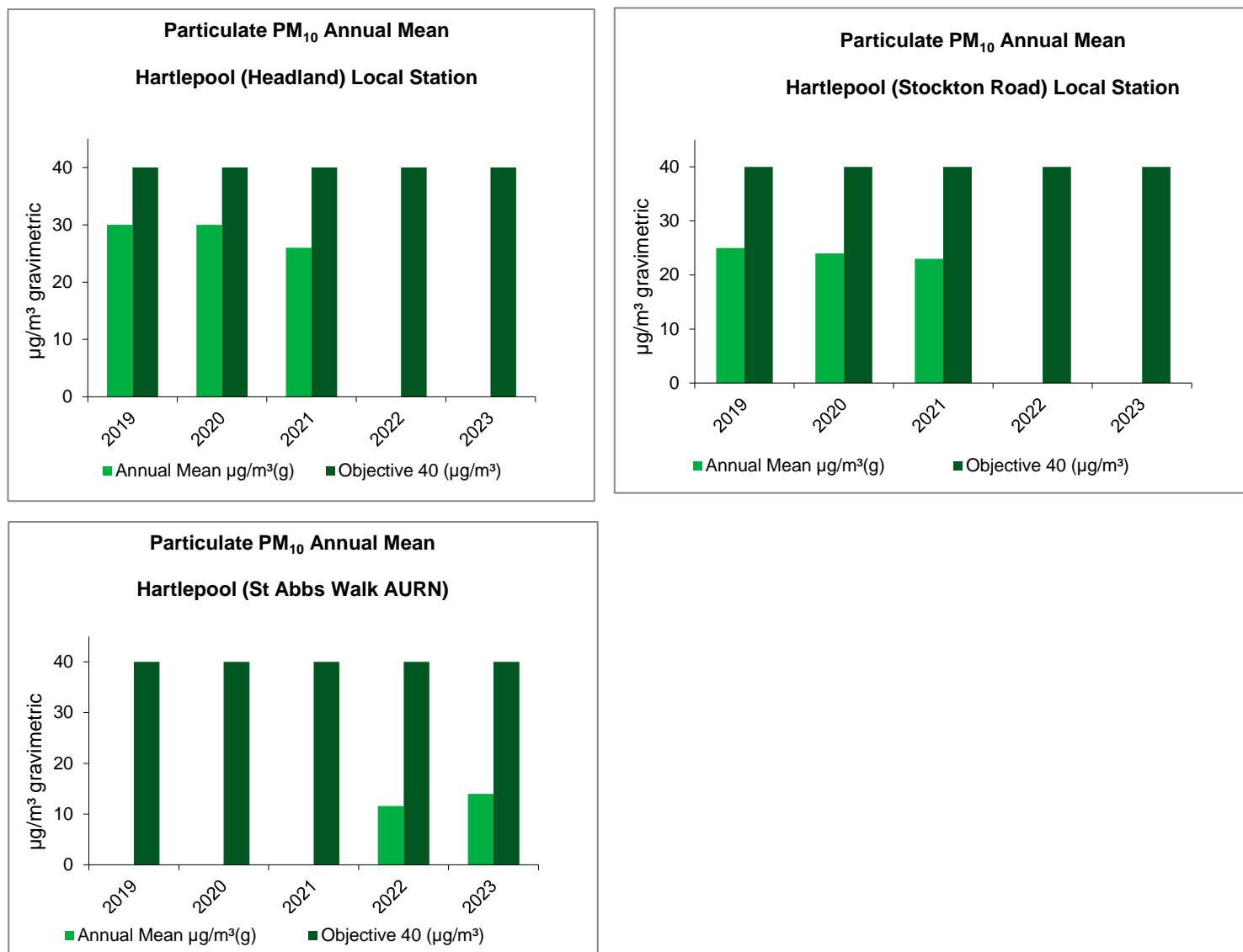
**Figure A.3 – Trends in Annual Mean PM<sub>10</sub> Concentrations**

Table A.7 – 24-Hour Mean PM<sub>10</sub> Monitoring Results, Number of PM<sub>10</sub> 24-Hour Means > 50µg/m<sup>3</sup>

Site 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 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
A1	450300	529700	Roadside	0	0	5 (38)	1 (33)	0 (34)	0	0
A2	452400	533600	Other	0	0	13 (46)	20	5 (41)	0	0
A3	451429	532312	Urban Background	99.02	99.02	0	0	0	0	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m<sup>3</sup> have been recorded.

Exceedances of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-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%).

Table A.8 – Annual Mean PM<sub>2.5</sub> Monitoring Results (µg/m<sup>3</sup>)

Site 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 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
A1	450300	529700	Roadside	0	0	18.9	16.6	16	0	0
A2	452400	533600	Other	0	0	22.2	20.8	18.4	0	0
A3	451429	532312	Urban Background	99.02	99.02	0	0	0	6.5	7

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

Notes:

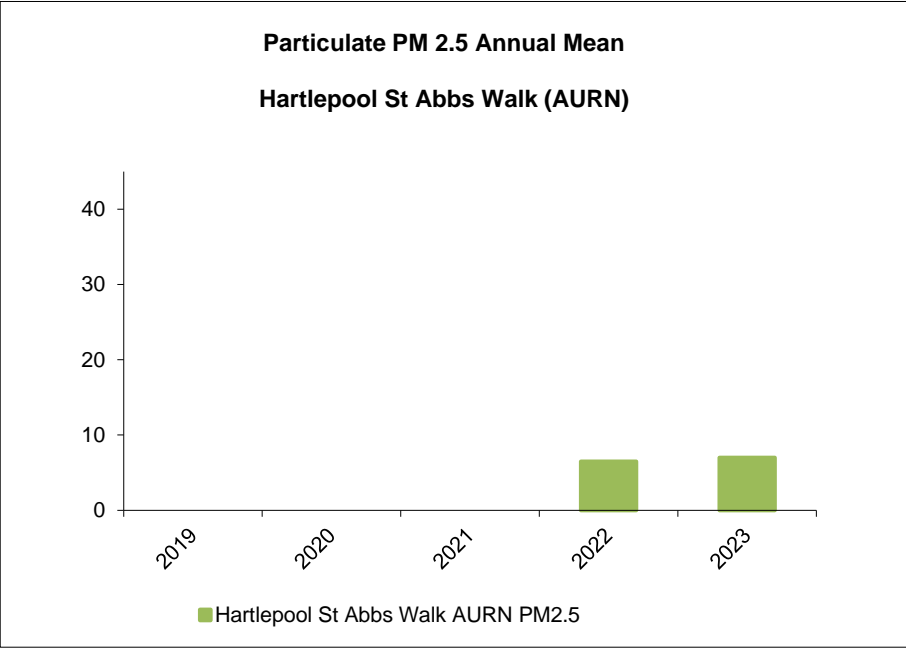
The annual mean concentrations are presented as µg/m<sup>3</sup>.

All means have been “annualised” as per LAQM.TG22 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%).

Figure A.4 – Trends in Annual Mean PM<sub>2.5</sub> Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO<sub>2</sub> 2023 Diffusion Tube Results (µg/m<sup>3</sup>)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S1	451292	534303	26.6	20.3	16.3	19.9	18.6	14.4	16.0	18.3	18.5	22.7	27.2	20.3	19.9	15.3	0	
S2	450400	533900	16.4	14.9	14.2	13.1	15.0	10.1	8.8	9.8	11.8	13.6	22.1	12.6	13.5	10.4	0	
S3	448395	535806	25.1		11.4	13.8	11.9	10.5	10.2	9.8	10.6	13.6	19.2	12.8	13.5	10.4	0	Tube missing February
S4	447343	534962	16.5	14.4	15.1	12.8	9.7	9.2	12.2	10.6	13.9	13.7	20.0	15.5	13.5	10.4	0	Spider in Tube August
S5	449385	531076	29.4	23.3	22.0	21.2	17.9	16.0	16.7	17.3	19.3	24.5	27.9		21.4	16.5	0	Tube missing December
S6	449600	529100	20.2	16.8	10.5	14.1	11.2	10.2	10.4	11.2	14.4	17.0	20.7	17.9	14.6	11.2	0	
S7	452502	529935	26.5	27.8		21.0	19.6	15.7	16.6	19.9	26.9	21.5	29.5	19.1	22.2	17.1	0	Tube Missing March
S8	450691	531839	22.9	23.8	21.7				12.2	13.7	16.4	21.0	21.6	17.8	19.0	14.6	0	Tube missing April, May, June

- ☒ All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1.
- ☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- ☐ Local bias adjustment factor used .
- ☒ National bias adjustment factor used.
- ☒ Where applicable, data has been distance corrected for relevant exposure in the final column.
- ☒ Hartlepool Borough Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

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

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

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 Hartlepool Borough Council During 2023

Hartlepool Borough Council have identified the following planning approvals for residential dwellings within the reporting year of 2023 which may affect air quality.

<b>H/2022/0299</b> Planning permission approved 14/09/2023	<b>LAND WEST OF WYNYARD VILLAGE AND SOUTH OF A689</b> <b>WYNYARD</b> Full planning permission for the erection of 143no. dwelling houses (Use Class C3) with associated infrastructure, access and landscaping.
<b>H/2022/0306</b> Planning permission approved 31/05/2023	<b>ENGINEERS SOCIAL CLUB</b> <b>28 RABY ROAD</b> <b>HARTLEPOOL</b> <b>TS24 8AE</b> Demolition of Former Engineers Club & Registry Office (The Willows) and erection of 3, 4 & 5 storey residential blocks with commercial units to ground floor providing 98no. residential units
<b>H/2021/0572</b> Planning Permission approved 16/03/2023	<b>LAND TO THE SOUTH OF GOLDEN MEADOWS</b> <b>HARTLEPOOL</b> Erection of 76 dwellings, associated infrastructure and landscaping

## **Additional Air Quality Works Undertaken by Hartlepool Borough Council During 2023**

In 2022 Hartlepool Borough Council agreed to replace the monitoring equipment at two automatic monitoring sites - Stockton Road and the Headland. There have been problems over the last few years with obtaining information from the sites and the decision was made to completely renew the equipment to ensure accuracy and consistency going forward. This equipment will be commissioned and installed in 2024. 5 new diffusion tubes have also been purchased and installed and will provide information for this ASR.

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

Hartlepool Borough Council nitrogen dioxide diffusion tube programme is operated through an approved laboratory (SOCOTEC, Didcot) with formal accreditation to BS standards and one that participates in the AIR-PT programme. Particular attention is paid to correct installation of the tubes at site and reliable exposure duration.

Tube precision for this laboratory is consistently shown as good for tube preparation 50% TEA in acetone. As can be seen from the table below SOCOTEC are considered to be satisfactory as they have 100% across their most recent six tube rounds where data was available - this indicates that diffusion tube results should be accurate to within +/- 2%.

### **Diffusion Tube Annualisation**

All diffusion tube monitoring locations within Hartlepool recorded data capture of 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.

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

The diffusion tube data presented within the 2023 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.TG22 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.

Hartlepool Borough Council have applied a national bias adjustment factor of 0.77 to the 2023 monitoring data. A summary of bias adjustment factors used by Hartlepool Borough Council over the past five years is presented in Table C.1.

**Table C.1 – Bias Adjustment Factor**

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	06/23	0.77
2022	National	03/22	0.78
2021	National	03/22	0.78
2020	National	09/21	0.76
2019	National	-	0.75

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/24				
Follow the steps below <b>in the correct order</b> to show the results of <b>relevant</b> co-location studies								This spreadsheet will be updated at the end of June 2024 <a href="#">LAQM Helpdesk Website</a>		
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 spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.										
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:		Step 2:	Step 3:	Step 4:						
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	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 <sup>2</sup> shown in <b>blue</b> at the foot of the final column.						
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote <sup>1</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at <a href="mailto:LAQMHelpdesk@bureauveritas.com">LAQMHelpdesk@bureauveritas.com</a> or 0800 0327953						
Analysed By <sup>1</sup>	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2023	R	Leeds City Council	12	25	19	30.0%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2023	UC	Leeds City Council	11	26	19	40.0%	G	0.71
SOCOTEC Didcot	50% TEA in acetone	2023	KS	Marylebone Road intercomparison	11	53	38	41.4%	G	0.71
SOCOTEC Glasgow	50% TEA in acetone	2023	KS	Marylebone Road intercomparison	11	49	38	30.4%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2023	R	Vale Of White Horse District Council	10	22	18	21.2%	G	0.83
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Wirral Council	11	15	13	16.7%	G	0.86
SOCOTEC Didcot	50% TEA in acetone	2023	Overall Factor <sup>2</sup> (28 studies)					Use		0.77
SOCOTEC Glasgow	50% TEA in acetone	2023	Overall Factor <sup>3</sup> (1 study)					Use		0.77

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

Wherever possible, 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 has been 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 NO<sub>2</sub> monitoring locations within Hartlepool Borough Council required distance correction during 2023.



## QA/QC of Automatic Monitoring

The two Hartlepool fixed continuous Local monitoring stations (one NO<sub>2</sub> and PM<sub>10</sub>, the other PM<sub>10</sub>), are modern installations, and have been operated under a comprehensive service contract. Operators of the site have received supplier training.

The Council is committed to achieving accuracy, precision, data capture, traceability and long term consistency to ensure that data is representative of ambient air quality. In common with other Tees Valley Councils, Hartlepool has a documented quality assurance and control programme, which includes an established schedule of regular site calibrations, validation of data, and documentation of all procedures.

Details are summarised as follows:

Calibration gas is obtained from approved gas standard suppliers. Equipment has a comprehensive service agreement with the supplier.

Data capture site operators are experienced and trained personnel, monitoring data capture on a daily basis where possible to ensure that faults are detected and corrected quickly.

Ratification data is screened, where possible on a daily basis, to check for unusual measurements. Suspicious data is investigated fully, and if found to be faulty, is deleted from the records. Particular attention is paid to possible environmental changes in the vicinity of the analyser.

Data is recorded monthly and compared with earlier results.

## PM<sub>10</sub> and PM<sub>2.5</sub> Monitoring Adjustment

The Stockton Road and Headland PM<sub>10</sub> monitors are BAM units adjusted to full gravimetric equivalence by dividing the raw data by 1.21.

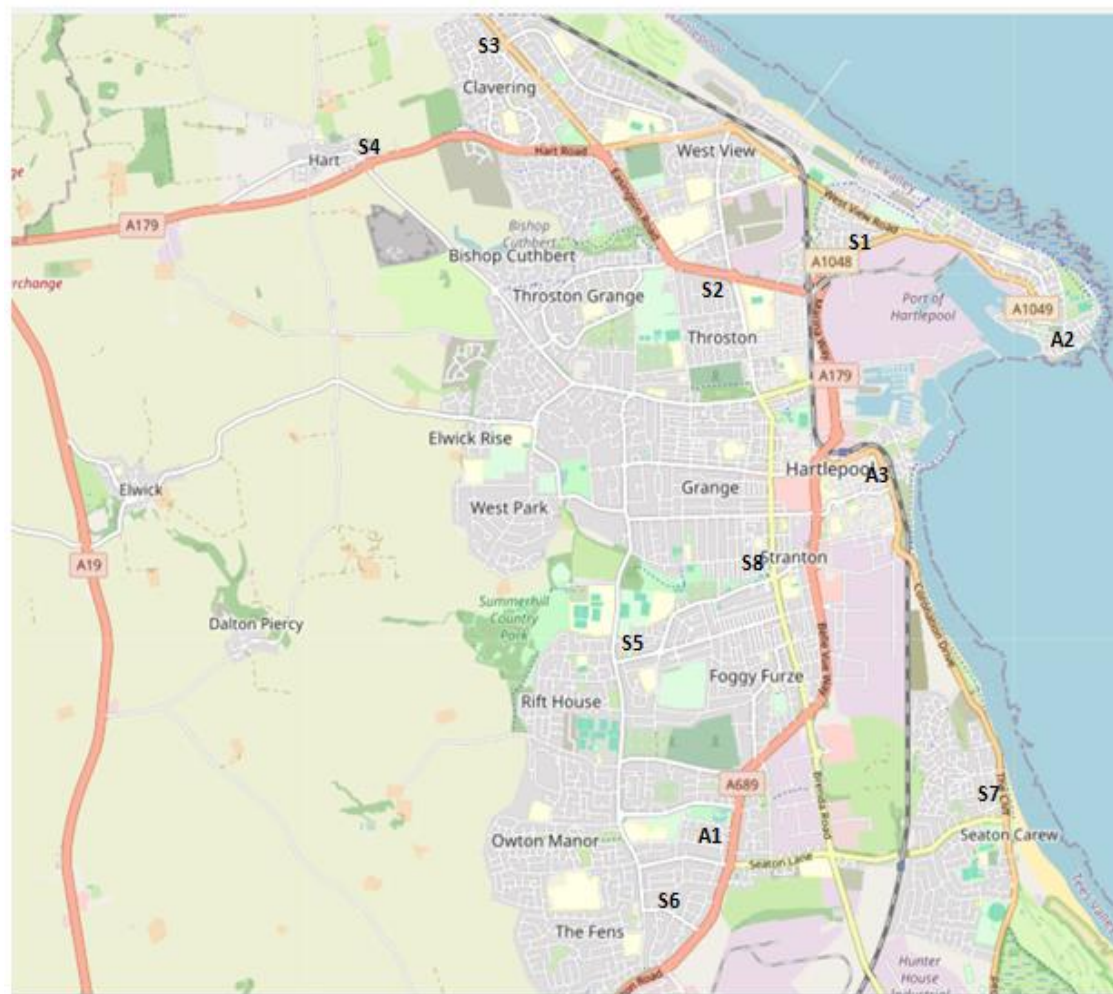
## NO<sub>2</sub> Fall-off with Distance from the Road

Wherever possible, 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 has been estimated using the NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table A.3. No automatic NO<sub>2</sub> monitoring locations within Hartlepool Borough Council required distance correction during 2023.



## Appendix D: Map of Monitoring Locations

Figure D.1 – Map of Monitoring Sites



### Key:

Automatic Monitoring Sites:

A1- Stockton Road, A2 - Headland, A3 - St Abbs Walk.

Diffusion Tubes from 2023:

S1 – Cleveland Road, S2 – Powlett Road,  
 S3 - Woodstock Way, S4 – The Fens (Hart),  
 S5 - Oxford Road, S6 – Fens Crescent,  
 S7 – The Front (Seaton Carew),  
 S8 – Blakelock Gardens

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

**Table E.1 – Air Quality Objectives in England<sup>11</sup>**

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

<sup>11</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Glossary of Terms

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

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