



Horsham
District
Council



2023 Air Quality Annual Status Report (ASR)

Horsham District Council

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

August 2023

Information	Horsham District Council Details
Local Authority Officer	Thais Covre Delboni Anna Czerska
Department	Environmental Health and Licencing Department
Address	Parkside, Chart Way, Horsham, West Sussex RH12 1RL
Telephone	01403 215609
E-mail	thais-covre.delboni@horsham.gov.uk
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Executive Summary: Air Quality in Our Area

This report details the results of air quality monitoring undertaken in 2022 across Horsham District and is prepared in accordance with the guidance issue by the Department for Environment, Food and Rural Affairs (Defra).

Local Authorities across the United Kingdom are required to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives set by the Government are likely to be achieved. Where exceedances are considered likely, the local authority must then 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.

Air Quality in Horsham District

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas^{1,2}.

The mortality burden of air pollution within the UK is equivalent to 29,000 to 343,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

Horsham district is primarily agricultural in character and does not incorporate a significant heavy industrial base or major transport hubs. Air quality in the majority of Horsham district is good however there are a few areas where elevated concentrations of pollutants occur.

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

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

³ Defra. Air quality appraisal: damage cost guidance, January 2023

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

The main source of air pollution locally are road traffic emissions from major roads, notably the A24, which intersects the district north – south; A264 to the north of Horsham; A272 and A281 at Cowfold; and A283 at Storrington. Two Air Quality Management Areas (AQMAs) have been declared in the district, in the village of Cowfold (Cowfold AQMA) and town centre of Storrington (Storrington AQMA), both for the exceedances of the annual mean objective for nitrogen dioxide (NO₂).

Air Quality Action Plans (AQAPs) were prepared for both AQMAs; the Storrington AQAP was submitted to Defra in 2012 and the Cowfold AQAP in 2013. The preparation of a district-wide AQAP is ongoing and will be published following a public consultation. The new AQAP will present and discuss the last ten years' worth of monitoring data and modelling results for future NO₂ concentrations in the AQMAs and will contain a range of schemes and measures that Horsham District Council (HDC) wishes to take forward. More information about the AQMAs can be found on [HDC's Air Quality webpage](#).

All long-term sites have shown an overall decreasing trend in NO₂ and Particulate Matter (both PM₁₀ and PM_{2.5}) concentrations within the last 5 years. This is believed to have been driven to a large extent by general improvements in vehicle emissions standards but also to some extent by the implemented local traffic management measures, although it is difficult to isolate the impacts of individual interventions.

Although the work under the Local Air Quality Management (LAQM) is the legal obligation of district councils, actions aimed at improving air quality most of the time require the cooperation of other departments and organisations. HDC works in cooperation with other stakeholders, such as planning, Public Health England, West Sussex County Council (WSSC) highways, neighbouring Local Authorities, Sussex Air Partnership, and the Environment Agency.

The assessment and implementation of the identified traffic management schemes is done in cooperation with WSSC as they are the authority responsible for roads and transport management. Steering groups were set up for each of the AQMAs. They have contributed to the development of the Action Plans and are the decision-making body for the action plan measures to be taken forward. The Council is consulted on planning applications for HDC Development Management and WSSC minerals and waste.

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 Plan⁵ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM_{2.5} targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce PM_{2.5} in their areas. The Road to Zero⁶ details 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.

Horsham District Council has taken forward several measures during the recent years in pursuit of improving local air quality. The key actions undertaken in 2022 were:

- Storrington HGV Survey Turning Count
- Promotion of Walk to School Week with the support of Environmental Health, neighbourhood wardens, parking services, Sussex police and Fire brigade
- Plans to replace and refurbish five vehicles in HDC's waste/recycling fleet have been approved
- New rapid electric vehicle charging points installed in Storrington and Billingshurst
- Public Consultation on proposals for walking, cycling and bus improvements in Comptons Lane, Horsham
- Trafalgar Neighbourhood Council has successfully been awarded a substantial contribution from its Community Climate Fund to encourage increased use of bicycles as a means of personal transport in Horsham District
- Sussex Air was successful with a bid submitted for the 2021/2022 Air Quality Grant for a number of projects. Including:
 - A Taxi engagement study, which Horsham District Council is leading. The purpose of this project is to facilitate a transition to electric vehicles by taxi and private hire drivers

⁵ Defra. Environmental Improvement Plan 2023, January 2023

⁶ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

- Improving Sussex automatic monitoring network, new PM2.5 analyser to be installed in Storrington or Cowfold in 2023
- Joining Defra’s Particulate Matter research study (with a duration of one year). New analysers were installed in Storrington in April 2022
- Ongoing work with Planning Policy and Development Control to ensure the impacts of new development are mitigated and/or offset
- Continuation of the monitoring programme, which includes the operation and maintenance of three air quality monitoring stations, with the data and Air Alert forecasts shared at <http://www.sussex-air.net>
- Attending Defra’s workshops for Local Air Quality Management and Sussex Air partnership meetings. With this, we can take informed proactive actions
- Air quality promotion via website and social media

Conclusions and Priorities

A decrease in NO₂ concentrations was observed across most sites in 2022 averaging -19% relative to pre pandemic levels (2019). Long-term sites across the district have shown a continuing overall downward trend over the monitoring period, indicative of a gradual improvement in fleet emissions and traffic management related measures.

Monitoring within Storrington AQMA showed a decrease of 15% relative to 2019. Storrington worst-location, diffusion tube 47 (Storrington 19n) at the junction of Manley’s Hill and School Hill, within Storrington AQMA, was the only site within the district that measured concentrations within 10% of the annual mean NO₂ objective, recording 38.1µg/m³, showing a decrease of 20% compared to the pre pandemic concentrations.

Technically, HDC could proceed to revoking the West Street/High Street part of the Storrington AQMA, which has for several years been in compliance with the annual mean objective for NO₂. However, continued action aimed at reducing traffic flows and congestion on the High Street has benefited the air quality within the whole of the AQMA. As such, no changes are proposed at present and the boundaries of the Storrington AQMA can remain unchanged.

Monitoring within Cowfold AQMA showed a decrease of 14% when compared to pre-pandemic levels. It is expected that the Cowfold AQMA will be revoked in the coming years. It is acknowledged that the traffic volumes were significantly reduced in the pandemic, which may have invalidated the results for 2020-2021.

WHO recommended 2021 Air quality guidelines level for NO₂ annual mean is 10 µg/m³. Based on this guideline all sites in Horsham district, except for background sites DT3 (Horsham 3N), DT4 (Horsham 4N) and DT41 (Storrington 17N), were above WHO guidelines in 2022.

Horsham is taking part on Defra's Particulate Matter research study, and three particulate matter analysers were installed in Storrington in the end of April 2022. Regarding particulate matter, automatic monitoring at the Horsham Park Way and Storrington AURN sites indicates that both the annual mean and 24-hour UK objective were complied with in 2022 and all the previous years of monitoring. Horsham Park Way PM₁₀ concentrations have been relatively constant trend in the past five years.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 sets the target to ensure that the annual mean concentration of PM_{2.5} in ambient air is equal to or less than 10 micrograms per cubic metre (µg/m³) by 31st December 2040. The 2040 target was achieved by Storrington AURN in 2022.

WHO recommended 2021 Air quality guidelines level for PM_{2.5} and PM₁₀ annual mean is 5 and 15µg/m³ respectively. Horsham Park Way was above WHO guidelines in 2022 for particulate matter. Storrington AURN meets the level for PM₁₀, but not for PM_{2.5}.

The Council's priorities for the coming year are:

- Publishing the update of the Air Quality Action Plan for Storrington and Cowfold
- Delivery management of the Defra-funded taxi engagement campaign to facilitate a transition to EV vehicles by taxi drivers
- Continued work with Planning Policy and Development Control to secure air quality mitigation from new development
- Continuation and expansion of the monitoring programme, to include monitoring for particulate matter
- Community engagement through participation in the Defra's funded Sussex-Air Community Engagement project
- Improvements to the air quality website and communications to make air quality information more accessible to the public
- Exploring the viability of a Smoke Control Area declaration

- Delivery of the HDC's vehicle replacement programme
- Expansion of Electric Vehicle Network
- Continued work with WSCC to increase the rate of active travel to and from schools
- Continued work with the steering groups on the development and implementation of AQAP measures
- Participation in the next bid for Defra's air quality funding
- Internal applications for s106 funding to facilitate the implementation of actions within the AQAP

The main challenges and barriers to implementation that HDC anticipates facing are:

- Availability of resources and funding for AQAP measures
- Challenges related to cost-effectiveness and enforcement of measures to tackle localised air pollution hotspots in rural areas where problems arose due to through traffic

Local Engagement and How to get Involved

The public can get involved by supporting behavioural change initiatives such as car sharing, walking, cycling, using public transport, joining the Car Club, buying zero-emissions vehicles for personal and commercial travel, turning liquid fuelled vehicle engine's off when stationary, minimising wood burning and only burning dry, well-seasoned wood and composting instead of having bonfires wherever possible. More information on how to get involved can be found at [Help to improve Horsham District's air quality page](#).

The air quality data monitored contributes to Sussex Air daily air pollution prediction service '[Sussex Air Quality Alert](#)'. This service is free to the public and helps people with respiratory and heart conditions who may be adversely affected by air pollution. Previous qualitative survey work established that subscribers to the service value it as an important resource.

Two air quality Steering Groups have regular meetings in the district: Storrington Steering Group and Cowfold Steering group. Their objective is to progress the work on the Storrington and Cowfold Action Plans. Each group is a partnership of Councillors and officers from Horsham District Council and West Sussex County Council and includes representatives from the Parish Council. For further information on the work being done, please visit the [Horsham District Council website](#) or contact:

- Environmental Health and Licencing Department: tel. 01403 215609; email:publichealth.licensing@horsham.gov.uk
- <https://www.horsham.gov.uk/environmental-health/air-quality>

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Horsham District Council with the support and agreement of the following officers and departments:

- Sussex Air
- West Sussex County Council (WSSCC) Transport Planning and Policy

Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in Horsham District.....	i
Actions to Improve Air Quality	iii
Conclusions and Priorities	iv
Local Engagement and How to get Involved.....	vi
Local Responsibilities and Commitment	vii
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	4
2.1 Air Quality Management Areas	4
2.1.1 Horsham Air Quality Action Plan update	6
2.2 Progress and Impact of Measures to address Air Quality in Horsham District.....	8
2.3 PM2.5 – Local Authority Approach to Reducing Emissions and/or Concentrations	19
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	22
3.1 Summary of Monitoring Undertaken.....	22
3.1.1 Automatic Monitoring Sites	22
3.1.2 Non-Automatic Monitoring Sites	22
3.2 Individual Pollutants.....	23
3.2.1 Nitrogen Dioxide (NO ₂)	23
3.2.2 Particulate Matter (PM ₁₀).....	26
3.2.3 Particulate Matter (PM _{2.5}).....	27
Appendix A: Monitoring Results	29
Appendix B: Full Monthly Diffusion Tube Results for 2022	51
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	53
New or Changed Sources Identified Within Horsham District Council During 2022	53
Additional Air Quality Works Undertaken by Horsham District Council During 2022	53
QA/QC of Diffusion Tube Monitoring	53
Diffusion Tube Annualisation.....	54
Diffusion Tube Bias Adjustment Factors	54
NO ₂ Fall-off with Distance from the Road	55
QA/QC of Automatic Monitoring	55
PM ₁₀ and PM _{2.5} Monitoring Adjustment.....	56
Automatic Monitoring Annualisation	56
NO ₂ Fall-off with Distance from the Road	57
Appendix D: Map(s) of Monitoring Locations and AQMAs	58
Appendix E: Summary of Air Quality Objectives in England	66
Glossary of Terms	68

References69

Figures

Figure 1.1 – Distance travelled to work, usual residents aged 16 years and over in employment, 2021, Horsham.....	2
Figure 1.2 – Method used to travel to work, usual residents aged 16 years and over in employment, 2021, Horsham.....	3
Figure 2.1 - Cowfold Source Apportionment 2019	7
Figure 2.2 - Storrington Source Apportionment 2019	7
Figure 2.3 – Walk to School Week 2022.....	10
Figure 2.4 – Electric Vehicle charging point at Storrington Library car park	11
Figure 2.5 – Weight restriction signs in Storrington	12
Figure 2.6 - Sussex Air Network	13
Figure A.1 – Trends in Annual Mean NO ₂ Concentrations: Horsham.....	38
Figure A.2 – Trends in Annual Mean NO ₂ Concentrations: Cowfold	39
Figure A.3 – Trends in Annual Mean NO ₂ Concentrations: Storrington.....	40
Figure A.4 – Trends in Annual Mean NO ₂ Concentrations: Pulborough.....	41
Figure A.5 – Trends in Annual Mean NO ₂ Concentrations: Henfield, Steyning, Billingshurst, Southwater.....	42
Figure A.6 – Monitoring Results: NO ₂ Concentrations trends (ug/m ³) at HO2 Horsham Park Way, HO4 Storrington AURN and HO5 Cowfold in 2022.....	44
Figure A.7 – Trends in Annual Mean PM ₁₀ Concentrations	46
Figure A.8 – Trends in Annual Mean PM _{2.5} Concentrations	49
Figure A.9 – Monitoring Results: PM ₁₀ and PM _{2.5} Concentrations trends (ug/m ³) at HO2 Horsham Park Way, HO4 Storrington AURN in 2022	50
Figure D.1 – Map of Horsham Monitoring Sites	58
Figure D.2 – Map of Horsham Monitoring Sites	59
Figure D.3 – Map of Cowfold Monitoring Sites.....	60
Figure D.4 – Map of Henfield Monitoring Site	61
Figure D.5 – Map of Pulborough Monitoring Site	62
Figure D.6 – Map of Billingshurst Monitoring Site	63
Figure D.7 – Map of Southwater Monitoring Site	64
Figure D.8 – Map of Steyning Monitoring Site	65

Tables

Table 2.1 – Declared Air Quality Management Areas.....	5
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Table 2.2 - Number of forecast Daily Air Quality Index days in 2022 (March to December) at selected sites	14
Table 2.3 – Progress on Measures to Improve Air Quality.....	16
Table A.1 – Details of Automatic Monitoring Sites	29
Table A.2 – Details of Non-Automatic Monitoring Sites	29
Table A.3 – Annual Mean NO ₂ Monitoring Results: Automatic Monitoring (µg/m ³).....	33
Table A.4 – Annual Mean NO ₂ Monitoring Results: Non-Automatic Monitoring (µg/m ³)...34	
Table A.5 – 1-Hour Mean NO ₂ Monitoring Results, Number of 1-Hour Means > 200µg/m ³	43
Table A.6 – Annual Mean PM ₁₀ Monitoring Results (µg/m ³)	45
Table A.7 – 24-Hour Mean PM ₁₀ Monitoring Results, Number of PM ₁₀ 24-Hour Means > 50µg/m ³	47
Table A.8 – Annual Mean PM _{2.5} Monitoring Results (µg/m ³)	48
Table B.1 – NO ₂ 2022 Diffusion Tube Results (µg/m ³).....	51
Table C.1 – Annualisation Summary (concentrations presented in µg/m ³)	54
Table C.2 – Details of sites used for Annualisation Summary	54
Table C.3 – Bias Adjustment Factor	55
Table C.4 – Local Bias Adjustment Calculation	55
Table E.1 – Air Quality Objectives in England	66
Table E.2 – Recommended 2021 WHO Air Quality Guidelines levels	66
Table E.3 – Air Quality Objectives Comparison	67

1 Local Air Quality Management

This report provides an overview of air quality in Horsham District during 2022. 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 Horsham District 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.

Horsham District has an area of 205 square miles and is a predominantly rural. Its population size has increased by 11.8%, from around 131,300 in 2011 to 146,800 in 2021. This is higher than the overall increase for England (6.6%), and for the South East (7.5%)⁷. Horsham is the main town and the principal administrative and commercial centre within the district.

A large proportion of the district is composed of countryside with a varied landscape of woodland, heathland, downland, river valleys and meadows being represented. Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest, and Sites of Nature Conservation Importance overlap the area. At the southern end of the district is the South Downs National Park. Agriculture remains a major user of land within the district. Significant industrial premises include a mechanical biological waste treatment facility and landfill site to the north of Horsham town and two brickworks.

Horsham District is well served by transport links to London, Gatwick Airport, the M25 and the coast. A network of subsidiary routes connects the villages and small centres of

⁷ <https://www.ons.gov.uk/visualisations/censuspopulationchange/E07000227/>

population. Emissions from road transport remains the main source of air pollution in the district.

According to the latest Census (2021):

- 40.8% of people aged 16 years and over in employment in Horsham work mainly at or from home
- 45.2% of people aged 16 years and over in employment in Horsham travel to work by driving a car or van (Figure 1.2)
- 21.5% of people aged 16 years and over in employment in Horsham travel less than 10km to work (Figure 1.1)

Figure 1.1 – Distance travelled to work, usual residents aged 16 years and over in employment, 2021, Horsham

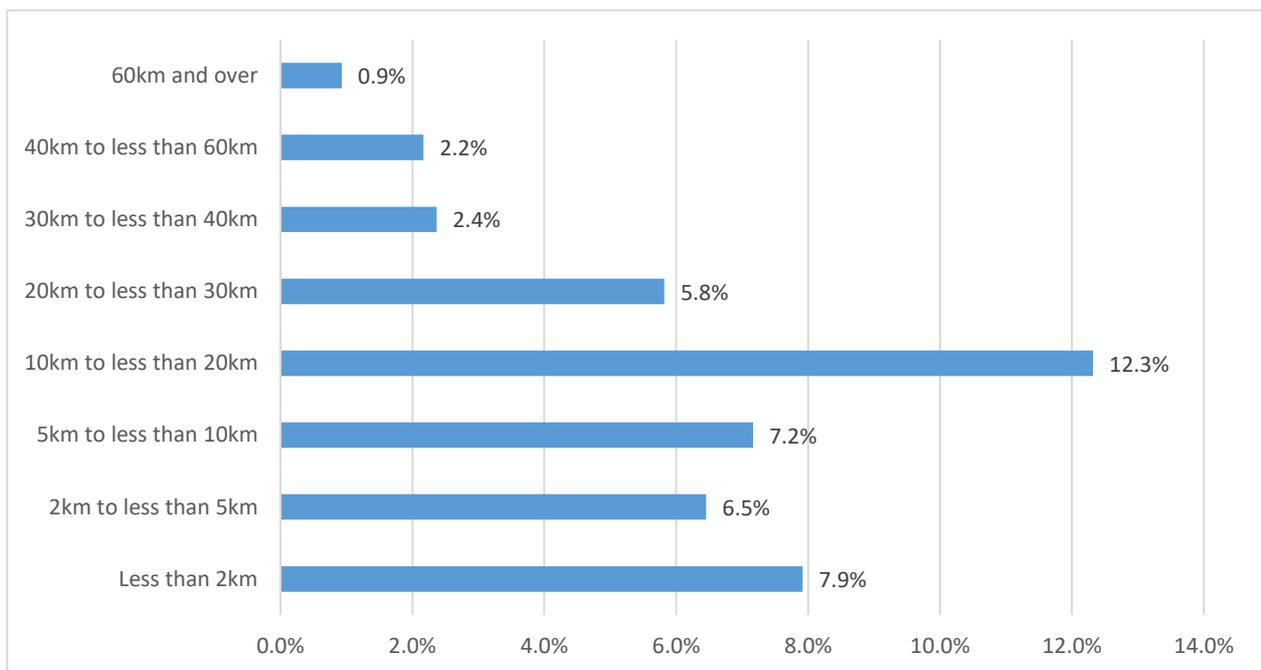
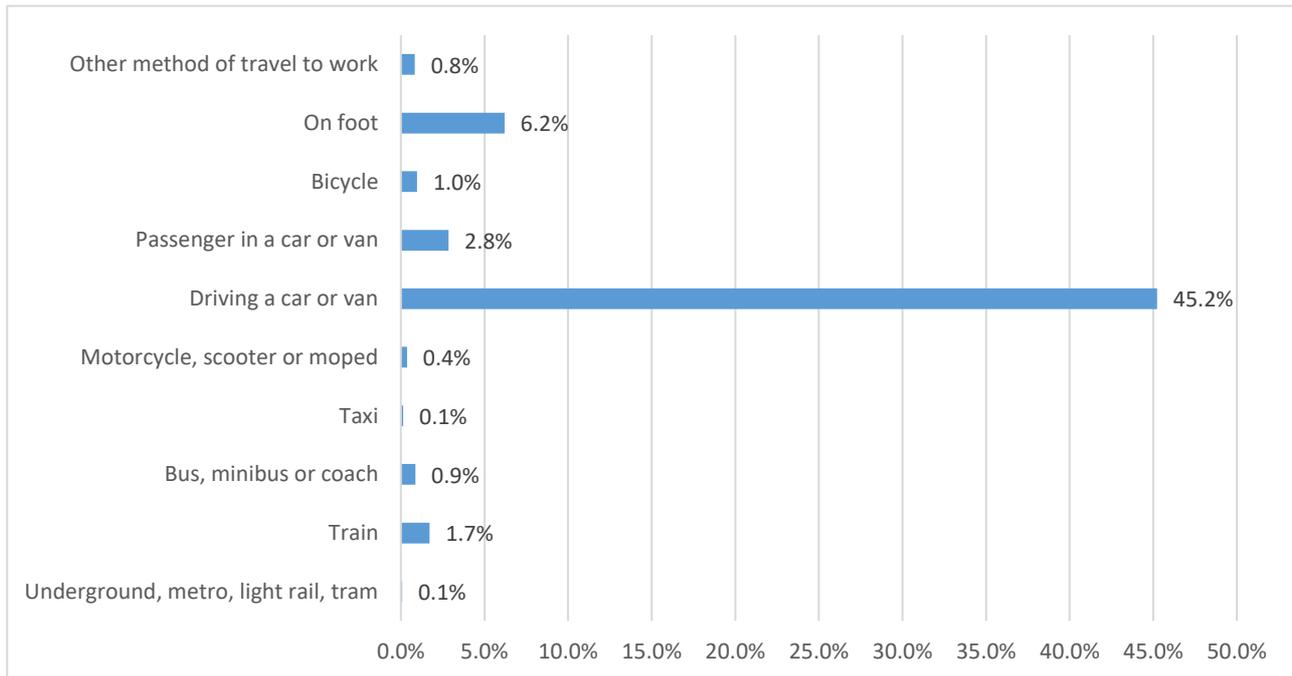


Figure 1.2 – Method used to travel to work, usual residents aged 16 years and over in employment, 2021, Horsham



The Census took place during the coronavirus (COVID-19) pandemic, a period of unparalleled and rapid change; the national lockdown, associated guidance and furlough measures will have affected the travel to work topic⁸.

The main source of air pollution in the district is road traffic emissions from major roads, notably the A24, A272 and A283, A281 and A264. Two Air Quality Management Areas (AQMAs) have been declared in the district, both for the exceedances of the annual mean nitrogen dioxide (NO₂) objective: Storrington AQMA was declared in December 2010 in the town centre of Storrington along the A283 and Cowfold AQMA was declared in September 2011 in the village centre of Cowfold along the A272/A281.

Steering groups were set up in the community for each of the AQMAs. The work of the steering groups contributed largely to the development of Action Plans for the AQMAs.

8

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/traveltoworkenglandandwales/census2021>

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.

A summary of AQMAs declared by Horsham District Council can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within Horsham District. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objective pertinent to the current AQMAs designations is NO₂ annual mean.

The achievement of congestion improvement measures in Storrington and Cowfold has been challenging as there are no easy solutions, and many of the solutions fall outside the power of HDC to implement. Horsham District Council continues to work with WSCC to explore traffic management measures to reduce congestion and improve air quality. This has included revisiting and reviewing the evidence from all previous measures identified to understand what impacts these would be likely to have in terms of improving air quality, and whether the measures would be deliverable and provide value for money. A number of these measures are continuing to be explored. The identification of schemes that are feasible, deliverable and can generate a positive business case remain the principal challenges for progressing measures to improve air quality. A review of historical and new schemes both proposed and implemented in Storrington and Cowfold can be found on HDC's Air Quality webpage at [Storrington Air Quality Management](#) and [Cowfold Air Quality Management](#).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Horsham AQMA No1	Dec-10	NO2 Annual Mean	Storrington town centre incorporating West Street, the High Street, and part of School Hill and Manleys Hill.	NO – Roads controlled by WSCC	50.2µg/m3 (Storrington 1,2)	-	3 years (2020-2022)	Storrington Air Quality Action Plan, October 2012	https://www.horsham.gov.uk/environmental-health/air-quality/storrington-air-quality-management
Horsham Cowfold AQMA	Oct-11	NO2 Annual Mean	Cowfold town centre incorporating The Street, part of Station Road and Bolney Road.	NO – Roads controlled by WSCC	40.5µg/m3 (Cowfold 1,2) 45.9µg/m3 (Cowfold 7n)	-	4 years (2019-2022)	Cowfold Air Quality Action Plan, September 2013	https://www.horsham.gov.uk/environmental-health/air-quality/cowfold-air-quality-management

Horsham District Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

Horsham District Council confirm that all current AQAPs have been submitted to Defra.

2.1.1 Horsham Air Quality Action Plan update

The preparation of a district-wide AQAP is ongoing and will be published following a public consultation. The new AQAP will present and discuss the last ten years' worth of monitoring data and modelling results for future NO₂ concentrations in the AQMAs and will contain a range of schemes and measures that Horsham District Council (HDC) wishes to take forward.

HDC is modelling the AQMAs as part of the Action Plan updating process. The main objective of this modelling is to assess which measures can be done to improve the Air Quality in these areas. The air quality dispersion model ADMS Roads (v5.0.1.3) is being used for the baseline modelling, verification, and scenario testing.

Air quality dispersion models can help local authorities to:

- Quantify the contribution of pollutant emissions arising from different source types to overall concentrations
- Predict concentrations across wider geographical areas than is possible through monitoring activities alone
- Determine geographic boundaries of any exceedance of the air quality objectives
- Predict concentrations for future years, considering changes in emission sources and emissions data
- Undertake scenario testing to consider the effects of AQAP measures on predicted concentrations

To understand the contribution of all sources of emissions to exceedances of the air quality objectives within the AQMAs a source apportionment was carried at Storrington and Cowfold worst-locations. Source Apportionment is the identification of ambient air pollution sources and the quantification of their contribution to pollution levels, and it is important to identify priorities whilst preparing an AQAP (Figure 2.1 and Figure 2.2).

Figure 2.1 - Cowfold Source Apportionment 2019

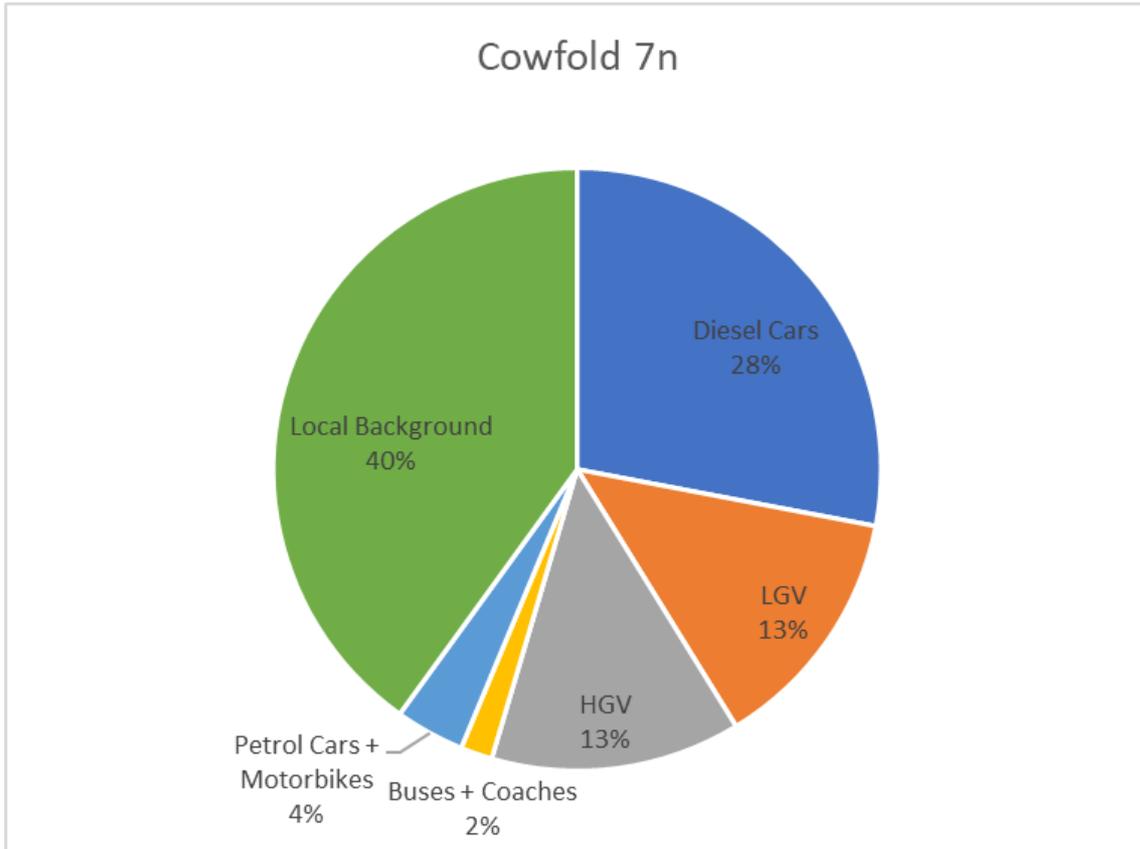
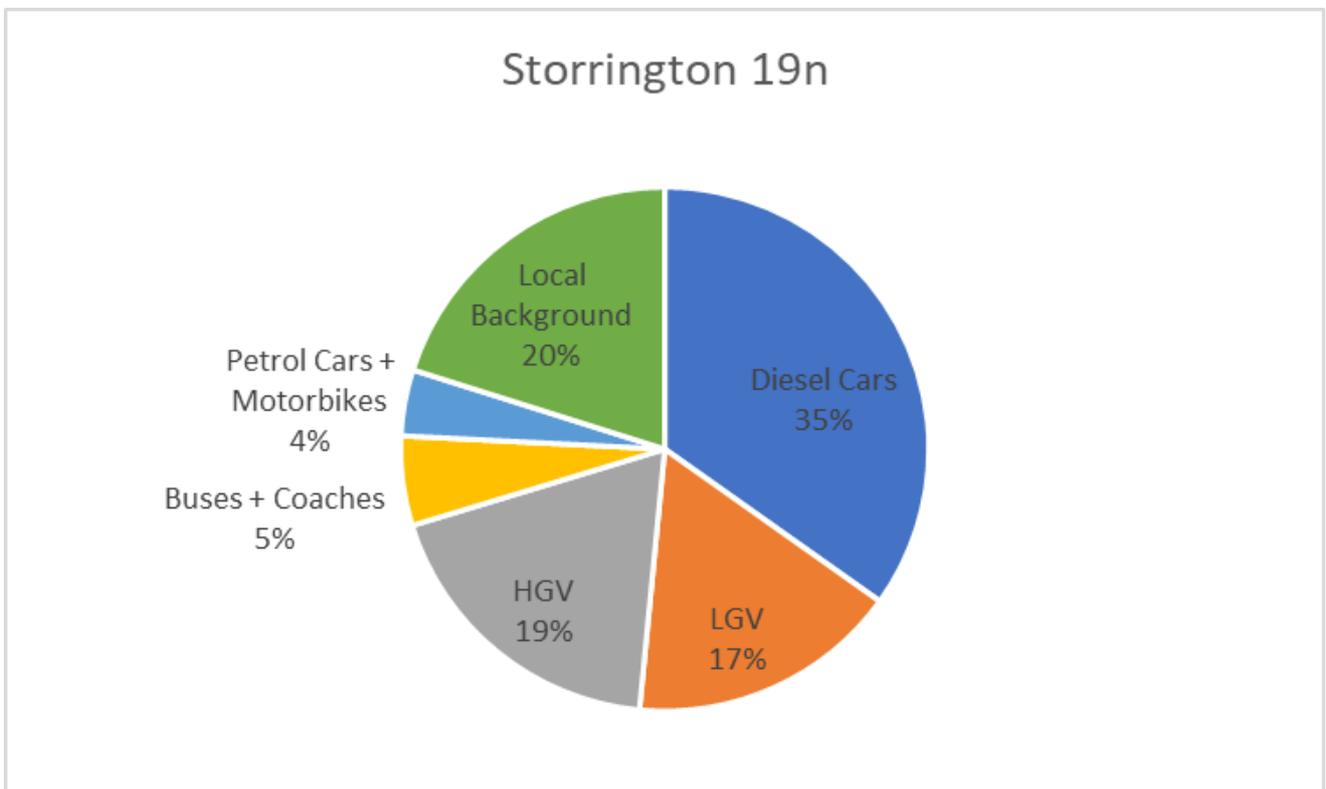


Figure 2.2 - Storrington Source Apportionment 2019



At Cowfold background concentrations represents a significant proportion of the total NO₂ concentrations. In Storrington and Cowfold diesel cars and heavy-duty vehicles are the main local source of NO₂ concentrations.

The do-nothing scenario modelled for 2027 indicates that both Cowfold and Storrington will be below the NO₂ Air Quality objectives. It is estimated that Cowfold will have a concentration of 19.5ug/m³ at DT 7n and Storrington a concentration of 25.1ug/m³ at Storrington 19n in 2027. HDC will also model every year from 2022 onwards to investigate in which year we will be in compliance with Air Quality objectives.

HDC is now in liaising with Transport Authorities and Steering groups to assess scenarios modelling and further publication of the AQAP.

2.2 Progress and Impact of Measures to address Air Quality in Horsham District

Defra's appraisal of last year's ASR concluded that on the basis of the evidence provided, the conclusions reached were accepted for all sources and pollutants.

Horsham District Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.3, with the type of measure and the progress Horsham District Council have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.3.

More detail on these measures can be found in their respective Action Plans and previous Annual Status Reports at [HDC's Air Quality Reports and Assessments page](#). Key completed measures are:

- Storrington HGV Survey Turning Count
- Promotion of Walk to School Week with the support of Environmental Health, neighbourhood wardens, parking services, Sussex police and Fire brigade
- Plans to replace and refurbish five vehicles in HDC's waste/recycling fleet have been approved
- New rapid electric vehicle charging points installed in Storrington and Billingshurst
- Public Consultation on proposals for walking, cycling and bus improvements in Comptons Lane, Horsham

- Trafalgar Neighbourhood Council has successfully been awarded a substantial contribution from its Community Climate Fund to encourage increased use of bicycles as a means of personal transport in Horsham District.
- Sussex Air was successful with a bid submitted for the 2021/2022 Air Quality Grant for a number of projects. Including:
 - A Taxi engagement study, which Horsham District Council is leading. The purpose of this project is to facilitate a transition to electric vehicles by taxi and private hire drivers.
 - Improving Sussex automatic monitoring network, new PM2.5 analyser to be installed in Storrington or Cowfold in 2023
- Joining Defra's Particulate Matter research study (with a duration of one year). New analysers were installed in Storrington in April 2022
- Ongoing work with Planning Policy and Development Control to ensure the impacts of new development are mitigated and/or offset
- Continuation of the monitoring programme, which includes the operation and maintenance of three air quality monitoring stations, with the data and Air Alert forecasts shared at <http://www.sussex-air.net>
- Attending Defra's workshops for Local Air Quality Management and Sussex Air partnership meetings. With this, we can take informed proactive actions
- Air quality promotion via website and social media

Community Engagement

Walk to School Week is a five-day challenge promoted by [Living Streets](#) to celebrate walk to school in May. Walk, cycling or scooting to school is good for:

- Physical health
- Mental health
- Local air quality
- Environment
- School Safety

Environmental Health, Parking and Neighbourhood Wardens teams met up with West Sussex Fire & Rescue Service and West Sussex Police to talk with parents and pupils about the benefits of walking to school.

Figure 2.3 – Walk to School Week 2022

Promotion of Electric Vehicles

In March 2020 HDC approved its Electric Vehicle (EV) Charge Point Strategy which aims to enable the provision of EV infrastructure across the district. In the end of 2021, HDC and WSCC signed a contract with Connected Kerb which will enable a large scale to roll out of electric vehicle chargepoints across the county and the Horsham District within the next decade.

For the Horsham District, this project will see thousands of chargepoints installed on streets, in public sector car parks and on community facilities, helping many drivers without off street parking to go electric. More information can be found in HDC's electric cars and charging points page. In 2022, new rapid electric vehicle charge points installed in Storrington (Figure 2.4) and Billingshurst ⁹.

Horsham District council is replacing or refurbishing five vehicles from the waste/recycling fleet to help reduce carbon emissions¹⁰.

⁹ <https://www.sussexpress.co.uk/news/politics/new-street-sweepers-for-horsham-to-help-reduce-carbon-emissions-3728967>

¹⁰ <https://www.sussexpress.co.uk/news/politics/new-street-sweepers-for-horsham-to-help-reduce-carbon-emissions-3728967>

Figure 2.4 – Electric Vehicle charging point at Storrington Library car park

Sussex Air was successful with their bid for the 2021/2022 Air Quality Grant which included a Taxi Study. The aim of the proposed taxi engagement project is to facilitate a transition to EV vehicles by taxi drivers and it will help the district to build an infrastructure that is convenient, reliable and works for the taxi trade and will drive the progression of taxi licensing policies for EV drivers. The outcomes of the study will be passed to Connected Kerb to follow on with technical and financial feasibility surveys to enable installations at the proposed sites.

In 2022, two mini forums were organized in partnership with Energy Saving Trust. The first in October for licensing officers across Sussex and the second, in November, for Councillors and elected members across Sussex. EST explained how EV work, how to charge them and busted some common myths. They also covered the business case for making the switch to EVs and examined some of the EV market offerings for taxi and private hire drivers. More information about the Taxi Project can be found on [Sussex Air Taxi Project page](#).

Storrington HGV survey

West Sussex County Council and Storrington & Sullington Parish Council undertook a review of the 7.5T weight limit restriction on the B2139 School Hill in Storrington. This restriction is marked “Except for Access” with an additional plate, where this refers solely to any side road access, delivery, or collection point between the restriction signs. The restriction has been in place since 2019 as one of the measures implemented to improve air quality within the designated Air Quality Management Area (AQMA.).

As part of this review, a CCTV traffic survey was undertaken of Goods Vehicles entering from either end of the restriction and an additional CCTV located within the restriction length. These have been used to identify vehicles passing through the restriction between the 12th and 18th September 2022.

After the survey, 51 letters were sent to companies that were breaching the 7.5T weight limit restriction and more signs we installed (Figure 2.5).

Figure 2.5 – Weight restriction signs in Storrington



A27 Improvements (Arundel bypass)

The Road Investment Strategy produced by DfT in March 2015 allocated a budget for the A27 schemes including the A27 Arundel bypass and A27 Worthing and Lancing improvements. The new bypass will feature approximately 8km of dual two-lane carriageway to the south of the existing A27. Starting at Crossbush, the route will reconnect with the existing A27 in the west near the A27/A29 Fontwell (east) roundabout. This is expected to reduce traffic flows through Storrington where longer distance traffic is avoiding the A27 due to congestion. It is also expected to reduce traffic flows through Cowfold where longer distance traffic is avoiding the A27 due to congestion (for example longer distance journeys between Haywards Heath and Chichester).

The Department of Transport has announced that the improvements at Crossbush have been deferred until at least 2025¹¹.

¹¹ <https://nationalhighways.co.uk/our-roads/south-east/a27-arundel-bypass/>

Sussex Air

The Sussex Air Quality Network was established in 1995 to support the local authorities across Sussex in their duties to monitor and report air quality under the Local Air Quality Management (LAQM) framework requirements as set out under Part IV of the Environment Act 1995.

The network was developed by the Sussex Air Quality Partnership, which is made up from the Sussex local authorities and Public Health bodies. Since it was established, the Partnership has developed a comprehensive regional monitoring network, which currently (end 2022) has twelve continuous air quality monitoring stations (AQMS) in operation. The network also incorporates data from five national Automatic Urban and Rural Network (AURN) air quality monitoring stations located in Sussex: this enhances the network to a total of seventeen (17) air quality stations across Sussex (Figure 2.6).

Figure 2.6 - Sussex Air Network



The full list of site information and all “live” and historical data is provided on the Sussex-air website: <http://www.sussex-air.net>.

Air Alert

The [Sussex Air Quality Alert](#) service was established over 15 years ago to provide a Sussex-wide air pollution forecasting and alert service to support vulnerable persons such as those with respiratory and heart conditions and the public. The service was enhanced from March 2022 to provide a more detailed forecasting service to 32 locations across Sussex, a higher spatial resolution than the previous regional approach, which focused on three broad sub-

regional areas. Local alerts in Horsham district are available for Billingshurst, Horsham, Storrington and Steyning.

The Daily Air Quality Indices (DAQI) are provided to identify where exceedances of health-based thresholds occur across the network. The system uses an index divided into four bands to provide more detail about air pollution levels in a simple way; these bandings range from Low, Moderate, High to Very High. The overall air pollution index is calculated from the highest index value of five pollutants: Nitrogen Dioxide, Sulphur Dioxide, Ozone, Carbon Monoxide and Particles < 10µm (PM10). Table 2.2 shows the number of forecast DAQI days in 2022 at sites within Sussex Air monitoring sites.

Table 2.2 - Number of forecast Daily Air Quality Index days in 2022 (March to December) at selected sites.

Alert location	Low (1-3)	Moderate (4-6)	High (7-9)	Very High (10)
Brighton	292	12	1	1
Chichester	286	18	1	1
Eastbourne	290	13	2	1
East Grinstead	290	14	1	1
Hastings	286	17	2	1
Haywards Heath	291	13	1	1
Horsham	289	15	1	1
Worthing	288	16	1	1

Horsham District Council's priorities for the coming year are:

- Publishing the update of the Air Quality Action Plan for Storrington and Cowfold
- Delivery management of the Defra-funded taxi engagement campaign to facilitate a transition to EV vehicles by taxi drivers
- Continued work with Planning Policy and Development Control to secure air quality mitigation from new development
- Continuation and expansion of the monitoring programme, to include monitoring for particulate matter
- Community engagement through participation in the Defra's funded Sussex-Air Community Engagement project
- Improvements to the air quality website and communications to make air quality information more accessible to the public

- Exploring the viability of a Smoke Control Area declaration
- Delivery of the HDC's vehicle replacement programme
- Expansion of Electric Vehicle Network
- Continued work with WSCC to increase the rate of active travel to and from schools
- Continued work with the steering groups on the development and implementation of AQAP measures
- Participation in the next bid for Defra's air quality funding
- Internal applications for s106 funding to facilitate the implementation of actions within the AQAP.

Horsham District Council worked to implement these measures in partnership with the following stakeholders during 2022:

- Planning Officers
- Public Health England
- WSCC highways
- Neighbouring districts local authorities
- Sussex Air Partnership
- Environmental Agency

The principal challenges and barriers to implementation that Horsham District Council anticipates facing are the identification of schemes that are feasible, deliverable and can generate a positive business case and having funding to pursue bigger projects. The achievement of congestion improvement measures in Storrington and Cowfold has been challenging as there are no easy solutions, and many of the solutions fall outside the power of HDC to implement.

Horsham District Council anticipates that the measures stated above and in [Table 2.3](#) will achieve compliance in Cowfold AQMA within the next few years.

Whilst the measures stated above and in [Table 2.3](#) will help to contribute towards compliance, Horsham District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Storrington AQMA. This conclusion is drawn on the basis of current monitoring results from Storrington 19n (Diffusion Tube 47) - the worst-case monitoring location in the Storrington AQMA.

Table 2.3 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated Actual Completion Date	Organisations Involved and Funding	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Air quality and emissions mitigation guidance for Sussex	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2014	Ongoing	HDC	Implementation	1% in the AQMA	Reduction in emissions from transport associated with new development through mitigation and compensation. Assessment of emissions from development required with application. Scheme of mitigation required.	The updated guidance (2021) has been published on HDC website and its application is tested in HDC and neighbouring districts within Sussex. It provides advice to developers on how to address local air quality when making a planning application.	Sussex Air partners are reviewing the guidance. The development of the district Local Plan is paused.
2	Electric vehicle charging project	Promoting Low Emission Transport	Other	2020	2031	HDC / WSCC	Implementation	Small initial impact on emissions but aim to facilitate the uptake of more LE vehicles.	Increase % of charging points installed on streets	Contract with Connected Kerb which will enable the large scale to roll out of thousands of public electric vehicle chargepoints across the district within the next decade was signed in 2021.	Proposed locations in phase one of the on-street electric vehicle (EV) chargepoint rollout in West Sussex have been revealed, and can be seen on Connected Kerb's website .
3	Taxi Study	Promoting Low Emission Transport	Taxi emission incentives	2021	2023	HDC / WSCC / Sussex Air Defra AQ Grant	Planning	Small initial impact on emissions but aim to facilitate the uptake of more LE vehicles.	Increase % of ULEV's by Taxis and private hire vehicles	Bid for the air quality grant was successful. In 2022, Energy Saving Trust's Local Government Support Team offered a mini forum for taxi licensing officers and elected members of Sussex to explain more about electric vehicles	Taxi engagement campaign to facilitate a transition to EV vehicles by taxi drivers across Sussex.
4	Community Engagement	Public Information	Via other mechanisms	2021	2023	HDC / Sussex Air Defra AQ Grant	Planning	No direct impact on emission reductions	Awareness raising events, attending community events with interactive stalls, online training and knowledge building events for community groups and distribution of NO2 diffusion tubes.	Bid for the air quality grant was successful.	
5	Replacement of HDC vehicle fleet	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2013	Ongoing	HDC	Ongoing	Small initial impact on emissions but aim to facilitate the uptake of more LE vehicles.	Introduction & increase % of ULEV's into Council's vehicle fleet.	Replacement of HDC Neighbourhood Wardens vehicle fleet from petrol to hybrid vehicles. Vehicles that ran on diesel were switched to sustainable-sourced Hydrogenated Vegetable Oil (HVO) fuel	
6	Sussex Air website	Public Information	Via the Internet		Ongoing	Sussex Air / HDC	Ongoing	No direct impact on emission reductions but optimising use of monitoring network data	Increase access to the website	Information on how to help improve air quality, Clean Burn Sussex Project, health advice, health effects and real time air quality information	
7	Walking and Cycling Measures	Promoting Travel Alternatives	Other		Ongoing	HDC / WSCC	Planning	Their direct impact on air quality issues in the short to medium are not likely to be significant, however they form part of a wider	Increase in active travel	Potential WSCC Local Transport Improvement Programme (LTIP) walking and cycling path improvement identified to link Water Lane with Hurston Lane using Riverside Walk and Public Rights of Way	Proposals for the Water Lane to Hurston Lane improvement require the support of local schools to progress. WSCC no longer has dedicated Safer Routes to School officers to

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated Actual Completion Date	Organisations Involved and Funding	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
								approach of promoting a culture of using alternative travel options to single occupancy car use			focus on school travel plans but supports schools with advice on travel planning when approached.
8	AirAlert	Public Information	Via other mechanisms	2006	Ongoing	Sussex Air / HDC	Ongoing	No direct impact on emission reductions but optimising use of monitoring network data for health associated benefits.	Increase in subscriptions to pollution alert service within Horsham district.	Health study started in 2006. Increase in subscriptions. Cold and heat alerts added to service over the recent years. In 2022 the Service was upgraded to include more areas	
9	[Storrington] Review on-street car parking and loading bay provision	Traffic Management	UTC, Congestion management, traffic reduction	2013		HDC/WSCC	On Hold	1% in the AQMA	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	Some issues related to the scheme: The potential impact of congestion related air quality issues associated with deliveries and parking is not known; Potential sensitivities regarding changes to availability of parking; The need to meet the needs of local businesses requiring deliveries.	A more detailed air quality assessment of changes to and re-designation of parking-bays and loading bays could be investigated further. Progression of a review will likely require local support and identification of resource to support this.
10	[Storrington] Installation of CCTV equipment at the mini-roundabout of School Hill and Manley's Hill to enforce the weight restriction for HGVs accessing School Hill.	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2019		HDC/Storrington & Sullington Parish Council	Planning	1% in the AQMA	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	WSCC have no powers to use ANPR cameras to issue Penalty Charge Notice and the cost estimates for CCTV ANPR camera equipment obtained in 2020 were found prohibitively high.	WSCC would have to apply for Part 6 powers, but they do not have plans to do this before June 2023. In 2022, WSCC and the Parish Council reviewed this scheme (Storrington HGV Survey).
11	[Storrington] Advisory lorry route signage improvements within the Storrington AQMA	Traffic Management	Other	2013	Ongoing	HDC/ WSCC	Completed	Unknown but expected low	Improved traffic flow / reduction in traffic congestion.	Advisory signage already exists for lorry traffic entering Storrington from the A283 Washington Road needing to access "Water Lane Trading estate", whilst all traffic for West Chiltington and Thakeham are advertised to use Water Lane; A voluntary agreement exists for Waitrose deliveries to access Waitrose via Water Lane, Thakeham Road, and School Hill, and signs have been installed to support this.	WSCC undertook a review in of the effectiveness of current signs in relation to the lorry routing in particular to the east of Storrington, and also in relation to the weight restriction on School Hill highlighted above. More signs were installed.
12	[Storrington] Freight Delivery Partnership	Promoting Low Emission Transport	Public Vehicle Procurement – Prioritising uptake of low emission vehicles	2013	Ongoing	HDC / WSCC	Ongoing	Unknown but expected low	Emission reductions sought through partnership working with local businesses to minimise impact of deliveries etc. on the village.	Encourage use of WSCC preferred lorry route rather than A283 through Storrington AQMA; investigate opportunities for local and shared deliveries; Encourage use of low emission delivery	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated Actual Completion Date	Organisations Involved and Funding	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
										vehicles to local stores within AQMA, provide links to CNG refuelling strategy	
13	[Storrington] Community minibus	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2013	Ongoing	HDC / WSCC	Ongoing	1 % in the AQMA	Enhance existing Storrington minibus service by replacing existing diesel fleet with Low /Zero emission vehicles.		Liaise with local bus operators to improve the emissions standards of buses operating through the AQMA
14	[Storrington] Improve bus service and information	Alternatives to private vehicle use	Other	2013	Ongoing	HDC / WSCC	Ongoing	1 % in the AQMA	Work with local bus service to utilise best available Euro standard vehicles for AQMA routes. Promote use of transport /travel plans to increase use of sustainable transport.		Subside strategic bus services to village schools; Investigate provision of local real-time bus information at bus stops to promote use
15	[Storrington and Cowfold] A27 Improvements (Arundel Bypass)	Traffic Management	Strategic highway improvements, Re-prioritising Road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2013	Unknown	Highways England/ WSCC	Planning	2.5% in the AQMA	Reduction in nitrogen dioxide concentrations. Improved traffic flow / reduction in traffic congestion.	The consultation on the latest designs for the A27 Arundel Bypass happened in the first quarter of 2022	If approved, construction of the Arundel bypass scheme is currently scheduled to commence in 2024 with completion scheduled for 2027.
16	[Storrington and Cowfold] A27 Improvements (Worthing & Lancing)	Traffic Management	Strategic highway improvements, Re-prioritising Road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2015	Unknown	Highways England/ WSCC	Planning	2.5% in the AQMA	Reduction in nitrogen dioxide concentrations. Improved traffic flow / reduction in traffic congestion.	Highway England have been working closely with key stakeholders to identify a package of potential improvements to meet the revised objectives in the government's Road Investment Strategy 2 (RIS2): 2020 to 2025, to improve the capacity and flow of traffic on the A27 from Worthing to Lancing.	Proposed improvements could begin in 2025 and be completed by 2027.
17	Strategic improvements to the A24 Worthing-Horsham corridor	Traffic Management	Strategic highway improvements, Re-prioritising Road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2015	Unknown	Highways England / WSCC	Planning	Unknown but expected low-medium	Reduction in nitrogen dioxide concentrations. Improved traffic flow / reduction in traffic congestion.	WSCC has undertaken a feasibility study of the A24 corridor between Worthing and Horsham including a package of traffic junction and sustainable transport measures. These proposals intended to encourage longer distance traffic flows to stay on the A27, A280 and A24 corridors for journeys for example to and from the south west and north east of the county, and to avoid use of less suitable routes such as the B2139/A283 through Amberley and Storrington.	This scheme is in the early stages of development and requires the further develop of designs, consultation, development of business case and securing of funding to deliver the package of measures.

2.3 PM2.5 – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of PM_{2.5} (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM_{2.5} has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 sets the target to ensure that the annual mean concentration of PM_{2.5} in ambient air is equal to or less than 10 micrograms per cubic metre (µg/m³) by 31st December 2040. Additionally, the Environmental Improvement Plan 2023 for England set interim targets that by January 2028, the annual average of 12µg/m³ for PM_{2.5} is not exceeded at any monitoring station.

In support of these national targets local authorities are encouraged to review and assess PM_{2.5} and take actions where possible to reduce the sources and emissions of these particulates. These are national targets and are non-binding targets for local authorities.

The Environment Act 2021 established a legally binding duty on Government to set an annual mean target on the level of fine particulate matter (PM_{2.5}), in addition to a longer-term target, by 31st October 2022 for England. The Act states:

“Whilst the responsibility for meeting the PM_{2.5} targets sits with national government; local authorities have a role to play in delivering reductions in PM_{2.5}.”

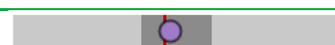
and

“Local authorities in England will need to work towards reducing PM_{2.5} in their area. Action to tackle PM₁₀/NO_x can be expected to contribute towards this.”

The district reported a population-weighted concentration of 6.8ug/m³ for the period of 2020 (Table 2.). PM_{2.5} levels are used to calculate an indicator in the Public Health Outcomes Framework (PHOF) – Fraction of Mortality Attributable to Particulate Matter Pollution. This indicator is calculated for each local authority in England, and it intended to enable Directors of Public Health to prioritise action on air quality in their local area. The estimated fraction of mortality attributable to long term exposure to current (2021) levels of anthropogenic PM_{2.5} was 5.1% in Horsham district. This places the district mid-way between the areas with the lowest estimated mortality burden in England (the fraction of around 3.2%) and

urbanised areas (London) which show the highest rates of mortality attributable to anthropogenic PM2.5 (7.2%). The 2021 data is used as it is the latest dataset made available at the time of writing.

Table 2.3 – Public health profiles - Horsham¹²

Indicator	Period	Horsham	Region	England	Worst/ Lowest	England	Best/ Highest
		Value	Value	Value		Range	
Fraction of mortality attributable to particulate air pollution (old method)	2021	5.1%	5.4%	5.5%	3.2%		7.2%
Air pollution: fine particulate matter (historic indicator)	2020	6.8	7.4	6.9	10.0		3.5

The PM2.5 point sources in Horsham district identified in the National Atmospheric Emission Inventory are:

- UK Waste Management Ltd.
- Viridor Waste Disposal Ltd
- Wienerberger Limited
- Ambion Brick Co Ltd
- Baggeridge Brick Plc
- Ibstock Brick Ltd

In agreement with the principles of the Air Quality and Emissions Mitigation Guidance for Sussex (2021) all new developments are required to implement mitigation/offsetting measures commensurate with their size/predicted emissions of NO2 and PM2.5.

Research has shown that wood burning is a large contributor to primary emissions of PM2.5. Unsurprisingly, solid fuel burning has had a significant contribution to the concentrations of PM2.5 in the South East region. That contribution has been quantified by King’s College at 6 to 9% annually, averaged across urban areas. In 2018 HDC was successful in securing Defra’s funding towards the Clean Burn Sussex project, aimed at the promotion of least

12

<https://fingertips.phe.org.uk/search/air%20pollution#page/1/gid/1/pat/6/ati/101/are/E07000227/iid/30101/age/230/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1>

polluting fuels and stoves. The project was a collaboration of 15 authorities in Sussex to raise awareness about domestic burning and promote better burning methods and choices.

A dedicated website for clean burning (<https://sussex-air.net/clean-burn/>) has been in operation from November 2019. Summary findings from the project are available for view on the website.

PM_{2.5} has not been monitored in the district for the past several years, but in the first quarter of 2022, Horsham District was chosen by Defra to take part in Particulate Matter study with a duration of one year. Three new PM analysers were installed in Storrington station in March 2022 for scientific research purpose, which includes a BAM 1020, a Palas Fidas 200 and a PM reference method. These analysers provided data for both PM₁₀ and PM_{2.5}.

Sussex air was successful on Defra's Air Quality Grant and additional particulate monitoring will be installed across Sussex, including Horsham, to further enhance the database and provide a more detailed and substantive understanding of particulate concentrations across the region. This data will be used in our public engagement projects.

Horsham District Council is taking the following measures to address PM_{2.5}:

- Expand PM_{2.5} monitoring across the district
- Joining Defra's Particulate Matter research study (with a duration of one year). New analysers were installed in Storrington in April 2022.
- Review of Air Quality and Emissions Mitigation Guidance for Sussex.

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

This section sets out the monitoring undertaken within 2022 by Horsham District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Horsham District Council undertook automatic (continuous) monitoring at 3 sites during 2022. Table A.11 in Appendix A shows the details of the automatic monitoring sites. The page 44 presents automatic monitoring results for Horsham District, with automatic monitoring results also available through the UK-Air and Sussex Air website.

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

HDC is a member of the Sussex Air Quality Partnership (Sussex Air) which benefits from the co-ordinated monitoring of air pollutants across the region. The Sussex Air Quality Network is made up of local authority owned AQMS and sites that are Automatic Urban and Rural (AURN) AQMS operated by the Environment Agency on behalf of Defra. There were 12 LA AQMSs in the network and 5 AURN AQMS in the network in 2022. The network is managed and co-ordinated by Bureau Veritas, on behalf of Sussex Air and they provide data calibration and ratification of results. All data from the network is published at www.sussex-air.net.

3.1.2 Non-Automatic Monitoring Sites

Horsham District Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 42 sites during 2022 with 49 diffusion tubes. 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: Map(s) of Monitoring Locations and AQMAs. 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.

All diffusion tubes have relevant exposure within 10m of the kerbside, except for tubes:

- 9 (Horsham 6N) – receptor at Rusper Road located 11m from kerbside
- 10 (Horsham 7N) – receptor at Warnham Road located 12m from kerbside
- 38 (Storrington 14) – receptor at Washington Road located 19m from kerbside

Triplicate tubes have been maintained at all three automatic analyser sites:

- HO2 Horsham Park Way (junction of Park Street and Park Way in Horsham)
- HO4 Storrington AURN (junction of Manley's Hill and Meadowside in Storrington)
- HO5 Cowfold (Bolney Road/The Street, Cowfold)

Diffusion tube changes in the past 5 years:

- DT (13, 14) - Storrington 1,2 at Manley's Hill, Storrington used to be duplicate from 2008 until 2018
- In 2019, DT14 was moved to Old Queen's Head, East Street, Horsham
- In 2020, DT14 was moved to Oakfield Road, Cowfold
- Horsham used to monitor Swan Corner, Station Road in Pulborough (Pulborough 1) from 2008 until 2019
- In 2020 DT 26 moved on to Albany House, Bishopric, Horsham

There were no changes to the diffusion tube monitoring survey in 2022.

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 (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³.

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 2022 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 NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

All Sussex-Air network sites that achieved the necessary data capture showed results that were compliant with the relevant air quality objectives and standards for nitrogen dioxide (NO₂) long term and short-term objectives. The annual mean concentrations for NO₂ have showed a general downward trend between 2018 and 2022.

In 2022 there were no monitoring sites where the annual mean NO₂ objective was exceeded in the district. But one site (47 – Storrington 19n) located within the Storrington AQMA, measured concentrations within 10% of the annual mean objective (i.e. 36µg/m³ or more). Which demonstrates that Storrington AQMA is still required.

Figure A.1 to Figure A.6 in Appendix A: Monitoring Results show the trends in annual mean NO₂ concentrations measured at the diffusion tube and continuous monitoring sites in the district over the monitoring period 2018-2022. The results of diffusion tube monitoring overall indicate a decrease of 5% in NO₂ concentrations in 2022 as compared to the previous year, the decrease is more significant, -15%, in relation to 2019 (before the pandemic). All the long-term sites show a continuing overall downward trend in measured concentrations of NO₂ over the last five years, which applies both to roadside and background locations. This can be attributed to decreasing background concentrations and is also indicative of a gradual improvement in fleet emissions

Horsham Town Sites

Data capture was good (above 75%) for most sites during 2022, but for site 26 (Horsham 12) annualisation was required (Table C.1).

Horsham town sites showed an average decrease of 7% in 2022 in relation to 2021. The highest annual mean NO₂ concentration of 29.7µg/m³ was recorded at monitoring site 26 (Horsham 12), located on Albion Way, a partial ring road connecting major routes in and out of Horsham Town Centre.

The analysis of hourly mean concentrations at monitoring station HO2(Figure A.6) by day of the week indicates that the highest concentrations were recorded during morning and afternoon traffic peaks throughout the working week from Monday to Friday. The highest concentrations in the year were recorded in March and December, of 21.4µg/m³ and 24.8µg/m³, respectively.

Cowfold Sites

Data capture was good (above 75%) all Cowfold sites during 2022, and no annualisation has been required.

Cowfold sites have been relatively constant in relation to 2021, but in relation to 2019 (before the pandemic), there was a decrease of 14%. The sites located within the AQMA recorded an overall decrease of 13% in relation to 2019. There wasn't any breach of annual mean NO₂ objective in the past four years, although site 37 (Cowfold 7n) reached a concentration of 36.1µg/m³ in 2019, which is within 10% of the annual mean objective.

The analysis of hourly mean concentrations at monitoring station HO4(Figure A.6) by day of the week indicates that the highest concentrations were recorded during morning and afternoon traffic peaks throughout the working week from Monday to Friday. The highest concentrations in the year were recorded in January, November, and December, of 27.8, 27.3 and 31.1µg/m³, respectively.

It is expected that the Cowfold AQMA will be revoked in the coming years. However, pollutant concentrations may vary significantly from one year to the next, and the Local Air Quality Management Technical Guidance (TG-22) states that the revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as evidenced through monitoring. Because the pandemic impacted levels of NO₂ in the past two years, and it cannot be ascertained if this will lead to a change in behaviour or if concentrations will be back to pre-pandemic levels. It was decided that meanwhile the Cowfold AQMA is still required.

Storrington Sites

Data capture was good (above 75%) for most sites during 2022, but for site HO4 annualisation was required (Table C.1).

Storrington sites showed a decrease of 3% in 2022 in relation to 2021, and an overall decrease of 14% in relation to 2019 (before the pandemic). The sites located within the AQMA recorded a 2% decrease in relation to 2021, and an overall decrease of 15% in relation to 2019. Whilst the AQMA encompasses the whole High Street in the town centre, in the recent years the only area in exceedance of the annual mean objective for NO₂ has been the mini roundabout of Manley's Hill and School Hill, as shown by the results at site 47 (Storrington 19). Site 47 and site 13 (Storrington 1) recorded the highest annual mean NO₂ levels for the year (38.1/m³ and 32.9µg/m³). Monitoring sites 13, 34, 38, 47 have reported values within 10% of the annual mean objective or higher in the past five years.

The analysis of hourly mean concentrations at monitoring station HO5 (Figure A.6) by day of the week indicates that the highest concentrations were recorded during morning and afternoon traffic peaks throughout the working week from Monday to Friday. The highest concentration in the year was recorded in January (25.4µg/m³).

Remaining Sites

The monitoring sites in the towns of Billingshurst, Henfield, Pulborough, Southwater and Steyning have remained below the objective in the past five years. The concentrations measured in Billingshurst, Henfield and Southwater have remained below 28 over the last five years.

HDC used to monitor NO₂ at Swan Corner, Station Road, Pulborough, but monitoring at this location ceased in 2020. Monitoring at DT27 (Pulborough 2) have remained below 21 over the last five years.

3.2.2 Particulate Matter (PM₁₀)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40µg/m³.

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

An automatic TEOM particulate monitor has been permanently located at Park Way in Horsham town centre for the past twenty years, giving 15-minute measurements of particulate matter concentrations. In the end of April 2022 three particulate matter analysers were installed in Storrington as part of Defra's Particulate Matter research study, details of data collections and ratification are presented in Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC.

Data capture was above 75% at Park Way (HO2) and Storrington (HO4) sites in 2022 and no annualisation has been required.

Automatic monitoring of PM10 at the Horsham Park Way site indicated that both the annual and daily mean objectives for PM10 were complied with in 2022 and in the previous five years of monitoring. The annual mean PM10 concentration recorded in 2022 showed an increase of 10% in relation to the previous year. Annual mean concentrations of PM10 at Park Way (HO2) and across Sussex Air network have been relatively constant since 2018.

WHO recommended 2021 Air quality guidelines level for PM10 annual mean is 15µg/m³. Horsham Park Way (HO2) has exceeded the 15µg/m³ annual mean for coarse particulate matter (PM10) recommended by WHO, but Storrington AURN (HO4) meets the level for PM10.

3.2.3 Particulate Matter (PM2.5)

In the end of April 2022 three particulate matter analysers were installed in Storrington as part of Defra's Particulate Matter research study, details of data collections and ratification are presented in Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC.

Data capture was above 75% at Storrington (HO4) in 2022 and no annualisation has been required. Table A.8 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past five years.

The annual mean concentrations of PM_{2.5} at Horsham Park Way (HO2) were estimated from the PM10 measurements, as per method described in Box 7.7 of Technical Guidance TG (22). Annual mean concentrations of PM_{2.5} across Sussex Air network have been relatively constant since 2018.

With regard to the fine particulates 2040 target annual mean, estimated concentrations at Horsham Park Way (HO2) sites was above the annual mean 10µg/m³ limit. The 2040 target is not exceeded at Storrington AURN (HO4).

The estimated concentrations of PM2.5 at Horsham Park Way (HO2) and Storrington (HO5) were above the WHO-recommended guideline value of 5µg/m³ taken as annual mean in 2022.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
HO2	Horsham Park Way	Roadside	517485	130590	NO ₂ , PM ₁₀	No	Chemiluminescence (APNA-370); TEOM	8.9	1.5	3
HO4	Storrington AURN	Roadside	509083	114198	NO ₂ , PM ₁₀ , PM _{2.5}	No	Chemiluminescence (Thermo 32i); FIDAS200	9.6	4.6	3.3
HO5	Cowfold	Roadside	521356	122553	NO ₂	Yes. Cowfold AQMA	Chemiluminescence (ML9841B)	4	6.5	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) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
Billingshurst Sites										
28	Billingshurst 1	Roadside	508649	125857	NO ₂	No	1.0	1.5	No	2.2
Cowfold Sites										
14	Cowfold 9	Roadside	521584	122457	NO ₂	No	4.5	1.0	No	2.0
12, 20	Cowfold 1,2	Roadside	521324	122610	NO ₂	Yes, Cowfold AQMA	2.5	1.7	No	2.7
21	Cowfold 3	Roadside	521267	122677	NO ₂	Yes, Cowfold AQMA	9.7	2.0	No	2.7

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
22	Cowfold 4	Roadside	521311	122704	NO ₂	No	9.3	2.0	No	2.4
35	Cowfold 5n	Roadside	521070	122706	NO ₂	Yes, Cowfold AQMA	23.0	3.6	No	2.5
36	Cowfold 6n	Roadside	521309	122248	NO ₂	No	3.0	1.8	No	2.2
37	Cowfold 7n	Roadside	521460	122473	NO ₂	Yes, Cowfold AQMA	2.0	1.1	No	2.2
43	Cowfold 8n	Urban Background	521411	122667	NO ₂	No	7.0	0.3	No	2.0
44, 45, 46	Cowfold AU A/B/C	Roadside	521356	122552	NO ₂	Yes, Cowfold AQMA	4.0	6.5	Yes	2.0
Henfield Sites										
2	Henfield 1n	Roadside	521492	115907	NO ₂	No	0.0	2.0	No	2.0
Horsham Sites										
1	Horsham 1N	Roadside	517489	130607	NO ₂	No	3.5	2.0	No	2.2
3	Horsham 3N	Urban Background	516008	130480	NO ₂	No	7.6	1.5	No	2.9
4	Horsham 4N	Urban Background	517680	130069	NO ₂	No	9.8	1.2	No	2.5
5, 6, 7	Park Way	Roadside	517489	130580	NO ₂	No	8.9	1.5	Yes	3.0
8	Horsham 5N	Roadside	518239	131137	NO ₂	No	9.6	1.4	No	2.4
9	Horsham 6N	Roadside	518654	132482	NO ₂	No	11.2	1.5	No	2.6
10	Horsham 7N	Roadside	516952	132215	NO ₂	No	12.0	2.0	No	2.2
11	Horsham 8N	Roadside	516646	130221	NO ₂	No	8.0	1.6	No	3.0
23	N. Horsham 1N	Roadside	517702	133570	NO ₂	No	4.9	1.9	No	2.4
24	N. Horsham 2N	Roadside	517476	134013	NO ₂	No	5.5	1.0	No	2.8
26	Horsham 12	Roadside	516909	130755	NO ₂	No	3.5	1.5	No	2.0
48	Horsham 9N	Roadside	518054	131155	NO ₂	No	1.0	1.5	No	2.0
Pulborough Sites										
27	Pulborough 2	Roadside	505288	118630	NO ₂	No	1.8	1.5	No	3.0
Southwater Sites										
49	Southwater 1	Roadside	515639	126599	NO ₂	No	1.0	1.5	No	2.0
Steyning Sites										
25	Steyning 4N	Kerbside	517642	111169	NO ₂	No	1.5	0.9	No	2.7

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
Storrington Sites										
13	Storrington 1	Roadside	508960	114270	NO ₂	Yes, Storrington AQMA	2.5	1.1	No	3.0
15	Storrington 3	Roadside	508935	114297	NO ₂	Yes, Storrington AQMA	0.0	1.2	No	2.0
16	Storrington 4	Roadside	508832	114272	NO ₂	Yes, Storrington AQMA	2.8	2.2	No	3.0
17	Storrington 5	Roadside	508742	114288	NO ₂	Yes, Storrington AQMA	1.9	1.9	No	3.5
18	Storrington 6	Roadside	508396	114449	NO ₂	No	7.7	1.9	No	2.4
19	Storrington 7	Roadside	508338	114374	NO ₂	No	6.7	1.6	No	3.0
29, 30, 31	Storrington 8, 9,10 AURN	Roadside	509083	114198	NO ₂	No	9.6	4.6	Yes	3.3
32	Storrington 13n	Roadside	508675	114306	NO ₂	Yes, Storrington AQMA	0.5	3.0	No	2.2
33	Storrington 12n	Roadside	508598	114323	NO ₂	Yes, Storrington AQMA	7.0	2.3	No	2.6
34	Storrington 11n	Roadside	508511	114365	NO ₂	Yes, Storrington AQMA	1.0	3.0	No	3.0
38	Storrington 14n	Roadside	509319	114160	NO ₂	No	20.0	0.9	No	2.6
39	Storrington 16n	Roadside	508966	114356	NO ₂	No	0.0	1.3	No	2.6
40	Storrington 15n	Roadside	509103	114532	NO ₂	No	12.0	1.7	No	2.2
41	Storrington 17n	Urban Background	508677	114149	NO ₂	No	1.0	1.5	No	2.2
42	Storrington 18n	Roadside	508215	114348	NO ₂	No	5.0	1.9	No	2.2
47	Storrington 19n	Roadside	508945	114268	NO ₂	Yes, Storrington AQMA	0.0	1.0	No	2.0

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 NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2022 (%) ⁽¹⁾	2018	2019	2020	2021	2022
HO2	517485	130590	Roadside	78.2	25.4	24.4	18.8	21.1	17.7
HO4	509083	114198	Roadside	70.0	23	22	17.4	20.1	17.6
HO5	521356	122552	Roadside	99.5	28.4	23.6	23.4	20.3	21.0

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.

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ 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 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 NO2 Monitoring Results: Non-Automatic Monitoring (µg/m3)

Diffusion Tube ID	Location	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2022 (%) ⁽¹⁾	2018	2019	2020	2021	2022
Billingshurst Sites										
28	96 High Street, Billingshurst	508649	125857	Roadside	99.7	27.0	26.2	23.8	22.2	20.3
Cowfold Sites										
14	2 Oakfield Road, Cowfold	521584	122457	Roadside	89.4			19.3	18.3	18.7
12, 20	Olde House, The Street, Cowfold	521324	122610	Roadside	99.7	35.4	31.6	26.8	26.5	26.4
21	6 Margaret Cott, A272, Cowfold	521267	122677	Roadside	99.7	31.8	30.7	24.6	26.5	25.5
22	Horsham Road, Cowfold(Trelawny House, A281, Cowfold)	521311	122704	Roadside	99.7	31.4	26.8	22.5	22.2	20.3
35	Thorndon, Cowfold (Junction Station Road/Thornden. Station Road, Cowfold)	521070	122706	Roadside	99.7	24.9	22.5	20.4	21.3	20.3
36	Millers Cott, Henfield Road, Cowfold	521309	122248	Roadside	91.9	25.1	23.5	21.7	20.5	20.3
37	3 Huntscroft Gardens, Bolney Road, Cowfold	521460	122473	Roadside	99.7	42.4	36.1	30.2	31.2	31.7
43	5-6 Fairfield Cottages, Cowfold	521411	122667	Urban Background	99.7	13.5	11.6	10.9	10.5	10.3
44, 45, 46	HO5 co-located, Bolney Road/The Street, Cowfold	521356	122552	Roadside	99.7	26.6	23.6	19.2	19.9	20.0
Henfield Sites										
2	Jct High Street/Cagefoot Lane, Henfield	521492	115907	Roadside	99.7	25.2	22.2	19.9	20.9	18.2
Horsham Sites										
14 (Horsham 11n)	Old Queen's Head, East Street	517672	517672	Roadside	N/A	-	26.6	-	-	-
1	Park Way, Horsham	517489	130607	Roadside	99.7	31.2	26.4	21.6	23.2	22.6

Diffusion Tube ID	Location	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2022 (%) ⁽¹⁾	2018	2019	2020	2021	2022
3	69 Hillside, Horsham	516008	130480	Urban Background	90.5	12.2	12.5	9.5	9.9	8.8
4	45 Gorings Mead, Horsham	517680	130069	Urban Background	99.7	11.6	10.2	9.1	9.0	8.7
5, 6, 7	Park Way co-located, AQM Horsham	517489	130580	Roadside	91.9	24.3	22.1	18.4	19.9	19.6
8	Harwood Rd, Horsham	518239	131137	Roadside	99.7	28.5	25.2	21.0	22.7	21.6
9	130 Rusper Rd, Horsham	518654	132482	Roadside	82.1	23.2	21.5	18.2	19.5	17.6
10	30 Mill House, Warnham Rd, Horsham	516952	132215	Roadside	99.7	27.4	23.0	18.6	19.4	18.9
11	54 Worthing Rd, Horsham	516646	130221	Roadside	91.9	24.8	21.9	19.1	20.7	19.9
23	Home Farm, Langhurstwood Road, Horsham	517702	133570	Roadside	99.7	21.8	19.3	16.8	17.6	13.9
24	Greylands Farm, Langhurstwood Road, Horsham	517476	134013	Roadside	92.5	18.3	17.3	15.8	14.6	14.1
26	Albany House, Bishopric, Horsham	516909	130755	Roadside	67.9	-	-	30.5	33.4	29.7
48	North St/Foundry Lan, Horsham	518054	131155	Roadside	99.7	31.3	26.5	22.1	23.3	24.1
Pulborough Sites										
26 (Pulborough 1)	Swan Corner, Station Road	504584	118568	Kerbside	N/A	34.2	28.3	-	-	-
27	42A Lower Street, Pulborough	505288	118630	Roadside	99.7	20.7	17.9	15.7	16.7	16.1
Southwater Sites										
49	Worthing Rd, Southwater	515639	126599	Roadside	99.7	27.3	23.5	21.1	21.7	19.4
Steyning Sites										
25	High St, Steyning	517642	111169	Kerbside	81.0	21.3	20.1	16.2	19.0	18.5
Storrington Sites										

Diffusion Tube ID	Location	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2022 (%) ⁽¹⁾	2018	2019	2020	2021	2022
13	Manleys Hill, Storrington	508960	114270	Roadside	99.7	44.7	38.9	31.6	34.3	32.9
15	3 School Hill, Storrington	508935	114297	Roadside	99.7	32.9	28.3	23.3	24.8	23.7
16	22 High Street, Storrington	508832	114272	Roadside	99.7	35.8	29.7	25.5	25.9	26.7
17	2 West Street, Storrington (Post Office)	508742	114288	Roadside	99.7	26.4	23.3	18.7	19.9	19.0
18	1-4 Holly Court, Pulborough Rd Storrington	508396	114449	Roadside	99.7	22.3	18.8	14.8	17.1	17.4
19	The Willows, Amberley Rd, Storrington	508338	114374	Roadside	99.7	20.9	18.4	15.6	17.6	17.7
29, 30, 31	Manleys Hill – HO4 Co-located	509083	114198	Roadside	99.7	26.6	22.9	20.5	21.7	21.7
32	18 West Street, Storrington	508675	114306	Roadside	99.7	29.9	25.6	21.4	23.1	23.0
33	3 Rectory Cott, Storrington	508598	114323	Roadside	99.7	28.6	26.0	20.0	23.0	22.4
34	53 West St, Storrington	508511	114365	Roadside	99.7	37.8	29.8	25.0	26.5	25.9
38	Cobden, Washington Rd, Storrington	509319	114160	Roadside	99.7	38.5	33.4	27.8	25.8	26.3
39	Mill Parade, Waitrose car park, Storrington	508966	114356	Roadside	99.7	24.0	21.6	18.9	19.2	18.4
40	Fryern Road, Storrington	509103	114532	Roadside	99.7	18.9	16.9	14.9	15.4	14.6
41	33 Church Street, Storrington	508677	114149	Urban Background	99.7	13.3	11.2	9.8	10.0	9.6
42	Barges End, 20 Amberley Road, Storrington	508215	114348	Roadside	99.7	19.1	16.0	13.4	18.1	15.4
47	Manleys Hill, Storrington – opp. Storrington1	508945	114268	Roadside	99.7	50.6	47.7	38.4	39.6	38.1

- ☒ 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 $\mu\text{g}/\text{m}^3$.

Exceedances of the NO_2 annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO_2 annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.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 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 NO2 Concentrations: Horsham

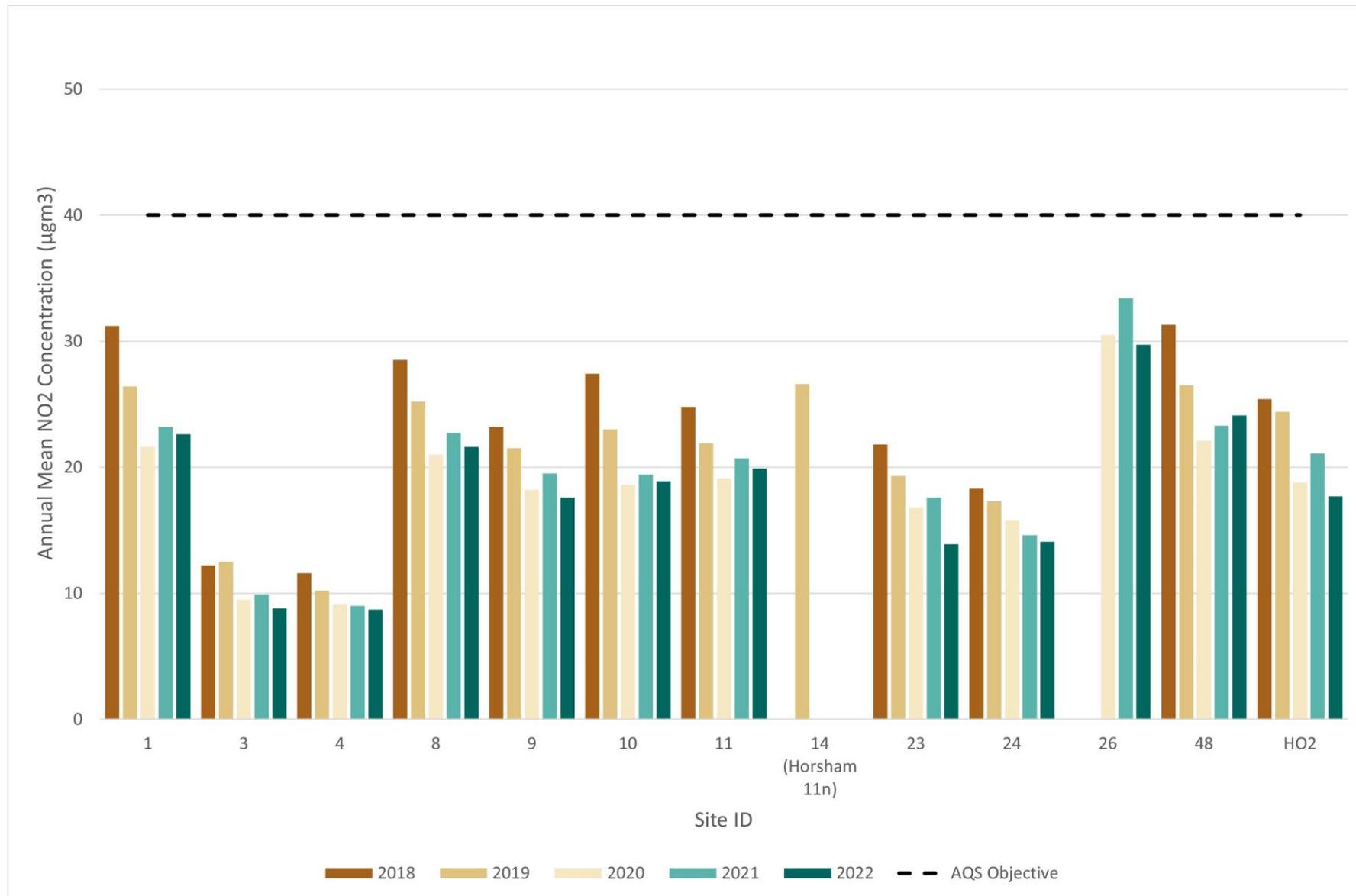


Figure A.2 – Trends in Annual Mean NO2 Concentrations: Cowfold

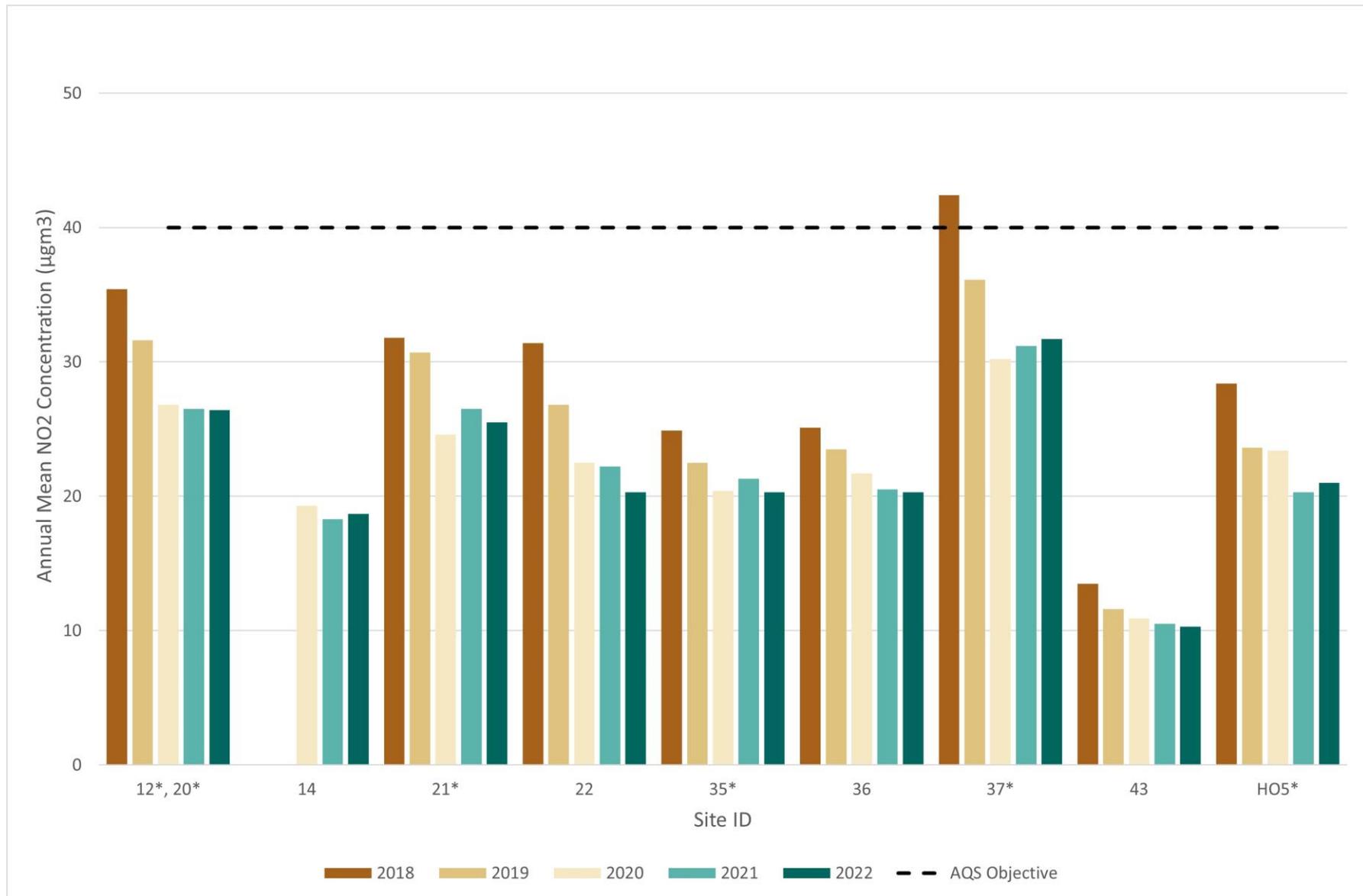


Figure A.3 – Trends in Annual Mean NO2 Concentrations: Storrington

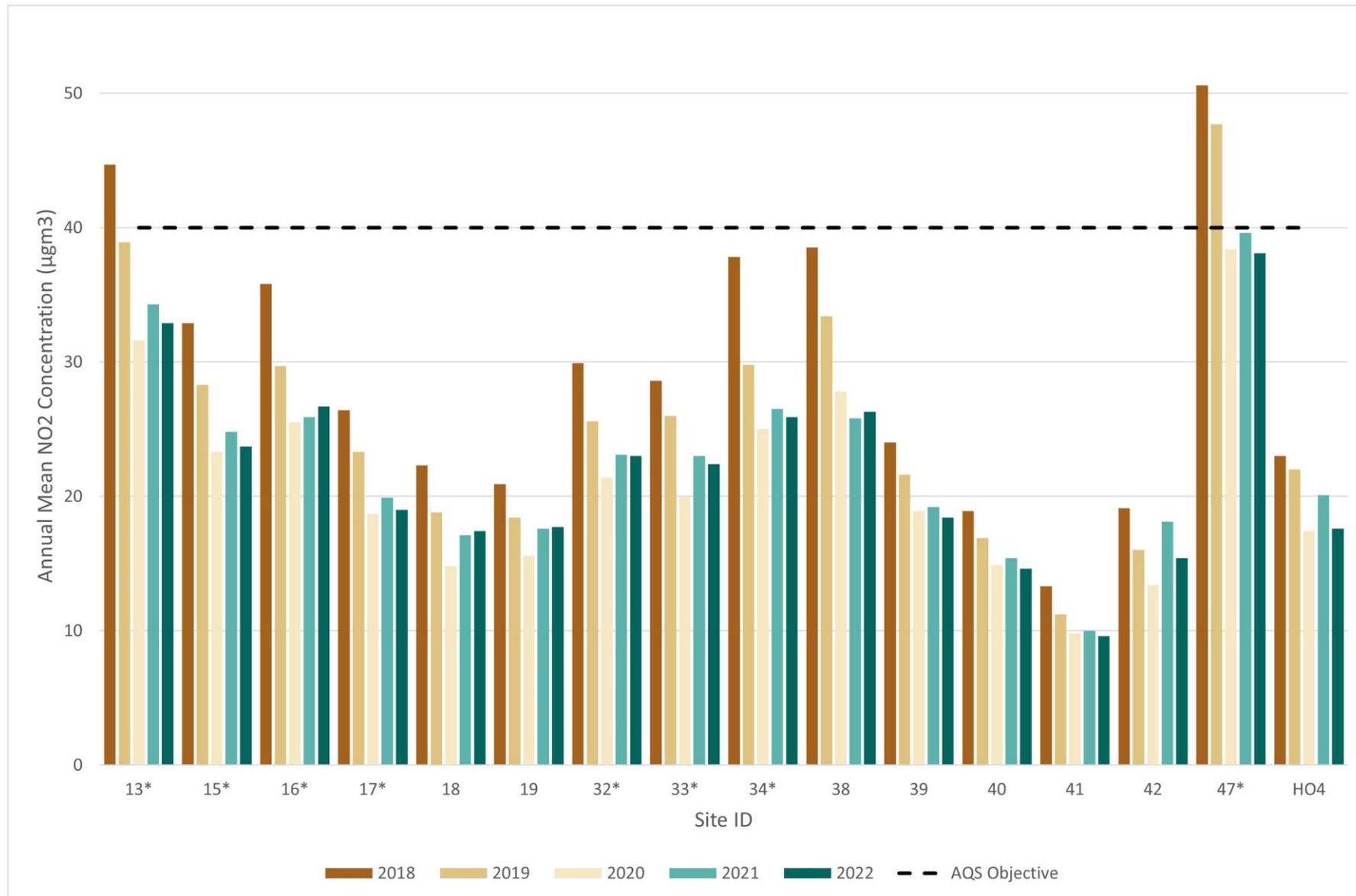


Figure A.4 – Trends in Annual Mean NO2 Concentrations: Pulborough

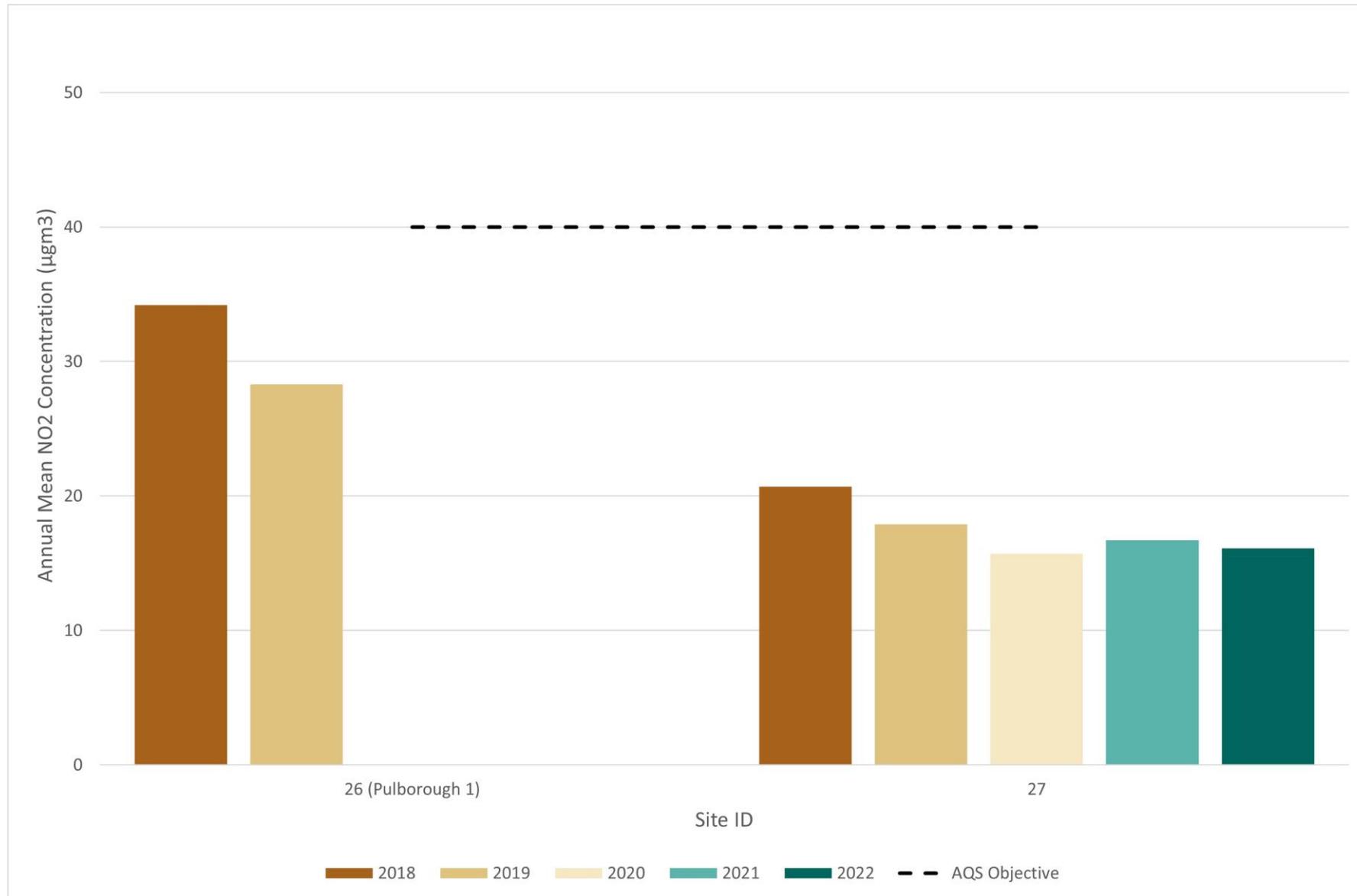


Figure A.5 – Trends in Annual Mean NO2 Concentrations: Henfield, Steyning, Billingshurst, Southwater

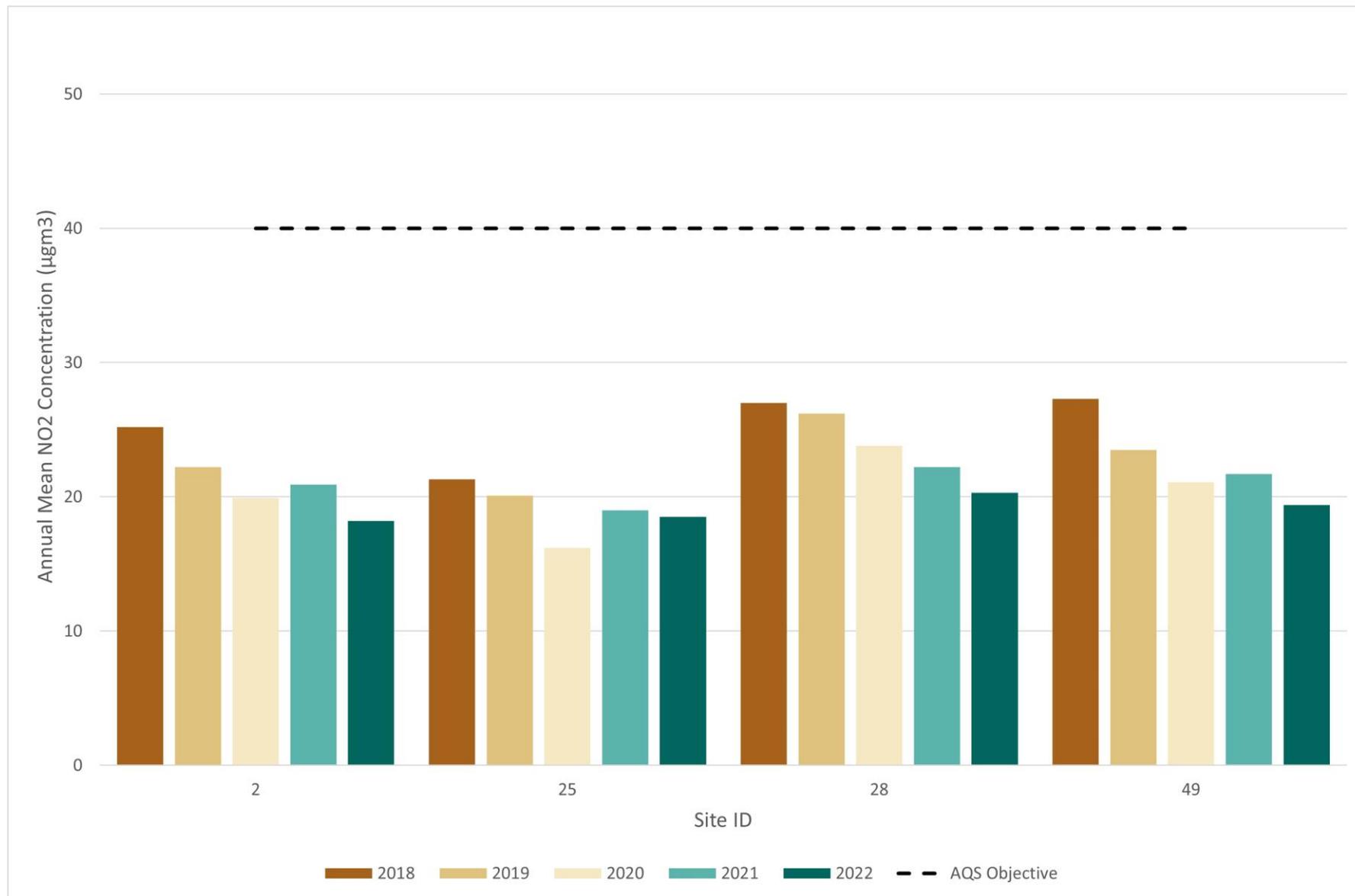


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2022 (%) ⁽¹⁾	2018	2019	2020	2021	2022
HO2	517489	130580	Roadside	71	0	0	0	0	0 (66.3)
HO4	509083	114198	Roadside	70	0	0	0	0	0 (77.2)
HO5	521356	122552	Roadside	90	0	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ 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 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.6 – Monitoring Results: NO2 Concentrations trends (ug/m3) at HO2 Horsham Park Way, HO4 Storrington AURN and HO5 Cowfold in 2022

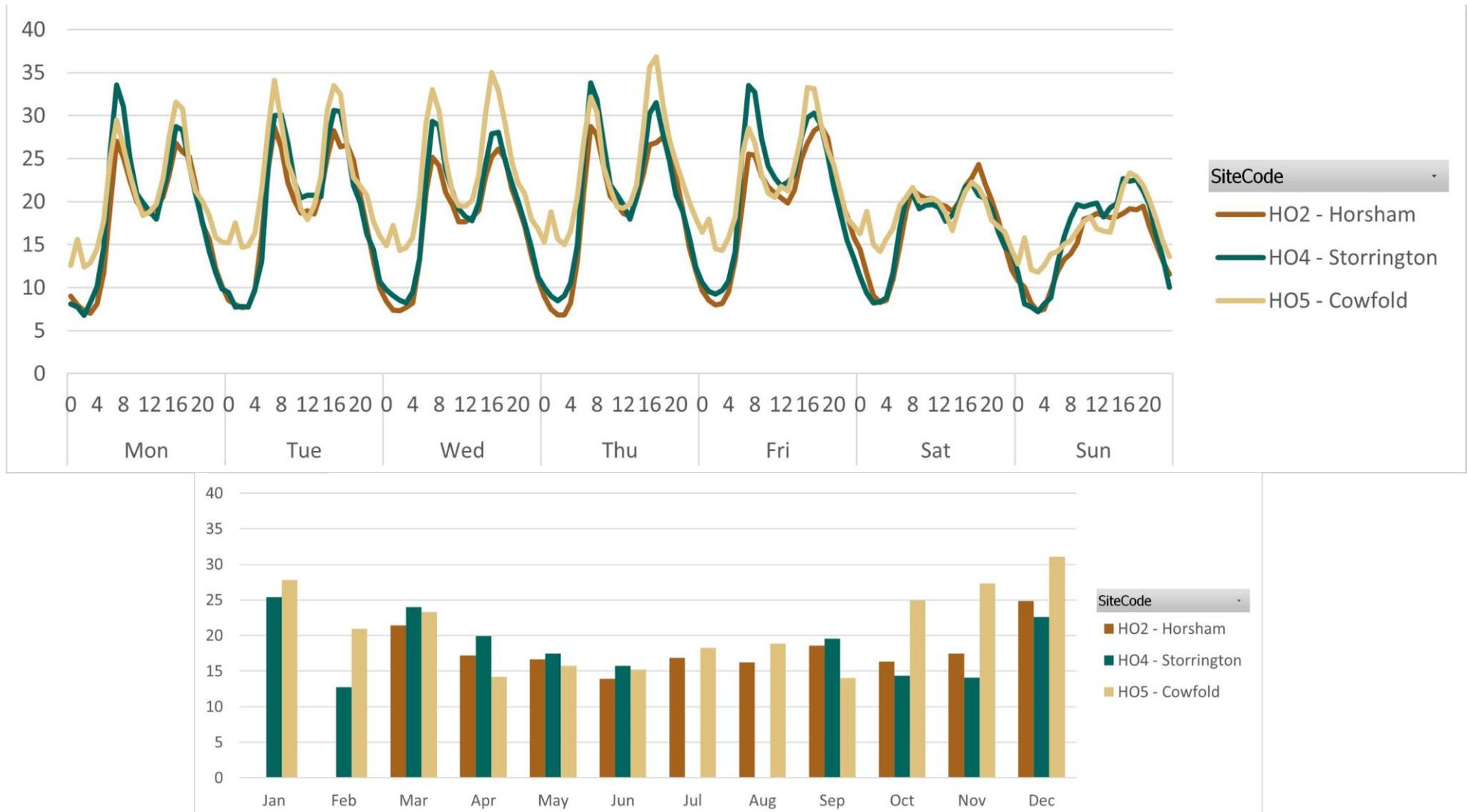


Table A.6 – Annual Mean PM10 Monitoring Results ($\mu\text{g}/\text{m}^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
HO2	517489	130580	Roadside	95.9	95.9	19.6	19.3	15.7	17.5	19.3
HO4	509083	114198	Roadside	75.6	75.6	-	-	-	-	14.0

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

Notes:

The annual mean concentrations are presented as $\mu\text{g}/\text{m}^3$.

Exceedances of the PM₁₀ annual mean objective of $40\mu\text{g}/\text{m}^3$ 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.7 – Trends in Annual Mean PM10 Concentrations

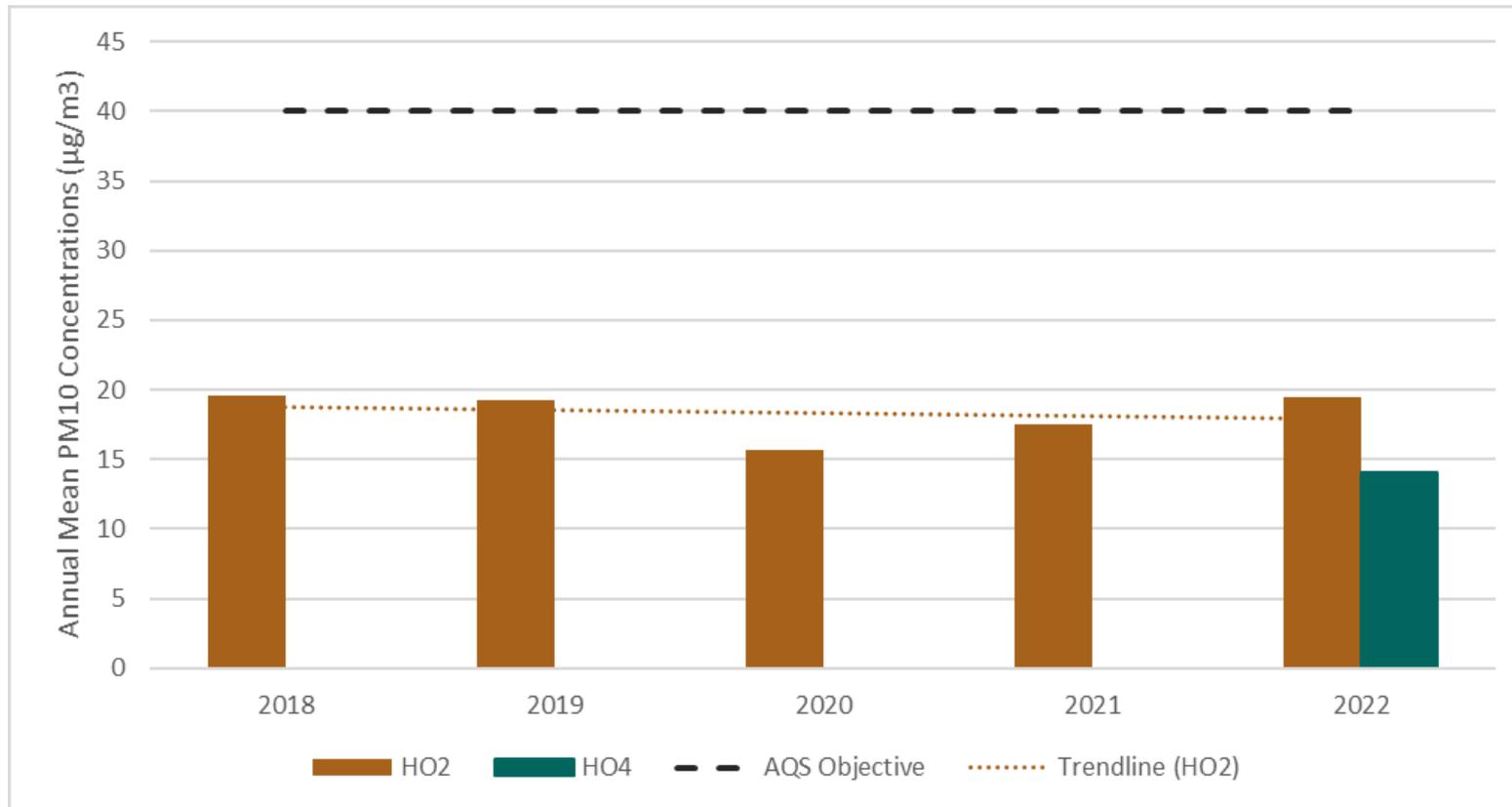


Table A.7 – 24-Hour Mean PM10 Monitoring Results, Number of PM10 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture (%) ⁽²⁾	2018	2019	2020	2021	2022
HO2	517489	130580	Roadside	100	98	0	5	0	0	0
HO4	509083	114198	Roadside	76	76	-	-	-	-	0 (21.5)

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ 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 PM2.5 Monitoring Results ($\mu\text{g}/\text{m}^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture (%) ⁽²⁾	2018	2019	2020	2021	2022
HO2*	517489	130580	Roadside	100	98	13.7	13.5	11	12.3	13.1
HO4	509083	114198	Roadside	76	76	-	-	-	-	7.3

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

Notes:

The annual mean concentrations are presented as $\mu\text{g}/\text{m}^3$.

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%).

*PM2.5 values for HO2 were estimated from the PM10 data using a nationally derived correction multiplying ratio of 0.7 (2018-2021) and national factor 6.4 (2022).

Figure A.8 – Trends in Annual Mean PM2.5 Concentrations

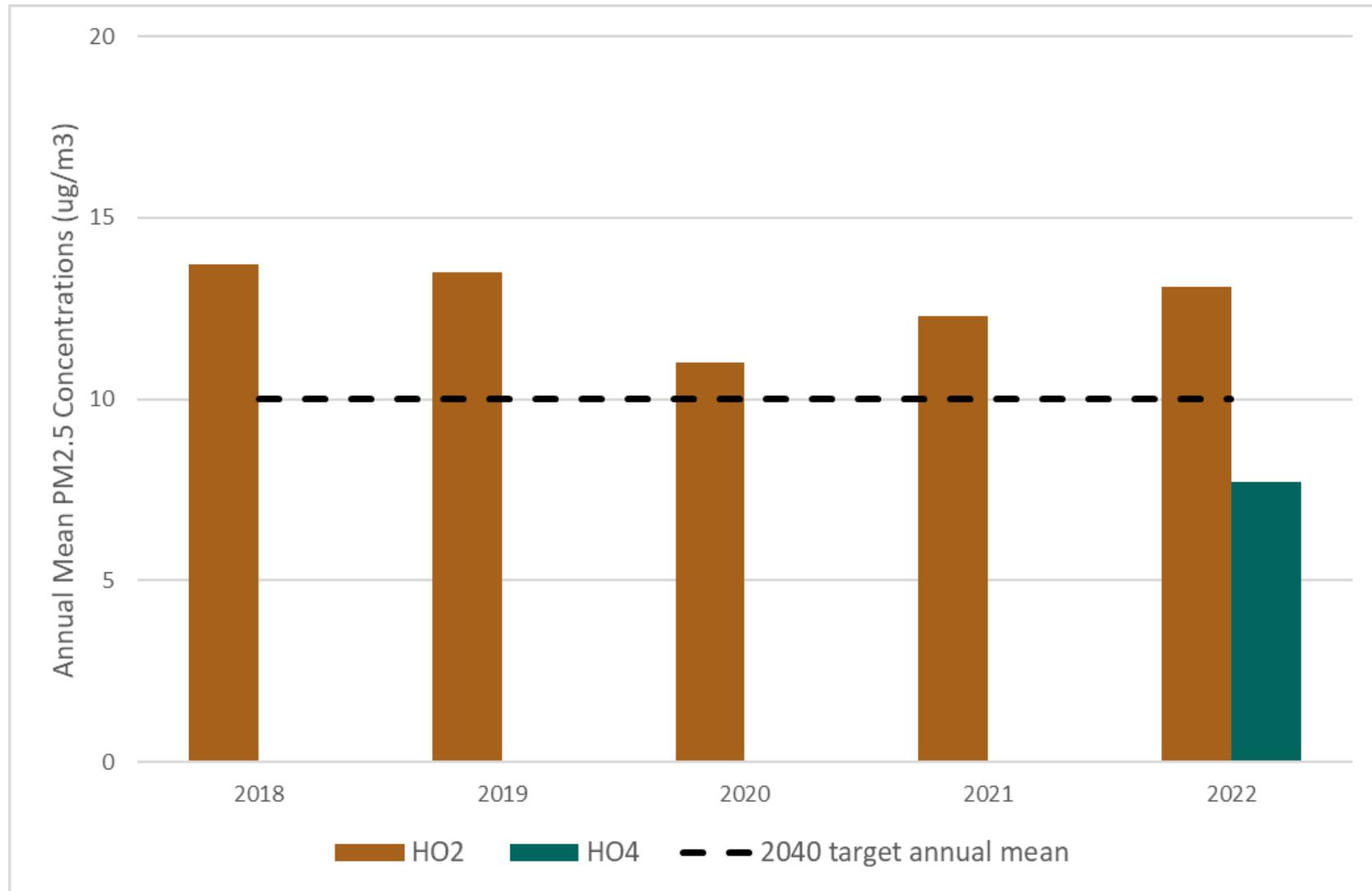
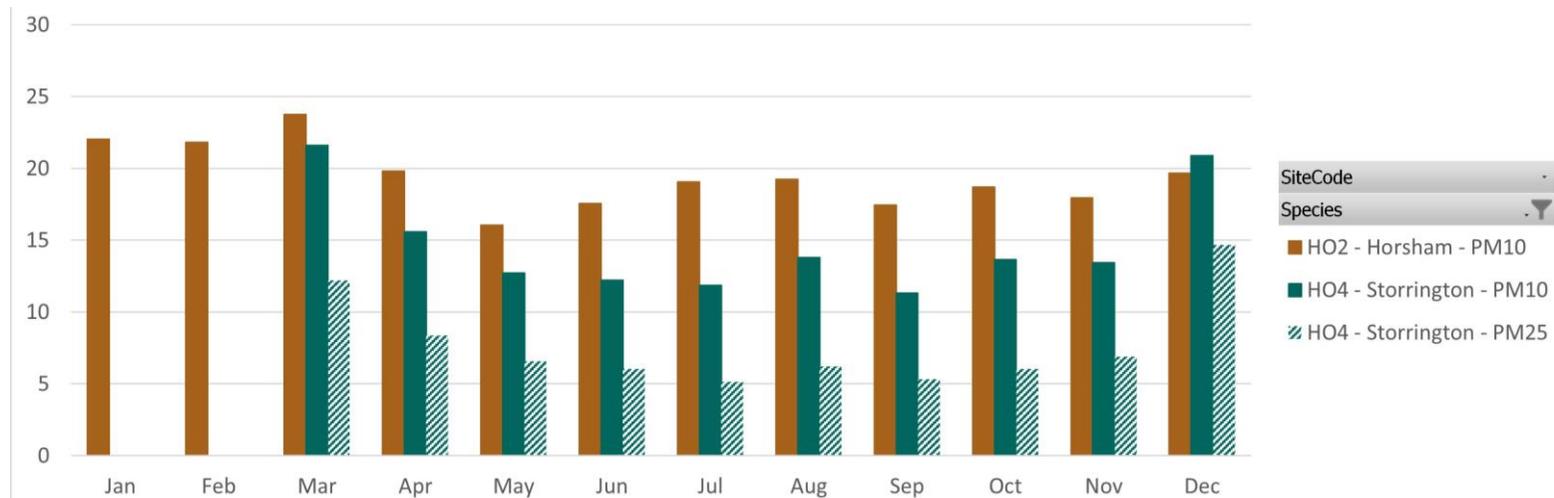
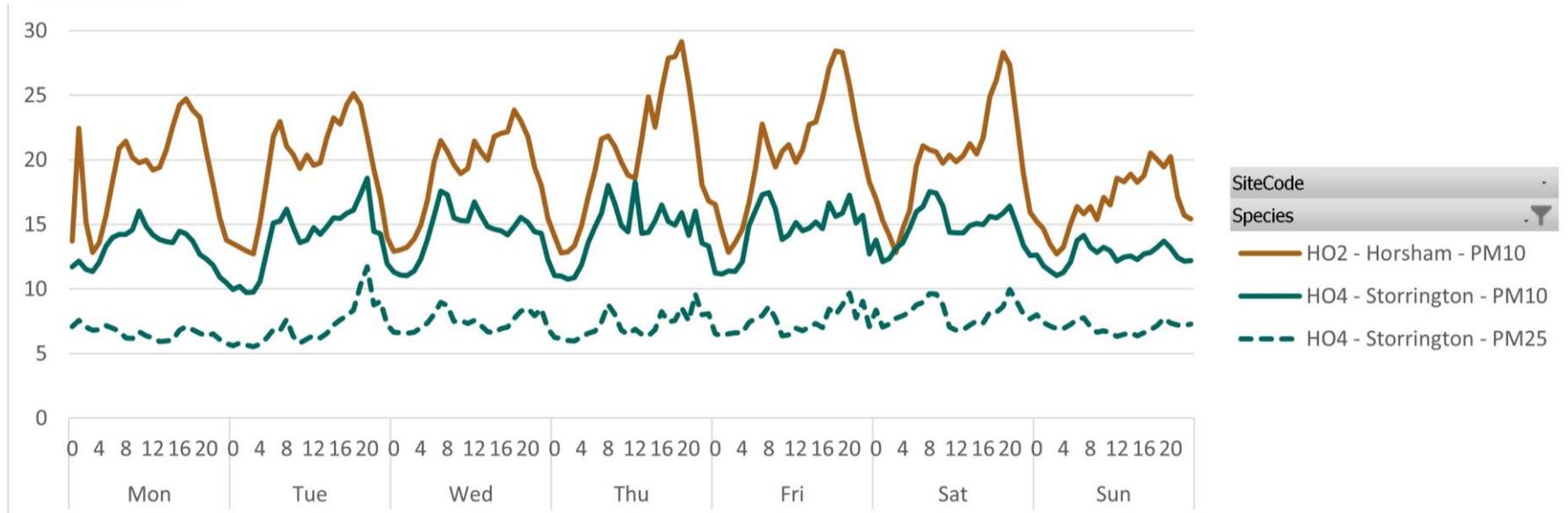


Figure A.9 – Monitoring Results: PM10 and PM2.5 Concentrations trends (ug/m3) at HO2 Horsham Park Way, HO4 Storrington AURN in 2022



Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO2 2022 Diffusion Tube Results (µg/m3)

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 <(0.78)>	Comment
Billingshurst Sites																	
28	508649	125857	33.6	30.8	27.8	22.8	21.7	19.6	18.1	23.2	24.9	27.3	27.8	35.3	26.1	20.3	
Cowfold Sites																	
12	521324	122610	35.9	33.0	39.0	29.3	32.4	34.4	32.3	33.6	31.4	34.7	35.7	34.6	-	-	Duplicate Site with 12 and 20 - Annual data provided for 20 only
14	521584	122457	32.1	24.4	24.6	21.9	19.3	21.5	21.3	37.7	22.0	20.4	18.8		24.0	18.7	
20	521324	122610	39.2	36.1	39.6	32.0	26.6	34.1	32.4	35.2	30.2	37.2	26.8	37.2	33.9	26.4	Duplicate Site with 12 and 20 - Annual data provided for 20 only
21	521267	122677	39.2	36.8	36.1	31.8	28.1	28.6	31.8	34.5	31.6	33.8	25.4	34.7	32.7	25.5	
22	521311	122704	34.4	31.4	31.9	23.1	20.4	24.8	24.8	26.3	21.5	22.4	22.1	29.7	26.1	20.3	
35	521070	122706	34.7	30.0	22.0	21.2	25.6	28.2	23.4	23.4	24.5	23.2	28.1	27.7	26.0	20.3	
36	521309	122248	36.4	27.0	25.4	25.0	23.0	23.2	23.6	24.4		24.6	23.3	30.4	26.0	20.3	
37	521460	122473	50.4	42.9	45.2	35.6	33.9	39.2	40.3	36.1	41.4	38.3	36.0	48.0	40.6	31.7	
43	521411	122667	20.4	14.9	13.8	10.6	9.8	14.3	10.1	11.0	11.2	10.9	12.0	19.1	13.2	10.3	
44	521356	122552	29.7	27.0	28.1	24.5	21.3	26.0	24.3	24.3	23.8	26.9	19.8	32.0	-	-	Triplicate Site with 44, 45 and 46 - Annual data provided for 46 only
45	521356	122552	31.6	27.3	25.2	24.5	22.1	26.4	24.1	24.8	23.4	26.4	18.5	31.5	-	-	Triplicate Site with 44, 45 and 46 - Annual data provided for 46 only
46	521356	122552	32.2	27.5	27.7	23.9	21.9	26.5	23.2	23.7	22.9	25.0	26.8	30.0	25.7	20.0	Triplicate Site with 44, 45 and 46 - Annual data provided for 46 only
Henfield Sites																	
2	521492	115907	33.8	25.1	26.2	22.5	20.5	19.9	17.8	20.9	23.4	23.1	11.7	35.2	23.3	18.2	
Horsham Sites																	
1	517489	130607	37.8	32.3	35.0	24.9	24.1	24.1	27.3	28.3	26.7	25.4	27.4	34.7	29.0	22.6	
3	516008	130480	17.1	12.3	14.1	51.4*	6.7	7.5	7.7	11.2	9.9	9.9	5.3	22.2	11.3	8.8	
4	517680	130069	16.1	13.0	13.2	11.1	6.7	8.4	7.7	10.6	9.9	9.1	8.2	19.9	11.2	8.7	
5	517489	130580	35.0	25.5	28.1	23.0		23.1	22.9	24.2	26.1	22.9	20.8	31.4	-	-	Triplicate Site with 5, 6 and 7 - Annual data provided for 7 only
6	517489	130580	34.6	25.2	27.2	22.2		21.2	22.9	23.9	25.2	22.5	14.7	30.4	-	-	Triplicate Site with 5, 6 and 7 - Annual data provided for 7 only
7	517489	130580	31.7	25.4	27.0	23.0		22.6	22.6	24.4	25.7	22.3	20.4	29.6	25.1	19.6	Triplicate Site with 5, 6 and 7 - Annual data provided for 7 only
8	518239	131137	37.5	29.4	32.2	24.8	20.1	21.0	22.9	31.8	29.0	23.4	23.5	37.3	27.7	21.6	
9	518654	132482	32.1	23.9	24.7	18.2	17.0	18.1	16.6	21.8			20.9	32.6	22.6	17.6	
10	516952	132215	33.2	24.4	27.8	22.9	17.6	19.3	21.6	25.0	24.2	21.7	19.9	32.5	24.2	18.9	
11	516646	130221	30.5	26.3	31.6	23.4	18.6	20.0	21.0	30.3		21.2	24.0	33.2	25.5	19.9	
23	517702	133570	27.0	23.5	19.7	13.7	15.5	13.1	12.0	15.2	15.1	15.4	18.0	25.5	17.8	13.9	
24	517476	134013	1.5*	22.0	21.7	16.1	14.1	17.1	17.3	18.0	18.0	17.1	18.2	19.7	18.1	14.1	
26	516909	130755			44.3			32.3	41.1	44.2	42.4	36.0	20.0	46.8	38.4	29.7	
48	518054	131155	43.4	31.8	34.4	30.8	25.5	25.3	25.2	34.8	29.1	27.0	24.2	39.0	30.9	24.1	
Pulborough Sites																	
27	505288	118630	29.2	22.9	23.8	19.8	17.5	15.8	16.9	20.6	19.5	17.4	15.9	28.7	20.7	16.1	

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 <(0.78)>	Comment
Southwater Sites																	
49	515639	126599	33.6	23.4	26.6	24.2	20.5	20.7	22.2	22.8	23.5	23.9	24.3	33.0	24.9	19.4	
Steyning Sites																	
25	517642	111169	26.4	30.4		1*	20.4	19.8	17.9	23.7	22.4	21.2	24.0	31.5	23.8	18.5	
Storrington Sites																	
13	508960	114270	48.2	37.8	47.8	46.5	34.9	39.8	44.8	55.8	48.4	33.3	27.7	40.4	42.1	32.9	
15	508935	114297	42.2	30.5	33.9	29.6	28.9	27.2	28.0	32.4	33.4	26.6	21.6	30.1	30.4	23.7	
16	508832	114272	37.1	37.9	37.8	33.1	32.2	30.8	33.2	34.5	32.7	35.1	32.2	34.9	34.3	26.7	
17	508742	114288	25.1	25.5	30.9	25.0	21.0	20.7	24.0	26.7	26.9	21.5	16.3	29.2	24.4	19.0	
18	508396	114449	31.5	26.2	25.0	20.3	18.9	18.7	19.8	20.3	20.6	20.5	16.5	29.0	22.3	17.4	
19	508338	114374	26.5	19.0	23.9	21.8	20.7	19.5	19.7	26.2	26.0	23.5	18.2	26.6	22.6	17.7	
29	509083	114198	31.0	29.0	31.3	29.2	26.3	31.2	29.4	33.1	30.5	25.9	17.0	27.1	-	-	Triplicate Site with 29, 30 and 31 - Annual data provided for 31 only
30	509083	114198	32.7	26.3	30.6	29.8	27.8	26.7	26.5	31.2	29.5	25.7	10.2	27.5	-	-	Triplicate Site with 29, 30 and 31 - Annual data provided for 31 only
31	509083	114198	31.9	25.5	31.5	29.4	27.8	26.2	27.3	31.6	29.6	23.8	21.4	28.1	27.8	21.7	Triplicate Site with 29, 30 and 31 - Annual data provided for 31 only
32	508675	114306	40.1	27.6	35.9	30.0	24.1	24.8	25.5	33.9	31.1	23.5	22.3	34.9	29.5	23.0	
33	508598	114323	41.0	28.3	35.6	28.0	22.1	20.9	26.0	29.0	27.0	25.7	24.5	37.0	28.8	22.4	
34	508511	114365	41.6	32.2	39.0	32.9	32.5	31.8	33.5	37.8	29.1	30.1	18.9	38.6	33.2	25.9	
38	509319	114160	42.4	35.5	35.8	34.0	30.7	28.0	29.2	36.4	36.2	32.5	27.5	36.1	33.7	26.3	
39	508966	114356	25.9	23.7	28.4	24.2	21.7	21.7	22.0	26.0	23.4	23.4	18.3	24.3	23.6	18.4	
40	509103	114532	23.9	21.3	18.7	16.2	13.9	18.4	16.0	17.6	17.3	19.6	18.4	23.7	18.8	14.6	
41	508677	114149	16.9	13.1	14.2	12.6	10.1	9.2	9.7	11.6	10.9	12.1	7.4	19.6	12.3	9.6	
42	508215	114348	25.6	20.7	23.1	23.7	15.9	14.4	15.9	22.4	19.1	17.1	13.3	26.2	19.8	15.4	
47	508945	114268	55.4	54.9	51.0	50.3	50.5	53.9	51.1	55.6	48.2	34.2	33.6	47.1	48.8	38.1	

- 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.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.
- Horsham District Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.
 NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 Horsham District Council During 2022

Horsham District Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Horsham District Council During 2022

Horsham District Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are sourced from Sototec in Didcot using the 50% TEA in acetone preparation method. The national bias adjustment factor was obtained from Defra national bias adjustment factor database (spreadsheet version number 06/23 published in June 2023) based on 27 co-location studies. The bias adjustment factor given for this methodology was 0.76.

Laboratories participate in two QA/QC schemes. The new AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP)) is run by LGC and supported by the Health & Safety Laboratory. The other scheme is a monthly field intercomparison Exercise operated by the National Physics Laboratory (NPL). Defra advises that local authorities should use diffusion tubes supplied by laboratories that have demonstrated satisfactory performance under the QA/QC schemes.

Socotec is a UKAS accredited laboratory and participates in both QA/QC schemes described above. The list of those laboratories which have performed satisfactorily in the AIR-PT scheme is provided to local authorities on the LAQM Support website¹³. In the latest

¹³ <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/qa-qc-framework/>

available AIR-PT results Socotec have scored 100% in round AR050 (May to June 2022). The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Diffusion Tube Annualisation

Annualisation (short to long term data adjustment) is required for any site with data capture less than 75% but greater than 25%. Annualisation was required for DT26 (Horsham 12), as the site was missing data for January, February, April, and May 2022 and had less than 9 months' usable data.

Table C.1 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor				Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
	HO5 - Cowfold	Horley	BH0 - Brighton Preston Park	CI1 - Chichester			
26	0.9759	0.9471	1.0154	1.0340	0.9931	38.4	38.1
HO4	0.9299	0.9089	0.9351	0.9801	0.9385	18.7	17.6

Table C.2 – Details of sites used for Annualisation Summary

Site Name	Site Type	Data capture
HO5 - Cowfold	Locally Managed - Roadside	99.5%
Horley	AURN - Suburban Industrial	92%
BH0 - Brighton Preston Park	AURN - Urban Background	99%
CI1 - Chichester	Locally Managed - Suburban	96.5

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 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_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Horsham District Council have applied a Local bias adjustment factor of 0.78 to the 2022 monitoring data. A summary of bias adjustment factors used by Horsham District Council over the past five years is presented in Table C.3.

Table C.3 – Bias Adjustment Factor

Monitoring Year	Local or National	Adjustment Factor
2022	Local (Cowfold)	0.78
2021	Local (Storrington, Cowfold, Park Way)	0.80
2020	Local (Storrington, Cowfold, Park Way)	0.83
2019	Local (Storrington, Cowfold, Park Way)	0.74
2018	Local (Storrington, Cowfold, Park Way)	0.81

Table C.4 – Local Bias Adjustment Calculation

	Local Bias Adjustment – HO5 Cowfold
Periods used to calculate bias	11
Bias Factor A	0.78 (0.68 - 0.91)
Bias Factor B	29% (10% - 47%)
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	29
Mean CV (Precision)	26.1
Automatic Mean ($\mu\text{g}/\text{m}^3$)	2.6%
Data Capture	
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	20.3
Overall Diffusion Tube Precision	Good Overall Precision
Overall Continuous Monitor Data Capture	Good Overall Data Capture

Notes:

A single local bias adjustment factor has been used to bias adjust the 2022 diffusion tube results.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No diffusion tubes NO₂ monitoring locations within Horsham District Council required distance correction during 2022.

QA/QC of Automatic Monitoring

Data collection and ratification for the HO2 Horsham Park Way and HO5 Cowfold monitoring stations is undertaken by Bureau Veritas through a contract with Sussex Air Partnership. For more information, please visit the Sussex Air Quality Partnership website at <http://www.sussex-air.net>. The operation and data management for both stations are carried

out to the AURN standards, however, the data quality could be further improved if independent inter calibrations site audits were carried out (which are requirement for AURN sites).

HO4 Storrington AURN monitoring station is an AURN affiliated site. A number of organisations are involved in the day-to-day running of the network. Currently, the role of Central Management and Co-ordination Unit (CMCU) for the whole AURN is contracted to Bureau Veritas, whilst Quality Assurance and Quality Control (QA/QC) activities are contracted to Ricardo Energy & Environment. The responsibility for operating individual monitoring sites is assigned to local organisations, such as local authority Environmental Health Officers with relevant experience in the field. Calibration gases for the network are supplied by BOC Limited and are provided with a UKAS certificate of calibration by Ricardo Energy & Environment.

Calibrations and checks at all stations are undertaken every two or four weeks by an in-house Local Site Operator and the analysers are maintained under contract with instrument suppliers/manufacturers for all three stations.

All data presented within this ASR have been previously ratified.

Live and historic data is available at Sussex-Air and UK-Air website.

PM10 and PM2.5 Monitoring Adjustment

The TEOM PM10 data at HO2 (Park Way) was corrected by a multiplying factor of 1.3 to gravimetric equivalence.

Bureau Veritas is running the PM intercomparison study (Fidas vs BAM) at 7 sites in England for Defra, of which Storrington is one site. The analyser has been added into the AQMS at Storrington in the end of April 2022, but is not part of the AURN in respect of UK compliance reporting. This data belongs to Defra and its data for a study rather than official AURN data, Bureau Veritas reviewed and edited the Storrington (Fidas) PM2.5 and PM10 data which is on Sussex-Air.

Automatic Monitoring Annualisation

TG 22 states that where automatic monitoring has been completed for less than 75% of the year, annualisation techniques can be used to estimate an annual average from a part year average. Annualisation is the process of estimating annual means from the extrapolation of short-term monitoring results. The methodology consists of using concentration data from

nearby, long-term, continuous monitoring sites to assist in estimating annual mean concentrations at the site(s) in question. The continuous monitoring sites used for comparison, where available, should be background (Urban Background, Suburban or Rural) sites to avoid any very local effects that may occur at Urban Centre, Industrial, Roadside or Kerbside sites, and should lie within a radius of about 50 miles. The data capture for each of these sites should be at least 85%. For annualisation to be completed, there must be 25% annual monitoring data available.

Annualisation was required for NO₂ at Storrington AURN (HO4), annualisation data for this site is presented in Table C.1 .

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

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

Figure D.1 – Map of Horsham Monitoring Sites

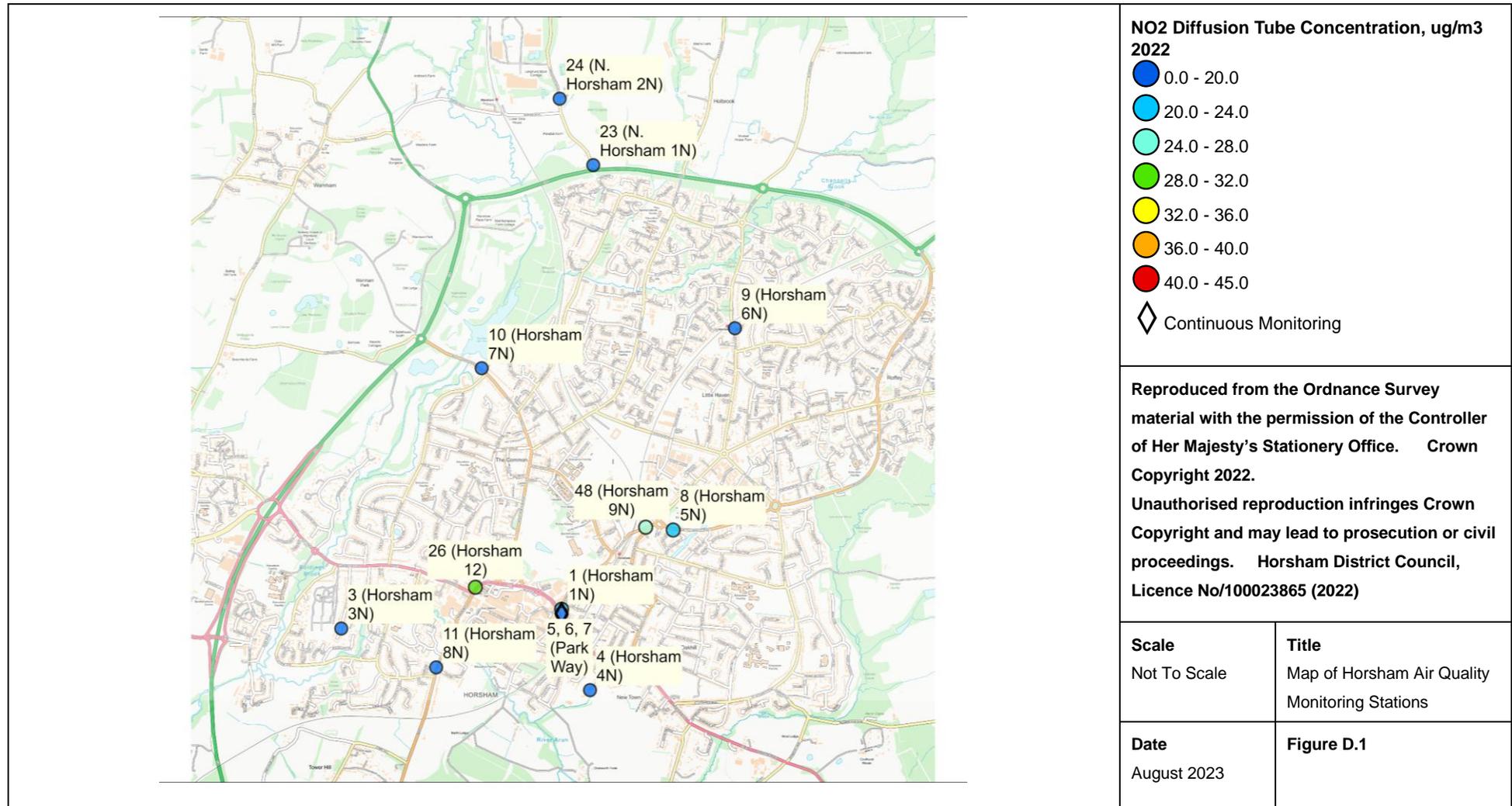


Figure D.2 – Map of Horsham Monitoring Sites

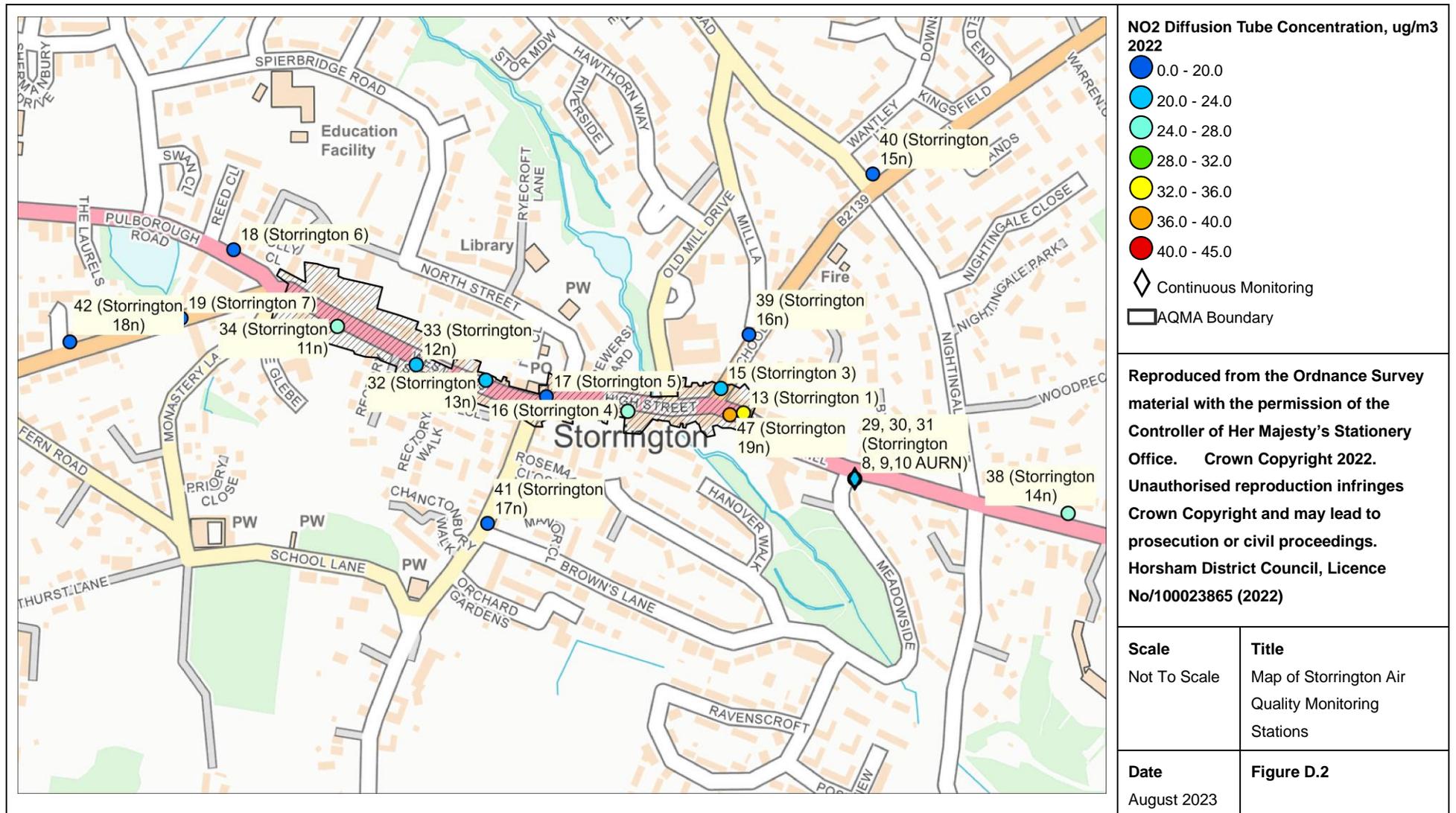


Figure D.3 – Map of Cowfold Monitoring Sites

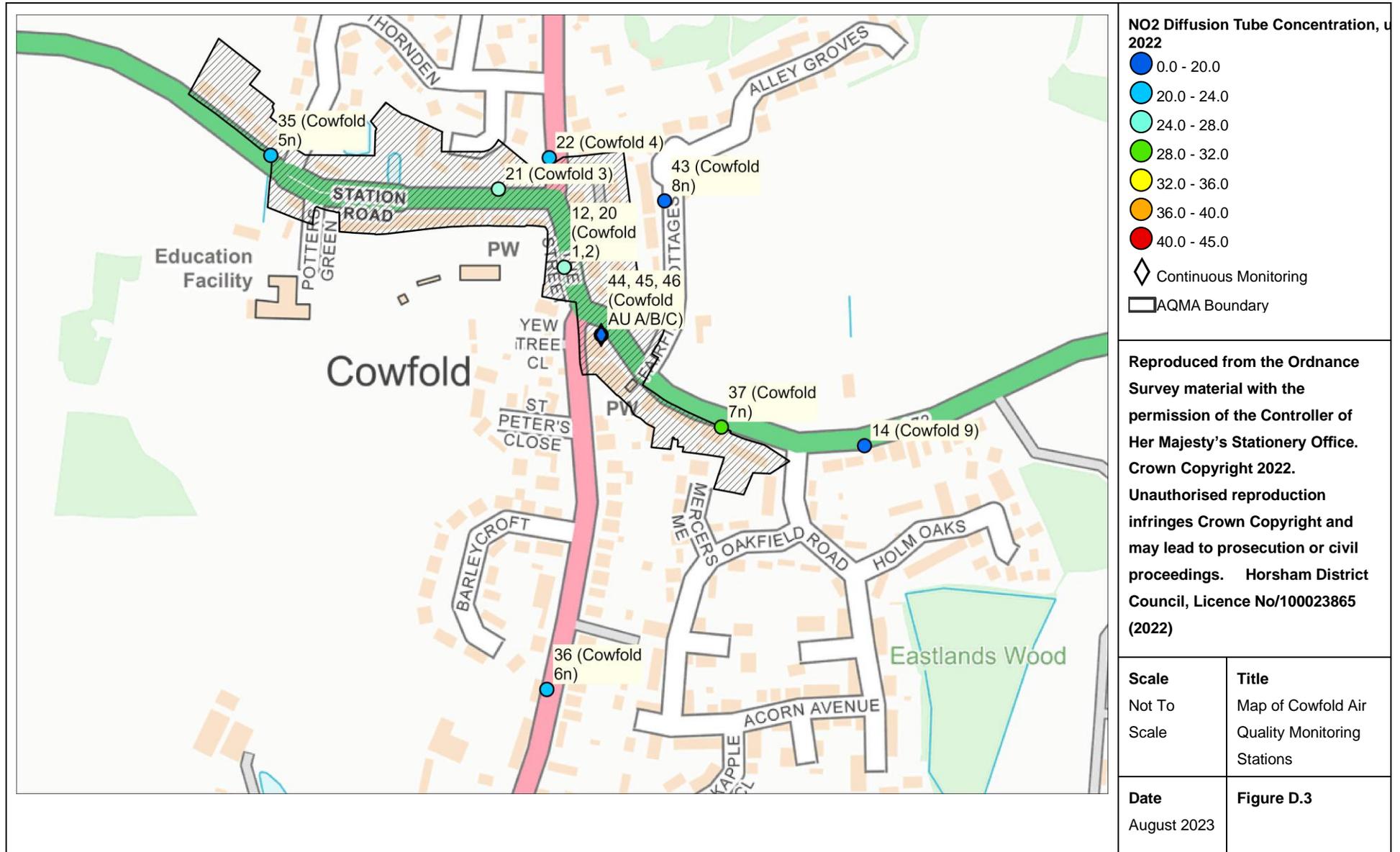


Figure D.4 – Map of Henfield Monitoring Site

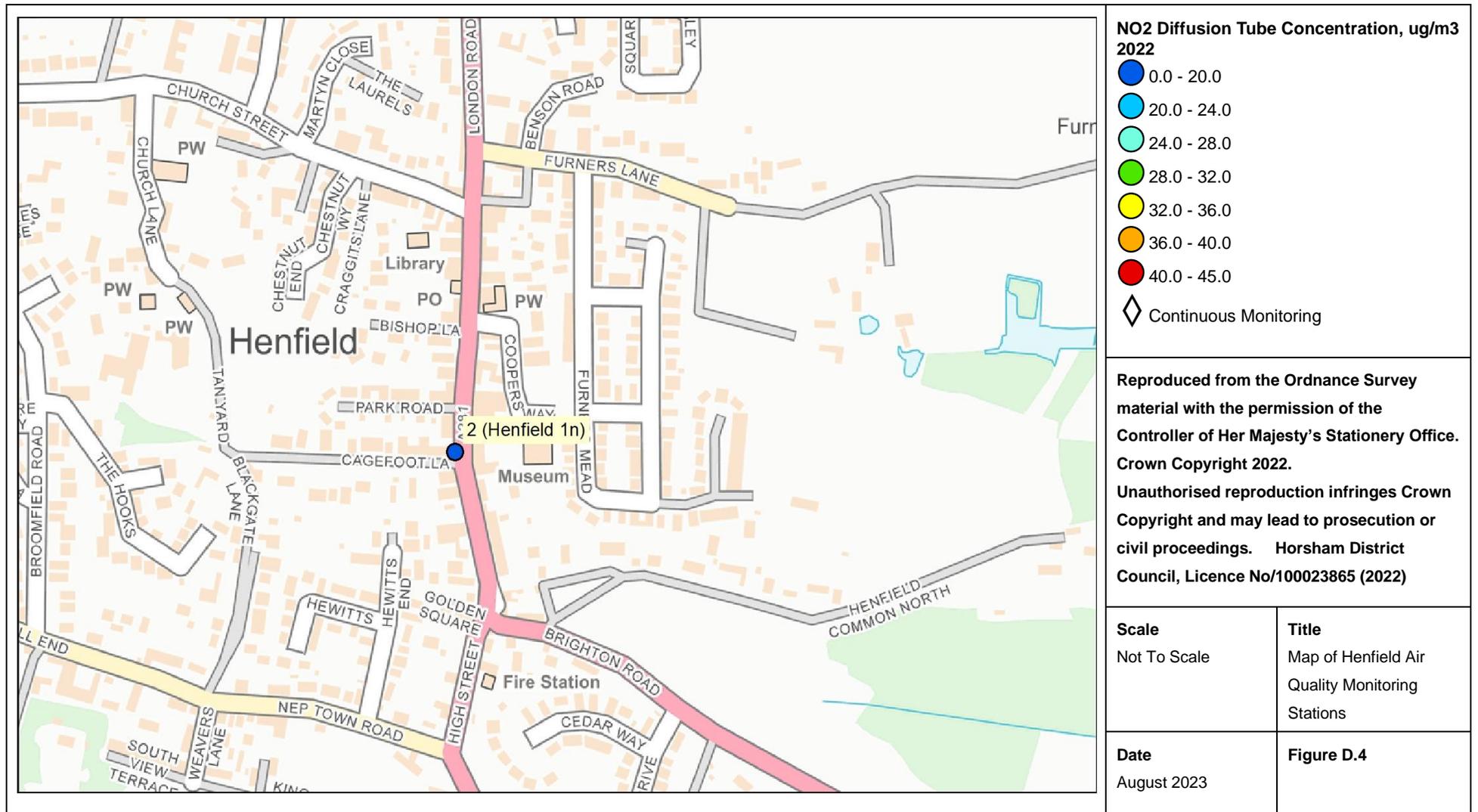


Figure D.5 – Map of Pulborough Monitoring Site

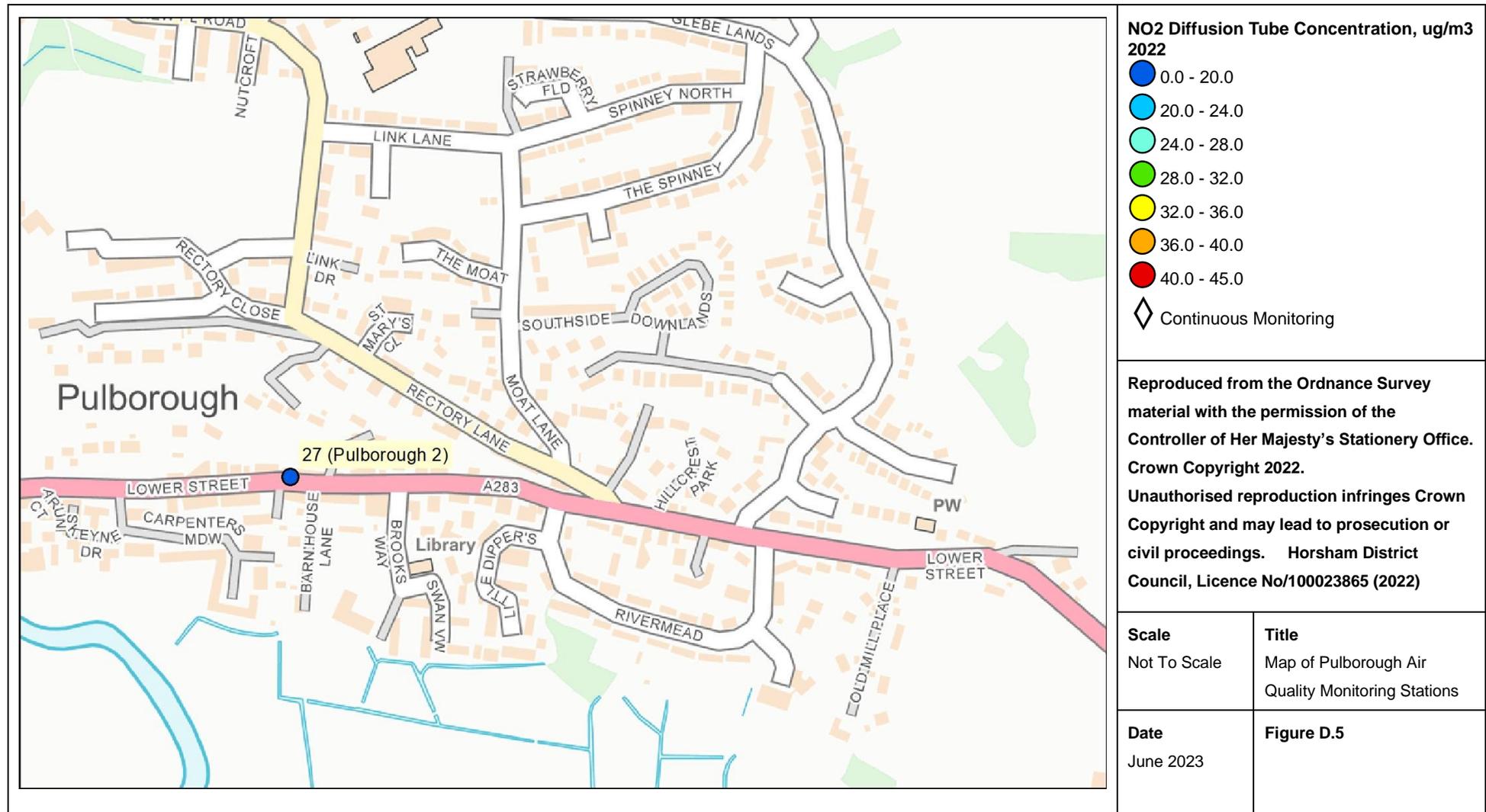


Figure D.6 – Map of Billingshurst Monitoring Site

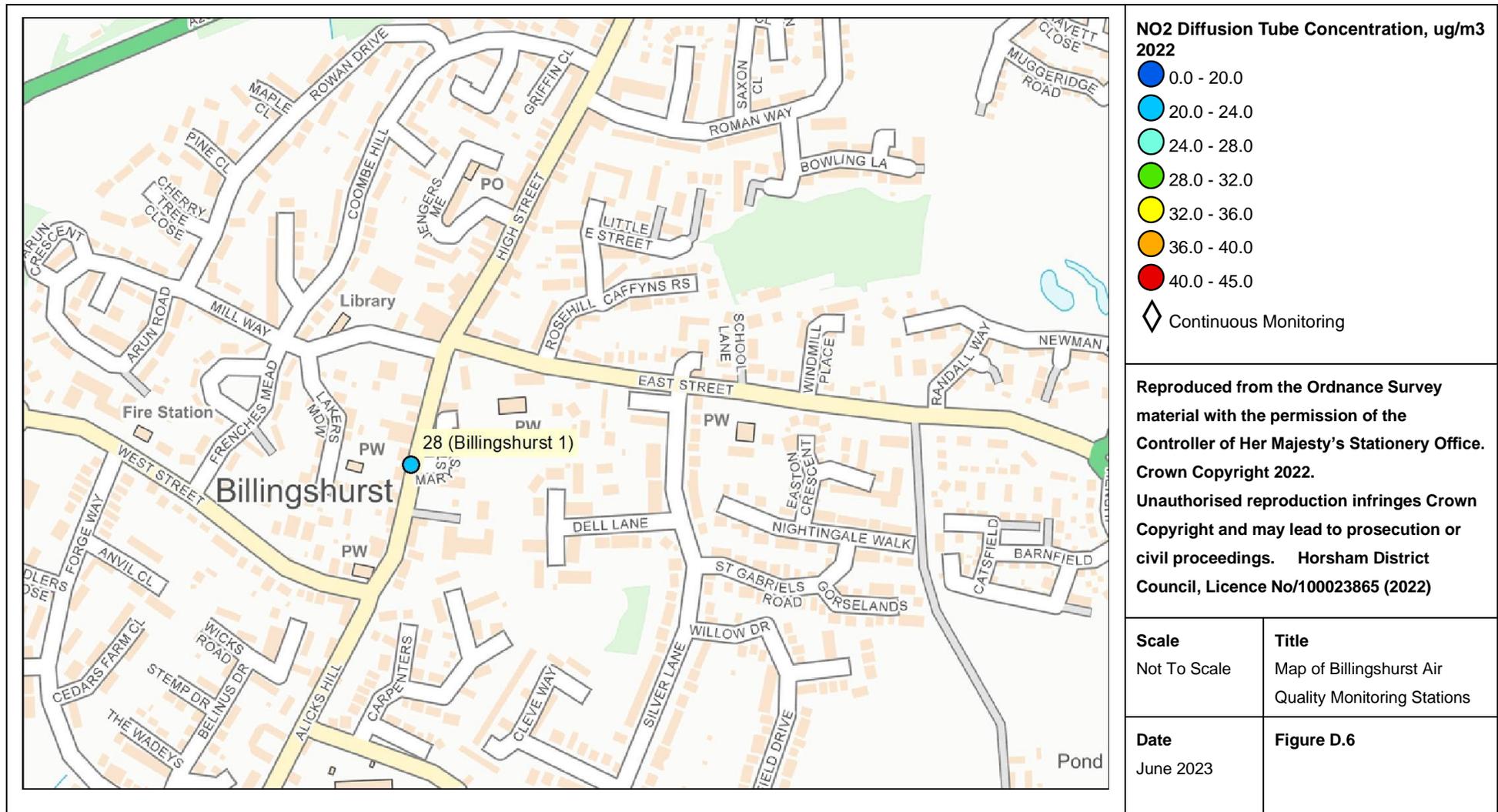


Figure D.7 – Map of Southwater Monitoring Site

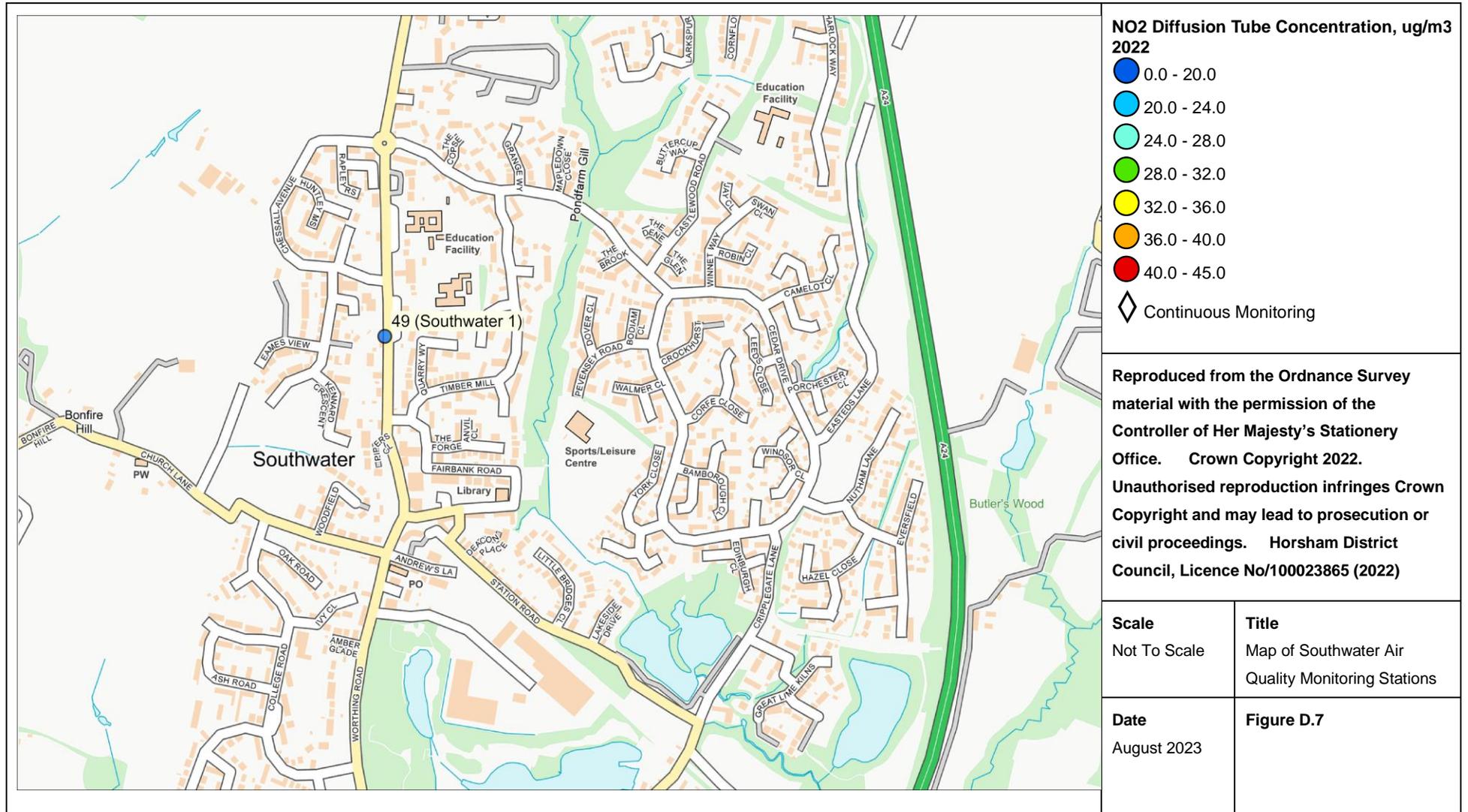
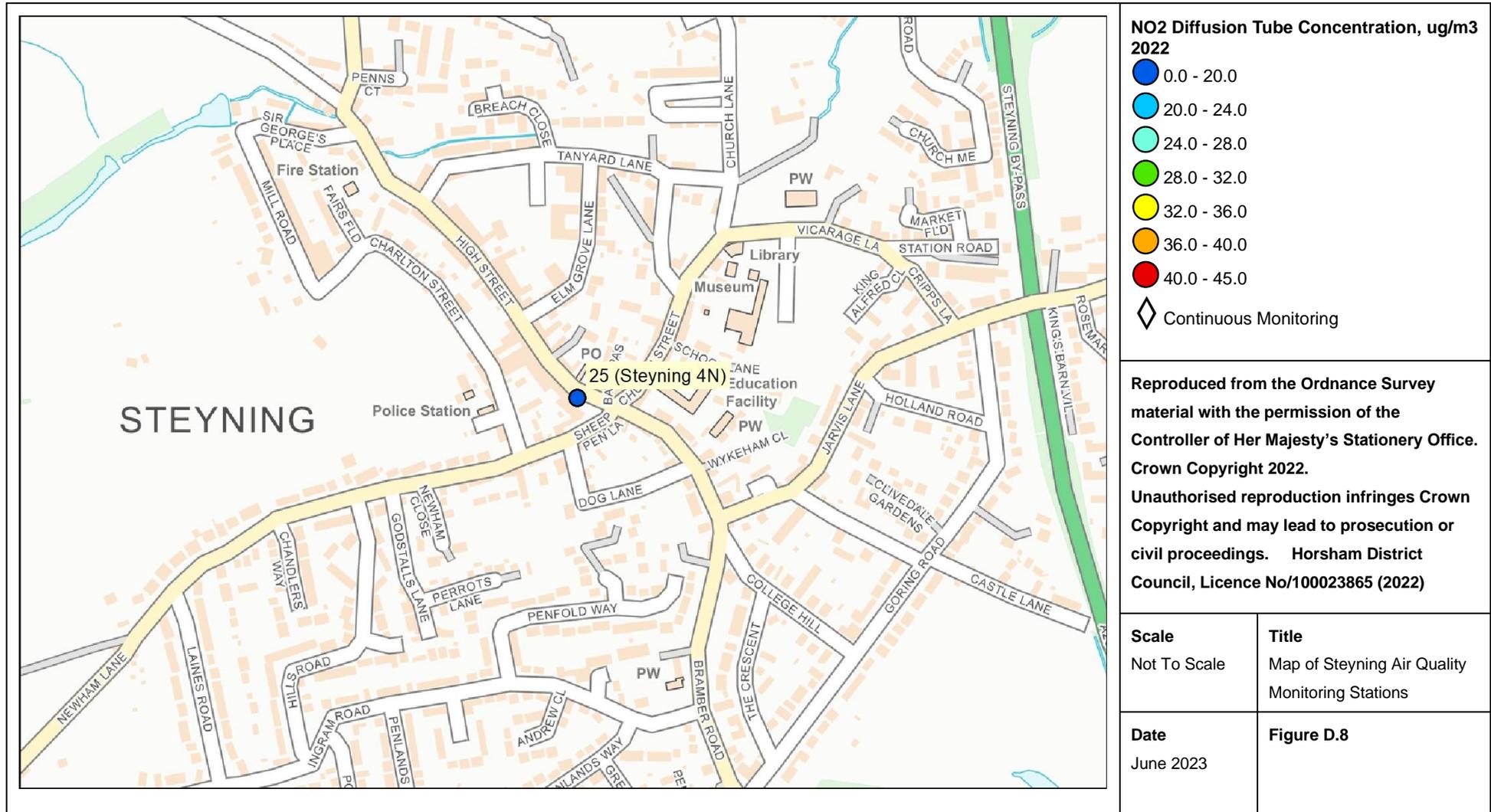


Figure D.8 – Map of Steyning Monitoring Site



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England¹⁴

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

Table E.2 – Recommended 2021 WHO Air Quality Guidelines levels¹⁵

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO ₂)	25µg/m ³ - 99th percentile (i.e. 3–4 exceedance days per year).	24-hour mean
Nitrogen Dioxide (NO ₂)	10µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	45µg/m ³ - 99th percentile (i.e. 3–4 exceedance days per year).	24-hour mean
Particulate Matter (PM ₁₀)	15µg/m ³	Annual mean
Fine Particulate Matter (PM _{2.5})	15µg/m ³ - 99th percentile (i.e. 3–4 exceedance days per year).	24-hour mean
Fine Particulate Matter (PM _{2.5})	5µg/m ³	Annual mean

¹⁴ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

¹⁵ <https://www.who.int/news-room/feature-stories/detail/what-are-the-who-air-quality-guidelines>

Table E.3 – Air Quality Objectives Comparison

Pollutant	Averaging period	Concentration		
		Current UK limit	WHO 2021	New target
AQ (England) regulations 2000 (apply to LAQM)				
Nitrogen Dioxide (NO ₂)	Hourly mean	200 µg/m ³	200 µg/m ³	Existing
	Annual mean	40 µg/m ³	10 µg/m ³	Existing
Particulate Matter (PM ₁₀)	24 hour mean	50 µg/m ³	45 µg/m ³	Existing
	Annual mean	40 µg/m ³	15 µg/m ³	Existing
	Daily 8 hour mean	120 µg/m ³	100 µg/m ³	Existing
Environmental Targets (PM) regulations 2023 (apply to national Government)				
Fine Particulate Matter (PM _{2.5})	Annual mean	20 µg/m ³	5 µg/m ³	10 µg/m ³
	Exposure target			35% reduction

Glossary of Terms

Abbreviation	Description
AIR-PT	Proficiency Testing scheme for laboratories involved in air quality analysis
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
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
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
HDC	Horsham District Council
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide
WSCC	West Sussex County Council
TEA	Triethanolamine

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.