



Horsham  
District  
Council



# 2021 Annual Status Report (ASR)

for

Horsham District Council

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

June 2021

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## Executive Summary: Air Quality in Our Area

This report considers new monitoring data and actions taken to improve air quality during 2020 in 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<sup>1,2</sup>.

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

Horsham district is primarily agricultural in character and does not incorporate a significant heavy industrial base or major transport hubs. 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 (NO<sub>2</sub>). 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.

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

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

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

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

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. Horsham District Council (HDC) works in cooperation with other stakeholders, such as planning, Public Health England, West Sussex County Council (WSCC) highways, neighbouring districts, Sussex-Air Partnership and the Environment Agency. The assessment and implementation of the identified traffic management schemes is done in cooperation with WSCC as they are the authority responsible for roads and transport management. Steering groups were set up for each of the AQMAs. The steering groups 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 WSCC minerals and waste.

## **Actions to Improve Air Quality**

Horsham District Council has taken forward a number of measures during the recent years in pursuit of improving local air quality. The key actions undertaken in 2020 are:

- Exploring issues around enforcement of the scheme for prohibition of goods vehicles over 7.5 tonnes on School Hill in Storrington between the A283 and the Mill Lane car park access road;
- Promotion of the prohibition of loading and unloading at any time on sections of North Street and prohibition of waiting on sections of The Square and West Street Storrington (completed summer 2019);
- Reviewing an advisory signage scheme for lorries on the A23 and A24 deterring HGVs from using A272 through Cowfold AQMA;
- Completion of the Clean Burn Sussex project aimed at the promotion of least polluting fuels and stoves;
- Integration of the *Air Quality and Emissions Mitigation Guidance for Sussex* (2021 update) with HDC environmental (air quality) policy; and
- Promoting air quality and the airAlert service on the website and through social media posts.

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.

## **Conclusions and Priorities**

Significant reductions in NO<sub>2</sub> concentrations were observed across all sites in 2020 averaging 15% relative to 2019. These can be attributed to reduced traffic volumes and congestion due to the Covid pandemic. Long-term sites have shown a continuing overall downward trend over the monitoring period, indicative of a gradual improvement in fleet emissions.

The monitoring results for 2020 indicate that one monitoring location measured concentrations within 10% of the annual mean objective: Storrington 19n (jct of Manley's Hill and School Hill), recording 38.4µg/m<sup>3</sup>; this shows a 20% decrease on 2019. Over the recent years exceedances in the Storrington AQMA have been limited to the mini-roundabout of Manley's Hill and School Hill. Technically, HDC could proceed to revoking the main part of the Storrington AQMA, which has for a number of years been in compliance with the annual mean objective for NO<sub>2</sub>. However, 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.

No other monitoring sites within the district exceeded the air quality objectives for NO<sub>2</sub> in 2020. The Cowfold 7n site has been the only monitoring site in the Cowfold AQMA which exceeded the annual mean objective in the recent years. However, in 2020 the site showed a 16% decrease to 30.2µg/m<sup>3</sup>. When corrected to the nearest residential exposure, Cowfold 7n has not exceeded the annual mean objective for NO<sub>2</sub> for four years. Yet, The Council would like to see the NO<sub>2</sub> levels decrease to 10% below the annual mean objective when corrected to the nearest residential exposure. It is expected that the Cowfold AQMA will be revoked in the coming years; meanwhile the Cowfold AQMA is still required.

The Council is preparing a formal update of the Storrington and Cowfold Action Plan, which will involve public consultation.

Regarding PM<sub>10</sub>, automatic monitoring at the Horsham Park Way site indicates that both the annual mean and 24-hour UK objective for PM<sub>10</sub> were complied with in 2020 and all the previous years of monitoring. Monitoring results collated from three other permanent monitoring sites in the

South East region show that both the annual mean and 24-hour UK objective for PM<sub>10</sub> were complied with in 2020 and all the previous years.

Regional monitoring for PM<sub>2.5</sub> has shown that the selected sites complied with the national annual mean limit value in 2020 and all the previous years. All sites have shown a decreasing trend throughout the monitoring period.

The Council's priorities for the coming year are:

- Formal update of the Storrington and Cowfold AQAPs including public consultation;
- Working with planning policy and development control to secure air quality mitigation from new development;
- Progression of a scheme to enable enforcement of breaches of the weight restriction for HGVs using School Hill;
- Exploring a Freight Delivery Partnership / Fleet Operator Recognition Scheme Standard: Encourage use of WSCC advisory lorry route rather than A283 through Storrington AQMA for longer distance lorry movements;
- Review of other traffic management / congestion improvement schemes for Storrington and Cowfold.

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

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. If you would like to obtain further information on the work being done please visit the Horsham District Council website or contact:

- Environmental Health: tel. 01403 215609; email: [publichealth.licensing@horsham.gov.uk](mailto:publichealth.licensing@horsham.gov.uk)
- <https://www.horsham.gov.uk/environmentalhealth/environmental-health/air-quality>

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# 1 Local Air Quality Management

This report provides an overview of air quality in Horsham District during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

Horsham District is a predominantly rural area with a population of 126 000. The total area is 205 square miles. Horsham is the main town and the principal administrative and commercial centre within the district with a population of around 40 000.

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

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 (NO<sub>2</sub>) 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.

## 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 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Horsham District Council can be found in Table 2.1. Figure 2.1 and Figure 2.2 show the boundaries of the declared AQMAs. Further information related to declared or revoked AQMAs, is available online at <http://uk-air.defra.gov.uk/agma/list?la=H>. A draft AQAP was prepared for both AQMAs; the Storrington AQAP was submitted to Defra in 2012 and the Cowfold AQAP in 2013 (Table 2.1).

#### 2.1.1 Summary of Previous Review and Assessments

Under the Environment Act 1995, local authorities are required to Review and Assess (R&A) air quality on a regular basis. A review of air quality means a consideration of the levels of pollutants in the air for which objectives are prescribed in Regulations<sup>5</sup>, and estimations of likely future levels. An assessment of air quality is the consideration of whether estimated levels for the relevant future period are likely to exceed the levels set in the objectives. A table of reports published is presented in Table 2.2 below.

The first review and assessment round was completed in 2000. The main conclusion was that the national air quality objectives were not likely to be exceeded at any locations in the district.

This first round of R&A constituted a benchmark against which Horsham District Council (the Council) measure progress in making improvements to the local air quality. Subsequent progress reports were completed in 2004 and 2005. In 2006 an Updating and Screening Assessment was completed. In all these reports no exceedance of air quality objectives was identified or predicted, which were the conclusions based on the results from the monitoring locations in operation at that time.

The Progress Reports submitted in 2007 and 2008 identified an exceedance of the air quality annual mean objective for NO<sub>2</sub> in Storrington and Cowfold and the need for Detailed Assessments

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<sup>5</sup> Air Quality Regulations for England (2000; Amendment Regulations 2002)  
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for both locations was acknowledged. Steps were taken to install continuous monitoring equipment at both locations in order to proceed to the detailed assessment stage.

The Updating and Screening Assessment submitted in 2009 confirmed continued exceedances of the air quality objective for NO<sub>2</sub> at Storrington and Cowfold on the basis of diffusion tube monitoring results and the detailed assessment study of these areas begun.

The 2010 Progress Report provided an update on air quality within the district and confirmed a continued exceedance of the air quality objective for NO<sub>2</sub> at Storrington and Cowfold. In accordance with the requirements of the LAQM framework the Council submitted the Detailed Assessments of air quality for these villages.

Following recommendations from the Detailed Assessments reports, the Council declared two Air Quality Management Areas (AQMAs), Storrington in December 2010 and Cowfold in October 2011. Maps showing the AQMA boundaries for both locations are provided in Figure 2.1 and Figure 2.2 overleaf.

The Further Assessment report for Storrington, submitted in March 2012, confirmed the findings of the Detailed Assessment and the AQMA in Storrington remained as originally declared. The Further Assessment report for Cowfold village was submitted to Defra in October 2012.

The declaration of AQMAs committed the Council to taking actions towards achieving the air quality objectives in the AQMA. In October 2012 Horsham District Council produced a draft AQAP for Storrington AQMA which was subject to public consultation during February/March 2013. The Action Plan for Cowfold was submitted to Defra in September 2013.

The Progress Reports produced in 2013 and 2014 confirmed continued exceedances of the annual mean air quality objective for NO<sub>2</sub> within the existing two AQMAs and updated the Action Plans for both Cowfold and Storrington.

The Updating and Screening Assessment completed in 2015 confirmed that the annual mean NO<sub>2</sub> concentrations continued to exceed or be close to exceeding the objective in the AQMAs in Cowfold and Storrington; as such, the AQMAs remain valid. The USA report included the Action Plan Progress Report for the Storrington and Cowfold AQMAs. The assessment of sources identified relevant exposure close to the Gatwick airport boundary that had not been previously assessed. It was recommended that a decision on a requirement to proceed to a Detailed Assessment in respect of this area is taken after the Airport Commission has given its recommendation on the airport expansion.

The decision on Gatwick expansion was taken in 2015 and Gatwick had not been considered the best option for the national airport capacity expansion. Still, diffusion tube monitoring was

undertaken in 2016 at a receptor in Bonnetts Lane, Crawley, near the airport boundary, in order to determine the NO<sub>2</sub> concentrations in this area, as the current total equivalent passenger throughput exceeds the threshold defined by the TG(16) guidance. The results from the site showed that annual mean NO<sub>2</sub> concentrations were well below 40µg/m<sup>3</sup>, which indicates that exceedances of the objective in that area are unlikely. This has been reported in the 2017 Annual Status Report (ASR).

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	Action Plan		
							Name	Date of Publication	Link
Storrington	December 2010	NO <sub>2</sub> – annual mean	Storrington town centre incorporating West Street, the High Street, and part of School Hill and Manleys Hill.	No - WSCC	50.2µg/m <sup>3</sup> (Storrington 1,2)  39.3µg/m <sup>3</sup> * (Storrington 11n)	31.6µg/m <sup>3</sup> (Storrington 1)  25.0µg/m <sup>3</sup> (Storrington 11n)  38.4µg/m <sup>3</sup> (Storrington 19n)	AQAP for Storrington	October 2012	HDC website <sup>1</sup>
Cowfold	October 2011	NO <sub>2</sub> – annual mean	Cowfold town centre incorporating The Street, part of Station Road and Bolney Road.	No - WSCC	40.5µg/m <sup>3</sup> (Cowfold 1,2)  45.9µg/m <sup>3</sup> (Cowfold 7n)	26.8µg/m <sup>3</sup> (Cowfold 1,2)  30.2µg/m <sup>3</sup> (Cowfold 7n)	AQAP for Cowfold	September 2013	HDC website <sup>2</sup>

\* Annual mean concentration in 2011

<sup>1</sup> <https://www.horsham.gov.uk/environmentalhealth/environmental-health/air-quality/storrington-air-quality>

<sup>2</sup> <https://www.horsham.gov.uk/environmentalhealth/environmental-health/air-quality/cowfold-air-quality>

**Table 2.2 - Summary of Air Quality Review and Assessment Reports and Conclusions for Horsham District Council**

Year	Report	Conclusions
2000	Review and Assessment	No exceedance of air quality objectives identified or predicted
2003	Review and Assessment	No exceedance of air quality objectives identified or predicted
2004	Progress Report	No exceedance of air quality objectives identified or predicted
2005	Progress Report	No exceedance of air quality objectives identified or predicted
2006	Update and Screening Assessment	No exceedance of air quality objectives identified or predicted
2007	Progress Report	Detailed assessment required for NO <sub>2</sub> in Cowfold and Storrington
2008	Progress Report	Detailed assessment for NO <sub>2</sub> required in Cowfold and Storrington
2009	Update and Screening Assessment	Detailed assessment for NO <sub>2</sub> required in Cowfold and Storrington
2010	Progress Report	Detailed assessment for NO <sub>2</sub> required in Cowfold and Storrington.
2010	Detailed Assessment for Storrington	Declaration of AQMA
2011	Detailed Assessment for Cowfold	Declaration of AQMA under consultation.
2012	Further Assessment Storrington	Report confirmed findings of Detailed Assessment 2010
2012	Action Plan Storrington	Submitted to Defra October 2012
2012	Further Assessment Cowfold	Report confirmed findings of Detailed Assessment 2011.
2012	Updating and Screening Assessment	Report confirmed AQMAs justified in Storrington and Cowfold.
2013	Progress Report	Report confirmed AQMAs justified in Storrington and Cowfold. Action Plans updated.
2013	Action Plan Cowfold	Submitted to Defra September 2013
2014	Progress Report	Report confirmed AQMAs justified in Storrington and Cowfold. Action Plans updated.
2015	Updating and Screening Assessment (USA)	Monitoring data for 2014 confirmed that annual mean NO <sub>2</sub> concentrations continued to exceed or be close to exceeding the objective in the AQMAs at Cowfold and Storrington; as such, the AQMAs remain valid.  The assessment of sources identified relevant exposure within 1000m of the Gatwick airport boundary that has not been previously assessed. The USA report recommended that a decision on a requirement to proceed to a Detailed Assessment in respect of this area be taken after the Airport Commission has given its recommendation on the airport expansion.
2016 2017 2018	Annual Status Report	Report confirmed AQMAs justified in Storrington and Cowfold. There were no monitoring sites exceeding the objectives for NO <sub>2</sub> outside the AQMAs from 2016 through to 2018. Action Plans updated. The results from a site near Gatwick Airport showed annual mean NO <sub>2</sub> concentrations well below the objective.



2019	Annual Status Report	Report confirmed AQMAs were still justified in Storrington and Cowfold. There were no monitoring sites exceeding the objectives for NO <sub>2</sub> outside the AQMAs in 2019. It was the first year where no monitoring site within the Cowfold AQMA exceeded the NO <sub>2</sub> objectives. Action Plans updated.
2020	Annual Status Report	2020 results showed significant reductions across all monitoring sites. It is likely that the Cowfold AQMA will be revoked in the coming years. Exceedances in the Storrington AQMA are limited to the mini-roundabout of Manley's Hill and School Hill. The Council is preparing a formal update of the Action Plan, which will involve public consultation.

Figure 2.1 - Map of Storrington AQMA Boundary

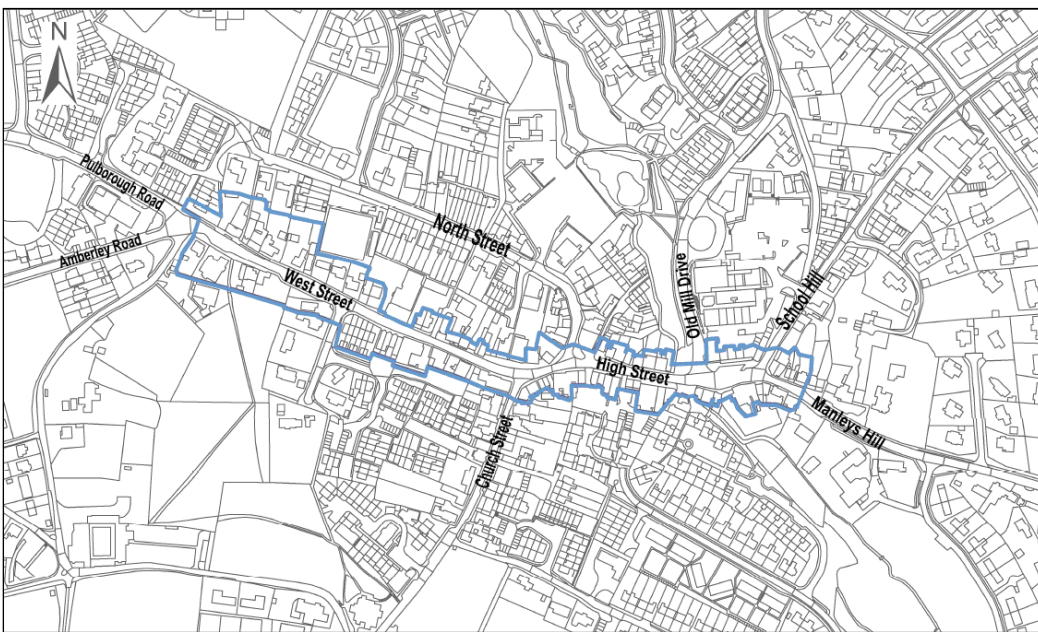
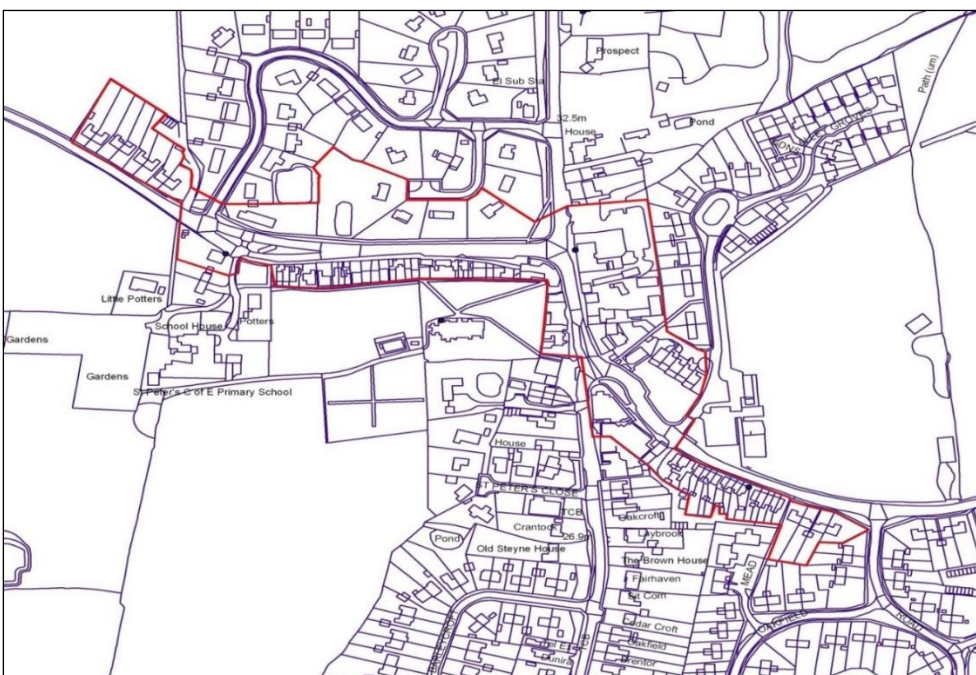


Figure 2.2 - Map of Cowfold AQMA Boundary



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

Horsham District Council (HDC) and West Sussex County Council have taken forward a number of measures during the recent years in pursuit of improving local air quality. Details of all measures completed, in train or planned are set out in Table 2.3. More detail on these measures can be found in their respective Action Plans: AQAP for Storrington<sup>6</sup> and AQAP for Cowfold<sup>7</sup>.

Due to periods of national and local lockdowns in 2020 the progression of the action plans was delayed; yet the following schemes have been pursued:

- Exploring issues around the enforcement of the scheme for prohibition of goods vehicles over 7.5 tonnes on School Hill in Storrington between the A283 and the Mill Lane car park access road;
- Promotion of a prohibition of loading and unloading at any time on sections of North Street and prohibition of waiting on sections of The Square and West Street Storrington (completed summer 2019);
- Reviewing an advisory signage scheme for lorries on the A23 and A24 deterring HGVs from using A272 through Cowfold AQMA;
- Completion of the Clean Burn Sussex project aimed at the promotion of least polluting fuels and stoves;
- Integration of the *Air Quality and Emissions Mitigation Guidance for Sussex (2021 update)* with HDC environmental (air quality) policy; and
- Promoting air quality and the airAlert service on the website and through social media posts.

The measures proposed to address air quality issues in Storrington and Cowfold AQMA are subject to periodic review in respect of their deliverability. The most recent review also highlighted a number of other measures which were considered further and which are described in more detail below; these being:

- Advisory lorry route signage improvements within the Storrington AQMA;
- Linking of two pedestrian crossings along the High Street/West Street; and
- Re-alignment of the A272 Bolney Road away from Huntscroft Cottages.

<sup>6</sup> [https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0013/5431/Storrington-AQ-ActionPlan-draft.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0013/5431/Storrington-AQ-ActionPlan-draft.pdf)

<sup>7</sup> [https://www.horsham.gov.uk/\\_data/assets/pdf\\_file/0004/14494/Cowfold-AQ-Action-Plan-drafftinal.pdf](https://www.horsham.gov.uk/_data/assets/pdf_file/0004/14494/Cowfold-AQ-Action-Plan-drafftinal.pdf)

The Council's priorities for the coming year are:

- Formal update of the Storrington and Cowfold AQAPs including public consultation;
- Working with planning policy and development control to secure air quality mitigation from new development;
- Progression of a scheme to enable enforcement of breaches of the weight restriction for HGVs using School Hill;
- Exploring a Freight Delivery Partnership / Fleet Operator Recognition Scheme Standard: Encourage use of WSCC advisory lorry route rather than A283 through Storrington AQMA for longer distance lorry movements;
- Review of other traffic management / congestion improvement schemes for Storrington and Cowfold.

The achievement of congestion improvement measures in Storrington and Cowfold has been challenging as there are no easy solutions and because Horsham District Council is not the highways authority. 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 investigated. Promotional initiatives that encourage people to consider walking, cycling and public transport use as alternatives to the car across the District also continue to be explored in line with the West Sussex Transport Plan 2011-2026.

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. One example is the LEZ trial in Storrington. Based on the findings of the 'Storrington Traffic Management Options Appraisal' study (2013)<sup>8</sup> and following further analysis of the feedback from the exhibition where the outcomes of the study were presented, a Low Emission Zone (LEZ) was identified as the most viable traffic management option to reduce NO<sub>2</sub> concentrations in the Storrington AQMA. Regrettably, the trial scheme did not achieve the expected results due to poor data capture and conformity caused by poor strength of the mobile signal. However, the camera system can achieve results with wired communication, or with the use of local storage and regular collection of data (costs to be compared). Subsequently, funding from Defra's Air Quality Grant was sought in order to undertake a feasibility study into the costs of using either a wired camera

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<sup>8</sup> [https://www.horsham.gov.uk/\\_\\_data/assets/pdf\\_file/0015/5433/StorringtonTrafficMgt.pdf](https://www.horsham.gov.uk/__data/assets/pdf_file/0015/5433/StorringtonTrafficMgt.pdf)  
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connection or local storage and regular collection of data. The application was unsuccessful, therefore the project cannot be progressed unless an alternative source of funding is found. Funds for a feasibility study would also be required to consider in further detail the traffic management implications of such a Low Emission Zone.

### **District Wide Action Plan Measures**

In the 12 months since submission of the 2019 Annual Status Report, work continued on the integration of the air quality planning guidance. A decision was taken to consolidate the HDC and Sussex guidance documents to facilitate its adoption and implementation by the planning department. The ***Air Quality and Emissions Mitigation Guidance for Sussex (2021)*** has had an update and its application continues to be tested in HDC and neighbouring districts within Sussex. As the Council's Local Plan is currently under review, this presents an opportunity to strengthen the wording of HDC's air quality policy. The Council is also looking to adopt the Air Quality and Emission Mitigation Guidance as a Supplementary Planning Document (SPD).

Development of the Emission Reduction Strategy has progressed with a number of key projects being developed in collaboration with partners. HDC approved its **Electric Vehicle (EV) Charge Point Strategy** in March 2020. In light of the Strategy the Council has worked with West Sussex County Council to procure a contractor via a concession contract. This is a collaborative approach involving most of the District and Borough Councils across the County (it excludes Chichester District Council). The intention is for the contractor to work collaboratively with Councils and other public sector organisations to install charge points on publicly owned land over the next 10 years. This is an ambitious programme to install 1000's of charge points across the County. The principle focus will be to provide charge points for residents that do not have access to off street parking, so they cannot charge at home. This is a barrier for EV take up for these residents. The cohesive and comprehensive network will also include some destination and rapid charge points; again to support the take up of EV by residents as well as businesses.

In 2014 Horsham became host to its first **car club**. With the recently added car, three cars (one eV/petrol hybrid) are currently available in Horsham. A scoping assessment is in progress to establish the viability of extending the car club scheme to Cowfold, Storrington, Billingshurst and Henfield. The car clubs in Horsham and in neighbouring Chichester District Council were originally funded by the Department for Transport's Local Sustainable Transport Fund (LSTF).

Horsham District Council has successfully bid for support from the Department for Transport (DfT) under Phase Two of the **ULEV Readiness Project**. The grant covered 75% of the cost of eV vehicle leases for three vehicles: two Nissan e-NV200 vans and one Nissan Leaf car, as well as the costs of the installation and maintenance of one charge point per vehicle - located at Swan

Walk car park, Chesworth Depot HDC and Hop Oast Depot HDC. Each vehicle was procured with a telematics system enabling an automatic data connection. The vehicles were delivered in May 2016 and have been used by the parking and leisure services. The grant period stretched over two years, and as the lease has been set for 4 years, HDC is now eligible for these costs. It remains to be seen if Parking and Leisure services find value in extending the lease contract further.

In 2018 HDC has secured grant funding towards a cleaner burning project, which has been branded as “Clean Burn Sussex”. Finalised in March 2021, the project was a collaboration of 15 authorities in Sussex to raise awareness about domestic burning and promote better burning methods and choices. A survey questionnaire to gather information on solid fuel burning in the region, and on the factors influencing this choice of fuel, has achieved a good response rate, and a summary report from the collected data was issued. Each resident who has completed the survey (and given their consent) was emailed information on how to reduce emissions from burning through using cleaner stoves and fuels. A dedicated website has been added to the Sussex Air domain and running since November 2019:

<http://www.sussex-air.net/Cleanburn/clean-burning.aspx>

### **Storrington Air Quality Action Plan**

The Action Plan for Storrington was submitted to DEFRA and published on the Council’s website in October 2012. The action plan appraisal report was received from DEFRA in November 2012 with the draft plan accepted as fulfilling the requirements of the Local Air Quality Management policy guidance (LAQM PG (16)). Most of the actions set out in the 2012 Plan have either been completed or retracted due to low effectiveness or low feasibility. The most recent review of the identified measures took place in June 2017. The review note, produced by the officers of HDC and the County Council can be downloaded from the Council’s website<sup>9</sup>.

The review identified a number of schemes for further consideration. Following further evaluation a decision was taken by the Storrington Air Quality Steering Group to prioritise the progression of three schemes:

- Prohibition of lorries turning right into School Hill from Manley’s Hill within the Storrington AQMA;
- Advisory lorry route signage improvements within the Storrington AQMA; and
- Time restrictions for goods vehicle loading/delivery within the AQMA during peak periods around the North Street/A283 High Street junction.

<sup>9</sup> [https://www.horsham.gov.uk/\\_\\_data/assets/pdf\\_file/0003/51996/Storrington-AQMA-traffic-scheme-proposals-review\\_updatedJune2019\\_draftv2.pdf](https://www.horsham.gov.uk/__data/assets/pdf_file/0003/51996/Storrington-AQMA-traffic-scheme-proposals-review_updatedJune2019_draftv2.pdf)

## **Prohibition of lorries turning right into School Hill from Manley's Hill within the Storrington AQMA**

The scheme sought the prohibition of lorries turning into or out of B2139 School Hill and A283 Manley's Hill. This included advance warning and lorry routing signs installed on the access routes into Storrington including A283 Washington Road, A283 High Street and B2139 Thakeham Road. Lorries turning into School Hill block traffic on Manley's Hill, which exacerbates congestion on Manley's Hill and the High Street. Furthermore, the mini-roundabout of School Hill and Manley's Hill lacks the space for lorries turning so a turning ban was believed to have a positive impact on safety in addition to reducing congestion. However, there were complications in the way in which such a prohibition could be legally worded as there are no permitted variants of signs that relate specifically to banning certain classes of vehicles from making specific movements. Subsequently, a wider scheme to ban all goods vehicles over 7.5 tonnes movements from B2139 School Hill between the A283 High Street/Manleys Hill and the access to Hill Lane Car Park (except for access) has been progressed. The scheme included the provision of prohibitory signs at the junctions and advance lorry routing signs on the access roads into Storrington, including A283 Washington Road and B2139 Thakeham Road. The scheme was completed in May 2019.

## **Enforcement of breaches of the weight restriction for HGVs accessing School Hill**

HDC in conjunction with Storrington Parish Council is looking to install CCTV equipment at the mini-roundabout of School Hill and Manley's Hill to enforce the weight restriction for lorries using School Hill. It follows the Neighbourhood Wardens having witnessed several breaches of the restrictions since the prohibitory signs were installed. Two options were quoted in 2020: outright purchase of the camera and contract for 1 year, and outright purchase of the camera and contract for 2 years, however the costs were prohibitive. HDC is currently exploring the possibility of camera rental from WSCC once the County Council has set up their TRO enforcement scheme up and running.

## **Advisory lorry route signage improvements within the Storrington AQMA**

In terms of advisory lorry route signage, there is a current voluntary agreement in place with Waitrose for delivery lorries coming from the A24 to use Water Lane to access the village centre. In addition local signage directs lorries to the Water Lane Trading Estate to use Water Lane. The goods vehicle prohibition above included additional HGV lorry routing signs so it is not certain what further improvements can be made, but any further suggestions from the Steering Group will be monitored and addressed as appropriate.

## **Time restrictions for goods vehicle loading/delivery within the AQMA during peak periods**

Parking on double yellow lines remains an issue in the town centre. The most affected area is North Street near the junction with the A283 West Street. It was envisaged that prohibition of loading/unloading in that area would reduce congestion and have a positive impact on safety. The installation works to implement double yellow lines and road signs prohibiting waiting, loading and unloading, took place in summer 2019. The scheme is now fully implemented and has shown to have a positive impact on air quality.

### **Other Measures**

There are a number of other schemes considered potentially viable, which may be progressed at a later date, depending on funding and scheme feasibility; these include:

- Review of on-street car parking and loading bay provision;
- Review of two pedestrian crossings along the High Street/West Street;
- Working with local businesses – to encourage alternative refuelling options; encourage home deliveries; investigate opportunities for local and shared deliveries; improve local bus service; promote transport plans; encourage the use of LEVs for deliveries within AQMA;
- Smarter Choices – encourage walking and cycling.

### **Review on-street car parking and loading bay provision**

Parking issues within the village which have been identified as contributing to congestion within the AQMA. One issue at the western end of the village near to the Amberley Road mini-roundabout was resolved in 2019 by a Traffic Regulation Order to remove a parking bay that was causing congestion. As a result the monitoring site Storrington 11n showed a significant decrease in NO<sub>2</sub> concentrations in 2019 compared to the previous year 2018. Other parking areas have been identified as causing congestion on a regular basis. Further detailed evaluation could be considered to understand the causes of congestion through the High St/West St related to the interactions of the pedestrian crossings, junctions, parking and deliveries. The scheme could entail re-designation of on-street car parking spaces as dedicated loading bays, to better manage arrangements for goods vehicles stopping on the carriageway. West Sussex County Council has a programme of reviews in relation to on-street parking management it is undertaking across larger towns across West Sussex and a light touch version of this could be an avenue through which to progress this evaluation further. The purpose of this would be to consider the longer-term strategy for parking management within the village, evaluate both the current and future demands for parking space provision and investigate optimised use of available spaces and look at options for improvement. Progression of a parking review for Storrington would be dependent on the

availability of a local funding resource, as the county's current programme resources (and hence funding resources) are already allocated elsewhere.

### **Review two pedestrian crossings along the High Street/West Street**

Both crossings have previously been upgraded to Puffin crossings (they use kerbside detectors to cancel demands on the crossing no longer required). The crossings use 'vehicle actuation' technology and were linked in 2017 during peak traffic flow times in attempt to smooth vehicle flow. The crossings do not include microprocessor technology (Microprocessor Optimised Vehicle Actuation - MOVA). This technology has the potential to enable green/red phase timings to react to periods of high air quality sensitivity and to prioritise traffic movement at peak times. To progress the scheme, a site study is needed to explore if MOVA technology is technically feasible to be delivered. However, there are doubts about how much any further benefits could be realised because of blocking back caused by the other mini-roundabout and traffic interactions along the High Street.

### **Working with local businesses**

- Alternative Refuelling Options: Encourage provision of electric vehicle charging points at local business and public car parking spaces. Ensure compatibility of EV charging points to enable link to "Charge your Car" pay as you go network. Encourage development of Compressed Natural Gas (CNG) refuelling network across the district via private companies and as part of a district alternative fuel strategy (See District-wide AP measures).
- Home delivery scheme: Encourage through businesses use of low emission delivery vehicles with possible link to district Compressed Natural Gas (CNG) refuelling strategy.
- Community minibus – enhance existing Storrington minibus service by replacing existing diesel fleet with Low /Zero emission vehicles. Funded by local businesses or new developments via planning contributions, possible link to CNG refuelling strategy.
- Improve local bus service – Liaise with local PSV operators to restrict vehicles entering AQMA to Euro IV/V standard. Consider subsidising strategic bus services to village schools via grant funding/Section 106 contributions to address 'school-run' traffic peaks. Investigate provision of local real-time bus information at bus stops to promote use.
- Transport Plans/ Travel Plans: Promote to existing businesses and new developments innovative solutions: e.g. low emission incentives; driver training; car share schemes; car clubs.
- Freight Delivery Partnership / Fleet Operator Recognition Scheme Standard: Encourage use of WSCC advisory lorry route rather than A283 through Storrington AQMA for longer



distance lorry movements; investigate opportunities for local and shared deliveries; Encourage use of low emission delivery vehicles to local stores within AQMA, provide links to CNG refuelling strategy.

These schemes are being investigated through various delivery avenues, and are subject to different feasibility and value for money considerations.

### **Smarter Choices – encourage walking and cycling; work with schools**

Sussex-air have been successful in the 2020/21 bid to Defra for funding to work with primary and secondary schools to tackle school travel emissions. The project will involve air quality monitoring and may include school street closures. This is a continuation of the programme that was first delivered in 2018-19 to work with primary schools in or near Sussex AQMAs.

A number of Local Transport Investment Programme (LTIP) schemes to improve walking paths and pedestrian crossings around schools have been considered by WSCC. These include:

- Pedestrian safety improvements to Water Lane roundabout to allow safe crossing. This scheme was completed in March 2020.
- Improvements (hard surfacing) for the Riverside route from Water Lane (West Wantley Farm) to Storrington Primary School / Leisure Centre. Monitoring undertaken during 2018 at school times found that there was no use of this path by pupils at school times, so this is not being progressed further at this stage. If future development shows a use of this path, this scheme can be revisited in future.

In addition, work continues on school travel plans, the below are examples of measures being investigated by Storrington Primary School:

- Crossing for the Leisure Centre on Spierbridge Road / Hormare Crescent. A school crossing patrol (SCP) count was carried out at this location and it did not meet the criteria for a paid SCP position. The location of a formal crossing here would not be on the desire line for pupils crossing the road here. The school has been encouraged to find a volunteer to carry out the SCP role to meet the needs of pupils crossing here.
- Cycling racks for Storrington Primary School.
- Rear access to Storrington Primary School including improvements to Love Lane path. This land is not owned by WSCC or HDC, the level of local resident support for the scheme is unclear, while there are flooding/drainage issues with this scheme, with the scheme awaiting more engagement from the school community.
- New School Keep Clear Markings were put in place in 2018 to ensure the markings meet the schools needs.

The final measure that should be discussed in this section is the A27 Improvements Scheme (Arundel bypass). This is not a scheme that the Council is directly involved in (as it is managed by Highways England), however HDC supported the proposals in their response to the 2017 consultation.

### **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. This is expected to reduce traffic flows through Storrington where longer distance traffic is avoiding the A27 due to congestion. Following Highways England consultation in late summer 2017, an initial preferred route announcement in 2018, a further consultation in 2019 and review period, a preferred route announcement was made in October 2020. Option 5BV1 has been chosen as the preferred route, which involves a new dual carriageway between Crossbush junction and a new junction with the existing A27 near Tye Lane. This option is expected to bring a reduction in the total vehicle numbers on the A283 route through Storrington - which is currently used by drivers wanting to avoid traffic on the A27.

Whilst the measures stated above and in Table 2.3 will help to contribute towards achievement of the AQOs, Horsham District Council anticipates that further additional measures at the national level not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the Storrington AQMA. This conclusion is drawn on the basis of current monitoring results from Storrington 19 - the worst-case monitoring location in the Storrington AQMA.

### **Cowfold Air Quality Action Plan**

Horsham District Council produced a draft Air Quality Action Plan for Cowfold in September 2013. The draft was accepted by DEFRA in December 2013. Similar to the Storrington Plan, most of the actions set out in the Cowfold Action Plan have either been completed or retracted due to low effectiveness or low feasibility. The most recent review of the identified measures has taken place in September 2017. The review note, produced by the officers of HDC and the WSCC can be downloaded from the Council's website<sup>10</sup>.

The review highlighted a number of measures for further consideration. Following further evaluation, the Cowfold Air Quality Steering Group supported progression of two main schemes that have been considered further and which are described in further detail below:

- Improved signage on strategic routes to discourage longer distance lorry traffic from using the A272 through Cowfold;

<sup>10</sup> [https://www.horsham.gov.uk/\\_\\_data/assets/pdf\\_file/0004/51997/Cowfold-Air-Quality-Management-Area-scheme-proposals-review-Sept-2019.pdf](https://www.horsham.gov.uk/__data/assets/pdf_file/0004/51997/Cowfold-Air-Quality-Management-Area-scheme-proposals-review-Sept-2019.pdf)  
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- Realignment of A272 Bolney Road adjacent to Huntscroft Cottages.

The Steering Group has also considered a traffic gating scheme to address air quality issues within the village, while the Cowfold Action Plan also includes a Smarter Choices scheme. This involves work with WSCC to enhance school travel plans, identify safety improvements to encourage walking, cycling, walking buses, and contribute to air quality awareness education programmes.

### **Improved signage on strategic routes to discourage longer distance lorry traffic using the A272 through Cowfold**

The following data is based on the maximum possible theoretical impact of installation of advisory signs for lorries on 4 route options on the A24, A272 and A23 deterring HGV traffic from taking the route through the Cowfold AQMA. An assessment of the movement of vehicles (particularly HGVs) through Cowfold was carried out in Spring 2019, based on 12-hour 0700-1900 traffic flows. Within the 12 hour flow on the A281 Cowfold High Street there was 6% HGVs of which 23% could be considered transferable movements to other routes. The conclusions were that only a small number of HGVs could potentially be re-routed away from Cowfold village centre. The survey data did not include details of the specific origins or destinations of these flows beyond the survey cordons located at the junctions of the A23 and A24, so not all of these candidate flows would be suitable for transfer. Further consideration of whether this level of candidate transferrable movement is significant in air quality terms is needed before a decision is taken to explore this measure further. It should also be noted that it was unclear what wording could be included on any signs so that messages would be clear and effective to drivers. Also, it could not be established that there would be sufficient controls available to agencies to enforce removal of this traffic. These issues, together with the anticipated cost of the scheme, means that the scheme has not been pursued further at this time.

### **Realignment of A272 Bolney Road adjacent to Huntscroft Cottages**

The Council has been liaising with WSCC to consider a proposed A272 road realignment project in the centre of Cowfold village. The proposed scheme, whilst initiated originally on highway safety grounds, would have the effect of moving the road further from the worst affected receptors within the AQMA. Dispersion modelling showed a significant reduction in NO<sub>2</sub> concentrations at receptors previously exceeding the annual mean objective. The cost of the scheme is like to be significant due to underground utilities present under the road, which adds to the traffic management costs. Due to the expected high costs, the only route to progress the scheme is through the WSCC Strategic Transport Investment Programme (STIP). The Council applied for Defra's air quality grant to provide partial funding for the scheme but was unsuccessful as, should

it be implemented, while the scheme will have a positive impact on NO<sub>2</sub> concentrations at relevant receptors, overall emissions will remain unchanged. Regarding the review of the STIP programme, there is a lot of pressure on this programme, and this scheme has not been prioritised in the most recent review decision. This scheme is therefore not being considered for further progression at this time but could still be considered in the future.

### **Smarter Choices – encourage walking and cycling; work with schools**

This scheme involves work with WSCC to enhance school travel plans, identify safety improvements to encourage walking, cycling, walking buses, and contribute to air quality awareness education programmes.

Sussex-air have been successful in the 2020/21 bid to Defra for funding to work with primary and secondary schools to tackle school travel emissions. The project will involve air quality monitoring and may include school street closures. This a continuation of the programme that was delivered in 2018-19 to work with primary schools in or near Sussex AQMAs.

### **Traffic gating option**

A further scheme discussed by the Steering Group has been the potential use of traffic signal gating to attempt to smooth the flow of A272 traffic westbound on the approach to the mini-roundabouts in the centre of the village, to attempt to reduce the amount of idling or very slow moving traffic at Huntscroft Cottages. There were a number of issues with this scheme including feasibility, technical, enforcement and business case issues, while initial air quality modelling suggesting that the benefits of the scheme would be minimal, hence the scheme has not been pursued further.

### **Other Measures**

There are a number of other schemes which could be considered, which may be progressed at a later date, depending on funding and scheme feasibility; those include:

- Review on-street car parking and loading bay provision;
- Promotion of alternative travel options; and
- Low Emission Zone / CAZ.

### **Review on-street car parking and loading bay provision**

This would entail potential changes to onstreet parking and to delivery arrangements for businesses in the centre of Cowfold. This measure was originally identified in the Action Plan in relation to delivery arrangements to the Coop before it moved to the former Old Coach House pub site. At present, there are not known to be significant on-street car parking or loading issues within

Cowfold affecting air quality receptor hotspot locations through the village. Therefore no specific action is proposed at this point in time. However, any planning applications coming forward for use of the former Coop building, as well as any continuing or emerging community concerns about onstreet parking or loading issues should be monitored in relation to air quality impacts.

### **Promotion of alternative travel options**

This includes a number of measures focusing on working with local businesses, promoting electric vehicles, improving public transport, promoting travel plans, encouraging walking and cycling, and working with schools. These schemes are being investigated through various delivery avenues, and are subject to different feasibility and value for money considerations.

### **Low Emission Zone / CAZ**

Given the experience from the Storrington LEZ trial, and the questions of practical enforceability of any LEZ restrictions it can be expected that there would be reservations about the feasibility and effectiveness of progressing a separate LEZ in Cowfold. However, a grant bid was submitted to Defra in 2019 for a feasibility study into the setting up a voluntary Clean Air Zone (CAZ), which would entail implementing a number of actions aimed at promoting and improving air quality, such as a car club and a rapid ev charging point. Regrettably, the bid was unsuccessful so alternative source of funding needs to be found were the scheme to be progressed.

### **A27 Improvements (Arundel bypass)**

In addition to the schemes detailed above, for which progression lies within the remit of HDC/WSCC, consultation took place in late summer 2017 in respect of the A27 Improvements (Arundel bypass) scheme. Following this consultation, an initial preferred route announcement in 2018, a further consultation in 2019, and a review period, a preferred route announcement was made in October 2020. Option 5BV1 has been chosen as the preferred route, which involves a new dual carriageway between Crossbush junction and a new junction with the existing A27 near Tye Lane. This scheme is 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).

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

Table 2.3 – Progress and Impact of AQAP Measures (2020)

Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
<b>DISTRICT WIDE MEASURES</b> 1	Planning Advice Document: Air Quality & Emissions Reduction Guidance	Policy Guidance and Development Control / Air Quality Planning and Policy Guidance	Mitigation of air quality impact of development based on principle of Horsham district as an 'Emission Reduction Area'	HDC	2013-14	May 2014	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.	1%	Planning Advice Document produced by HDC Environmental Health Dept. in collaboration with Strategic Planning Dept.  The guidance provides advice to developers on how to address local air quality when making a planning application in Horsham District.	The updated guidance, Air Quality And Emissions Mitigation Guidance for Sussex (2019) has been published on HDC website and its application is tested in HDC and neighbouring districts within Sussex.	Ongoing	As the Local Plan is currently under review, this presents an opportunity to strengthen the wording of HDC's air quality policy. The Council is also looking to adopt the Air Quality and Emission Mitigation Guidance as a Supplementary Planning Document (SPD).
2	District Emission Reduction Strategy	Promoting Low Emission Transport / Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, gas fuel recharging  Promoting Low Emission Transport / Company Vehicle Procurement – Prioritising uptake of low emission vehicles	Development of alternative fuel strategy	HDC	2013	2014 – ongoing	At least one alternative refuelling option in all new/refurbished filling stations. One public EV charging point in each village in Horsham district. EV rapid charge points for Energise network. Work with local businesses to develop CNG refuelling infrastructure for local commercial fleet operators.	1%	One new refuelling station application received to date – recommendation made to DPO by EH Dept. – Four existing standard EV charging points in HDC (Horsham x2 & Storrington x2). Rapid chargers for one additional location (Billingshurst) and replacement of two existing standard EV chargers being quoted.	Final version of the Electric Vehicle Strategy for West Sussex 2019-2030 got published in December 2019.  HDC approved an Electric Vehicle (EV) Charge Point Strategy in March 2020.	Ongoing	Small initial impact on emissions but aim to facilitate the uptake of more LE vehicles. Planning guidance requires EV charging points for all developments as mitigation measure. Review of potential LE fuel assets within district e.g. biomethane from existing landfill/anaerobic digestion plant ongoing as part of strategic planning.

Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers to Implementation
2 cont/		<p>Promoting Low Emission Transport / Public Vehicle Procurement – Prioritising uptake of low emission vehicles</p> <p>Promoting Low Emission Transport / Taxi licensing conditions</p> <p>Promoting Low Emission Transport / Low Emission Zone</p>	Public /commercial vehicle fleet improvement	HDC Funding for ULEV vehicle leases: HDC & OLEV	2013/14	2014/15	<p>Introduction &amp; increase % of ULEV's into Council's vehicle fleet.</p> <p>-Condition requiring latest Euro standard for all new taxis through licensing condition.</p> <p>-buses entering AQMAs to be best available Euro standard vehicle within the company fleet. Achieved via negotiation/LEZ</p>	1%	<p>ULEV Readiness Grant was secured in 2015. Three ultra-low emission vehicle have been delivered to the HDC fleet. Most of the cost of vehicle leases is to be reimbursed by OLEV for 24 months.</p> <p>Taxi/private hire vehicle licence conditions under review. Current vehicles comply with latest Euro standard.</p> <p>Ongoing liaison with bus companies serving routes through AQMAs to reduce engine idling at bus stops.</p> <p>Brighton Bus LEZ introduced in Jan 2015.</p>	<p>Three ultra-low emission vehicles (two vans and one car) have been delivered in May 2016 and are being used by the parking and leisure services. The 3 vehicles have been leased for 4 years. The OLEV grant covered 75% of the cost of the 24 month vehicle leases and charging infrastructure for the first 2 years of use.</p> <p>The final report on the vehicle usage submitted to OLEV in April 2018.</p>	2015 – ongoing	Small initial impact on emissions but aim to facilitate the uptake of more LE vehicles. Benefits of Brighton LEZ vehicle emission improvements will extend to areas outside Brighton.
3	AirAlert	Public Information/ Via other mechanisms	Promote AQ health warning system for individuals with respiratory /cardiac conditions.	Sussex-Air/HDC	Service operational	Service operational	Increase in subscriptions to pollution alert service within Horsham district.	No reduction in emissions.	Project started in 2006. Health based study	Health study continuing. Increase in subscriptions. Cold and heat alerts added to service over the recent years.	Ongoing service	No direct impact on emission reductions but optimising use of monitoring network data for health associated benefits.
4	Clean Burn Sussex	Public Information/ Via other mechanisms	Promote the least polluting fuels and stoves. Raise awareness about domestic burning and promote better burning methods and choices.	Sussex-Air/HDC	2018	2018/20	<p>Number of survey forms returned.</p> <p>Number of visitors to the website.</p> <p>Number of suppliers participating in the project.</p>	<1%	Project completed	Data collected in survey was analysed and a summary report published. A project evaluation report was submitted to Defra on 1 April 2021. A dedicated website has been added to the Sussex Air domain and running from November 2019.	09/2020	Community participation is crucial to the project's success.

Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
<b>STORRINGTON-SPECIFIC MEASURES</b> 1	Prohibition of lorries turning right into School Hill from Manley's Hill and turning left into Manley's Hill from School Hill. Advisory lorry route signage improvements within the Storrington AQMA	Traffic Management/ Strategic highway improvements	Improvement to existing highway through Storrington to reduce traffic congestion	HDC / WSCC	2013-17	2019	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	1%	Meetings with Steering Group & Storrington business representatives identified broad support for the scheme which was implemented in May 2019.	A variant of this scheme successfully passed through the design stage and has been completed in May 2019. Road signs prohibiting all goods vehicles over 7.5t from using School Hill between the A283 and the Mill Lane car park access road were installed on the access routes into Storrington, Manleys Hill and School Hill.	Completed in May 2019	There have been incidences of large lorries making turning movements between School Hill and Manley's Hill and vice versa causing congestion at the mini-roundabout due to the constrained junction.  Emission reductions anticipated as a result of reduced congestion caused by blockages on High Street / West Street.
2	Time restrictions for goods vehicle loading/delivery within the AQMA during peak periods.	Traffic Management/ Strategic highway improvements	Improvement to existing highway through Storrington to reduce traffic congestion	HDC / WSCC	2013-17	2019	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	1%	Meetings with Steering Group & Storrington business representatives identified broad support for the scheme.	A Traffic Regulation Order was progressed to prohibit waiting, loading and unloading at any time on sections of North Street, The Square and West Street in Storrington.	Completed in summer 2019	Parking on double yellow lines remains an issue in the town centre. The most affected area is North Street near the junction with the A283 West Street.
3	Review on-street car parking and loading bay provision	Traffic Management/ UTC, Congestion management, traffic reduction	Improvement to existing highway through Storrington to reduce traffic congestion	HDC / WSCC	2013-17	2020	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	1%	Meetings with Steering Group & Storrington business representatives identified broad support for the review.	The steering group would like to prioritise other schemes ahead of this one as parking in bays is not as much of an issue in terms of increased congestion as e.g. lorry turning into School Hill or vehicle parking on double yellow lines.	TBC	A more detailed air quality assessment of changes to and re-designation of parking-bays and loading bays could be investigated further. This could be a combined assessment of some of the other measures discussed in this document, including a review of the pedestrian crossings and junctions.



Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
4	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/ Workplace Parking Levy, Parking Enforcement on highway	Improvement to existing highway through Storrington to reduce traffic congestion	HDC/Storrington & Sullington Parish Council	2019	2020/21	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	1%	Quotations sought	The cost estimates for CCTV ANPR camera equipment obtained in 2020 were found prohibitively high. HDC went on to explore the possibility of camera rental from WSCC once the County Council has set up their TRO enforcement scheme up and running.	2022	Having seen evidence of breaches of this new restriction, HDC has been investigating the feasibility of enforcement, using CCTV ANPR cameras to collect vehicle data.
5	Evaluate synchronisation for two pedestrian crossings along the High Street/West Street.	Traffic Management/ UTC, Congestion management, traffic reduction	Improvement to existing highway through Storrington to reduce traffic congestion	HDC / WSCC	2013-17	2019/19	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	1%	Meetings with Steering Group identified broad support for this scheme.	Initial review completed in 2018. A site study needed to explore if MOVA technology is technically feasible to deliver will cost ££1000-£1500 to assess site specific circumstances including speed of traffic, detection points, visibility, interactions to side roads, etc. Such assessment will provide a view on the likely benefit of the scheme as well as recommendations on changes to the operation of the crossings (e.g. timings) under the current technology to promote smoother traffic flow. A more detailed study giving more certainty about the degree of benefit from MOVA is likely to cost in the region of £5000 due to the high survey costs in on-ground operatives trying to manually recreate the operational benefits of the technology by	TBC	There are doubts about how much any further benefits from MOVA could be realised because of blocking back caused by the other mini-roundabout and traffic interactions along the High Street.

Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
										controlling the current crossings. The overall expected cost of the MOVA technology is not known.		
6	Promotion of Alternative Transport / Fuelling options	Promoting Low Emission Transport/ Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, gas fuel recharging	Local initiatives to incentivise the uptake of low emission vehicles / sustainable transport.	HDC / WSCC	2013/14	2014/15	Standard eV charging points to be upgraded to rapid charge. Review car parking charging to encourage LE vehicles as part of Energise network. Review transport links/car parking facilities associated with Pulborough main-line station.	1%	Preliminary assessment of existing arrangements.	Measure incorporated into Planning Advice Document. Review undertaken of HDC vehicles at Storrington transport depot to establish opportunities for upgrading/ replacing with low emission vehicles. Rapid EV charger installed in Storrington in 2015.	2013 – ongoing	Emission reductions anticipated as a result of reduction in local car journeys and increase in LE vehicles & improved sustainable transport options.
7	Public/commercial vehicle fleet improvement	Promoting Low Emission Transport/ Public Vehicle Procurement – Prioritising uptake of low emission vehicles	Working with local businesses	HDC / WSCC	2013/14	2014/15	Encourage use of LE home delivery vehicles Incentivise use of LE vehicles by Community minibus service. 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.	1%	Preliminary meeting with local Business Club representatives Low Emission Strategy negotiated with Waitrose as part of planning condition for extended store incorporating use of LE delivery vehicles.	Review of Council Depot vehicles underway by EST to establish Euro standard, replacement schedule and opportunities for upgrading to low emission fuels.	2013 – ongoing	Emission reductions sought through partnership working with local businesses to minimise impact of deliveries etc. on the village.
8	Promotion of Alternative Lorry delivery Routes	Promoting Low Emission Transport/ Public Vehicle Procurement – Prioritising uptake of low emission vehicles	Freight delivery partnerships e.g. Fleet Operator Recognition Scheme Standard	HDC / WSCC	2013/14	2015/16	Encourage use of WSCC preferred lorry routes. Facilitate links for local shared deliveries. Encourage use of LE delivery vehicles in AQMAs.	1%	Freight delivery partnership group previously established by WSCC to be reviewed to assess merit of re-establishing group. May be valid should LEZ	LEZ trial initiated in December 2014.  Waitrose agreed for delivery lorries coming from the A24 to use Water Lane to access the village centre. Local signage directs lorries to the Water Lane Trading	2013 – ongoing	Emission reductions sought through partnership working with local businesses to minimise impact of deliveries etc. on the village.

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							Provide links to EV/CNG refuelling facilities.		option be adopted.	Estate to use Water Lane. The options for further advisory signage for lorries are considered by Storrington AQAP Steering Group.		
9	Smart Choices	Transport Planning and Infrastructure/ Other  Alternatives to private vehicle use/ Car Clubs	Encouraging local walking /cycling by improving access & safety of routes. Introduction of local car club.	HDC / WSCC	2013/14	2015/20	Promote bike rental scheme with local supplier. Investigate funding streams for improvements to local walking & riding paths. – Improve signage -Investigate funding for secure bike storage at local car parks. Undertake feasibility study for introduction of car club in Storrington following success of initiative in Horsham town.	1%	Preliminary review of current facilities. Further meeting with Parish Council to be arranged. Feasibility study to be considered to assess suitability of car club in Storrington by looking at demographics etc.	Measures incorporated into Planning Advice Document for new developments. Scoping report in progress for provision of car club to village.  A number of LTIP schemes to improve walking paths and pedestrian crossings around schools have been considered by WSCC, more details in the main text.	2013 – ongoing	Emission reductions sought through encouraging the use of sustainable transport options within the village.
10	School Travel Plans	Promoting Travel Alternatives/ School Travel Plans	Working with local schools	WSCC/ HDC	Ongoing	Ongoing	Work with WSCC to enhance school travel plans. Identify safety improvements to encourage walking/cycling. Contribute to air quality awareness education programmes.	1%	Preliminary meeting with WSCC School Travel Advisor June 2013 to review issues and identify options.	School travel improvements considered as part of planning applications for new residential developments in Storrington. Work continues on school travel plans. Storrington Primary School and WSCC have been working to investigate options for pedestrian crossing and cycling improvements in and around the school (see main text)	2013 – ongoing	Emission reductions sought through working with schools, parents and pupils to encourage the use of safe and sustainable transport to and from schools, and reduce the number of local car trips.
11	A27 Improvements (Arundel Bypass)	Traffic Management/ Strategic	Campaign to improve A27 on air quality grounds at	Highways England/ WSCC	2013 – ongoing	Dependant on Highways England	Improvements to A27 now programmed by Highways	2.5%	WSCC A27 Action campaign launched to seek	Consultation took place in late summer 2017 in respect of the A27	TBC	Improvements to the A27 are one of the key priorities of the current West

Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
		highway improvements	Chichester, Worthing & Arundel to reduce use of 'alternative' routes such as A283 through Storrington.				England. Key indicator of AP measure will be for HE to agree scheme and implement.		improvement to A27.	Improvements (Arundel bypass) scheme. Following this consultation, an initial preferred route announcement in 2018, a further consultation in 2019 and review period, a preferred route announcement was made in October 2020. Option 5BV1 has been chosen as the preferred route.		Sussex Transport Plan (LTP3).
12	A27 Improvements (Worthing & Lancing)	Traffic Management/ Strategic highway improvements	Campaign to improve A27 on air quality grounds at Chichester, Worthing & Arundel to reduce use of 'alternative' routes such as A283 through Storrington.	Highways England/ WSCC	2015 – ongoing	Dependant on Highways England	Key indicator of AP measure will be for HE to agree scheme and implement.	2.5%	WSCC A27 Action campaign launched to seek improvement to A27.	Consultation by Highways England on one option ("to improve the A27 junctions at Worthing and Lancing") took place during Summer 2017. The scheme was reviewed in 2019 and was re-announced with revised objectives as part of the government's Road Investment Strategy 2 (RIS2): 2020 to 2025 in March 2020. Further option identification work is underway and further public consultation is expected in spring/summer 2022.	Unknown	Improvements to the A27 are one of the key priorities of the current West Sussex Transport Plan (LTP3).
<b>COWFOLD Specific Action Plan Measures 1</b>	Improved signage on strategic routes or restrictions on longer distance lorry traffic	Traffic Management/ Strategic highway improvements	Improvement to existing highway through Cowfold to reduce traffic congestion	HDC / WSCC	2013-17	2020	Reduction in NO <sub>2</sub> concentrations in Cowfold. Improved traffic flow / reduction in traffic congestion.	1%	A traffic survey assessment was carried out in March 2019.	Scheme has been endorsed by Cowfold Parish Council.  An assessment of the movement of vehicles (particularly HGVs) through Cowfold was carried out in Spring 2019, based on a 12-hour traffic survey.	Unknown	Changes to road signs might encourage longer distance lorry traffic to use other strategic routes such as the A23/A264/A24 to the north or the A23/A27/A24 to the south to avoid the Cowfold AQMA. Variable Message Signs (VMS) might also be considered to

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												<p>encourage drivers to use alternative routes at peak times when air quality problems are worse.</p> <p>The conclusions of the feasibility study are that only a small number of HGVs could potentially be re-routed away from Cowfold village centre in peak hours.</p> <p>There are also concerns that there are insufficient controls available to the highway authorities (WSCC and Highways England) to encourage this traffic to use suitable alternative routes.</p> <p>These issues, together with the anticipated cost of the scheme, means that the scheme has not been pursued further at this time.</p>

Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
2	Smart Choices – encourage walking and cycling; work with schools	Transport Planning and Infrastructure/ Other  Alternatives to private vehicle use/ Car Clubs	Encouraging local walking /cycling by improving access & safety of routes. Introduction of local car club.	HDC / WSCC	2013/14	2015/20	Promote bike rental scheme with local supplier. Investigate funding streams for improvements to local walking & riding paths. – Improve signage -Investigate funding for secure bike storage at local car parks. Undertake feasibility study for introduction of car club in Cowfold following success of initiative in Horsham town.	1%	Preliminary review of current facilities. Further meeting with Parish Council to be arranged. Feasibility study to be considered to assess suitability of car club in Cowfold by looking at demographics etc. Measures incorporated into Planning Advice Document for new developments. , Scoping report in progress for provision of car club to village.	A bid led by East Sussex County Council has secured funding through the air quality grant scheme 2020/21 towards developing an action plan for schools and businesses in AQMAs, this includes Cowfold and Storrington Primary schools.	2013 – ongoing	Emission reductions sought through encouraging the use of sustainable transport options within the village.
3	Review on-street car parking provision and possible re-designation of spaces as dedicated loading bays, to reduce number of vehicles stopping on the carriageway	Traffic Management/ UTC, Congestion management, traffic reduction	Potential changes to on-street parking and to delivery arrangements for businesses in the centre of Cowfold.	HDC / WSCC	2015/20	2020	Reduce emissions from traffic in Cowfold	1%	It is believed that this measure was originally identified in the Action Plan in relation to delivery arrangements to the Coop before it moved to the former Old Coach House pub site.	There are not known to be significant on-street car parking or loading issues within Cowfold affecting air quality receptor hotspot locations through the village.  Close monitoring of any proposals for new uses of the former Coop building will need to be made to ensure any potential impacts on air quality will be appropriately mitigated.	2015 – ongoing	Any planning applications coming forward for use of the former coop building, as well as any continuing or emerging community concerns about on-street parking or loading issues should be monitored in relation to air quality impacts.

Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
4	Promotion of Alternative Transport Options	<p>Promoting Low Emission Transport / Public Vehicle Procurement - Prioritising uptake of low emission vehicles</p> <p>Alternatives to private vehicle use/ Car Clubs</p> <p>Promoting Low Emission Transport / Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging</p>	Local initiatives to incentivise the uptake of low emission vehicles / sustainable transport.	HDC / WSCC	2013/14	2014/20	Reduce emissions from traffic in Cowfold	1%	<p>Planning Advice Document incorporates local mitigation measures. Current planning applications will be required to provide incentives to encourage low emission vehicles.</p> <p>This includes a number of measures focusing on working with local businesses, promoting electric vehicles, improving public transport, promoting travel plans, encouraging walking and cycling, and working with schools.</p>	<p>Cowfold village serves a local population of approximately 1800 residents. Public transport options are limited and private car use is the primary mode of transport.</p> <p>Although expected to be a low proportion of the overall volume of vehicle trips, engagement with Cowfold Primary School should continue in order to ensure as many local trips are made by other means to single child occupancy car use as possible.</p>	2015 – ongoing	These schemes are being investigated through various delivery routes. Their direct impact on Cowfold air quality issues in the short to medium are not likely to be significant, however they form part of a wider approach of promoting a culture of using alternative travel options to single occupancy car use.

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5	A272 Road Realignment  (Realignment of A272 Bolney Road adjacent to Huntscroft Cottages)	Traffic Management/ Strategic highway improvements	Assessment of vehicle restrictions /measures to reduce traffic volume and improve flow through Cowfold AQMA	HDC / WSCC	2014/15	2019/20	Reduction in nitrogen dioxide concentrations in Cowfold. Improved traffic flow / reduction in traffic congestion.	10%	A272 road realignment scheme identified by WSCC County Local Committee. Project would move carriageway further from receptors at Huntscroft Cottages.	Road realignment scheme – proposed primarily on pedestrian safety grounds because of the narrow footpath adjacent to Huntscroft cottages.  Dispersion modelling showed a significant reduction in NO <sub>2</sub> concentrations at receptors currently exceeding the annual mean objective.  Due to existing pressures no new schemes have been incorporated into the Strategic Transport Investment Programme in 2019. This scheme is therefore not being considered for further progression at this time but could still be considered in the future.	Unknown	Road realignment will move A272 further from Huntscroft Cottages which experience the highest NO <sub>2</sub> concentrations within the Cowfold AQMA. NO <sub>2</sub> concentrations will be significantly reduced at receptor locations.  Feasibility of the scheme is unclear due to potential impacts on character of village and business case.  The cost of the scheme is significant due to underground utilities present under the road and with the traffic management costs required. An estimate of the scheme cost is £600,000.



Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
6	Clean Air Zone / LEZ	Promoting Low Emission Transport/ Low Emission Zone	Assessment of vehicle restrictions /measures to reduce traffic volume and improve flow through Cowfold AQMA	HDC / WSCC	2019/18	2025	Reduction in nitrogen dioxide concentrations in Cowfold. Improved traffic flow / reduction in traffic congestion.	10%	Any LEZ might restrict all HGV's of pre Euro V classification from entering the village.  A LEZ trial was undertaken in Storrington AQMA in partnership with Siemens. The scheme could not go ahead due to the Greenzone system not functioning effectively. Signal reception problems affecting the system resulted in significant loss of data, whilst there were also problems with the categorisation of vehicles into Euro standard categories.	Given the experience from the Storrington LEZ trial, and the questions of practical enforceability of any LEZ restrictions it can be expected that there would be significant reservations about the feasibility and effectiveness of progressing a separate LEZ in Cowfold.  A grant bid was submitted to Defra in 2019 for a feasibility study into the setting up a voluntary Clean Air Zone (CAZ), which would entail implementing a number of actions aimed at promoting and improving air quality, such as a car club and a rapid ev charging point. Regrettably, the bid was unsuccessful so alternative source of funding needs to be found were the scheme to be progressed.	2025	The zone would limit access to the village for specific vehicle types not meeting specified emission standards (e.g. Euro V or above).  The set up cost and operational costs of the scheme are significant.  Additional considerations are needed to be given to the practical enforceability of any restrictions, whether exemptions are needed for local access, and the impacts of the zone on local businesses and the local community.
7	A27 Improvements (Arundel Bypass)	Traffic Management/ Strategic highway improvements	Campaign to improve A27 on air quality grounds at Chichester, Worthing & Arundel to reduce use of 'alternative' routes through villages such as Storrington& Cowfold.	Highways England/ WSCC	2013 – ongoing	Dependant on Highways England	Improvements to A27 now programmed by Highways England. Key indicator of AP measure will be for HE to agree scheme and implement.	Unknown	WSCC A27 Action campaign launched to seek improvement to A27.	Consultation took place in late summer 2017 in respect of the A27 Improvements (Arundel bypass) scheme. Following this consultation, an initial preferred route announcement in 2018, a further consultation in 2019 and review period, a preferred route announcement was made in October 2020. Option 5BV1	TBC	Improvements to the A27 are one of the key priorities of the current West Sussex Transport Plan (LTP3).

Measure No.	Measure	EU Category / EU Classification	Focus	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments / Barriers so Implementation
										has been chosen as the preferred route.		
8	A27 Improvements (Worthing & Lancing)	Traffic Management/ Strategic highway improvements	Campaign to improve A27 on air quality grounds at Chichester, Worthing & Arundel to reduce use of 'alternative' routes through villages such as Storrington& Cowfold.	Highways England/ WSCC	2015 – ongoing	Dependant on Highways England	Key indicator of AP measure will be for HE to agree scheme and implement.	Unknown	WSCC A27 Action campaign launched to seek improvement to A27.	Consultation by Highways England on one option ("to improve the A27 junctions at Worthing and Lancing") took place during Summer 2017. The scheme was reviewed in 2019 and was re-announced with revised objectives as part of the government's Road Investment Strategy 2 (RIS2): 2020 to 2025 in March 2020. Further option identification work is underway and further public consultation is expected in spring/summer 2022.	Unknown	Improvements to the A27 are one of the key priorities of the current West Sussex Transport Plan (LTP3).

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

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

The major sources of primary PM<sub>2.5</sub> are industrial combustion, road transport, off-road transport, residential sources and small-scale waste burning<sup>11</sup>. Road transport sources of PM<sub>2.5</sub> include mainly exhaust emissions from diesel vehicles, together with non-exhaust emissions from tyre wear, brake wear and road surface abrasion.

Chemically, a large proportion of the total mass of PM<sub>2.5</sub> consists of nitrates, sulphates and organic and elemental/black carbon<sup>12</sup>. The carbon(aceous) particles are associated with a variety of combustion sources including diesel powered engines, residential burning and power stations. There is evidence of adverse health effects of black carbon particles linked with cardiovascular conditions and premature mortality<sup>13</sup>.

PM<sub>2.5</sub> 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 (2019) levels of anthropogenic PM<sub>2.5</sub> was 4.8% in the Horsham district<sup>14</sup>. This places the district mid-way between the areas with the lowest estimated mortality burden in England (the fraction of around 3%) and very urbanised areas which show the highest rates of mortality attributable to anthropogenic PM<sub>2.5</sub> (around 7%)<sup>15</sup>.

<sup>11</sup> Air Quality Expert Group (2012) *Fine Particulate Matter (PM<sub>2.5</sub>) in the United Kingdom*

<sup>12</sup> Elemental carbon and black carbon are terms often used interchangeably, however they are defined by the measurement method applied - John G. Watson, Judith C. Chow, and L.-W. Antony Chen (2005) *Summary of Organic and Elemental Carbon/Black Carbon Analysis Methods and Intercomparisons*

<sup>13</sup> WHO (2013) *Review of evidence on health aspects of air pollution – REVIHAAP Project*

<sup>14</sup> PHE (2018) Public Health Profiles.

<https://fingertips.phe.org.uk/search/air%20pollution#page/0/gid/1/pat/6/par/E12000008/ati/101/are/E07000210>

<sup>15</sup> As above

Horsham District Council is working to address PM<sub>2.5</sub> through measures aimed at reducing emissions from road transport, in particular, measures increasing the uptake of low emission vehicles.

Although PM<sub>2.5</sub> is no longer monitored in the district, a review of data from three South East sites monitoring PM<sub>2.5</sub>: Eastbourne AURN, Chatham AURN and Rochester Stoke AURN has been undertaken in this report. The results from those sites (discussed in Section 3.2.3) show that concentrations have remained well below the national target value of 25µg/m<sup>3</sup> for all the years of monitoring. However, Eastbourne and Chatham sites have exceeded 10µg/m<sup>3</sup> recommended by WHO.

Research has shown that wood burning is a large contributor to primary emissions of PM<sub>2.5</sub>. Unsurprisingly, solid fuel burning has had a significant contribution to the concentrations of PM<sub>2.5</sub> in the South East region. That contribution has been quantified by King's College at 6 to 9% annually, averaged across urban areas<sup>16</sup>. In 2018 HDC was successful in securing Defra's funding towards the Clean Burn Sussex project, aimed at the promotion of least 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 (<http://www.sussex-air.net/Cleanburn/clean-burning.aspx>) has been in operation from November 2019. Summary findings from the project are available for view on the website.

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 NO<sub>2</sub> and PM<sub>2.5</sub>.

In cooperation with Sussex-Air Partnership, Horsham DC has supported the development and maintenance of the "Energise" eV charge point network. Funding for Energise and the eV South East Network Partnership project has ceased in 2017 so the priority was to form a new partnership to continue with the project and the expansion of the regional ev charging network (previously known as the Energise network). In March 2020 HDC approved its Electric Vehicle (EV) Charge Point Strategy which aims to enable the provision of ev infrastructure. In light of the

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<sup>16</sup> Environmental Research Group - King's College London (2019) Airborne particles from wood burning in UK cities

Strategy the Council has worked with West Sussex County Council to procure a contractor via a concession contract to install 1000's of charge points across the County. The principle focus will be to provide charge points for residents that do not have access to off street parking.

The Council previously secured funding from the Office for Low Emission Vehicles and Department for Transport's Local Sustainable Transport Fund (LSTF) to set up of a car club in Horsham. It is anticipated that the scheme can be extended to other towns in the district.

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

This section sets out the monitoring undertaken within 2020 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 2016 and 2020 to allow monitoring trends to be identified and discussed.

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

Currently Horsham District Council has three automatic monitoring stations located in:

- Park Way, Horsham town centre, housing NO<sub>x</sub> and PM<sub>10</sub> analysers;
- Storrington village, housing a NO<sub>x</sub> analyser. This station is affiliated to the Automatic Urban and Rural Network (AURN).
- Cowfold village, housing a NO<sub>x</sub> analyser.

All stations are roadside sites with relevant public exposure<sup>17</sup>. Further details of these monitoring stations are provided in Table A.1 in Appendix A. The location of the automatic monitoring stations are shown in Figures D1 - D3, Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

All monitoring stations are collocated with triplicate NO<sub>2</sub> diffusion tubes.

Horsham District Council 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 Monitoring Network is managed and co-ordinated by the Environmental Research Group based at King's College London, on behalf of

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<sup>17</sup> NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. National monitoring results are available at <https://uk-air.defra.gov.uk/data/>

Sussex-air and they provide data calibration and ratification of results. All data from the network is published at [www.sussex-air.net](http://www.sussex-air.net).

### **3.1.2 Non-Automatic Monitoring Sites**

Horsham District Council undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 42 sites during 2020. The total number of diffusion tubes was 49. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

Details of all monitoring sites are shown in Tables A1 and A.2 in Appendix A. The site locations are shown in Figures D.1-D.10 in Appendix D.

In 2020 two new sites were added to the monitoring survey:

- Cowfold 9 on the A272 Bolney Road, opposite the Scout's Club – to monitor the impact of a proposed zebra crossing; and
- Horsham 12 on Albany Road in Horsham – to verify NO<sub>2</sub> levels on this major route through Horsham.

In 2020 monitoring ceased at Horsham 11 (Queen's Head, Horsham) and ulborough 1 (Swan Corner, Station Road, Pulborough).

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

Horsham 6N – receptor at Rusper Road located a distance of 11m from kerbside;

Horsham 7N – receptor at Warnham Road located a distance of 12m from kerbside;

and

Storrington 14 – receptor at Washington Road located a distance of 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; and

HO5 Cowfold (Bolney Road/The Street, Cowfold).

## **Horsham District Council**

There was one duplicate site in 2020: Cowfold 1,2 (Olde House, The Street, Cowfold). In 2019, Storrington 2 of the duplicate site Storrington 1,2 (Manleys Hill) was removed and relocated.



## 3.2 Individual Pollutants

The following sections provide results from the automatic monitoring stations and diffusion tube network hosted by Horsham District Council and additional data for particulate matter from the Reigate and Banstead RG1 site in Surrey, as well as Eastbourne AURN in East Sussex and Chatham AURN and Rochester Stoke AURN in Kent.

The air quality monitoring results for Horsham presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 33%), and distance correction. Further details on adjustments are provided in Appendix C.

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

#### Automatic Monitoring Data

The Council monitored NO<sub>2</sub> at three locations during 2020: HO2 Horsham Park Way, HO4 Storrington AURN and HO5 Cowfold. Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for all the years where monitoring was undertaken with the air quality objective of 40µg/m<sup>3</sup>. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

Table A.4 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for all the monitoring years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

Data capture was good (above 75%) during 2020 at all three sites and, as such, no annualisation has been required.

The results at the three monitoring stations indicate that the NO<sub>2</sub> objectives for 2020 were not exceeded, with annual mean concentrations well below the annual mean objective level of 40µg/m<sup>3</sup> and no measured exceedances of the 1-hour objective.

Two of the three sites – HO2 Horsham Park Way and HO54 Storrington AURN saw a significant reduction in NO<sub>2</sub> concentrations of approximately 20% relative to 2019 which can be attributed to reduced traffic volumes and congestion due to the Covid pandemic. Interestingly, HO5 Cowfold did not record a reduction in NO<sub>2</sub> concentrations in 2020; this may be due to relatively small reduction in traffic volumes on the A272 Bolney Road during the pandemic.

The annual mean NO<sub>2</sub> concentration for Horsham Park Way for 2020 was 18.8µg/m<sup>3</sup>. There were no exceedances of the 1-hour objective at the Park Way site. The highest concentrations in the year were recorded in January (winter-time, before national lockdown) and November and December (winter-time, period of eased lockdown restrictions<sup>18</sup>); this is shown in Figures B.1 and B.2 in Appendix B. From the analysis of weekly hourly mean concentrations it can be seen that the highest concentrations were recorded in the morning and afternoon traffic peaks from Monday through to Friday (Figure B.2, Appendix B).

For the Storrington AURN site, the annual mean NO<sub>2</sub> concentration for 2020 was 17.4µg/m<sup>3</sup>. There were no exceedances of the 1-hour objective. The highest concentrations in the year were recorded in September and December (period of eased lockdown restrictions); this is shown in Figures B.1 and B.2 in Appendix B. From the analysis of hourly mean concentrations it can be seen that the highest hourly mean concentrations were recorded in the morning traffic peaks from Monday through to Friday (Figure B.2, Appendix B).

The measured annual mean NO<sub>2</sub> concentration at the Cowfold station in 2020 was 23.4µg/m<sup>3</sup>, only a marginal decrease on the previous year. There were no exceedances of the 1-hour objective at the site. The highest concentrations in the year were recorded in January (winter-time, period of eased lockdown restrictions), August, September and October (period of eased lockdown restrictions) this is shown in Figures B.1 and B.2 in Appendix B. The levels recorded from August to October are markedly higher than those at the other two sites. The analysis of hourly mean concentrations by day of the week indicates that the highest concentrations were recorded during afternoon traffic peaks throughout the working week from Monday to Friday (Figure B.2, Appendix B).

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<sup>18</sup> Sussex entered a Tier 2 local lockdown on 2<sup>nd</sup> December 2020.

Figure A.1 in Appendix A shows the trend in NO<sub>2</sub> concentrations at the monitoring locations for all the years of monitoring. For Horsham Park Way and Storrington AURN, the annual mean concentrations have decreased significantly during the covid pandemic whereas there was no decrease observed at the Cowfold site. Decreasing concentrations at roadside sites are in agreement with the national trend for roadside NO<sub>2</sub>. The Horsham Park Way and Storrington sites show an overall decreasing trend over the monitoring period. The trend for the Cowfold site is not clear due to the recent peaks in 2016, 2017 and 2018, before the decrease in 2019.

### **Diffusion Tube Monitoring Data**

For diffusion tubes, the full 2020 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.

Nitrogen dioxide diffusion tube monitoring was undertaken at 42 locations throughout Horsham District during 2020.

Although data capture for Storrington tubes was affected by lamppost works in November, overall data capture for the survey in 2020 was good (75% or greater) at all sites but the new sites Cowfold 9 and Horsham 12. Both Cowfold 9 and Horsham 12 were set up in May and thus required short to long term adjustment (annualisation).

The results for 2020 (shown in Table A.8 and Table A.9) have been corrected using a local bias correction factor of 0.83, as obtained from three co-location studies at HO2 Horsham Parkway, HO2 Storrington and HO5 Cowfold. Full details of the bias adjustment and QA/QC procedure are provided in Appendix C.

In 2020 there were no monitoring sites where the annual mean NO<sub>2</sub> objective was exceeded. One site measured concentrations within 10% of the annual mean objective (i.e. 36µg/m<sup>3</sup> or more):

- Storrington 19n (jct of Manley's Hill and School Hill) – located within the Storrington AQMA.

Storrington 19n is located within the existing AQMA, which demonstrates that the Storrington AQMA is still required.

### Horsham Town Sites

Horsham sites showed an average decrease of 15% in 2020. The highest annual mean NO<sub>2</sub> concentration of 30.5µg/m<sup>3</sup> was recorded at the new monitoring site Horsham 12 at Albany House. Horsham 12 is located on Albion Way, a partial ring road connecting major routes in and out of Horsham Town Centre.

### Storrington Sites

For the Storrington monitoring sites, the reduction in NO<sub>2</sub> concentrations in 2020 averaged 16%. The sites located within the AQMA recorded an 18% reduction. The majority of long-term sites show a continuing overall downward trend over the monitoring period.

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 NO<sub>2</sub> has been the mini-roundabout of Manley's Hill and School Hill, as shown by the results at Storrington 1 (previously 1,2) and Storrington 19.

The duplicate site Storrington 1,2 in the Storrington AQMA has been reduced to a single monitoring tube Storrington 1 in 2019. The site has shown a result of 31.6µg/m<sup>3</sup> in 2020, which represents a 19% decrease on the previous year.

Near to Storrington 1,2, on the opposite side of the road, is the relocated site Storrington 19n. The Storrington 19n site is located at the same distance from the road as the façade of the nearest residential property, and as such no correction was required. Storrington 19n recorded the highest concentration in the monitoring survey for 2020, with the annual mean result of 38.4µg/m<sup>3</sup>, a 20% decrease on 2019.

The monitoring site Storrington 14n on the main A283 Washington Road (Manleys Hill) in Storrington has exceeded the annual mean objective throughout the monitoring period to 2017, however concentrations at the nearest relevant exposure have remained well below the objective. Storrington 14n is a kerbside site located at a distance of approximately 20m from the nearest residential property. The site recorded an annual mean concentration of 27.9µg/m<sup>3</sup> in 2020, a significant decrease on the previous years. A distance correction using Defra's Distance from Roads

Calculator<sup>19</sup> has given an estimated result of 15.9µg/m<sup>3</sup> at the nearest residential façade.

### **Cowfold Sites**

The measured annual mean NO<sub>2</sub> concentrations in Cowfold for 2020 have shown a decrease of 14% on the previous year.

The Cowfold 7n site, located on the A272 to the east of the town, has been the only monitoring site in the Cowfold AQMA, which exceeded the annual mean objective in the recent years. The trend for this site is a protracted decrease. The concentrations peaked in 2011 and 2012, followed by a decrease in 2013 and 2014, before increasing again in 2015 and 2016. In the past three years the site decreased to 42.4µg/m<sup>3</sup> in 2018, to go below the objective levels in 2019 with a concentration of 36.1µg/m<sup>3</sup>. The decrease observed in 2020 was 16% with a result of 30.2µg/m<sup>3</sup>.

### **Remaining Sites**

The monitoring sites in the towns of Billingshurst, Pulborough and Steyning have remained below the objective throughout the monitoring period.

The concentrations measured in Billingshurst have remained relatively stable at approximately 30µg/m<sup>3</sup> over the monitoring period from 2013 to 2017, to reduce to 26 µg/m<sup>3</sup> over 2018-2019. The site showed a further reduction of 9% in 2020.

The Pulborough sites have shown a continuous downward trend over the monitoring period.

The concentration at the Steyning monitoring site have remained below 25µg/m<sup>3</sup> since 2015.

The new sites Henfield 2 (A281 High Street) and Southwater 1 (Opp. Southwater Infant Academy, Worthing Rd) measured well below the objective for 2019 and both decreased by approximately 10% in 2020. Southwater 1 was set up to monitor the impacts of new developments in Southwater, including a residential development of 600 dwellings which has now mostly been completed, located opposite Southwater Infant Academy. The Southwater site registered an increase of about just below 3µg/m<sup>3</sup> since 2017 when the development was still under construction, however it has decreased to 23.5µg/m<sup>3</sup> in 2019 and 21.1µg/m<sup>3</sup> in 2020.

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<sup>19</sup> <https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>

Figures A.4 to A.7 in Appendix A show the trends in annual mean NO<sub>2</sub> concentrations measured at the diffusion tube sites over the monitoring period 2008-2020. The results of diffusion tube monitoring overall indicate a significant decrease of 12% in NO<sub>2</sub> concentrations in 2020 as compared to the previous year. The majority of sites show a distinct overall downward trend in measured concentrations of NO<sub>2</sub> over the monitoring period, 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.

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

The Council monitored PM<sub>10</sub> at one location during 2020: HO2 Horsham Park Way. In addition to Horsham Park Way, PM<sub>10</sub> used to be monitored at Storrington AURN, however, this had ceased in 2017 when Defra re-located the PM<sub>10</sub> and PM<sub>2.5</sub> analysers at the end of 2017 to an area of lower coverage.

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. Data collection and ratification is undertaken by the Environmental Research Group through their contract with the Sussex Air Quality Partnership. The data obtained from the Park Way analyser has been corrected using the Volatile Correction Model developed by the Environmental Research Group. Further information on the correction applied to the TEOM results is presented in Appendix C. Data capture was above 75% in 2020 and as such no annualisation has been required.

In this report, the results from Horsham Park Way are compared against three other permanent monitoring sites in the South East region: Reigate and Banstead RG1 in Horley, Chatham AURN and Rochester Stoke AURN in Medway. Table A.5 in Appendix A compares the ratified and adjusted monitored PM<sub>10</sub> annual mean concentrations for all the years where monitoring was undertaken, with the air quality objective of 40µg/m<sup>3</sup>. Table A.6 in Appendix A compares the ratified continuous monitored PM<sub>10</sub> daily mean concentrations for all the monitoring years with the air quality objective of 50µg/m<sup>3</sup>, not to be exceeded more than 35 times per year.

Automatic monitoring of PM<sub>10</sub> at the Horsham Park Way site indicated that both the annual mean and 24-hour UK objective for PM<sub>10</sub> were complied with in 2020 and all

the previous years of monitoring. The annual mean PM<sub>10</sub> concentration recorded in 2020 was 15.7µg/m<sup>3</sup>, which shows a significant decrease on the previous year. To compare, the roadside site in Chatham was above the WHO-recommended guideline value of 20µg/m<sup>3</sup> taken as an annual mean, for most of the monitoring period including the last three years, with only a small decrease observed in 2020.

Peaks in concentrations of PM<sub>10</sub> at Horsham Park Way and the comparison sites were observed during regional episodes in April and November. Horsham Park Way did not record any exceedances of the daily mean concentration objective in 2020 (Figure B.2, Appendix B). From the analysis of weakly hourly mean concentrations it is found that the highest concentrations at Horsham Park Way were generally recorded in the evening hours during the working week (Figure B.4, Appendix B).

Figure A.2 shows the trend in PM<sub>10</sub> concentrations at Horsham Park Way for all the years of monitoring, as compared to the three South East sites. Horsham Park Way remained well below both the long term and short term air quality objectives for PM<sub>10</sub> throughout the monitoring period. Results from the Horsham Park Way analyser show an overall gradual reduction in measured concentrations since monitoring at this location began in 2007. To compare, Chatham AURN is a roadside site and shows a trend typical for a roadside site - decreasing to 2015, followed by a small increase in the recent years. Reigate and Banstead monitor is situated in a suburban location. The site shows a decreasing trend, typical for an urban background site.

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

PM<sub>2.5</sub> objectives have been set out in the UK Air Quality Regulations. Although there is no requirement for local authorities in England to review and assess PM<sub>2.5</sub> against these objectives as part of the LAQM regime, results have been reported as recommended by Technical Guidance LAQM.TG(16).

PM<sub>2.5</sub> had been monitored at the Storrington AURN site, however monitoring ceased at the end of 2016 when Defra re-located the analyser to an area of lower coverage. As PM<sub>10</sub> is still monitored at the Horsham Park Way site, the annual mean concentrations of PM<sub>2.5</sub> were estimated from the PM<sub>10</sub> measurements using a local ratio of PM<sub>2.5</sub> to PM<sub>10</sub>, as per method described in Box 7.7 of Technical Guidance TG(16). The estimated concentrations of PM<sub>2.5</sub> presented in Table A.7 indicate that concentrations have been well below the national target value of 25µg/m<sup>3</sup> in 2020,

and previous years at the Horsham Park Way site<sup>20</sup>. However, the results have remained above the WHO-recommended guideline value of 10µg/m<sup>3</sup> taken as annual mean.

Table A7 also presents data from three South East sites monitoring PM<sub>2.5</sub>: Eastbourne AURN, Chatham AUR and Rochester Stoke AURN. Results from those sites indicate that concentrations have remained well below the limit value of 25µg/m<sup>3</sup> in 2020 and all the years of monitoring. However, the guideline value of 10µg/m<sup>3</sup> recommended by WHO has largely been exceeded throughout the monitoring period at all those sites.

Figure A.3 shows the trend in PM<sub>2.5</sub> concentrations at Horsham Parkway (values plotted for the Horsham Parkway sites are estimated values) and the three comparison sites. This overall shows a slow reduction in the PM<sub>2.5</sub> concentrations over the recent years at Horsham Parkway. Eastbourne AURN and Rochester AURN are both background sites; both showed a gradual reduction in concentrations until 2015. Since 2015 the concentrations increased slightly at both sites, to decrease in 2019. The roadside site in Chatham AURN has shown a continuous decrease over the monitoring years but has increased in 2018, which may have been caused by the change of analyser.

### **3.1.6 Sulphur Dioxide (SO<sub>2</sub>)**

There is currently no sulphur dioxide monitoring undertaken by Horsham District Council. However, results of automatic monitoring was undertaken at a permanent station Lullington Heath in Sussex have shown compliance with the LAQM objectives for SO<sub>2</sub><sup>21</sup>.

Given that no large scale industrial combustion processes or significant areas of domestic solid-fuel burning have been identified within Horsham District it is unlikely that the objectives for sulphur dioxide would have been exceeded within the district during 2020.

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<sup>20</sup> National target value as per *The Air Quality Standards Regulations 2010*

<sup>21</sup> <https://sussex-air.net/AQNearMe/Monitoring/Statistics.aspx?SiteCode=LL1%2cLL1&SiteName=Lullington+Heath+Rural+AURN%2cLullington+Heath+Rural+AURN>



## Appendices

Appendix A: Monitoring Results for 2020

Appendix B: Full Monitoring Results for 2020

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

Appendix D: Maps of Monitoring Locations and AQMAs

Appendix E: Summary of Air Quality Objectives in England

Appendix F: Impact of COVID-19 upon LAQM

## 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	Inlet Height (m)	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Does this location represent worst-case exposure?
HO2	Horsham Park Way	Roadside	517485	130590	NO <sub>2</sub> ; PM <sub>10</sub>	N	Chemiluminescence (APNA-370); TEOM	3.0	7.0	1.5	Y
HO4	Storrington AURN	Roadside	509083	114198	NO <sub>2</sub>	N	Chemiluminescence (Thermo 32i)	3.3	9.6	4.6	N
HO5	Cowfold	Roadside	521356	122553	NO <sub>2</sub>	Y (Cowfold AQMA)	Chemiluminescence (ML9841B)	2.0	4.0	6.5	N

**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 (Lab Ref.)	Site Name	Site Location	Site Type	Triplicate or Co-located Tube?	OS Grid Ref X	OS Grid Ref Y	In AQMA?	Diffusion Tube Height	Relevant Exposure? (Y/N with distance to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)
<b>Billingshurst Sites</b>										
28	Billingshurst 1	96 High Street	Roadside	N	508623	125834	N	2.2m	Y (1.0m)	1.5m
<b>Cowfold Sites</b>										
12,20	Cowfold 1,2	Olde House, The Street, Cowfold	Roadside	Duplicate	521324	122610	Y	2.7m	Y (2.5m)	1.7m
21	Cowfold 3	6 Margaret Cotts, A272, Cowfold	Roadside	N	521267	122677	Y	2.7m	Y (9.7m)	2.0m
22	Cowfold 4	Trelawny House, A281, Cowfold	Roadside	N	521311	122704	N	2.4m	Y (9.3m)	2.0m
35	Cowfold 5n	Junction Station Road/Thorndon, Station Road, Cowfold	Roadside	N	521070	122706	Y	2.5m	Y (23.0m)	3.6m
36	Cowfold 6n	Millers Cott. Henfield Road, Cowfold	Roadside	N	521309	122248	N	2.2m	Y (3.0m)	1.8m
37	Cowfold 7n	3 Huntscroft Gardens, Bolney Road, Cowfold	Roadside	N	521460	122473	Y	2.2m	Y (2.0m)	1.1m
43	Cowfold 8n	5-6 Fairfield Cottages, Cowfold	Urban Background	N	521411	122667	N	2.0m	Y (7.0m)	0.3m
14	Cowfold 9	2 Oakfield Road, Cowfold	Roadside	N	521584	122457	N	2.0m	Y (4.5.)	1.0m
44,45,46	Cowfold AU A/B/C	Bolney Road/The Street, Cowfold	Roadside	Triplicate, co-located with HO5 Cowfold	521356	122552	Y	2.0m	Y (20.0m)	6.5m
<b>Henfield Sites</b>										
1	Henfield 2n	Jct of A281 High Street & Cagefoot Ln	Roadside	N	521492	115907	N	2.0m	Y (0m)	2.0m
<b>Horsham Sites</b>										
1	Horsham 1	Park Way, Horsham	Roadside	N	517489	130580	N	2.2m	Y (3.5m)	2.0m
3	Horsham 3	69 Hillside, Horsham	Urban Background	N	516000	130600	N	2.9m	Y (7.6m)	1.5m
4	Horsham 4	45 Gorings Mead, Horsham	Urban Background	N	517600	130100	N	2.5m	Y (9.8m)	1.2m
8	Horsham 5	Harwood Rd, Horsham	Roadside	N	518230	131140	N	2.4m	Y (9.6m)	1.4m
9	Horsham 6	130 Rusper Rd, Horsham	Roadside	N	518650	132490	N	2.6m	Y (11.2m)	1.5m
10	Horsham 7	30 Mill House, Warnham Rd, Horsham	Roadside	N	516952	132215	N	2.2m	Y (12.0m)	2.0m
11	Horsham 8	54 Worthing Rd, Horsham	Roadside	N	516650	130220	N	3.0m	Y (8.0m)	1.6m

## Horsham District Council

Diffusion Tube ID (Lab Ref.)	Site Name	Site Location	Site Type	Triplicate or Co-located Tube?	OS Grid Ref X	OS Grid Ref Y	In AQMA?	Diffusion Tube Height	Relevant Exposure? (Y/N with distance to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)
5,6,7	Park Way	AQMS Horsham	Roadside	Triplicate, co-located with HO2 Horsham Park Way	517489	130580	N	2.8m	Y (8.9m)	2.1m
23	N. Horsham 1N	Home Fm, Langhurstwd Rd, Horsham	Roadside	N	517702	133570	N	2.4m	Y (4.9m)	1.9m
24	N. Horsham 2N	Graylands Fm Cotts, Horsham	Roadside	N	517476	134013	N	2.8m	Y (5.5m)	1.0m
48	Horsham 9N	North St/Foundry Ln	Roadside	N	518074	131164	N	2.0m	Y (1.0m)	1.5m
14	Horsham 11n	Old Queen's Head, East Street	Roadside	N	517672	130322	N	2.0m	Y (0.5m)	1.0m
26	Horsham 12	Albany House, Horsham	Roadside	N	516909	130755	N	2.0m	Y (3.5m)	1.5m
<b>Pulborough Sites</b>										
27	Pulborough 2	42A Lower Street, Pulborough	Roadside	N	505185	118623	N	3.0m	Y (1.8m)	1.5m
<b>Southwater Sites</b>										
48	Southwater 1	Opp. Southwater Infant Academy, Worthing Rd, Southwater	Roadside	N	515639	126599	N	2.0m	Y (1.0m)	1.5m
<b>Steyning Sites</b>										
25	Steyning 4N	Church St, Steyning	Kerbside	N	517732	111198	N	2.7m	Y (1.5m)	0.9m
<b>Storrington Sites</b>										
13	Storrington 1	Manleys Hill, Storr duplicate	Roadside	N	508960	114270	Y	3.0m	Y (2.5m)	1.1m
15	Storrington 3	3 School Hill, Storrington	Roadside	N	508935	114297	Y	2.0m	Y (0m)	1.2m
16	Storrington 4	22 High Street, Storrington	Roadside	N	508832	114272	Y	3.0m	Y (2.8m)	2.2m
17	Storrington 5	2 West Street, Storrington (Post Office)	Roadside	N	508742	114288	Y	3.5m	Y (1.9m)	1.9m
18	Storrington 6	1-4 Holly Court, Pulborough Rd Storrington	Roadside	N	508396	114449	N	2.4m	Y (7.7m)	1.9m
19	Storrington 7	The Willows, Amberley Rd, Storrington	Roadside	N	508338	114374	N	3.0m	Y (6.7m)	1.6m
29,30,31	Storrington 8/9/10 AURN	Manleys Hill AURN co-located	Roadside	Triplicate, co-located with HO4 Storrington AURN	509083	114198	N	3.3m	Y (9.6m)	4.6m
34	Storrington 11n	53 West Street, Storrington	Roadside	N	508511	114365	Y	3.0m	Y (1.0m)	3.0m
33	Storrington 12n	3 Rectory Cottage Storrington	Roadside	N	508598	114323	Y	2.6m	Y (7.0m)	2.3m
32	Storrington 13n	18 West Street, Storrington	Roadside	N	508675	114306	Y	2.2m	Y (0.5m)	3.0m

Diffusion Tube ID (Lab Ref.)	Site Name	Site Location	Site Type	Triplicate or Co-located Tube?	OS Grid Ref X	OS Grid Ref Y	In AQMA?	Diffusion Tube Height	Relevant Exposure? (Y/N with distance to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)
38	Storrington 14n	Cobden, Manleys Hill, Storrington	Roadside	N	509319	114160	N	2.6m	Y (20.0m)	0.9m
40	Storrington 15n	Fryern Road, Storrington	Roadside	N	509103	114532	N	2.2m	Y (12.0m)	1.7m
39	Storrington 16n	Mill Parade, Waitrose car park, Storrington	Roadside	N	508966	114356	N	2.6m	Y (0m)	1.3m
41	Storrington 17n	33 Church Street, Storrington	Urban Background	N	508677	114149	N	2.2m	Y (1.0m)	1.5m
42	Storrington 18n	20 Amberley Road, Storrington (Barges End)	Roadside	N	508215	114348	N	2.2m	Y (5.0m)	1.9m
47	Storrington 19n	jct of A283 Manley's Hill and School Hill	Roadside	N	508945	114268	Y	2.0m	Y (0m)	1.0m

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

Site ID/Name	Site Type	Within AQMA ?	Valid Data Capture 2020 % <sup>(1)</sup>	Annual Mean Concentration µg/m <sup>3</sup>														
				2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
HO2 Horsham Park Way	R	N	99.4	26	30	29	31	30.4	27.0	28.6	29.9	25.4	26.5 <sup>a</sup>	28.6	26.2	25.4	24.4	18.8
HO4 Storrington AURN	R	N	94.4	-	-	-	21 <sup>*</sup>	27.6	23.4	24.8	26.9	22.4 <sup>a</sup>	21.3	25.1	22.7	23.0	22.0	17.4
HO5 Cowfold	R	Y	99.3	-	-	-	-	-	27.0	29.1	24.7	27.9 <sup>a</sup>	25.5	27.2	29.5	28.4	23.6	23.4

Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16

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

**Notes:**

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

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

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

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

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

\* Indicative value only. The NO<sub>2</sub> annual mean has been estimated from unratified data for period 21.10.09 – 31.12.2009.

<sup>a</sup> Annual mean concentration “annualised” as per Box 7.9 of TG(16) as data capture less than 75%.

R - Roadside

**Table A.4 – 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>**

Site ID/Name	Site Type	Within AQMA ?	Valid Data Capture 2020 % <sup>(1)</sup>	Number of Exceedances of Hourly Mean (200 µg/m <sup>3</sup> )															
				2006	2007	2019	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
<b>HO2 Horsham Park Way</b>	R	N	99.4	0	0	0	0	0	0	0	0	0	0 (102.9)	0	0	0	0	0	
<b>HO4 Storrington AURN</b>	R	N	94.4	-	-	-	n/a	0	0	0	0	0	0 (78.7)	0 (85.1)	0 (102.7)	0	0	0	0
<b>HO5 Cowfold</b>	R	Y	99.3	-	-	-	n/a	n/a	0	0	0	0	0 (120)	0 (98.7)	0	0	0	0	0

**Notes:**

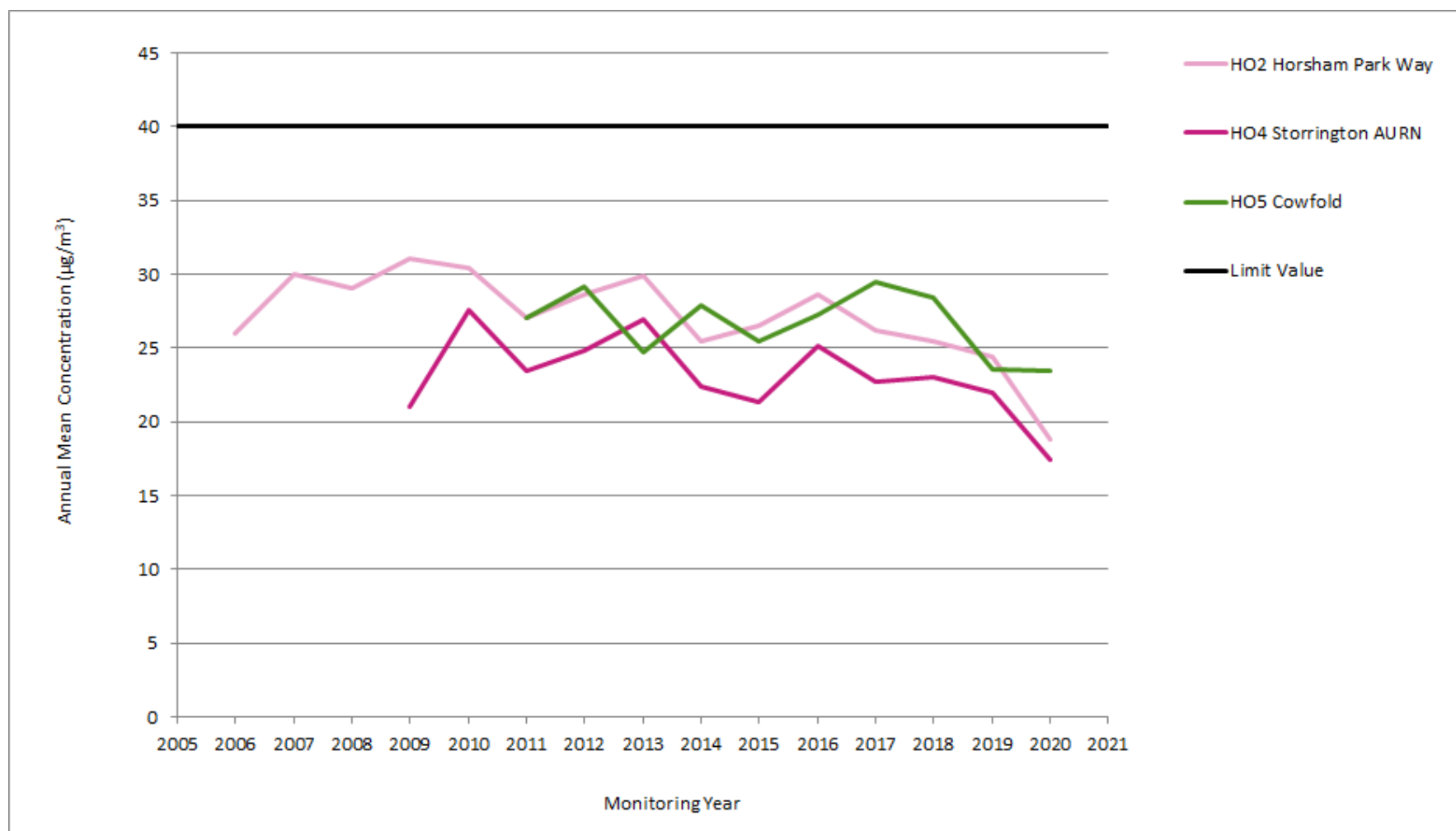
Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m<sup>3</sup> have been recorded.

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

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

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

Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations Measured at Automatic Monitoring Sites 2006 – 2020





**Table A.5 – Results of Automatic Monitoring of PM<sub>10</sub>: Comparison with Annual Mean Objective 2007 – 2020**

Site ID/Name	Site Type	Within AQMA ?	Valid Data Capture 2020 % <sup>(1)</sup>	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration µg/m <sup>3</sup>													
					2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
HO2 Horsham Park Way	R	N	100.0	Y	24.9	23.8	23.9	18.3	24.0	23.2	22.3	20.9	18.6 <sup>a</sup>	18.0	18.2	19.6	19.3	15.7
Reigate & Banstead RG1 – Michael Crescent, Horley (Comparison Site)	S	Y (NO <sub>2</sub> )	93.7	Y	23.3*	19.7	18.8	18.7**	21.7	19.4	20.1	18.7	19.2	16.6	16.2	17.1	15.7	15.0
Chatham AURN (Comparison Site)	R	Y (NO <sub>2</sub> )	95.1	Y	-	-	-	-	24.1	20.8	23.1	21.4	18.5	19.2	21.6	23.8	22.9	22.0
Rochester Stoke AURN (Comparison Site)	S	N	100.0	Y	22.8*	19.8	-	-	-	15.9	17.9	17.6	14.6	15.8	16.6	17.4	15.0	14.9

**Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.**

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

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

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

(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%).

\*\* Data not fully ratified.

<sup>a</sup> Annual mean concentration “annualised” as per Box 7.9 of TG(16) as data capture less than 75%.

R – Roadside; S – Suburban

TEOM, TEOM FDMS (changed to FIDAS in Aug 2018), BAM

**Table A.6 – Results of Automatic Monitoring of PM<sub>10</sub>: Comparison with 24-hour Mean Objective 2007 – 2020**

Site ID/Name	Site Type	Within AQMA ?	Valid Data Capture 2020 % <sup>(1)</sup>	Confirm Gravimetric Equivalent (Y or NA)	Number of Exceedances of 24-Hour Mean (50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year) <sup>(2)</sup>													
					2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
HO2 Horsham Park Way	R	N	100.0	Y	17	9	3	0	11 (39)	9 (38)	2 (33)	4 (32)	2 (29.3)	4	2	0	5	0
Reigate & Banstead RG1 – Michael Crescent, Horley (Comparison Site)	S	Y (NO <sub>2</sub> )	93.7	Y	9*	5	4	1**	9	7	2	4	3 (28.9)	3	2	0	1	0
Chatham AURN (Comparison Site)	R	Y (NO <sub>2</sub> )	95.1	Y	-	-	-	-	20	14	11	15	4	3	7	11	15	8
Rochester Stoke AURN (Comparison Site)	S	N	100.0	Y	8*	2	-	-	-	4	3	8	2 (24)	4 (32)	4	5	11	7

**Notes:**

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

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

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

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

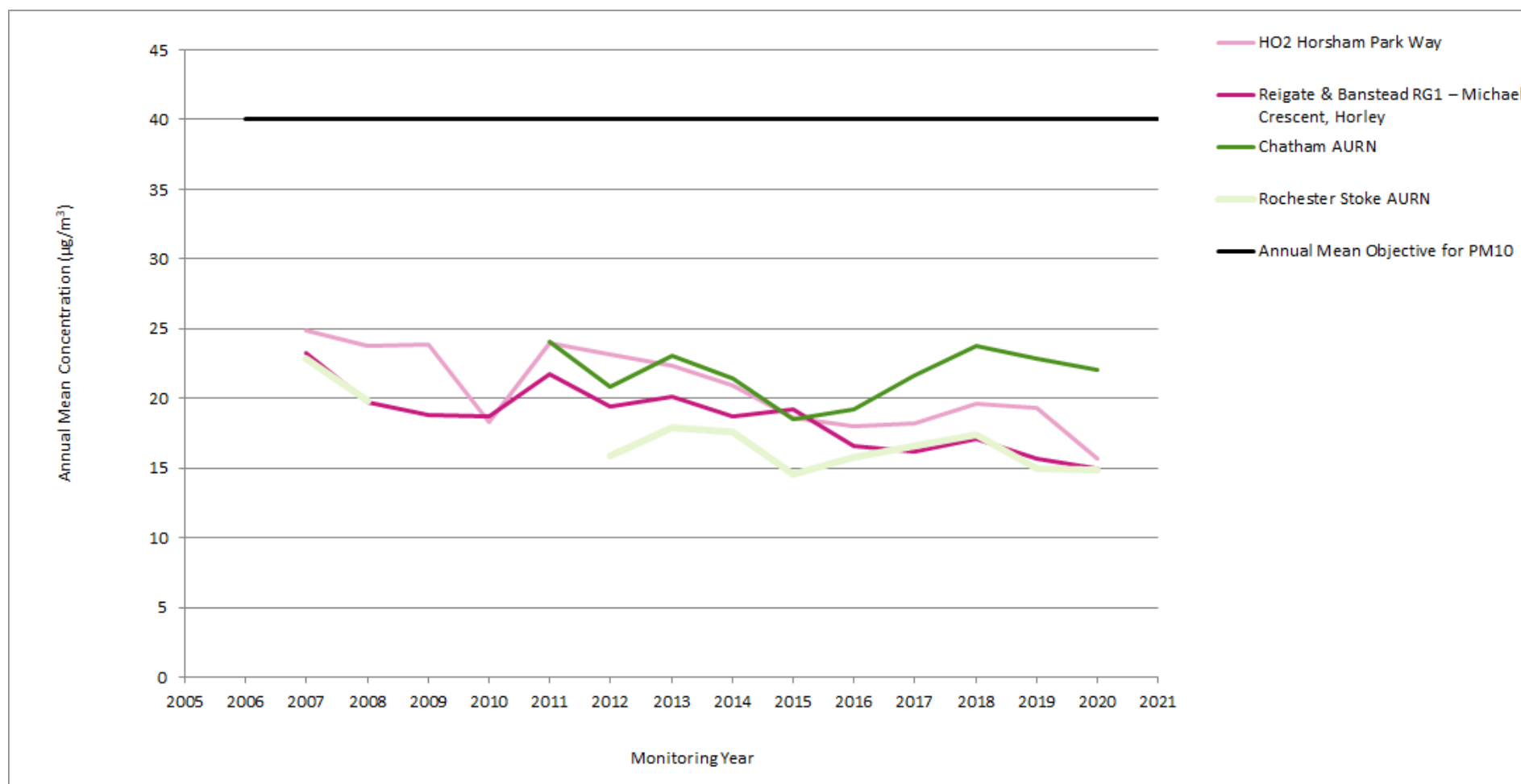
\* TEOM data has been corrected using the default 1.3 correction factor to estimate gravimetric concentrations.

\*\* Data not fully ratified.

R - Roadside; S – Suburban

TEOM, TEOM FDMS (changed to FIDAS in Aug 2018), BAM

Figure A.2 – Trends in Annual Mean PM<sub>10</sub> Concentrations Measured at Automatic Monitoring Sites 2007 – 2020



**Table A.7 – Results of Automatic Monitoring of PM<sub>2.5</sub>: Comparison with Annual Mean Objective 2010 – 2020**

Site ID	Site Type	Within AQMA?	PM <sub>2.5</sub> Annual Mean (µg/m <sup>3</sup> )* / (Valid Data Capture) <sup>(1)</sup>										
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
HO2 Horsham Park Way	R	N	13.0 <sup>e</sup> (98.9)	16.8 <sup>e</sup> (89.1)	18.3 <sup>e</sup> (86.2)	16.1 <sup>e</sup> (88)	14.6 <sup>e</sup> (84)	13.2 <sup>e</sup> (60.8)	12.6 <sup>e</sup> (81.1)	12.7 <sup>e</sup> (86.6)	13.7 <sup>e</sup> (92.6)	13.5 <sup>e</sup> (89.3)	11.0 <sup>e</sup> (100.0)
Eastbourne AURN (Comparison Site)	UB	N/A	13.4 (93.5)	16.4 (98.2)	15.7 (95.2)	15.3 (98.7)	12.2 (75.8)	12.3 <sup>a</sup> (67.4)	14.4 <sup>a</sup> (73.8)	11.3 (96.3)	12.7 (97.8)	10.5 (98.8)	8.7 (98.3)
Chatham AURN (Comparison Site)	R	Y (NO <sub>2</sub> )	-	17.0 (99.4)	16.8 (98.5)	13.4 (94.2)	13.5 (96.1)	11.8 (90.3)	11.5 (75.5)	14.1 (95.2)	15.2 (96.1)	13.9 (90.0)	10.9 (90.1)
Rochester Stoke AURN (Comparison Site)	S	N/A	-	14.1 (84.1)	14.3 (91.7)	16.3 (88.8)	15.0 (79.6)	8.7 (94.8)	11.3 (87.3)	9.7 (89.9)	9.9 (97.1)	10.8 (99.6)	9.7 (99.8)

Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.

**Notes:**

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

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

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

\* As a comparison, the UK Air Quality Standard objective for PM<sub>2.5</sub> is 25µg/m<sup>3</sup> (target value) for England

<sup>a</sup> Annualised results obtained from Eastbourne 2016 Air Quality Annual Status Report

R - Roadside; S – Suburban; UB – Urban Background

<sup>e</sup> PM<sub>2.5</sub> values for HO2 Horsham Park Way were estimated from the PM<sub>10</sub> data using Storrington AURN ratio of PM<sub>2.5</sub>/PM<sub>10</sub> as per method described in Box 7.7 of TG(16). UK average ratio of 0.7 was used where local data was not available (in 2014 and from 2017 onwards)

Figure A.3 – Trends in Annual Mean PM<sub>2.5</sub> Concentrations Measured at Automatic Monitoring Sites 2010 – 2020

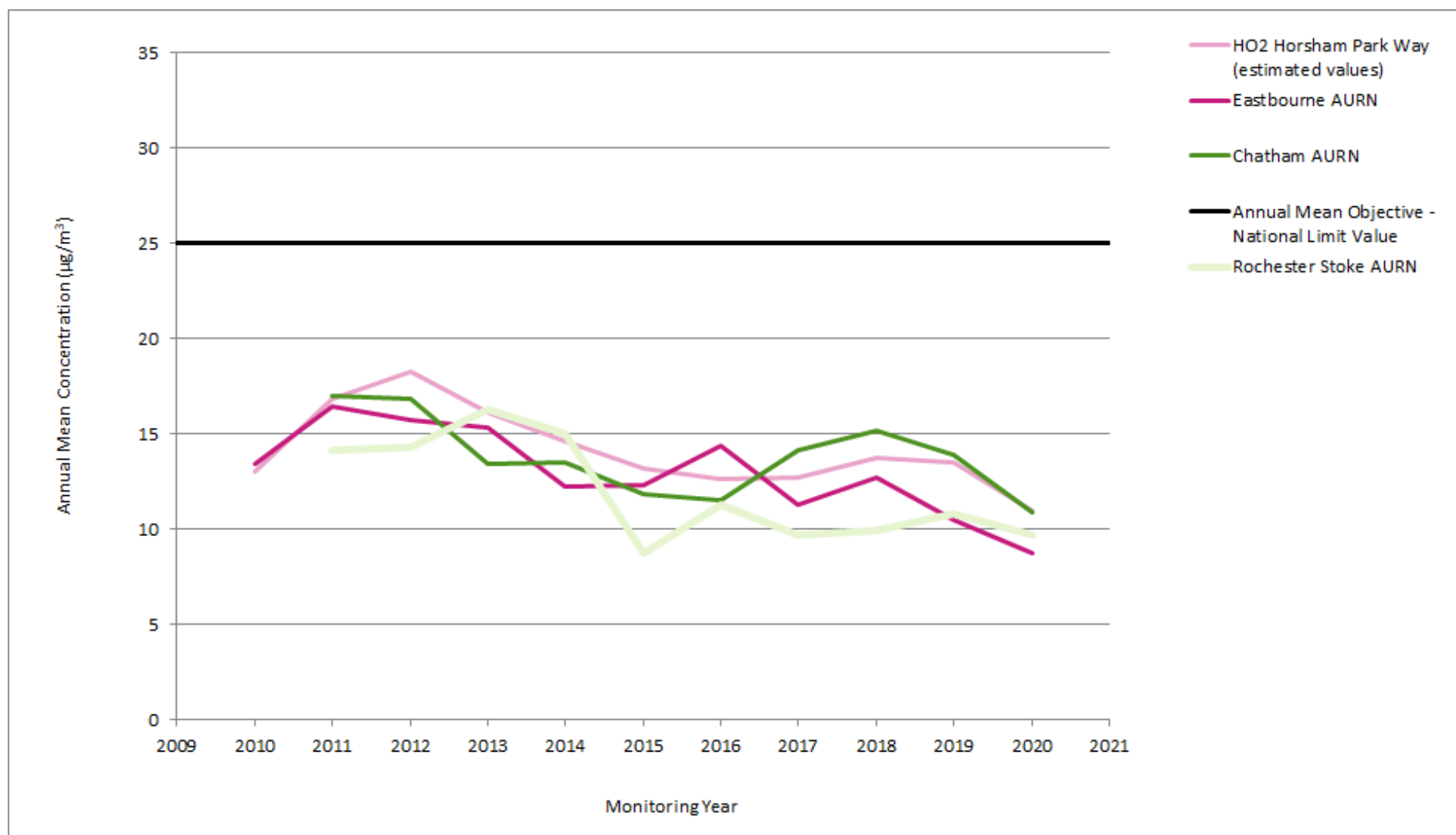


Table A.8 – Results of Nitrogen Dioxide Diffusion Tubes in 2020

Site Name	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Within AQMA?	Triplicate or Collocated Tube	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3) (4)</sup>
								2020 (µg/m <sup>3</sup> )
<b>Billingshurst Sites</b>								
Billingshurst 1	508623	125834	Roadside	N	N	100.0	100.0	23.8
<b>Cowfold Sites</b>								
Cowfold 1,2	521324	122610	Roadside	Y	Duplicate	100.0	100.0	26.8
Cowfold 3	521267	122677	Roadside	Y	N	100.0	100.0	24.6
Cowfold 4	521311	122704	Roadside	N	N	100.0	100.0	22.5
Cowfold 5n	521070	122706	Roadside	Y	N	91.7	91.7	20.4
Cowfold 6n	521309	122248	Roadside	N	N	100.0	100.0	21.7
Cowfold 7n	521460	122473	Roadside	Y	N	100.0	100.0	30.2
Cowfold 8n	521411	122667	Urban Background	N	N	100.0	100.0	10.9
Cowfold 9	521584	122457	Roadside	N	N	66.7	100.0	19.3
Cowfold AU A,B,C	521356	122552	Roadside	Y	triplicate	100.0	100.0	19.2
<b>Henfield Sites</b>								
Henfield 2n	521492	115907	Roadside	N	N	100.0	100.0	19.9
<b>Horsham Sites</b>								
Horsham 1N	517489	130580	Roadside	N	N	100.0	100.0	21.6
Horsham 3N	516000	130600	Urban Background	N	N	100.0	100.0	9.5
Horsham 4N	517600	130100	Urban Background	N	N	100.0	100.0	9.1
Horsham 5N	518230	131140	Roadside	N	N	100.0	100.0	21.0
Horsham 6N	518650	132490	Roadside	N	N	100.0	100.0	18.2
Horsham 7N	516952	132215	Roadside	N	N	100.0	100.0	18.6
Horsham 8N	516650	130220	Roadside	N	N	100.0	100.0	19.1
Park Way	517489	130580	Roadside	N	Triplicate & co-located	100.0	100.0	18.4
N. Horsham 1N	517702	133570	Roadside	N	N	100.0	100.0	16.8

Site Name	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Within AQMA?	Triplicate or Collocated Tube	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3) (4)</sup>
								2020 (µg/m <sup>3</sup> )
N. Horsham 2N	517476	134013	Roadside	N	N	100.0	100.0	15.8
Horsham 9N	518074	131164	Roadside	N	N	100.0	100.0	22.1
Horsham 12	516909	130755	Roadside	N	N	66.7	100.0	30.5
<b>Pulborough Sites</b>								
Pulborough 2	505185	118623	Roadside	N	N	100.0	100.0	15.7
<b>Southwater Sites</b>								
Southwater 1	515639	126599	Roadside	N	N	100.0	100.0	21.1
<b>Steyning Sites</b>								
Steyning 4N	517732	111198	Kerbside	N	N	100.0	100.0	16.2
<b>Storrington Sites</b>								
Storrington 1	508960	114270	Roadside	Y	N	91.7	91.7	31.6
Storrington 3	508935	114297	Roadside	Y	N	100.0	100.0	23.3
Storrington 4	508832	114272	Roadside	Y	N	100.0	100.0	25.5
Storrington 5	508742	114288	Roadside	Y	N	100.0	100.0	18.7
Storrington 6	508396	114449	Roadside	N	N	100.0	100.0	14.8
Storrington 7	508338	114374	Roadside	N	N	100.0	100.0	15.6
Storrington 8,9,10 AURN	509083	114198	Roadside	N	Triplicate & co-located	100.0	100.0	20.5
Storrington 11n	508511	114365	Roadside	Y	N	91.7	91.7	25.0
Storrington 12n	508598	114323	Roadside	Y	N	83.3	83.3	20.0
Storrington 13n	508675	114306	Roadside	Y	N	100.0	100.0	21.4
Storrington 14n	509319	114160	Roadside	N	N	91.7	91.7	27.8
Storrington 15n	509103	114532	Roadside	N	N	100.0	100.0	14.9
Storrington 16n	508966	114356	Roadside	N	N	100.0	100.0	18.9
Storrington 17n	508677	114149	Urban Background	N	N	100.0	100.0	9.8
Storrington 18n	508215	114348	Roadside	N	N	91.7	91.7	13.4

Site Name	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Within AQMA?	Triplicate or Collocated Tube	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2020 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3) (4)</sup>
								2020 (µg/m <sup>3</sup> )
Storrington 19n	508945	114268	Roadside	Y	N	100.0	100.0	38.4

Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.

Diffusion tube data has been bias adjusted.

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

#### Notes:

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

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

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

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

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

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

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



Table A.9 – Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2020)

Site ID	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$												
			2008 (NBF = 0.93)	2009 (NBF = 0.81)	2010 (LBF = 0.81)	2011 (LBF=0.78 & 0.8)	2012 (NBF=0.79 & LBF=0.89, 0.77 & 0.82)	2013 (NBF=0.8 & LBF=0.92, 0.82 & 0.71)	2014 (NBF = 0.81)	2015 (LBF = 0.81)	2016 (LBF = 0.78)	2017 (LBF = 0.78)	2018 (LBF = 0.81)	2019 (LBF = 0.74)	2020 (LBF = 0.83)
<b>Billingshurst Sites</b>															
Billingshurst 1	R	N	-	-	-	-	-	30.8	28.8	30.0	30.1	30.6	27.0	26.2	23.8
<b>Cowfold Sites</b>															
Cowfold 1,2 (duplicate)	R	Y	46.3	45.4	43.4	40.5 (39.5)	39.2 (40.6)	37.5 (33.3)	37.8	36.0	39.6	37.6	35.4	31.6	26.8
Cowfold 3	R	Y	41.2	39.1	36.4	35.2 (34.4)	32.5(33.7)	33.8 (30.0)	31.6	31.8	34.6	33.1	31.8	30.7	24.6
Cowfold 4	R	N	34.7	35.4	33.3	29.4 (28.7)	29.5(30.6)	28.7 (25.5)	29.7	24.6	30.9	29.5	31.4	26.8	22.5
Cowfold 5n	R	Y	-	-	30.5*	27.4 (26.8)	28.7(29.8)	25.7 (22.8)	23.9	29.9	26.7	29.7	24.9	22.5	20.4
Cowfold 6n	R	N	-	-	32.4*	27.4 (26.7)	28.9(30.0)	26.0 (23.1)	26.6	24.6	26.9	26.4	25.1	23.5	21.7
Cowfold 7n	R	Y	-	-	47.8*	45.9 (44.8)	43.8(45.4)	41.0 (36.4)	40.7	42.9	46.5	43.8	42.4	36.1	30.2
Cowfold 8n	UB	N	-	-	-	16.0 (15.6)	15.0(15.5)	14.3 (12.7)	11.8	12.4	14.4	13.9	13.5	11.6	10.9
Cowfold 9	R	N	-	-	-	-	-	-	-	-	-	-	-	-	19.3 <sup>a</sup>
Cowfold AU A,B,C (triplicate)	R	Y	-	-	-	26.7 (26.1)	28.2 (29.3)	27.0 (25.0)	27.2	25.4	27.5	27.0	26.6	23.6	19.2
<b>Henfield Sites</b>															
Henfield 2n	R	N	-	-	-	-	-	-	-	-	-	26.3 <sup>a</sup>	25.2	22.2	19.9
<b>Horsham Sites</b>															
Horsham 1N	R	N	38.2	37.1	36.0	33.7 (32.0)	33.2 (37.4)	25.6 (29.5)	32.3	32.4	32.1	31.6	31.2	26.4	21.6
Horsham 3N	UB	N	16.2	14.0	15.5	12.8 (12.2)	12.4(14.0)	13.6 (15.7)	11.6	10.3	13.0	11.4	12.2	12.5	9.5
Horsham 4N	UB	N	15.2	13.2	15.3	12.9 (12.3)	12.4(14.0)	12.9 (14.8)	9.4	11.0	12.9	11.0	11.6	10.2	9.1
Horsham 5N	R	N	36.9	32.1	33.2	27.8 (26.5)	27.4 (30.8)	28.0 (32.2)	23.8	30.4 <sup>a</sup>	31.4	27.8	28.5	25.2	21.0
Horsham 6N	R	N	30.9	27.7	28.8	25.0 (23.7)	26.6 (30.0)	23.8 (27.4)	21.8	21.2	25.7	23.8	23.2	21.5	18.2
Horsham 7N	R	N	32.2	28.9	29.3	26.6 (25.3)	26.0 (29.3)	26.3 (30.2)	26.8	26.6	28.9	27.2	27.4	23.0	18.6
Horsham 8N	R	N	30.0	29.5	29.5	23.8 (22.6)	22.5 (25.3)	23.8 (27.3)	22.5	21.1	25.2	23.6	24.8	21.9	19.1

Site ID	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) µg/m <sup>3</sup>												
			2008 (NBF = 0.93)	2009 (NBF = 0.81)	2010 (LBF = 0.81)	2011 (LBF=0.78 & 0.8)	2012 (NBF=0.79 & LBF=0.89, 0.77 & 0.82)	2013 (NBF=0.8 & LBF=0.92, 0.82 & 0.71)	2014 (NBF = 0.81)	2015 (LBF = 0.81)	2016 (LBF = 0.78)	2017 (LBF = 0.78)	2018 (LBF = 0.81)	2019 (LBF = 0.74)	2020 (LBF = 0.83)
Park Way (triplicate)	R	N	30.8	28.7	30.3	26.0 (24.7)	25.0 (28.2)	25.9 (29.8)	24.0	23.5	25.3	24.4	24.3	22.1	18.4
N. Horsham 1N	R	N	29.6	27.9	23.7	24.2 (23.0)	25.8 (29.1)	21.9 (25.2)	23.0	22.9	23.1	24.6	21.8	19.3	16.8
N. Horsham 2N	R	N	24.2	22.1	19.4	18.8 (17.9)	19.9 (22.5)	19.2 (22.0)	18.9	17.4	20.5	19.4	18.3	17.3	15.8
Horsham 9N	R	N	-	-	-	-	-	-	-	-	-	31.0	31.3	26.5	22.1
Horsham 12	R	N	-	-	-	-	-	-	-	-	-	-	-	-	30.5 <sup>a</sup>
<b>Pulborough Sites</b>															
Pulborough 2	R	N	<b>52.1*</b>	26.3	28.0	22.3 (21.2)	24.7	<b>39.1 (31.3)<sup>a</sup></b>	21.5	20.1	23.5	21.1	20.7	17.9	15.7
<b>Southwater Sites</b>															
Southwater 1	R	N	-	-	-	-	-	-	-	-	-	24.5 <sup>a</sup>	27.3	23.5	21.1
<b>Steyning Sites</b>															
Steyning 4N	K	N	27.4	26.2	26.8	28.4 (27.1)	22.3	24.4	20.1	29.2	22.7	20.0	21.3	20.1	16.2
<b>Storrington Sites</b>															
Storrington 1	R	N	<b>49.8</b>	<b>50.7</b>	<b>50.2</b>	<b>45.1 (42.9)</b>	<b>42.7 (41.6)</b>	<b>41.0 (42.0)</b>	<b>37.3</b>	<b>39.2</b>	<b>42.1</b>	<b>40.7</b>	<b>44.7</b>	<b>38.9</b>	31.6
Storrington 3	R	N	<b>39.7</b>	<b>38.0</b>	<b>37.5</b>	33.4 (31.8)	35.1 (34.2)	31.9 (32.7)	28.8	27.7	30.4	31.6	32.9	28.3	23.3
Storrington 4	R	N	<b>39.8</b>	<b>43.4</b>	<b>42.0</b>	<b>42.0 (40.0)</b>	<b>40.9 (39.9)</b>	<b>38.2 (39.2)</b>	35.1	<b>36.1</b>	<b>37.5</b>	<b>37.5</b>	35.8	29.7	25.5
Storrington 5	R	N	32.2	27.9	32.4	25.8 (24.6)	26.9(26.2)	27.0 (27.6)	23.3	23.5	26.9	27.4	26.4	23.3	18.7
Storrington 6	R	N	27.6	28.1	27.4	21.0 (19.9)	23.9(23.3)	24.5 (25.2)	24.2	21.7	23.7	24.3	22.3	18.8	14.8
Storrington 7	R	N	27.1	25.2	21.6	24.6 (23.4)	22.4(21.8)	23.1 (23.7)	18.7	20.5	23.4	21.5	20.9	18.4	15.6
Storrington 8,9,10 AURN (triplicate)	R	N	-	29.2*	27.4	24.5 (23.3)	25.6 (25.0)	25.8 (24.2)	22.4	24.1	26.5	25.5	26.6	22.9	20.5
Storrington 11n	R	Y	-	-	35.8*	39.3 (37.4)	<b>38.4(37.4)</b>	<b>39.0 (40.0)</b>	<b>36.2</b>	<b>37.8</b>	<b>38.3</b>	<b>37.5</b>	<b>37.8</b>	29.8	25.0
Storrington 12n	R	Y	-	-	31.6*	32.8 (31.2)	31.2(30.4)	30.5 (31.3)	28.0	25.8	29.3	29.0	28.6	26.0	20.0

Site ID	Site Type	Within AQMA ?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$												
			2008 (NBF = 0.93)	2009 (NBF = 0.81)	2010 (LBF = 0.81)	2011 (LBF=0.78 & 0.8)	2012 (NBF=0.79 & LBF=0.89, 0.77 & 0.82)	2013 (NBF=0.8 & LBF=0.92, 0.82 & 0.71)	2014 (NBF = 0.81)	2015 (LBF = 0.81)	2016 (LBF = 0.78)	2017 (LBF = 0.78)	2018 (LBF = 0.81)	2019 (LBF = 0.74)	2020 (LBF = 0.83)
Storrington 13n	R	Y	-	-	35.3*	30.5 (29.0)	32.1(31.3)	33.7 (34.5)	28.2	27.5	31.7	31.1	29.9	25.6	21.4
Storrington 14n	R	N	-	-	-	<b>45.8 (43.6)</b>	22.6 <sup>b</sup>	22.9 <sup>b</sup>	22.2 <sup>b</sup>	23.2 <sup>b</sup>	22.8 <sup>b</sup>	21.6 <sup>b</sup>	19.7 <sup>b</sup>	18.4 <sup>b</sup>	15.9 <sup>b</sup>
Storrington 15n	R	N	-	-	-	20.5 (19.5)	19.1(18.6)	20.8 (21.3)	19.7	18.3	20.3	20.3	18.9	16.9	14.9
Storrington 16n	R	N	-	-	-	25.5 (24.3)	24.0(23.4)	25.6 (26.3)	26.3	23.1	24.2	23.5	24.0	21.6	18.9
Storrington 17n	UB	N	-	-	-	15.4 (14.6)	16.1(15.7)	15.8 (16.2)	12.9	11.8	14.8	12.9	13.3	11.2	9.8
Storrington 18n	R	N	-	-	-	21.4 (20.4)	19.7(19.2)	21.0 (21.5)	17.2	16.4	21.9	20.4	19.1	16.0	13.4
Storrington 19n	R	N	-	-	-	-	-	-	-	-	<b>59.8<sup>a</sup></b>	<b>56.4</b>	<b>50.6</b>	<b>47.7</b>	<b>38.4</b>

<sup>a</sup> Annual mean concentration “annualised” as per Box 7.10 of TG(16) as data capture less than 75%. Appendix C gives details of ‘annualisation’ for 2020.

<sup>b</sup> Tubes adjusted using the Defra’s ‘Distance from Roads Calculator’ to calculate exposure at the facade of the nearest residential property. Results for Storrington 14 in Table A.9 have historically been presented after distance correction was applied

\* Denotes diffusion tubes that have not been in position for a sufficient period to give a reliable annual mean.

K – Kerbside; R-Roadside; UB – Urban background

In **red bold**, exceedance of the NO<sub>2</sub> annual mean objective of 40 $\mu\text{g}/\text{m}^3$ .

In **red**, concentrations equal or above 36 $\mu\text{g}/\text{m}^3$  (within 10% of the NO<sub>2</sub> annual mean objective of 40 $\mu\text{g}/\text{m}^3$ ).

Figure A.4 – Trends in Annual Mean NO<sub>2</sub> Concentrations measured at Diffusion Tube Monitoring Sites 2008 – 2020: Horsham

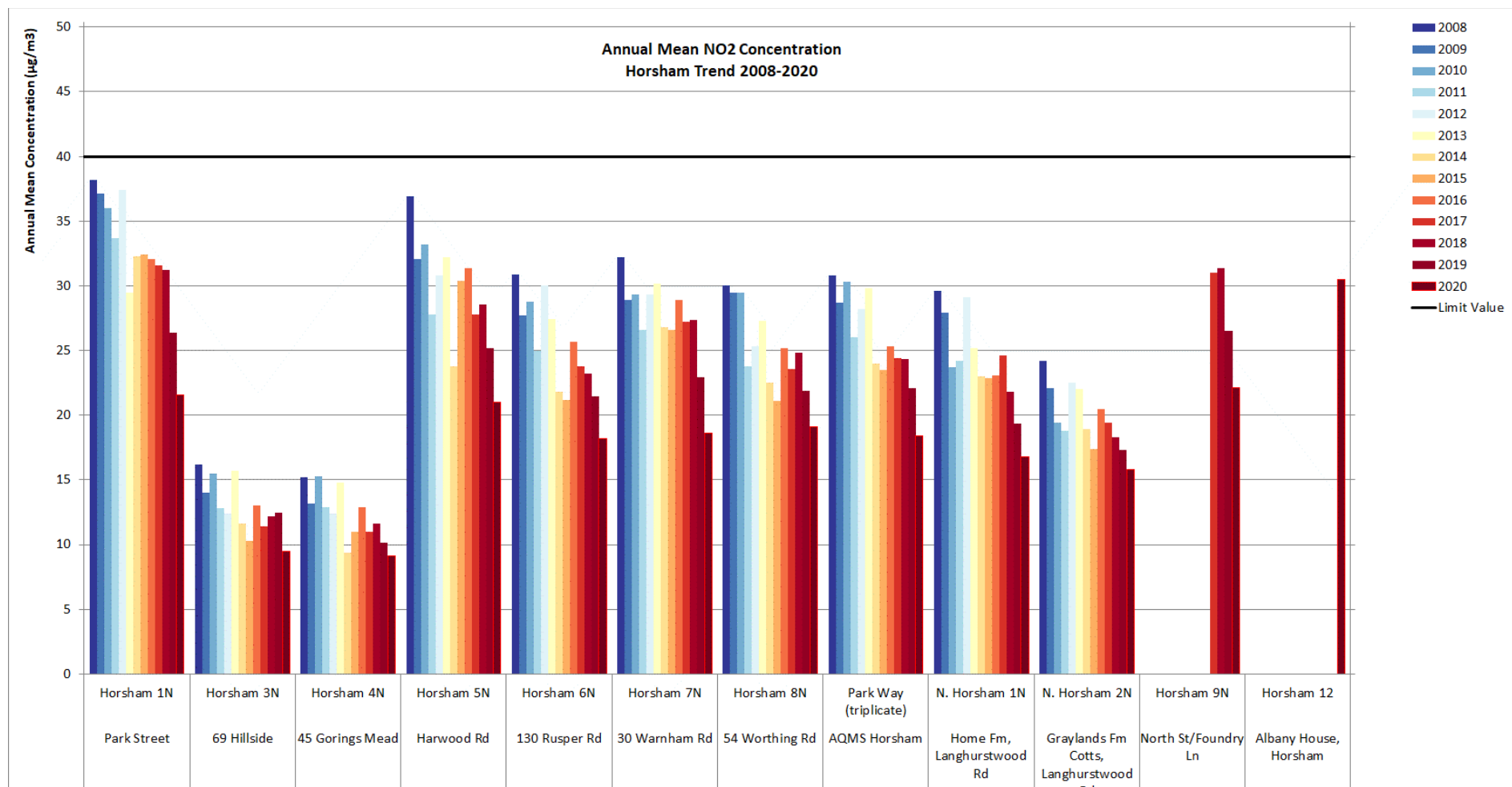


Figure A.5 – Trends in Annual Mean NO<sub>2</sub> Concentrations measured at Diffusion Tube Monitoring Sites 2008 – 2020: Storrington

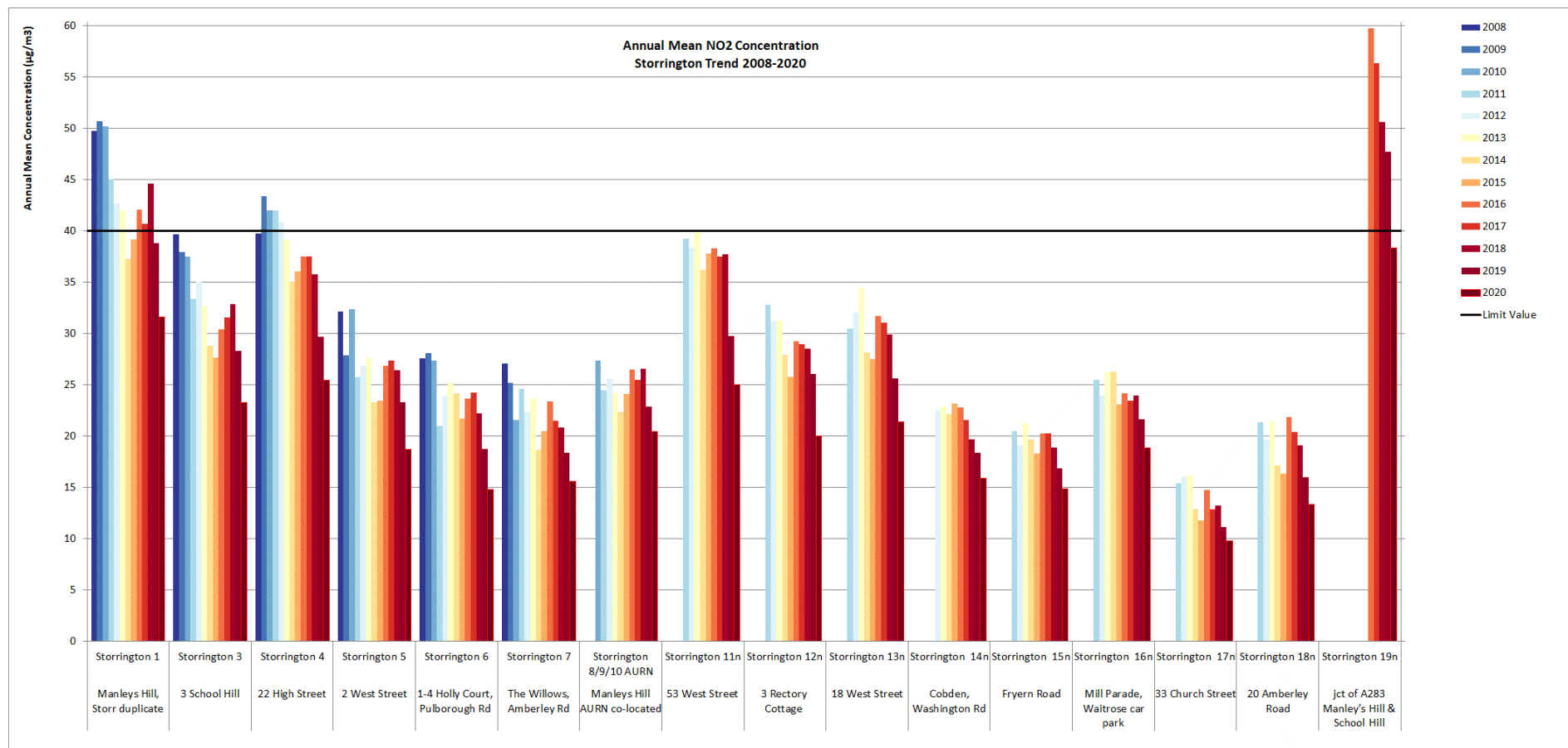
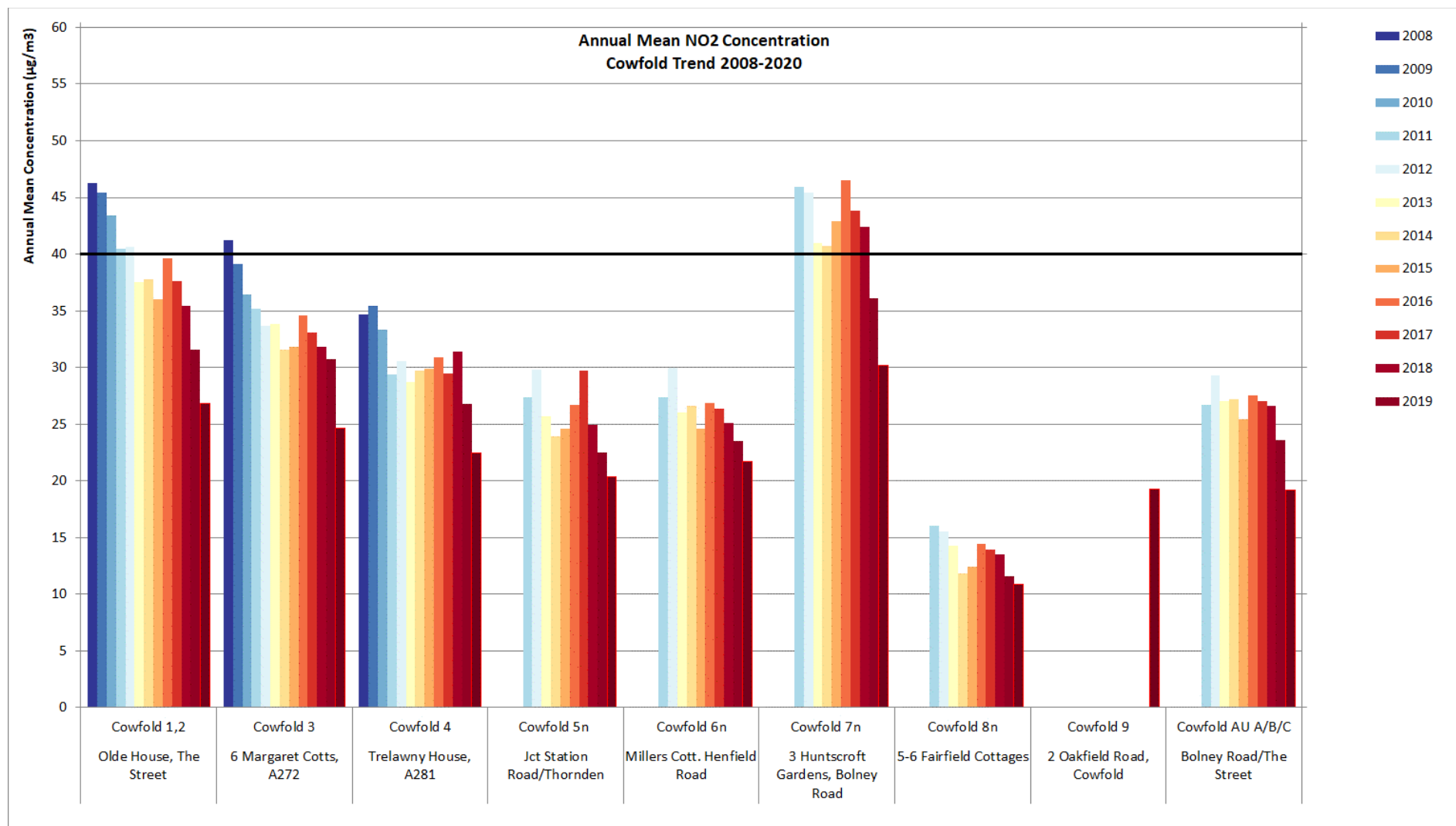
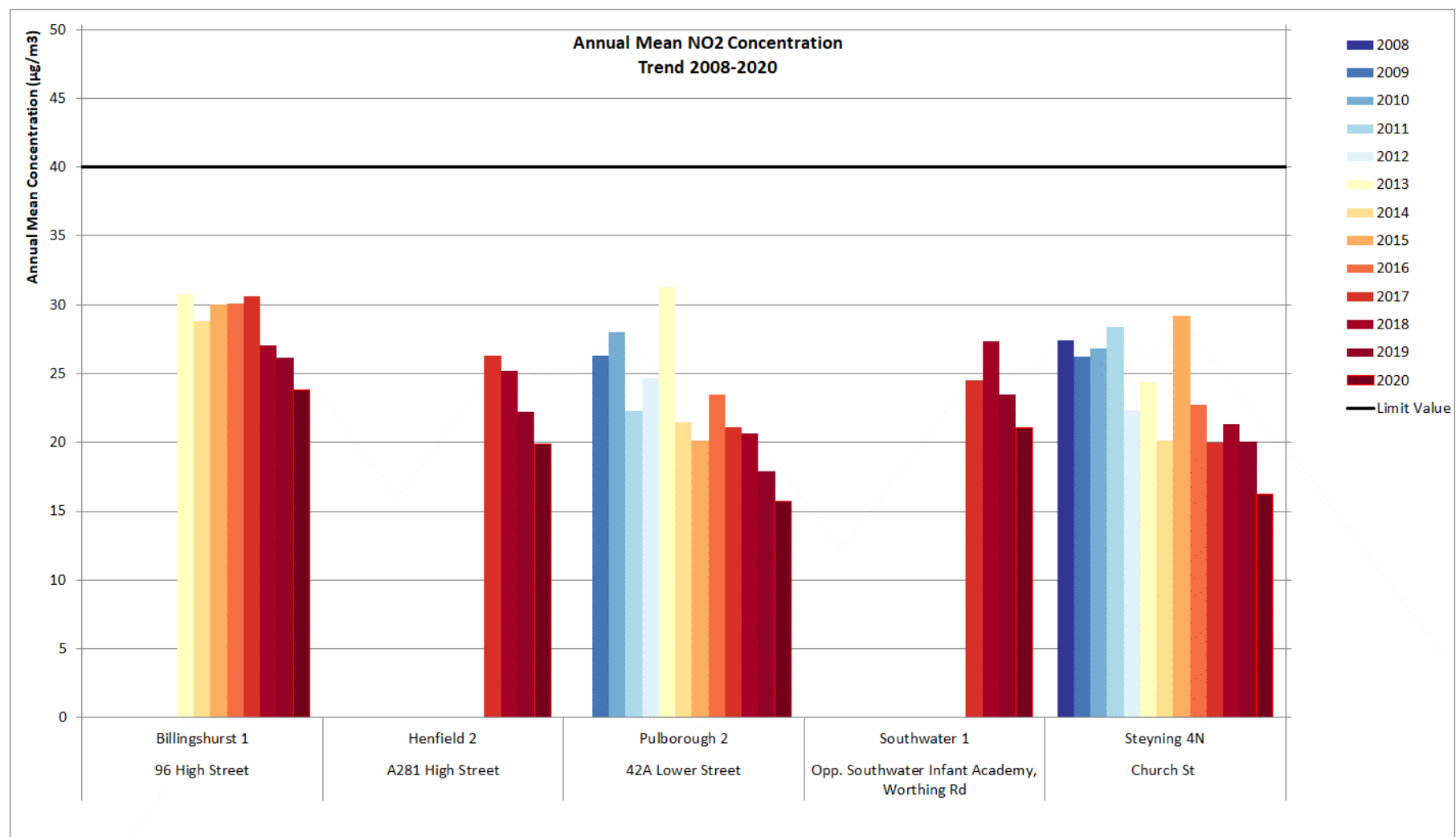


Figure A.6 – Trends in Annual Mean NO<sub>2</sub> Concentrations measured at Diffusion Tube Monitoring Sites 2008 – 2020: Cowfold



**Figure A.7 – Trends in Annual Mean NO<sub>2</sub> Concentrations measured at Diffusion Tube Monitoring Sites 2008 – 2020: Billingshurst; Henfield; Pulborough, Southwater & Steyning**



## Appendix B: Full Monthly Diffusion Tube Results for 2020

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

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	517489	130580	39.3	31.5	22.0	18.6	17.1	15.1	17.7	29.4	29.8	24.7	36.8	30.2	26.1	21.6	-	
2	521492	115907	35.0	31.7	20.4	19.0	17.3	16.9	16.4	20.7	28.4	24.6	31.8	26.3	24.0	19.9	-	
3	516000	130600	16.9	11.1	12.9	9.8	9.2	5.4	4.7	9.9	13.2	11.5	20.5	13.0	11.5	9.5	-	
4	517600	130100	15.4	11.9	11.5	9.3	6.7	6.1	3.9	9.6	12.0	11.4	19.6	14.6	11.0	9.1	-	
5	517489	130580	32.4	29.4	18.5	16.0	15.1	15.3	15.0	19.7	25.1	23.8	33.5	24.7	-	-	-	Triplicate Site with 5, 6 and 7 - Annual data provided for 7 only
6	517489	130580	32.8	23.5	17.7	15.9	15.6	16.0	14.1	23.9	25.4	24.1	31.0	23.9	-	-	-	Triplicate Site with 5, 6 and 7 - Annual data provided for 7 only
7	517489	130580	32.8	24.9	18.8	15.6	14.5	16.7	17.6	23.4	26.2	22.5	27.2	25.9	22.2	18.4	-	Triplicate Site with 5, 6 and 7 - Annual data provided for 7 only
8	518230	131140	37.7	27.8	24.0	18.4	20.2	16.8	15.5	23.6	33.1	26.7	36.2	24.0	25.3	21.0	-	
9	518650	132490	35.1	22.5	17.9	15.1	14.6	14.6	13.2	20.5	23.9	24.6	34.5	25.7	21.9	18.2	-	
10	516952	132215	32.9	26.6	19.4	14.9	17.0	15.0	12.8	20.7	26.0	24.1	33.2	26.3	22.5	18.6	-	
11	516650	130220	31.3	32.0	22.9	15.9	14.2	15.5	12.7	17.2	26.9	24.9	33.7	31.5	23.1	19.1	-	
12	521324	122610	46.1	34.5	27.1	20.3	23.7	29.6	26.9	34.3	32.1	33.9	39.0	29.7	-	-	-	Duplicate Site with 12 and 20 - Annual data provided for 20 only
13	508960	114270	52.9	39.0	38.3	32.6	34.4	30.6	29.8	38.9		42.7	48.8	29.0	38.1	31.6	-	
14	521584	122457					16.1	17.5	16.9	21.7	25.3	22.2	30.5	23.8	21.7	19.3	-	
15	508935	114297	38.7	32.1	25.1	22.1	21.8	22.2	21.4	29.1	35.2	28.8	32.9	27.2	28.1	23.3	-	
16	508832	114272	43.8	39.0	25.9	22.8	20.3	27.7	20.4	30.1	32.1	33.7	40.6	32.3	30.8	25.5	-	
17	508742	114288	32.1	23.1	19.3	18.4	17.6	15.2	17.1	26.4	25.1	21.1	29.1	24.6	22.5	18.7	-	
18	508396	114449	27.2	20.3	15.6	13.9	11.9	14.9	12.2	20.6	19.4	15.7	21.8	20.6	17.9	14.8	-	



DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
19	508338	114374	29.5	22.0	17.2	15.7	13.5	16.2	12.1	17.3	22.2	19.3		21.5	18.8	15.6	-	
20	521324	122610	46.6	32.2	33.4	23.6	22.0	31.9	26.7	34.6	35.2	33.5	42.5	36.6	32.3	26.8	-	Duplicate Site with 12 and 20 - Annual data provided for 20 only
21	521267	122677	42.3	31.5	27.9	19.9	19.9	22.6	23.7	32.4	33.4	32.7	38.2	30.7	29.6	24.6	-	
22	521070	122706	42.9	40.1	25.9	18.5	16.6	21.1	20.6	26.6	27.1	26.2	33.2	29.7	27.2	22.5	-	
23	517702	133570	27.7	25.9	18.6	12.8	10.8	13.7	12.5	18.5	22.4	25.3	33.0	22.5	20.3	16.8	-	
24	517476	134013	34.7	23.7	15.8	11.8	12.6	11.2	11.4	17.2	20.9	18.8	30.0	21.4	19.1	15.8	-	
25	517732	111198	31.3	21.1	16.1	17.7	13.2	15.5	11.0	18.4	23.0	20.9	25.3	20.5	19.6	16.2	-	
26	516909	130755					27.7	28.0	31.1	38.8	36.0	33.8	38.3	39.4	34.2	30.5	-	
27	505185	118623	28.7	20.7	17.3	16.1	13.1	11.9	11.8	18.0	23.2	20.3	23.6	22.8	19.0	15.7	-	
28	508623	125834	42.0	37.0	25.5	15.6	16.6	23.7	19.5	27.1	33.8	33.0	38.6	32.2	28.7	23.8	-	
29	509083	114198	30.9	22.3	19.9	20.4	21.5	22.8	19.2	31.2	31.1	21.2	29.0	25.0	-	-	-	Triplicate Site with 29, 30 and 31 - Annual data provided for 31 only
30	509083	114198	32.2	24.2	19.2	20.2	22.1	24.4	16.9	28.4	33.0	23.3	29.2	23.9	-	-	-	Triplicate Site with 29, 30 and 31 - Annual data provided for 31 only
31	509083	114198	34.1	17.5	20.4	20.5	21.0	24.2	18.3	29.9	30.4	23.1	29.2	24.6	24.8	20.5	-	Triplicate Site with 29, 30 and 31 - Annual data provided for 31 only
32	508675	114306	36.0	26.0	26.3	23.4	21.1	24.2	16.7	27.4	33.9	23.8	24.3	26.7	25.8	21.4	-	
33	508598	114323	39.5	23.7	21.8	21.0	16.5	19.2	14.3		29.4	25.0		30.1	24.2	20.0	-	
34	508511	114365	43.1	36.9	31.6	22.1	21.8	29.4	24.3	29.5	36.2	27.1		32.7	30.1	25.0	-	
35	521311	122704	36.6	32.2	20.7	14.8	16.0	20.9	22.0		27.5	24.5	30.5	26.6	24.6	20.4	-	
36	521309	122248	38.4	36.8	25.1	16.1	16.4	24.3	19.6	24.5	29.6	26.5	32.8	26.9	26.2	21.7	-	
37	521460	122473	54.0	42.1	30.3	24.9	25.5	25.5	31.2	35.8	42.1	37.1	49.6	39.6	36.4	30.2	-	
38	509319	114160	47.4	38.1	28.0		25.8	29.0	28.3	34.1	41.3	30.4	36.3	30.7	33.5	27.8	-	
39	508905	114325	33.9	22.4	21.9	15.6	18.0	21.5	14.7	23.5	27.8	22.7	27.9	24.0	22.8	18.9	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
40	509103	114532	28.7	19.1	16.3	12.1	11.1	16.0	10.2	17.5	19.9	19.5	24.0	20.9	18.0	14.9	-	
41	508677	114149	17.5	16.4	11.3	9.9	8.1	8.0	5.0	11.4	12.8	11.3	17.4	12.1	11.8	9.8	-	
42	508215	114348	24.9	19.6	17.2	12.7	11.3	12.3	8.7	13.6	21.5	18.6		18.2	16.2	13.4	-	
43	521411	122667	19.2	16.2	11.4	9.4	7.5	9.6	6.7	12.3	15.0	13.4	20.2	17.6	13.2	10.9	-	
44	521356	122552	36.0	24.7	13.2	16.2	14.5	18.9	18.0	25.4	25.0	23.3	32.3	26.3	-	-	-	Triplicate Site with 44, 45 and 46 - Annual data provided for 46 only
45	521356	122552	35.5	22.1	21.8	14.8	14.5	21.2	18.3	23.5	26.7	25.6	31.5	28.1	-	-	-	Triplicate Site with 44, 45 and 46 - Annual data provided for 46 only
46	521356	122552	37.2	25.9	18.7	15.1	12.6	18.9	17.4	24.8	26.3	22.1	30.1	27.3	23.2	19.2	-	Triplicate Site with 44, 45 and 46 - Annual data provided for 46 only
47	508945	114268	69.6	41.8	40.3	25.3	33.2	50.7	42.2	54.4	51.2	49.3	52.7	44.3	46.4	38.4	-	
48	518074	131164	40.4	28.0	20.5	22.2	16.2	17.1	20.0	24.7	36.8	31.0	38.3	23.9	26.6	22.1	-	
49	515639	126599	35.6	35.4	25.4	15.3	16.8	17.4	18.6	26.5	29.0	25.5	34.5	27.4	25.5	21.1	-	

All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1

Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16

Local (regional) bias adjustment factor used

National bias adjustment factor used

Data has not been distance corrected for relevant exposure in the final column as all results are below 36µg/m<sup>3</sup>

Horsham District Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System

#### Notes:

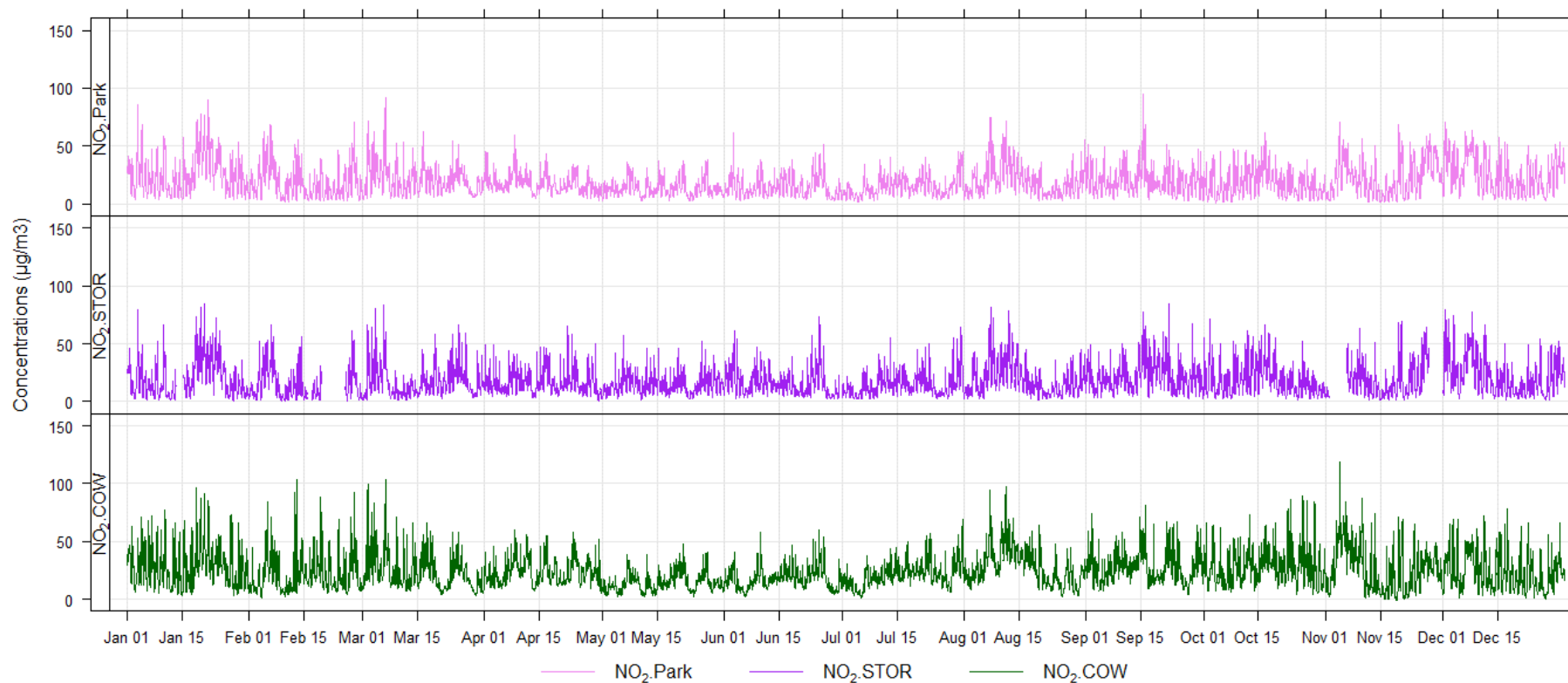
Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

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

See [Appendix C](#) for details on bias adjustment and annualisation.

Figure B.1 – Continuous Monitoring Results: 1-hr mean NO<sub>2</sub> Concentrations at HO2 Horsham Park Way, HO4 Storrington AURN & HO5 Cowfold in 2020

1-hr mean NO<sub>2</sub> concentrations by year at HO2 Horsham Park Way, HO4 Storrington AURN & HO5 Cowfold in 2020

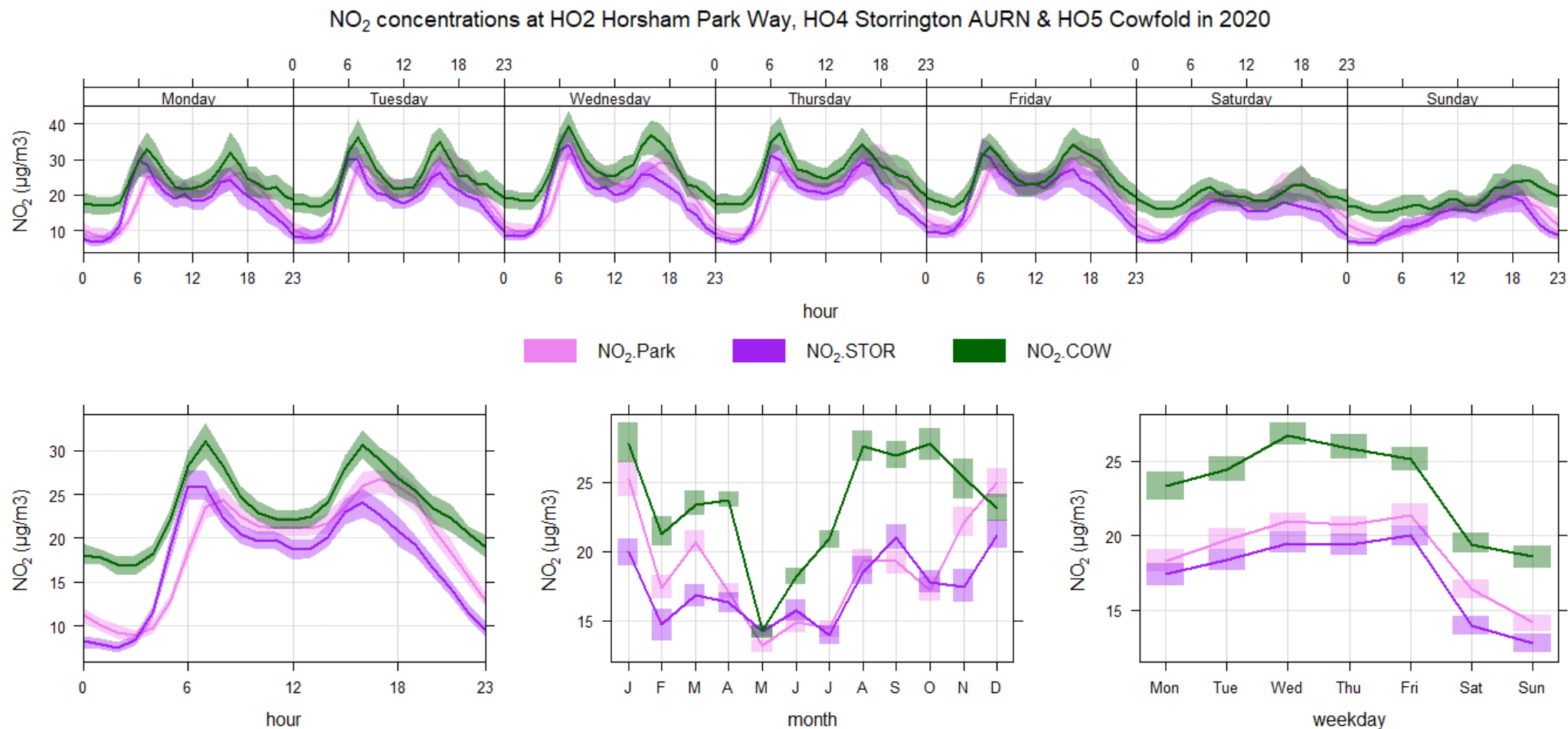


NO2.Park	NO2.STOR	NO2.COW
Min. : 0.80	Min. : 0.5421	Min. : 0.5421
1st Qu.: 9.30	1st Qu.: 7.9788	1st Qu.: 7.9788
Median :15.80	Median :14.0948	Median :14.0948
Mean :18.81	Mean :17.3584	Mean :17.3584
3rd Qu.:25.10	3rd Qu.:23.2465	3rd Qu.:23.2465
Max. :94.50	Max. :84.8784	Max. :84.8784
NA's :25	NA's :488	NA's :37

Min = minimum; Max = maximum, mean, 1<sup>st</sup> Qu. = First quartile;  
 3<sup>rd</sup> Qu. = Third quartile; NA's = missing data

Data plotted using Openair.

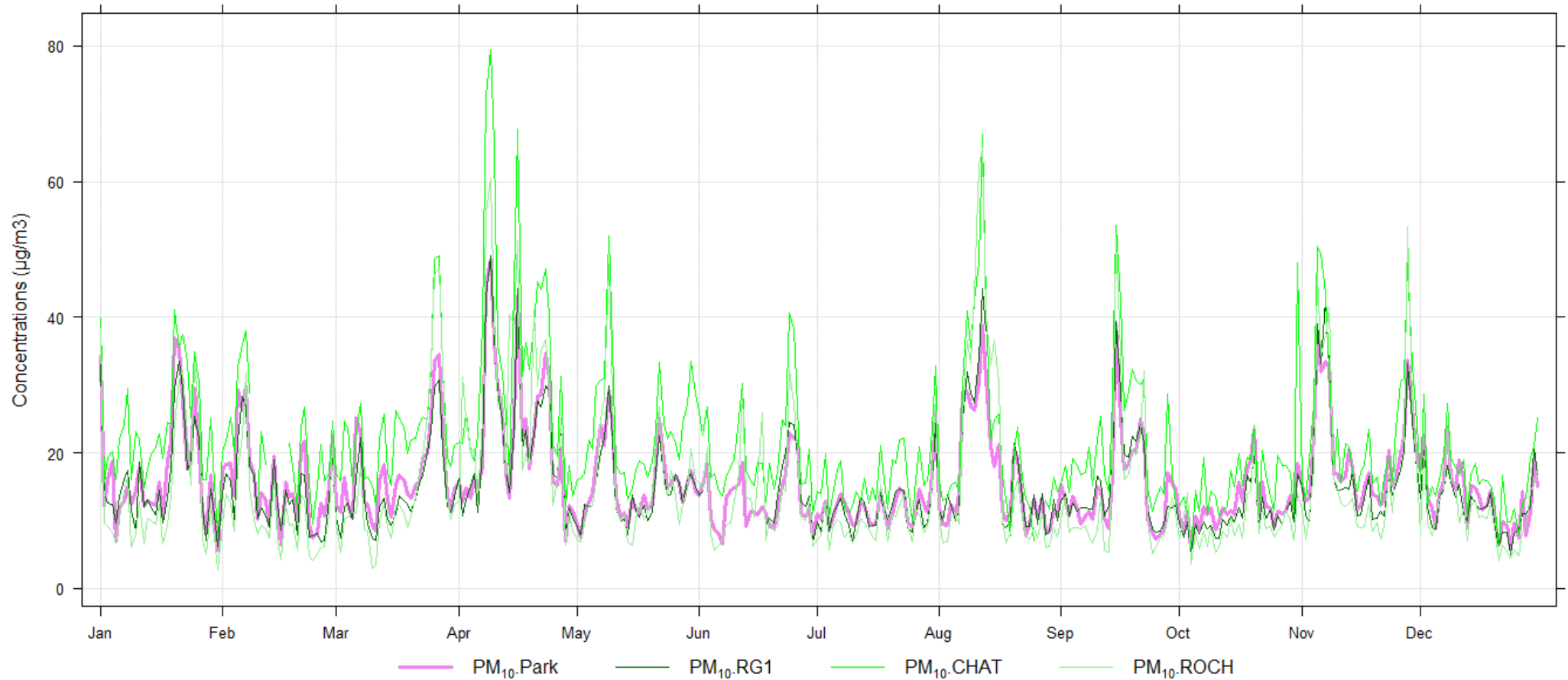
Figure B.2 – Continuous Monitoring Results: NO<sub>2</sub> Concentrations at HO2 Horsham Park Way, HO4 Storrington AURN & HO5 Cowfold in 2020



Data plotted using Openair.

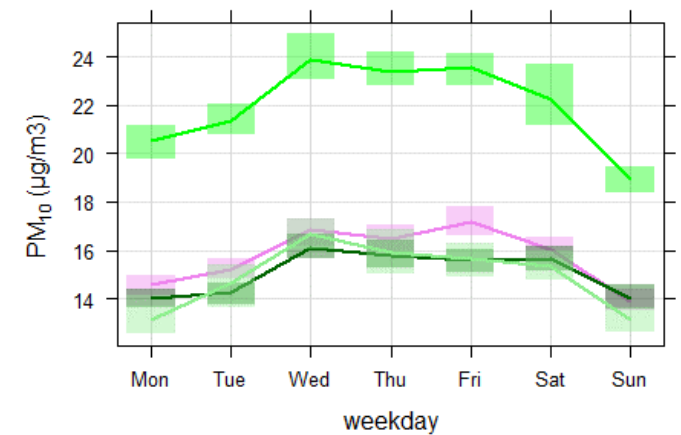
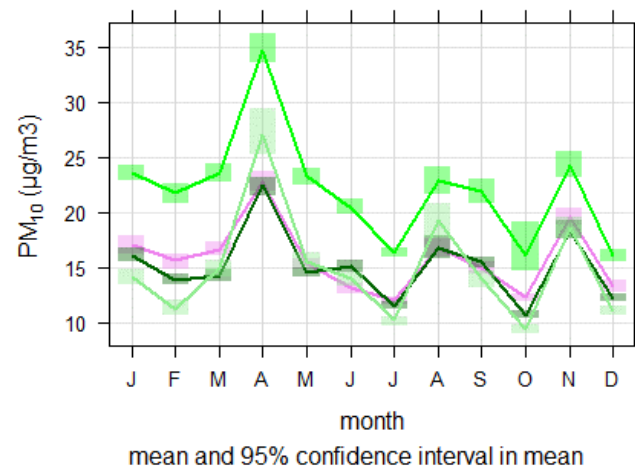
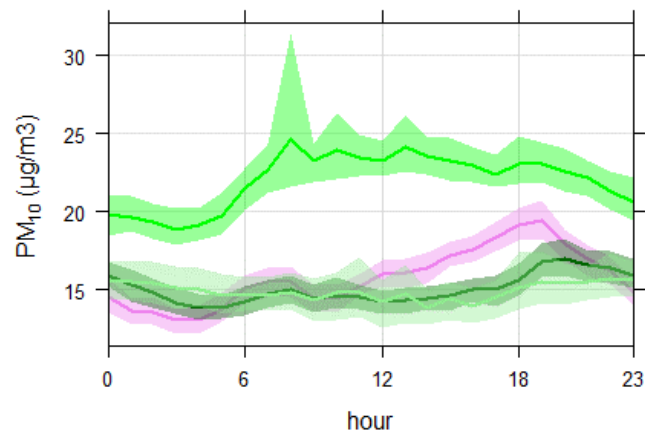
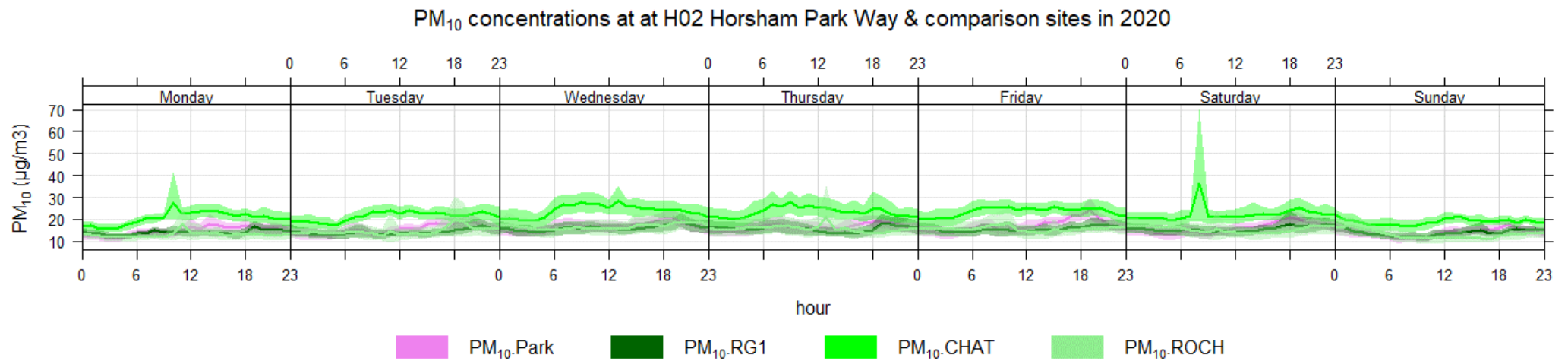
Figure B.3 – Continuous Monitoring Results: 24-hr mean PM<sub>10</sub> Concentrations, H02 Horsham Park Way & Comparison Sites, 2020

24-hour PM<sub>10</sub> concentrations at H02 Horsham Park Way & comparison sites in 2020



Data plotted using Openair.

Figure B.4 – Continuous Monitoring Results: PM<sub>10</sub> Concentrations, HO2 Horsham Park Way & Comparison Sites, 2020



PM10.Park	PM10.RG1	PM10.CHAT	PM10.ROCH
Min. : -4.60	Min. : -2.30	Min. : 0.966	Min. : 0.525
1st Qu.: 9.50	1st Qu.: 9.30	1st Qu.: 13.527	1st Qu.: 7.325
Median : 13.50	Median : 12.80	Median : 18.358	Median : 11.150
Mean : 15.75	Mean : 15.06	Mean : 22.002	Mean : 14.923
3rd Qu.: 19.80	3rd Qu.: 18.10	3rd Qu.: 27.054	3rd Qu.: 17.250
Max. : 129.80	Max. : 135.70	Max. : 720.785	Max. : 330.125
NA's : 38	NA's : 516	NA's : 366	NA's : 15

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

### New or Changed Sources Identified Within Horsham District Council During 2020

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

### Additional Air Quality Works Undertaken by Horsham District Council During 2020

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

### QA/QC of Diffusion Tube Monitoring

The diffusion tubes are sourced from Sototec (previously Environmental Scientifics Group (ESG)) 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 03/21 published in March 2021) based on 22 co-location studies. The bias adjustment factor given for this methodology was 0.77.

Exposure times on two occasions were marginally shorter than the recommended 4 weeks (9-4 days). A time-weighted annual mean NO<sub>2</sub> concentration was calculated using the Diffusion Tube Data processing Tool v.1.1.

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 website<sup>22</sup>. In the latest available AIR-PT results Socotec have scored 100% in rounds AR036 (January to February 2020) and AR040 (September to October 2020). The percentage score reflects the results deemed to be satisfactory based upon the z-score of  $< \pm 2$ . No results were reported in rounds AR037 (May to June 2020), and AR 039 (July to August 2020).

Regarding the inter-comparison co-location study from Marylebone Road, it was rated as 'good' (tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%).

### Diffusion Tube Annualisation

Annualisation (short to long term data adjustment) is required for any site with data capture less than 75% but greater than 33%.

The adjustment has been undertaken for the new diffusion tube monitoring sites Cowfold 9 (Oakfield Road, Cowfold) and Horsham 12 (Albany House, Horsham), both set up in May 2020.

The calculations presented in Table C.2 were carried out using the Diffusion Tube Data Processing Tool<sup>23</sup> in line with LAQM Technical Guidance LAQM Guidance TG(16) Box 7.9.

### Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO<sub>x</sub>/NO<sub>2</sub> continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

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<sup>22</sup> <https://laqm.defra.gov.uk/assets/laqmno2performancedatauptoOctober2020v1.pdf>

<sup>23</sup> <https://laqm.defra.gov.uk/tools-monitoring-data/dtdp.html>



Horsham District Council have applied a local bias adjustment factor of 0.83 to the 2020 monitoring data. The use of bias adjustment factors over the past few years has varied but generally fluctuates around 0.8. A summary of bias adjustment factors used by Horsham District Council since 2007 is presented in Table C.1.

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

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor	Comments
2007	Local	-	0.9	Local bias was calculated from the HO2 Horsham Park Way co-location study. Diffusion tubes were prepared to the 10% TEA in water method and analysed by Bureau Veritas Laboratories.
2008	National		0.93	The national bias was considered more representative for the diffusion tube survey as a whole. The locally-derived bias from the HO2 Horsham Park Way co-location study was 0.9 based on 10 periods of data. Diffusion tubes were prepared using 50% TEA in acetone method and analysed by Bureau Veritas in Glasgow.
2009	National		0.81	The national bias was considered more representative for the diffusion tube survey as a whole. The locally-derived bias from the HO2 Horsham Park Way co-location study was 0.88 based on 10 periods of data. Diffusion tubes were prepared using 20% TEA in water method and analysed by Environmental Scientifics Group (formerly Bureau Veritas) in Glasgow.
2010	Local	-	0.81	The local bias was considered more representative for the diffusion tube survey as a whole. There was close agreement between the national and local bias adjustment factors at 0.84 and 0.81 respectively. The local bias adjustment factor was derived from two separate co-location sites: HO2 Horsham Park Way (based on 11 periods of data) and HO4 Storrington AURN (based on 10 periods of data); both studies produced the same bias factors. Diffusion tubes were prepared using 20% TEA in water method and analysed by Environmental Scientifics Group (formerly Bureau Veritas) in Glasgow.

2011	Local	-	0.78 & 0.8	<p>The local bias was considered more representative for the diffusion tube survey as a whole. There was close agreement between the national and local bias adjustment factors. The national bias factor was 0.82 based on 5 studies. Three local bias adjustment factors were obtained: 0.78 for HO2 Horsham Park Way (based on 11 periods of data), 0.78 for HO4 Storrington AURN (based on 11 periods of data) and 0.8 for HO5 Cowfold (based on 9 periods of data). Diffusion tubes were prepared using 20% TEA in water method and analysed by Environmental Scientifics Group (formerly Bureau Veritas) in Glasgow.</p>
2012	National and Local		0.79 (national); 0.89, 0.77 & 0.82 (local)	<p>As there was limited agreement between the national and local bias adjustment factors the results have been corrected using both factors. The national bias factor was 0.79 based on 26 studies. Three local bias adjustment factors were obtained: 0.89 for HO2 Horsham Park Way (based on 11 periods of data), 0.77 for HO4 Storrington AURN (based on 12 periods of data) and 0.82 for HO5 Cowfold (based on 12 periods of data). Diffusion tubes were prepared using 50% TEA in acetone method and analysed by Environmental Scientifics Group in Didcot.</p>
2013	National and Local		0.8 (national); 0.92, 0.82 & 0.71 (local)	<p>As there was limited agreement between the national and local bias adjustment factors the results have been corrected using both factors. The national bias factor was 0.8 based on 28 studies. Three local bias adjustment factors were obtained: 0.92 for HO2 Horsham Park Way (based on 12 periods of data), 0.82 for HO4 Storrington AURN (based on 12 periods of data) and 0.71 for HO5 Cowfold (based on 11 periods of data). Diffusion tubes were prepared using 50% TEA in acetone method and analysed by Environmental Scientifics Group in Didcot.</p>
2014	National		0.81	<p>The national bias was considered more representative for the diffusion tube survey as a whole. There was close agreement between the national and local bias adjustment factors. The national bias factor was 0.81 based on 30 studies. Two local bias adjustment factors were obtained: 0.85 for HO2 Horsham Park Way (based on 11 periods of data), 0.78 for HO4 Storrington AURN (based on 5 periods of data) and 0.78 for HO5 Cowfold (based on 6 periods of data). The factors for Storrington and Cowfold co-location studies were excluded due to poor data capture for both studies. Diffusion tubes were prepared using 50% TEA in acetone method and analysed by Environmental Scientifics Group in Didcot.</p>

2015	Local	-	0.81	Diffusion tubes were exposed for 9-10 months in 2015 so a local bias factor derived from the Cowfold co-location study was considered better matched than using an annual (national database) factor. The value of the national database factor was similar to that of the local factor (0.81 based on 21 studies available at the time the report was written and 0.79 based on 29 studies available later in the year).
2016	Local		0.78	The local bias factor, derived from the three co-location studies, was considered to be more representative for the diffusion tube survey. All three co-location studies are carried out at roadside locations and majority of the diffusion tube sites in the survey are roadside sites. All three co-location studies had good data capture and tube precision in 2016. The national bias factor was 0.77, based on 30 studies.
2017	Local		0.78	The local bias factor, derived from the three co-location studies, was considered to be more representative for the diffusion tube survey. The value of the national database factor was similar (0.77 based on 27 studies available at the time the report was written).
2018	Local		0.81	The local bias factor, derived from the three co-location studies, was considered to be more representative for the diffusion tube survey. The use of a local bias factor represented a conservative approach as its value was higher than that of a national bias factor.
2019	Local		0.74	The local bias factor, derived from the three co-location studies, was considered to be more representative for the diffusion tube survey.

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

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

Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m<sup>3</sup> and the monitoring site is not located at a point of relevant exposure (taking the limitations of the LAQM NO<sub>2</sub> fall-off with distance calculator into account).

The monitoring results were below  $36\mu\text{g}/\text{m}^3$  at all sites meeting the above criteria so no diffusion tube  $\text{NO}_2$  monitoring locations within Horsham District Council required distance correction during 2020. However, as results for the site Storrington 14 have historically been presented after distance correction was applied, the 2020 result was also corrected to maintain consistency. The results of distance correction for Storrington 14 are shown in Table C.4.

## QA/QC of Automatic Monitoring

Data collection and ratification for the Park Way and Cowfold monitoring stations is undertaken by the Environmental Research Group, Kings College, through a contract with the 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 is carried out to the AURN standards, however, the data quality could be further improved if independent inter calibrations site audits were carried out (these are a requirement for AURN sites).

The Storrington monitoring station is an AURN affiliated site managed primarily by AEA Technology in accordance with the 'QA/QC Procedures for the UK Automatic Urban and Rural Air Quality Monitoring Network (AURN)'.

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

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

The PM<sub>10</sub> monitoring data from the HO2 Horsham Parkway analyser has been corrected by King's College London in accordance with the Volatile Correction Model (VCM)<sup>24</sup>.

## Automatic Monitoring Annualisation

All automatic monitoring locations within Horsham District Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 33% do not require annualisation.

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<sup>24</sup> <http://www.volatile-correction-model.info/Default.aspx>

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

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

No automatic NO<sub>2</sub> monitoring locations within Horsham District required distance correction during 2020.

Table C.2 – Annualisation Summary (concentrations presented in  $\mu\text{g}/\text{m}^3$ )

Site ID	Annualisation Factor Brighton Preston Park	Annualisation Factor Reading New Town	Annualisation Factor London Eltham	Annualisation Factor London Hillingdon	Average Annualisation Factor	Raw Data Annual Mean	Annualised Time Weighted Annual Mean
Cowfold 9 (Oakfield Road, Cowfold)	1.0633	1.0999	1.0458	1.0901	1.0748	21.7	23.3
Horsham 12 (Albany House, Horsham)	1.0633	1.0999	1.0458	1.0901	1.0748	34.2	36.8

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3
<b>Periods used to calculate bias</b>	12	11	11
<b>Bias Factor A</b>	0.85 (0.78 - 0.92)	0.7 (0.66 - 0.76)	0.98 (0.84 - 1.17)
<b>Bias Factor B</b>	18% (9% - 28%)	42% (32% - 53%)	2% (-14% - 19%)
<b>Diffusion Tube Mean (<math>\mu\text{g}/\text{m}^3</math>)</b>	22.2	24.9	23.6
<b>Mean CV (Precision)</b>	5.6%	3.5%	4.9%
<b>Automatic Mean (<math>\mu\text{g}/\text{m}^3</math>)</b>	18.7	17.5	23.1
<b>Data Capture</b>	100%	96%	100%
<b>Adjusted Tube Mean (<math>\mu\text{g}/\text{m}^3</math>)</b>	19 (17 - 20)	17 (16 - 19)	23 (20 - 28)

**Notes:**

A combined local bias adjustment factor of 0.83 has been used to bias adjust the 2020 diffusion tube results.

Table C.4 – NO<sub>2</sub> Fall off With Distance Calculations (concentrations presented in  $\mu\text{g}/\text{m}^3$ )

Site ID/Name	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	Comments
38/Storrington 14n	0.9	20.9	27.8	8.6	15.9	Results for Storrington 14 in Table A.9 have historically been presented after distance correction was applied.

## Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Location of Horsham Air Quality Monitoring Station

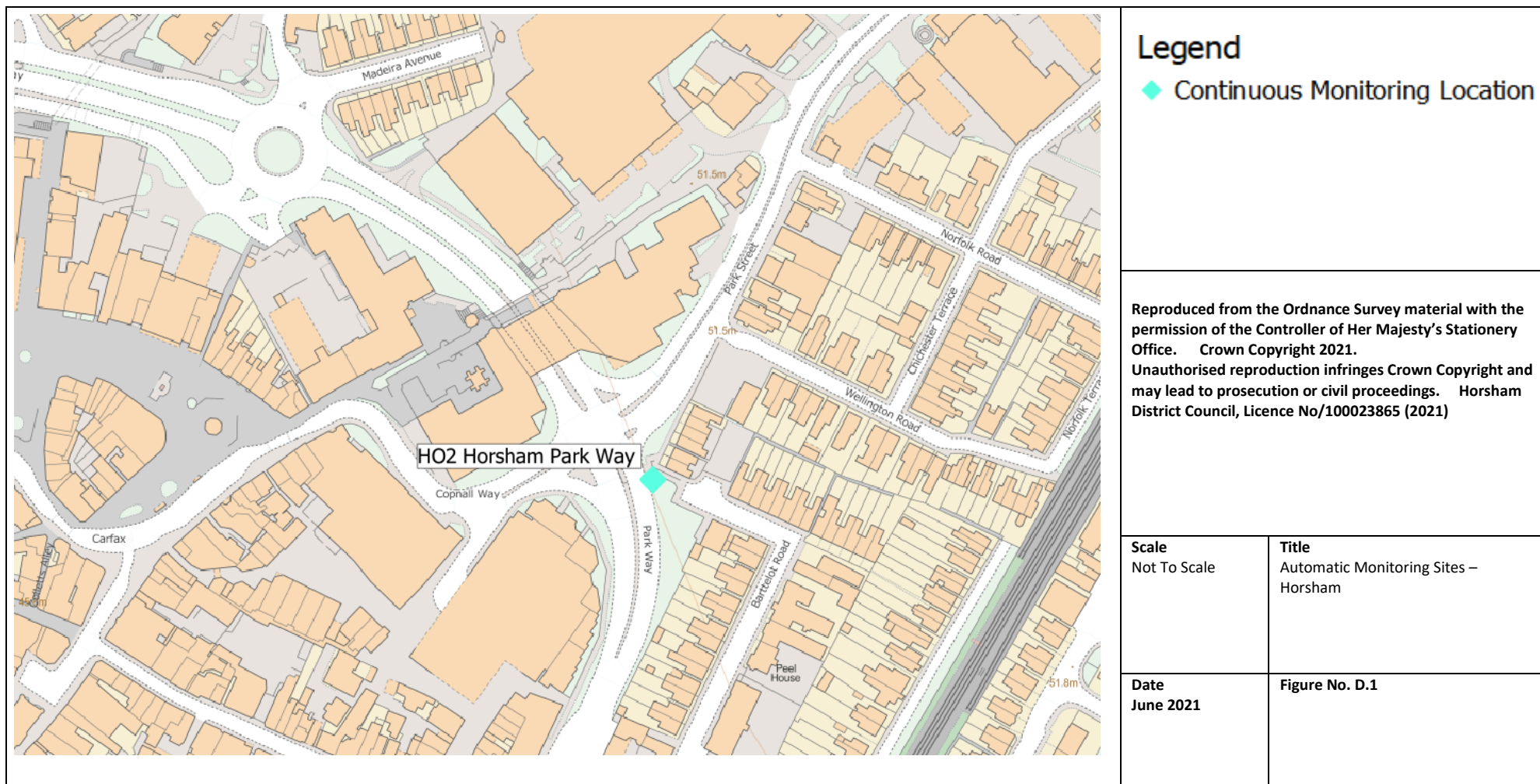


Figure D.2 – Location of Storrington Air Quality Monitoring Station

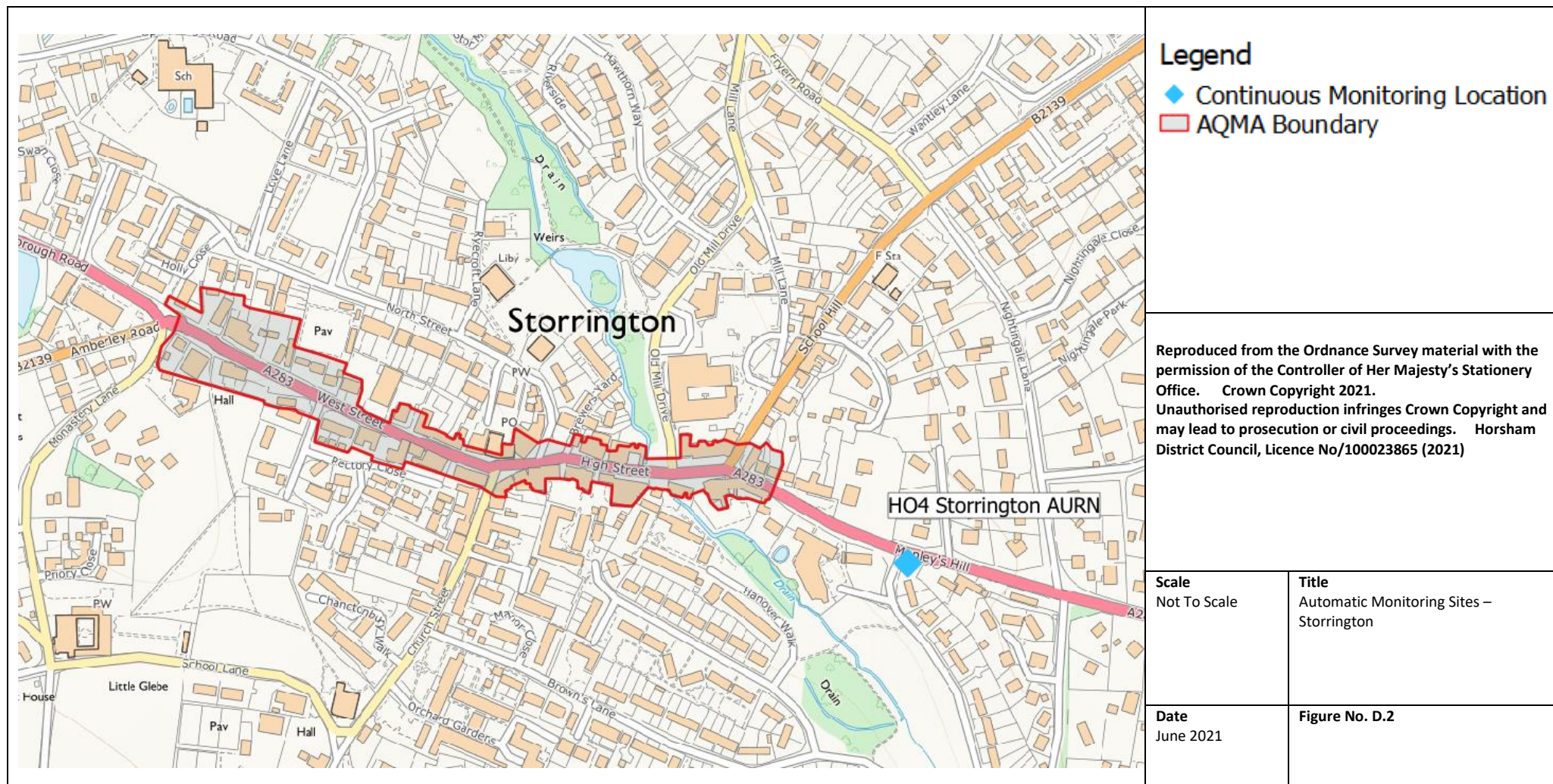




Figure D.3 – Location of Cowfold Air Quality Monitoring Station

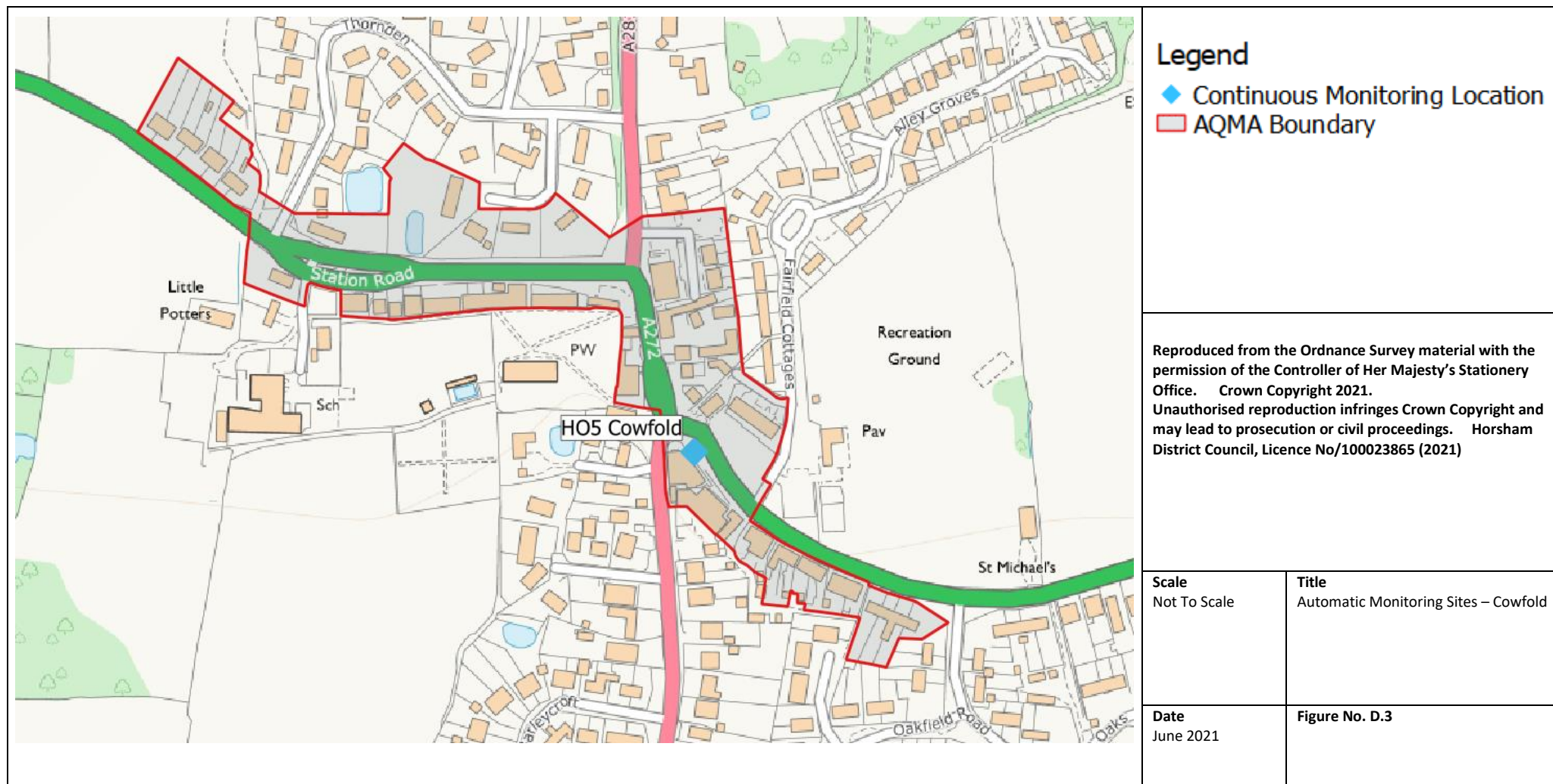


Figure D.4 – Locations of Diffusion Tube Monitoring Sites – Horsham

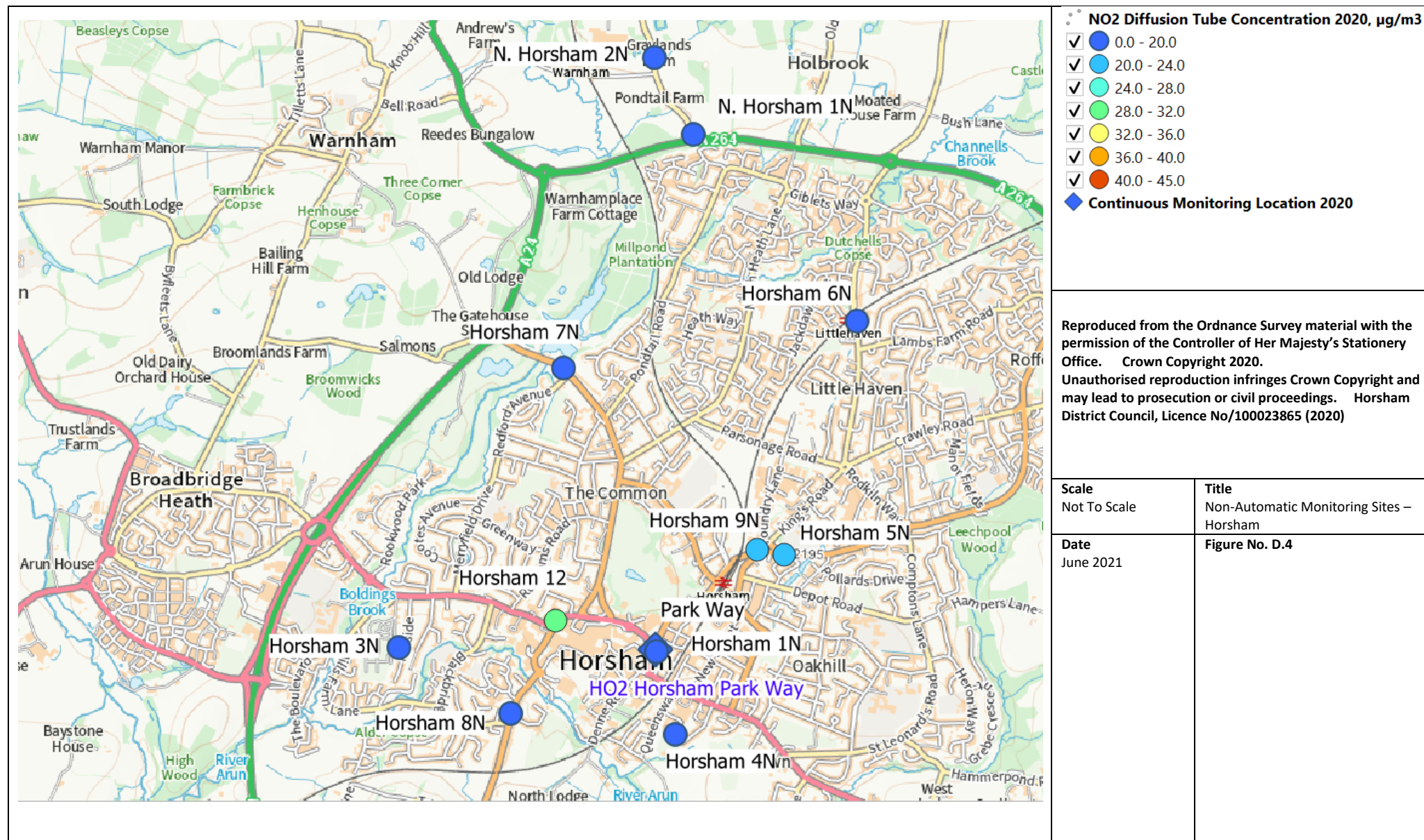


Figure D.5 – Locations of Diffusion Tube Monitoring Sites – Storrington

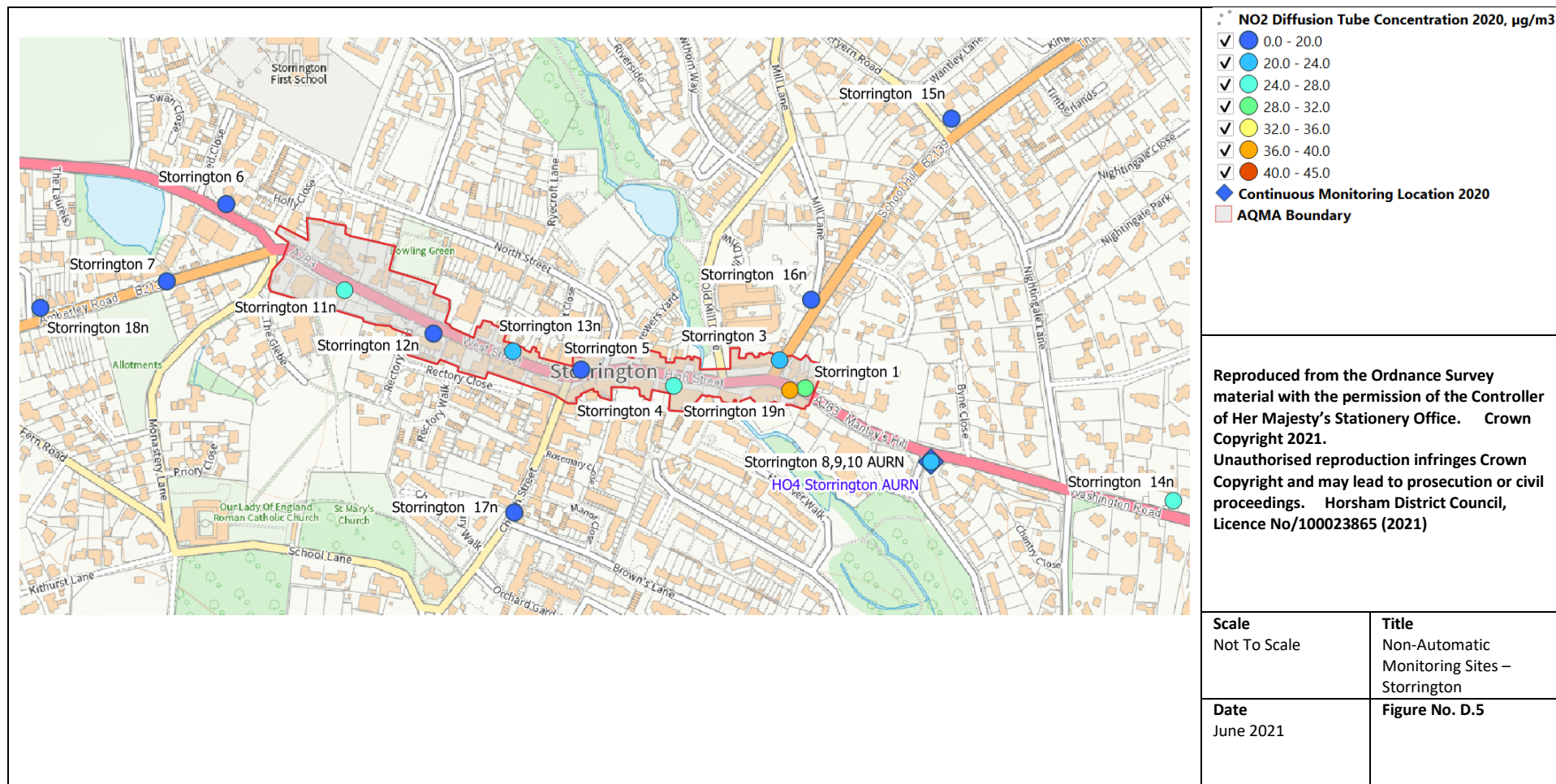


Figure D.6 – Locations of Diffusion Tube Monitoring Sites – Cowfold



Figure D.7 – Locations of Diffusion Tube Monitoring Sites – Henfield

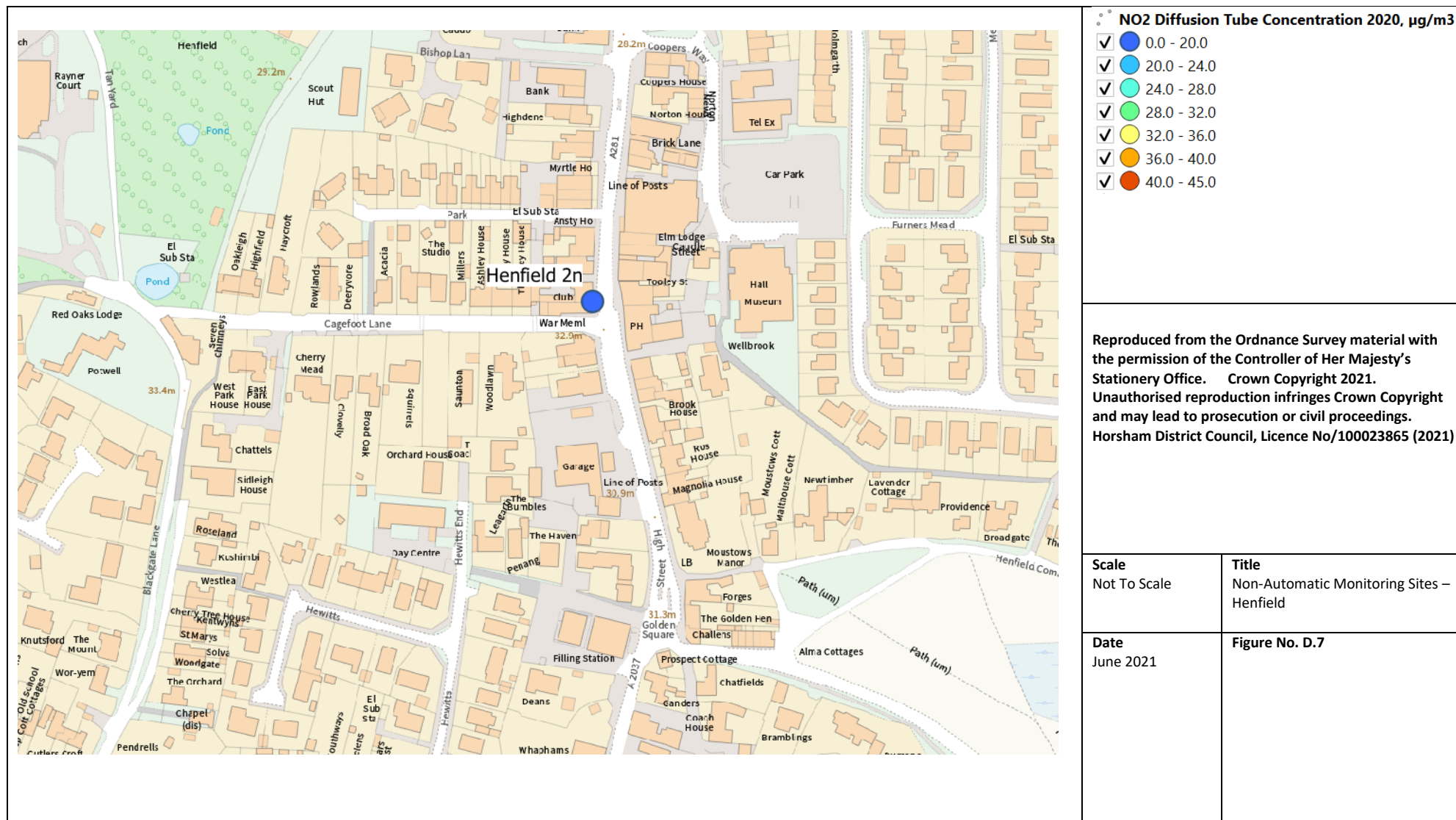


Figure D.8 – Locations of Diffusion Tube Monitoring Sites – Pulborough



Figure D.9 – Locations of Diffusion Tube Monitoring Sites – Billingshurst



Figure D.10 – Locations of Diffusion Tube Monitoring Sites – Southwater

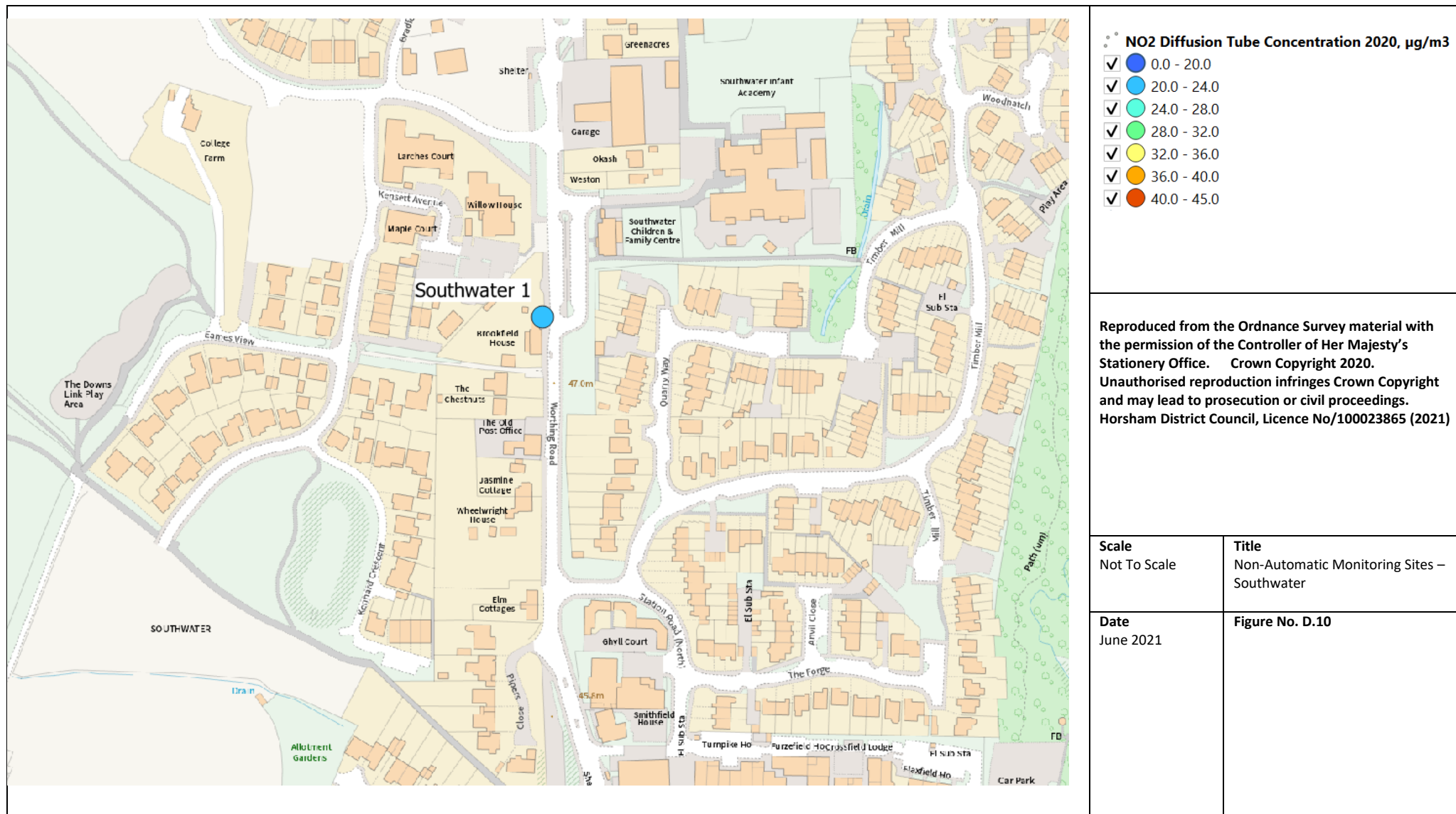
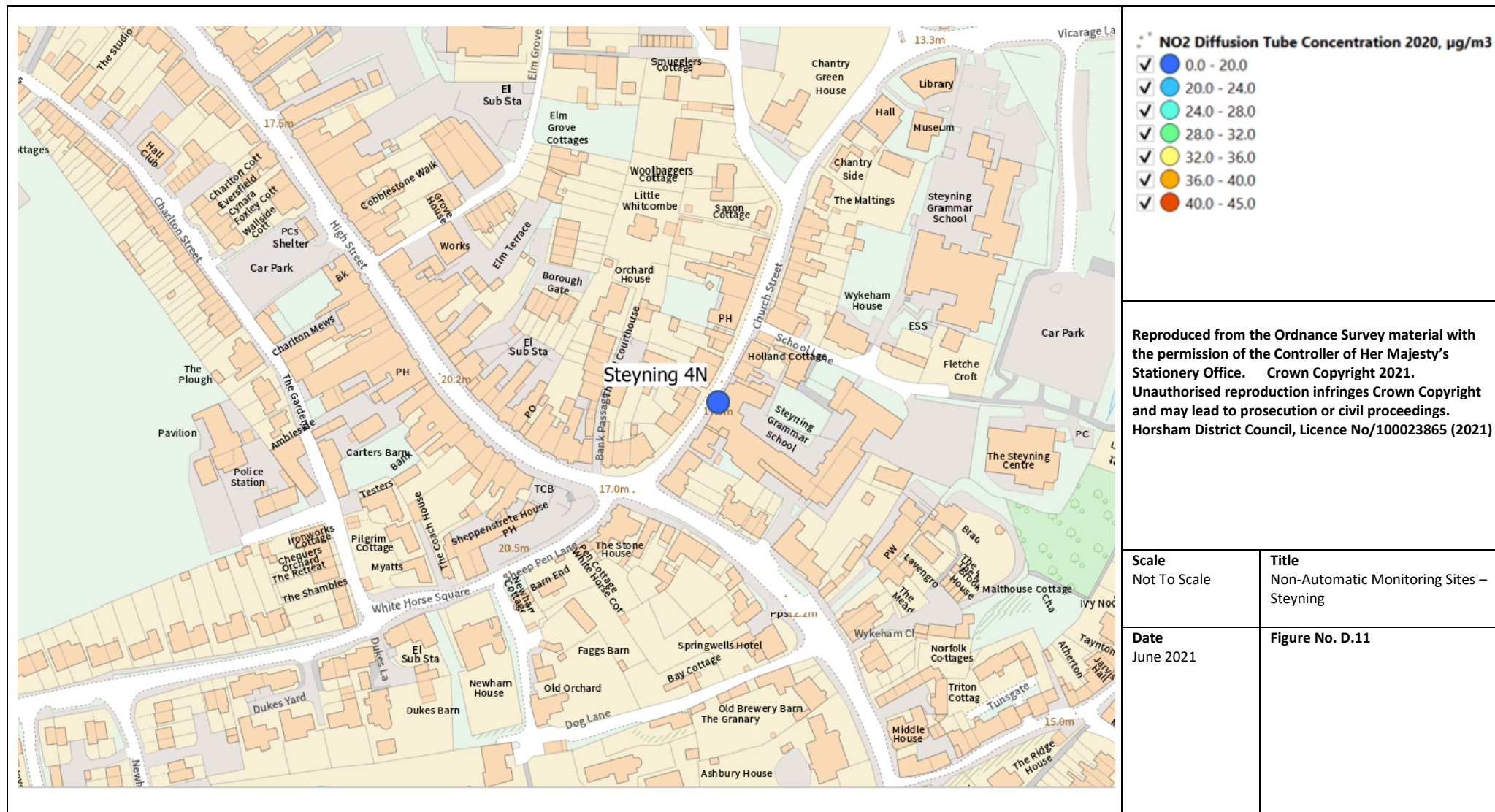




Figure D.11 – Locations of Diffusion Tube Monitoring Sites – Steyning



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

Table E.1 – Air Quality Objectives in England<sup>25</sup>

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

<sup>25</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Appendix F: Impact of COVID-19 upon LAQM

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

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO<sub>2</sub>) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data<sup>26</sup> suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO<sub>x</sub>), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)<sup>27</sup> has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO<sub>2</sub> annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which represents an absolute reduction of between 10 to 20µg/m<sup>3</sup> if expressed relative to annual mean averages. During this period, changes in PM<sub>2.5</sub> concentrations were less marked

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<sup>26</sup> Prime Minister's Office, COVID-19 briefing on the 31<sup>st</sup> of May 2020

<sup>27</sup> Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

than those of NO<sub>2</sub>. PM<sub>2.5</sub> concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that PM<sub>2.5</sub> concentrations during the initial lockdown period are of the order 2 to 5µg/m<sup>3</sup> lower relative to those that would be expected under business-as-usual conditions.

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

## • **Impacts of COVID-19 on Air Quality within Horsham District Council**

- The Cowfold AQMA is situated at the intersection of the A272 and A281 in Cowfold. For the past decade the highest concentrations for NO<sub>2</sub> in the AQMA have been recorded on the Bolney Road section of the A272. Only one monitoring site – Cowfold 7 – on Bolney Road - has continued to exceed the annual mean objective for NO<sub>2</sub>. In 2020 Cowfold 7 showed a result of 30.2µg/m<sup>3</sup>, which represents a decrease of 16% on the previous year. This also corresponds with an estimated traffic reduction of approx. 15% on Bolney Road as compared with 2019<sup>28</sup>. The estimate is however very uncertain as traffic data was collected over 5 months only. It is also worth noting that traffic volumes on the A281 in 2020 experienced a much higher reduction of 28%; again this is based on an incomplete dataset.
- On average the annual mean concentrations for NO<sub>2</sub> in 2020 reduced by 16% relative to 2019 across the diffusion tube monitoring sites in the Cowfold AQMA.
- The Storrington AQMA encompasses the A283 High Street, West Street, and part of Manleys Hill including a small section of the B2139 School Hill. In recent years only the monitoring sites at the mini-roundabout of Manley's Hill and School Hill have been recording concentrations in exceedance of the annual mean objective for NO<sub>2</sub>. NO<sub>2</sub> reductions in 2020 saw Storrington 1 decreasing by 19% from 38µg/m<sup>3</sup> in 2019 to 31.6µg/m<sup>3</sup> in 2020. Storrington 19 decreased by 20%, to 38.4µg/m<sup>3</sup>, over the same period. This corresponds with an estimated traffic reduction of approx. 22% observed on West Street, however it is based on incomplete data.

<sup>28</sup> <https://wstraffidata.cdmf.info/Account/login>

- Storrington sites within the AQMA reduced on average by 18% relative to 2019. This corresponds with an approximate 20% reduction in traffic flows on the A283 and the B2139 (based on incomplete data).

- **Opportunities Presented by COVID-19 upon LAQM within Horsham District Council**

Pop-up cycle lane was set up along Albion Way in Horsham in September 2020. However, the perception of the cycle route was that it narrowed the carriageway and increased congestion. A low take up of the scheme by cyclists was a secondary concern. The overall response to the scheme was negative and as such the cycle lane was removed in November 2020.

- **Challenges and Constraints Imposed by COVID-19 upon LAQM within Horsham District Council**

No direct challenges or constraints relating to LAQM have arisen during 2020 as a consequence of COVID-19 within Horsham District Council. The impacts were assessed against the criteria of the LAQM Impact Matrix provided within Table F.1.

- Bias adjustment was undertaken as normal. Twenty two co-location studies were included in the March 2021 edition of the national database of bias factors for the laboratory and preparation method used, which is the average number of studies usually available in March.

**No Impact**

- The usual monitoring regime was maintained in 2020, and 100% data capture was achieved for all but the new sites Cowfold 9 and Horsham 12, both set up in May 2020. Tubes were stored in accordance with laboratory guidance and analysed promptly.

**No Impact**

Table F.1 – Impact Matrix

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

## 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
ASR	Air Quality Annual Status Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
CLC	County Local Committee
CYC	Charge-Your-Car eV charge point network
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EH	Environmental Health
EU	European Union
EV	Electric Vehicle
FDMS	Filter Dynamics Measurement System
HDC	Horsham District Council
HDPF	Horsham District Planning Framework
HE	Highways England
IWP	Integrated Works Programme
LAQM	Local Air Quality Management
LE	Low Emission
LEV	Low Emission Vehicle
LSTF	Local Sustainable Transport Fund
LTIP	Local Transport Investment Programme
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Nitrogen oxides
OLEV	Office for Low Emission Vehicles
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance/Quality Control
STIP	Strategic Transport Investment Programme
TRO	Traffic Regulation Order
ULEV	Ultra-Low Emission Vehicles
WASP	Workplace Analysis Scheme for Proficiency
WSCC	West Sussex County Council
TEA	Triethanolamine

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**REPORT ENDS**

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