Horsham District Council

SUSSEX-air
Air Quality Partnership

2016 Annual Status Report (ASR) for Horsham District Council

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

July 2016

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Executive Summary of Air Quality in Our Area

This report details the results of air quality monitoring undertaken in 2015 across Horsham District and is prepared in accordance with the guidance issue by the Department for Environment, Food and Rural Affairs (Defra).

Local Authorities across the United Kingdom are required to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives set by the Government are likely to be achieved. Where exceedences 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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2]. The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

The area covered by Horsham District Council is primarily agricultural in character and does not incorporate a significant heavy industrial base or major transport hubs. Locally, the most significant contributions to poor air quality come from road transport and the air pollutants of most concern are particulate matter (PM_{10}) and nitrogen dioxide (NO_2).

The main source of air pollution in the district 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 town centres of Cowfold and Storrington; both for the exceedences of the annual mean objective for NO_2. A draft Air Quality Action Plan (AQAP) was prepared for both AQMAs; the Storrington AQAP was submitted to Defra in 2012 and the Cowfold AQAP in 2013.

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 various departments and organisations. Horsham District Council works in cooperation with other stakeholders, such as planning, Public Health England, West Sussex County Council (WSCC) highways, neighbouring

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

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 in the community for each of the AQMAs. The work of the steering groups contributed largely to the development of draft Action Plans for the AQMAs. The Council is consulted by the Environment Agency upon the granting of environmental permits for 'PartA1' processes and liaises with the Agency regarding any issues concerning those permits.

The diffusion tube monitoring data for 2015 presented in this report confirms that measured levels of NO_2 in the AQMAs at Cowfold and Storrington are exceeding, or are close to exceeding, the air quality objective for this pollutant. One diffusion tube site in the monitoring survey exceeded the annual mean objective for NO_2; this was Cowfold 7n, located on the A272 in the Cowfold AQMA. Four other monitoring sites measured concentrations within 10% of the annual mean objective (i.e. 36µg/m³ or more), three of these sites are within the Storrington AQMA (Storrington 1,2; Storrington 4 and Storrington 11n) and one within the Cowfold AQMA (Cowfold 1,2). The diffusion tube results indicate a general reduction in NO_2 concentrations in the past two years 2014-2015 when compared with previous years. An overall decreasing trend has been observed for the majority of diffusion tube monitoring sites in the district in the eight years since the first monitoring sites were established. This can be attributed to decreasing background concentrations and is also indicative of a gradual improvement in fleet emissions.

The continuous monitoring results for NO_2 from the three monitoring stations in the district indicate that the NO_2 objectives for 2015 were not exceeded, with annual mean concentrations below the annual mean objective level of 40µg/m^3 and no measured exceedences of the 1-hour objective. Two monitoring stations (HO4 Storrington AURN and HO5 Cowfold) have shown a small decrease on the previous year's concentrations. The Storrington site shows an overall decreasing trend since 2010. The overall trend at the Cowfold site is not clear with concentrations increasing in 2011, 2012 and 2014 and decreasing in 2013 and 2015. The peak concentration was 29.1µg/m^3 in 2012. The 2015 results from the HO2 Horsham station showed a small increase on 2014 although it must be noted that the 2015 result was 'annualised' so should be treated with caution. Despite the increase in 2015, the overall trend at the Horsham site also appears to be decreasing.

On the basis of the 2015 monitoring data for NO_2, the boundaries of the Storrington and Cowfold AQMAs can remain unchanged, and there is no need to proceed to a detailed assessment for any other location or pollutant.

Regarding particulate matter (PM_{10}), there were no exceedences of the PM_{10} air quality objectives at the two monitoring sites in the district in 2015. Data from the Horsham Park Way analyser shows an overall gradual reduction in measured concentrations since monitoring at this location begun in 2007. A decreasing trend has also been observed in the recent years at the Storrington AURN site.

The $PM_{2.5}$ results for 2015 indicate that concentrations at the monitoring site in Horsham Park Way are well below the target value of 25µg/m^3 in 2015. For the Horsham Park Way site, the annual mean

concentrations of $PM_{2.5}$ were estimated from the PM_{10} measurements (method described in Technical Guidance TG(16)). Those results also show values well below 25µg/m^3 in 2015.

Actions to Improve Air Quality

Horsham District Council has taken forward a number of measures during the current reporting year of 2015 in pursuit of improving local air quality. The key actions completed in 2015 are: the completion and adoption of the Planning Advice Document: Air Quality and Emissions Reduction Guidance (May 2014); expanding the "Energise" electric vehicle charge point network by adding two rapid eV charging points in Storrington and Billingshurst (Figure 2.3); and lease of three electric vehicles, procured with the support from a successful bid from the Office for Low Emission Vehicles under Phase Two of the ULEV Readiness Project (Figure 2.4).

The achievement of congestion improvement measures in Storrington and Cowfold has been challenging as there are no easy solutions. 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.

Local Priorities and Challenges

The Council's priorities for the coming year are finalising the Low Emission Zone (LEZ) trial at Storrington and progressing further evaluation of traffic management / congestion improvement schemes for Storrington and Cowfold. The plans are to reconvene the Action Plan Steering Group in Cowfold with the aim of progressing the identified measures and communicating with local residents and the wider public. Following the completion of those actions, the Action Plans for Storrington and Cowfold will be duly updated.

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 contact:

- Environmental Health: tel. 01403 215 200; email: publichealth.licensing@horsham.gov.uk

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1 Local Air Quality Management

This report provides an overview of air quality in Horsham District during 2015. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedence 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 any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table G1 in Appendix G.

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. 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 exceedences of the annual mean nitrogen dioxide (NO_2) 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 town 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 draft 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 exceedence or likely exceedence of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months, setting out measures it intends to put in place in pursuit of 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/aqma/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[4], 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 exceedence of air quality objectives was identified or predicted.

The Progress Reports submitted in 2007 and 2008 identified an exceedence of the air quality annual mean objective for NO_2 in Storrington and Cowfold and the need for Detailed Assessments 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 exceedences of the air quality objective for NO_2 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 exceedence of the air quality objective for NO_2 at Storrington and Cowfold. In accordance with the

[4] Air Quality Regulations for England (2000; Amendment Regulations 2002)

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 draft Action Plan for Cowfold was submitted to Defra in September 2013.

The Progress Reports produced in 2013 and 2014 confirmed continued exceedences of the annual mean air quality objective for NO_2 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_2 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 has 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. Now that the recommendation has been made and Gatwick has not been considered the best option for the national airport capacity expansion, it is still recommended that diffusion tube monitoring is undertaken at the receptors closest to the airport boundary in order to determine the NO_2 concentrations in this area as the current total equivalent passenger throughput exceeds the threshold defined by the TG(16) guidance.

Table 2.1 - Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	One Line Description	Action Plan
Storrington	NO_2 – annual mean	Storrington town centre incorporating West Street, the High Street, and part of School Hill and Manleys Hill.	Draft AQAP for Storrington (October 2012)
Cowfold	NO_2 – annual mean	Cowfold town centre incorporating The Street, part of Station Road and Bolney Road.	Draft AQAP for Cowfold (September 2013)

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_2 in Cowfold and Storrington
2008	Progress Report	Detailed assessment for NO_2 required in Cowfold and Storrington
2009	Update and Screening Assessment	Detailed assessment for NO_2 required in Cowfold and Storrington
2010	Progress Report	Detailed assessment for NO_2 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	Draft 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	Draft 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	Monitoring data for 2014 confirmed that annual mean NO_2 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. Although Gatwick Airport currently has a total equivalent passenger throughput of more than 10 million passengers per annum (mppa) and according to Section B.1 of Box 5.4 of TG(09) it is necessary to proceed to a Detailed Assessment, the report 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.

Figure 2.1 - Map of Storrington AQMA Boundary

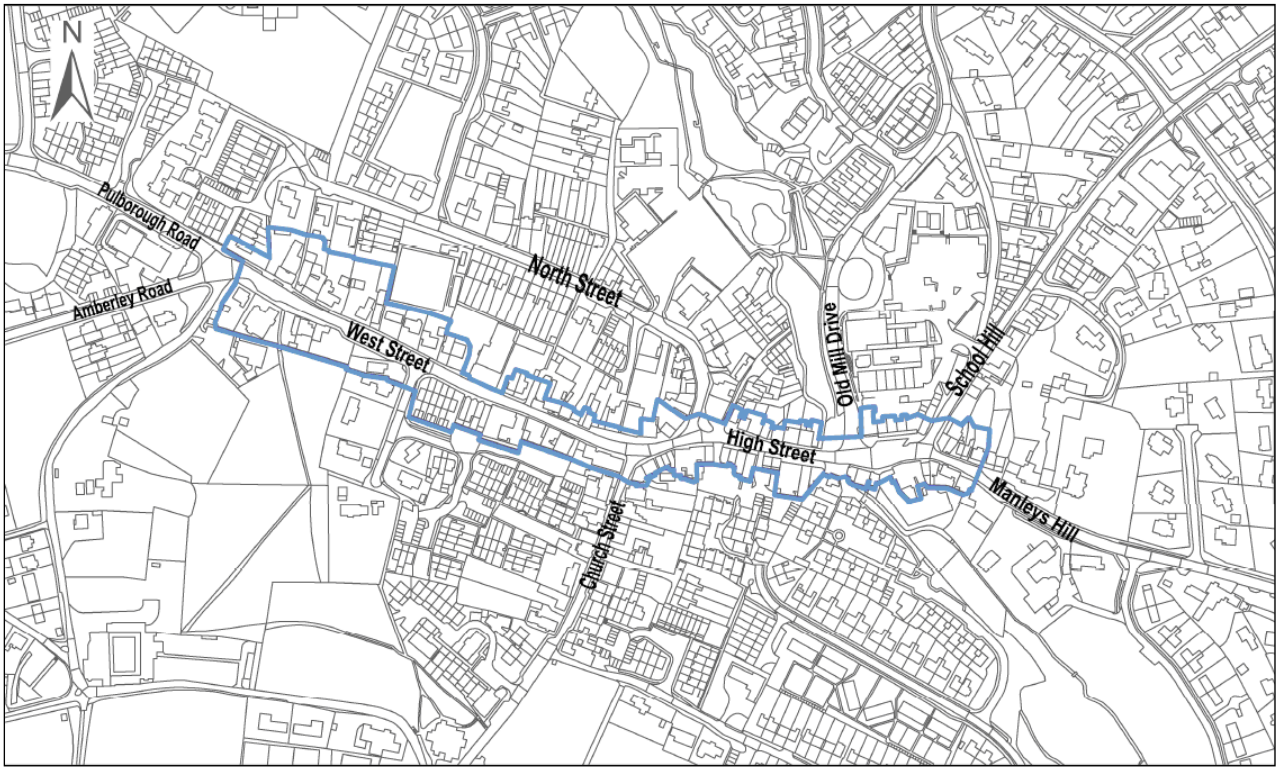
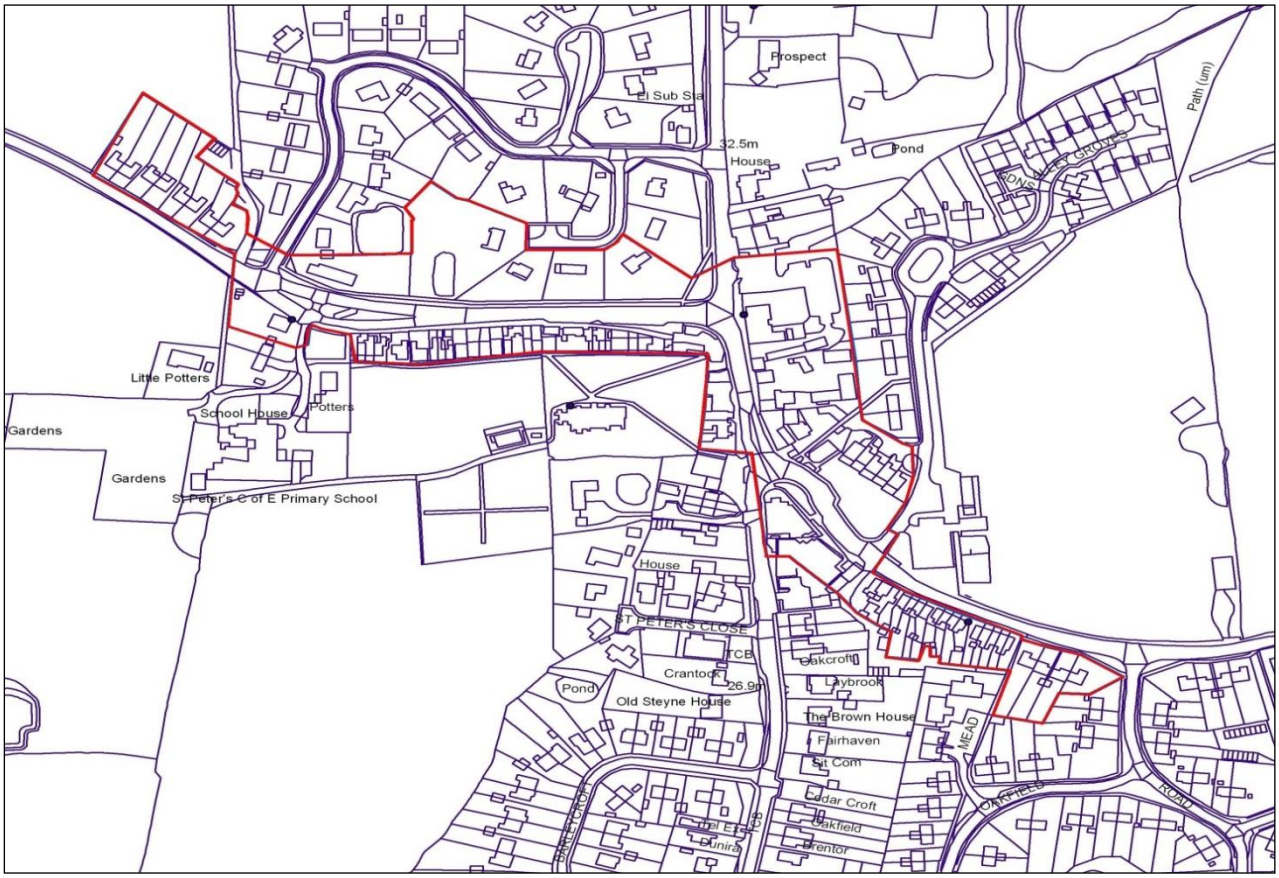


Figure 2.2 - Map of Cowfold AQMA Boundary



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

Horsham District Council (HDC) has taken forward a number of measures during the current reporting year of 2015 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: Draft AQAP for Storrington[5] and Draft AQAP for Cowfold[6].

The key actions completed in 2015 are:

- The Planning Advice Document: Air Quality and Emissions Reduction Guidance has been published in May 2014 and forms part of the Local Planning Policy Framework;
- Two rapid eV charging point (in Storrington and Billingshurst) were incorporated into the "Energise" electric vehicle charge point network, which is the South East's network managed by Sussex-Air Partnership;
- Horsham Council has successfully bid for support from Office for Low Emission Vehicles, the Department for Transport (DfT) under Phase Two of the ULEV Readiness Project. A grant offer was received in November 2015 from DfT in respect of three vehicles. The grant will contribute 75% of the cost of 24-month eV vehicle leases for three vehicles: one Nissan Leaf car and two Nissan e-NV200 vans. The grant will also cover the costs of the installation and maintenance of one charge point per vehicle. Each vehicle was procured with a telematics system enabling an automatic data connection.

The achievement of congestion improvement measures in Storrington and Cowfold has been challenging as there are no easy solutions. 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.

Consideration of congestion improvement measures is focusing on the following measures to understand what difference they are likely to make to air quality, and whether the schemes are feasible:

[5] https://www.horsham.gov.uk/__data/assets/pdf_file/0013/5431/Storrington-AQ-ActionPlan-draft.pdf

[6] https://www.horsham.gov.uk/__data/assets/pdf_file/0004/14494/Cowfold-AQ-Action-Plan-draftfinal..pdf

- The construction of a mini-roundabout at the High Street/North Street junction within the Storrington AQMA;
- Further enhancements to the manner in which the signal controlled pedestrian crossings operate in Storrington and Cowfold ;
- Lorry turning movements between School Hill and Manleys Hill and vice versa in Storrington and advisory lorry route signage improvements;
- The A272 road realignment project in the centre of Cowfold village; and
- Whether it is possible to gate traffic within Cowfold to reduce air quality problems.

The Council's priorities for the coming year are finalising the Low Emission Zone (LEZ) trial at Storrington and progressing further evaluation of the traffic management / congestion improvement schemes for Storrington and Cowfold. The plans are to reconvene the Steering Group in Cowfold, which will help with progressing the identified measures and act as a liaison with local residents.

Following the completion of those actions, the Action Plans for Storrington and Cowfold will be duly updated.

District Wide Action Plan Measures

In the 12 months since submission of the 2015 Updating and Screening Assessment, work continued on the main district-wide measures incorporated into both Action Plans. The **Planning Advice Document: Air Quality and Emissions Reduction Guidance** has been completed and has been considered by the Planning Inspectorate as part of the Horsham District Planning Framework (HDPF) examination. The guidance document has been linked into the HDPF core strategy and developments must meet the standards within it for exposure assessment, cumulative impact assessment and mitigation.

Development of the **Emission Reduction Strategy** is progressing with a number of key projects being developed in collaboration with partners. Notably Horsham District Council is working with the Sussex Air Partnership and *eV South East* to provide locations within the District to house electric vehicle rapid charge points. *eV South East* is a public private partnership connecting eV charge points together to benefit and encourage the growth in electric vehicles (eV) in the region.

Rapid charging provides fast, convenient electric vehicle charging with the ability to charge a vehicle's battery to 80% capacity in as little as 30 minutes. Two rapid charge points were installed in 2015 in Billingshurst and Storrington village. The sites for part of the 'Energise' network, which will enable:

- EV drivers to find "open to all" public charge points more easily;
- Allow ease of access for all eV drivers by encouraging pay as you go (PAYG) at point of purchase;

- Allow drivers to move freely across the south east and other regions (UK and EU).

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 currently 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 have been funded from the Department for Transport's Local Sustainable Transport Fund (LSTF).

Horsham Council has successfully bid for support from the Department for Transport (DfT) under Phase Two of the **ULEV Readiness Project**. This provides a fleet review and possible financial contribution to support the uptake of Ultra Low Emission Vehicles (ULEV) within public sector fleets. The Energy Saving Trust (EST) has evaluated the Council's current fleet and made a recommendation for up four fleet vehicles, as well as two pool cars to replace grey fleet when driven for at least 10,400 miles. A grant offer was subsequently received from DfT in respect of three vehicles. The grant will contribute 75% of the cost of 24-month eV vehicle leases for three vehicles: two Nissan e-NV200 vans and one Nissan Leaf car, as well as cover the costs of the installation and maintenance of one charge point per vehicle - to be 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.

Storrington Air Quality Action Plan

The draft 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 (09)). The appraisal report included recommendations for the finalised plan.

A significant element of the Action Plan for Storrington included a traffic management feasibility study undertaken by an independent air quality consultant. The 'Storrington Traffic Management Options Appraisal' study was presented to the Storrington Air Quality Steering Group in January 2013. The study was used to assess the air quality benefits of 7 possible traffic management schemes. Of those options, 3 were identified as having the potential to reduce emissions and alleviate congestion within the village. The feasibility study outcomes and the Action Plan as a whole were the focus of the public exhibition held in the village centre in February 2013. Further analysis of the feedback from the exhibition, local residents and other key stakeholders, including Sussex Police, identified the introduction of a Low Emission Zone (LEZ) as the most viable traffic management option.

Low Emission Zones are areas within a defined boundary, where vehicle access is restricted according to the level of their emissions. Currently there are 4 operational LEZ's in the UK; London, Norwich and Oxford and Brighton. The aim of an LEZ in Storrington would be to reduce pollution levels by restricting the most polluting vehicles from entering the Air Quality Management Area. Pollution emissions from vehicles are regulated under various European Directives which specify emission standards for different vehicle types. The emission standards become increasingly stringent for newer vehicles over time.

In order to accurately identify the most effective LEZ strategy for the village, the Storrington AQAP Steering Group and the Sussex Air Quality Partnership[1] implemented a trial project utilising a LEZ system designed by Siemens plc. 'Greenzone' has been developed by Siemens based on their experience of setting up the London LEZ to enable workable schemes to be implemented on a smaller scale. The trial incorporates the use of 4 'Automatic Number Plate Recognition' (ANPR) cameras positioned at strategic locations on Pulborough Road, Amberley Road, Washington Road and School Hill. The expectation of the system was that the cameras count and categorise vehicles by size (e.g. cars, buses, trucks etc.) and identify Euro standard by reference to vehicle registration dates. There was to be no enforcement or restriction of vehicles during the trial period.

It was intended that the data from the trial would be used to ascertain the air quality benefits of a range of possible LEZ options including restrictions based on a range of Euro standards; restrictions on specified vehicle types; possible time-limited restrictions on specified vehicles e.g. during peak traffic periods; and consideration of potential vehicle exemption criteria.

The trial was due to commence in June 2014 for a period of 12 months. However, there were a series of unavoidable delays which have significantly impacted on the availability of reliable data from the cameras. In particular, the mobile network in Storrington has proved to be extremely variable and it has been difficult to establish a secure connection at two of the four camera sites. After a series of remedial measures were tested, the reliability of the connection improved in June 2015 enabling sufficient data to be captured from all four cameras. The data collected for a period of four months from June 2015 to September 2015 was recently evaluated for completeness and conformity with the existing traffic count data. The data analysis showed the data capture for the four cameras was low - within the range of 35-37%. Furthermore, the data collected by the cameras showed poor conformity with the data collected from the corresponding traffic flow counters, with total vehicle flow numbers significantly different in the camera and traffic counter datasets. Therefore, the conclusion of the trial is that the Greenzone system is not appropriate in the rural setting of Storrington due to problem with data collection and the incongruence of the collected data.

The Storrington Action Plan Steering Group is subsequently to reach a decision on whether the Council should continue with the project. This is to be communicated by the Storrington Air Quality Steering Group after a meeting in July 2016. The findings of the trial will be reported in the next Annual Status Report.

A larger **scheme to improve the High Street/North Street junction** within the AQMA is also being examined. The construction of a mini-roundabout at this junction was originally scoped as part of planning application for re-development of a major store (Waitrose) within the village, and whilst planning permission was granted, the scheme has yet to be brought forward. The air quality assessment submitted with the original application indicated that changing it to a mini-roundabout would improve traffic flow with resultant benefits in terms of reducing vehicle emissions. Consideration is currently being given to what level of benefit this is likely to bring to congestion and reducing vehicle emissions, and whether this scheme presents good value for money to be brought forward independent of the development via alternative funding means.

Another congestion improvement project being considered is the **prohibition of lorries turning right into School Hill from Manleys Hill and turning left from High Street into School Hill**. There are practical challenges associated with this scheme such as limited space to attach additional street signage. There are also complications with whether this scheme could be legally or practically enforced, in particular given the local access exemptions required.

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 options for further advisory signage for lorries are being considered by the Steering Group.

As part of the congestion improvement measures for Storrington, HDC are working closely with WSCC to resolve **parking** issues within the village which have been identified as contributing to congestion within the AQMA. Two parking areas have been identified as causing congestion on a regular basis. Further detailed evaluation is being 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.

HDC, WSCC and the Parish Council have held further discussions with '**Storrington in Bloom'** coordinators to develop the possibility of introducing recognised pollution absorbing plants and planting methods into the village to improve air quality within the AQMA. However, it was established that there are no suitable sites for tree planting in West Street or the High Street so the project cannot be progressed.

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.

The draft Action Plan incorporated both Cowfold specific measures and other 'district-wide' measures to reduce vehicle emissions and improve air quality. Of the Cowfold measures one of the main projects was to undertake a traffic management options appraisal study in conjunction with the Highways Authority at WSCC. This project followed on from the 'Storrington Traffic Management Options Appraisal' study which looked at a number of possible schemes to reduce traffic congestion and improve vehicle emissions. The Storrington study was undertaken by an air quality consultancy which was able to model the potential benefits of the potential schemes. The project was funded by an air quality grant awarded by DEFRA. Unfortunately Horsham District Council has been unsuccessful in bidding for a similar grant for Cowfold and are therefore unable to assess the options in the same way. However, given that there are similarities between the two locations in terms of air quality we have been able to apply some of the principles of the Storrington study to identify possible traffic management options which may be appropriate for Cowfold.

On the basis of the feasibility study outcomes for Storrington, it can be assumed that there would be no air quality benefit in imposing a 20mph speed restriction through the Cowfold AQMA.

We are re-evaluating the option of 'gating' traffic in Cowfold to understand whether it is possible to reduce air pollution problems at the worst locations within the village. The feasibility of this option is unclear and there are a number of challenges, in particular around driver compliance and enforcement, and with regard to traffic flow management.

The Council has also 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. It is likely that this will have a beneficial impact on air quality for those receptors, although the feasibility of this scheme is unclear at this time due to the impacts on the character of the village and the business case for the scheme which is being further considered by WSCC.

Horsham District Council has also requested that WSCC investigate the feasibility and costs associated with upgrading the existing pedestrian crossing in the centre of the village on 'The Street' between the mini-roundabouts to a "puffin" crossing which could reduce traffic waiting times. The crossing was recently (beginning of 2016) upgraded to a puffin crossing, which means it should operate more efficiently using kerbside detectors to cancel no longer required demands.

In addition, planters have recently (beginning of 2016) been installed outside the Co-op store on 'The Street' in order to prevent vehicles parking on the pavement there. The measure should reduce congestion in this section of road.

Figure 2.3 - Billingshurst eV Rapid Charging Point (Six Bells Car Park)

Figure 2.4 - ULEV Readiness Grant - Nissan Leaf

Table 2.3 - Progress and Impact of AQAP Measures (2015)

No.	Measure	Focus	EU Category / EU Classification	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
DISTRICT WIDE MEASURES 1	Planning Advice Document: Air Quality & Emissions Reduction Guidance	Mitigation of air quality impact of development based on principle of Horsham district as an 'Emission Reduction Area'	Policy Guidance and Development Control / Air Quality Planning and Policy Guidance	HDC	2013-14	May 2014	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.	Air Quality & Emissions Reduction Guidance produced & tested. Revised Horsham District Planning Framework (HDPF) incorporates AQ guidance / policy statement. HDPF currently under examination by Planning Inspector.	The Guidance has been published in May 2014. The Environmental Protection Policy 24 of the adopted Local Planning Framework refers to the requirements of the Guidance. Update to Guidance is planned for December 2016. The Council is also looking to adopt the Guidance as a Supplementary Planning Document (SPD).	Reduction in emissions from transport associated with new development through mitigation and compensation.

No.	Measure	Focus	EU Category / EU Classification	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
2	District Emission Reduction Strategy District Emission Reduction Strategy	Development of alternative fuel 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	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 instigated via Energise Network	See progress to date. Principle of CNG infrastructure provision incorporated into planning Advice Document as possible mitigation measure for commercial developments.	Ongoing 2016	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.
2 cont/		Public /commercial vehicle fleet improvement	Promoting Low Emission Transport / Public Vehicle Procurement – Prioritising uptake of low emission vehicles Promoting Low Emission Transport / Taxi licensing conditions Promoting Low Emission Transport / Low Emission Zone	HDC	2013/14	2014/15	Introduction & increase % of ULEV's into Council's vehicle fleet. -Condition requiring latest Euro standard for all new taxis through licensing condition. -buses entering AQMAs to be best available Euro standard vehicle within the company fleet. Achieved via negotiation/LEZ	1%	ULEV Readiness Project stage 2: HDC fleet to be reviewed by EST. Taxi/private hire vehicle licence conditions under review. Current vehicles comply with latest Euro standard. Ongoing liaison with bus companies serving routes through AQMAs to reduce engine idling at bus stops.	ULEV Readiness Project Stage 2 applied for and approved for EST assessment. Brighton Bus LEZ introduced in Jan 2015.	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.

No.	Measure	Focus	EU Category / EU Classification	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
3	A27 Improve-ments	Campaign to improve A27 on air quality grounds at Chichester, Worthing & Arundel to reduce use of 'alternative' routes such as A283 through Storrington.	Traffic Management/ Strategic highway improvements	Highways Agency/ WSCC	2013 - ongoing	Dependant on HA	Improvements to A27 now programmed by Highways England. Key indicator of AP measure will be for HE to agree scheme and implement.		WSCC A27 Action campaign launched to seek improvement to A27.	The Road Investment Strategy produced by DfT in March 2015 allocates a budget for the A27 schemes including the A27 Arundel bypass and A27 Worthing and Lancing improvements. HE are currently looking at the improvement options and undertaking technical work before consultation in 2017.	If approved, construction is currently scheduled to commence in 2021, with completion scheduled for 2023-2024.	Improvements to the A27 are one of the key priorities of the current West Sussex Transport Plan (LTP3). Currently approximately 50% of all vehicles passing through the Storrington AQMA are 'through traffic'. 60% of HGV's in Storrington are 'through traffic'.
4	AirAlert	Promote AQ health warning system for individuals with respiratory /cardiac conditions.	Public Information/ Via other mechanisms	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 alert added to service.	Ongoing service.	No direct impact on emission reductions but optimising use of monitoring network data for health associated benefits.
STORRINGTON-SPECIFIC MEASURES 1	Traffic Management Feasibility Study	Assessment of vehicle restrictions /measures to reduce traffic volume and improve flow through Storrington AQMA	Promoting Low Emission Zone/ Low Emission Zone	HDC / WSCC	2014/15	LEZ Trial commenced December 2014	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	10%	AQ feasibility study completed December 2013. Public consultation & Sussex Police consulted. LEZ identified as most feasible traffic management option. LEZ trial commissioned & implemented.	LEZ identified as preferred option. 'ANPR camera' based LEZ trial delayed due to network problems. June 2015: connection issues resolved; data collected from June to September 2015 is being evaluated for completeness and conformity. The decision on whether the Council will continue with the project is to be communicated in July 2016.	The trial has now been completed. The conclusion of the trial is that the Greenzone data collection system is not appropriate in the rural setting of Storrington. Interim report on LEZ trial data proposed for August 2016.	LEZ trial will identify vehicles within the camera 'cordon' by vehicle type and Euro standard (based on vehicle registration date). Data from trial to be used to evaluate impact on air quality of an LEZ, based on a number of possible vehicle restriction

No.	Measure	Focus	EU Category / EU Classification	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
												scenarios.
2	Congestion Improvement Measures	Improvement to existing highway through Storrington to reduce traffic congestion	Traffic Management/ Strategic highway improvements Traffic Management/ UTC, Congestion management, traffic reduction	HDC / WSCC	2013/14	2014/15	Reduction in nitrogen dioxide concentrations in Storrington. Improved traffic flow / reduction in traffic congestion.	1%	Meetings with Steering Group & Storrington business representatives identified key congestion points within village. Junction improvement at High St/North St scoped as part of approved development scheme.	Two parking areas identified as causing congestion on a regular basis. Further detailed evaluation being considered to understand the causes of congestion through the High St/West St related to pedestrian crossings, junction interactions and parking/deliveries.	2015/16	Emission reductions anticipated as a result of reduced congestion caused by blockages on High Street / West Street.
3	Promotion of Alternative Transport / Fuelling options	Local initiatives to incentivise the uptake of low emission vehicles / sustainable transport.	Promoting Low Emission Transport/ Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, gas fuel recharging	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 to be installed in Storrington.	2015 - ongoing	Emission reductions anticipated as a result of reduction in local car journeys and increase in LE vehicles & improved sustainable transport options.

No.	Measure	Focus	EU Category / EU Classification	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
4	Promotion of Alternative Transport / Fuelling options	Working with local businesses	Promoting Low Emission Transport/ Public Vehicle Procurement – Prioritising uptake of low emission vehicles	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.	2015 - ongoing	Emission reductions sought through partnership working with local businesses to minimise impact of deliveries etc. on the village.
5	Promotion of Alternative Transport / Fuelling options	Freight delivery partnerships		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. Provide links to EV/CNG refuelling facilities.	1%	Freight delivery partnership group previously established by WSCC to be reviewed to assess merit of re-establishing group. May be valid should LEZ option be adopted.	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 Estate to use Water Lane. The options for further advisory signage for lorries are considered by Storrington AQAP Steering Group.	2015 - ongoing	Emission reductions sought through partnership working with local businesses to minimise impact of deliveries etc. on the village.

No.	Measure	Focus	EU Category / EU Classification	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
6	Smart Choices	Encouraging local walking /cycling by improving access & safety of routes. Introduction of local car club.	Transport Planning and Infrastructure/ Cycle network Alternatives to private vehicle use/ Car Clubs	HDC / WSCC	2013/14	2015/16	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. WSCC School Travel Coordinator identified key walking/ cycling routes requiring improvement. Scoping report in progress for provision of car club to village.	2015 - ongoing	Emission reductions sought through encouraging the use of sustainable transport options within the village.
7	School Travel Plans	Working with local schools	Promoting Travel Alternatives/ School Travel Plans	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.	Further work required in liaison with School Travel Advisor. School travel improvements considered as part of planning applications for new residential developments in Storrington. WSCC introduced parking restrictions outside Storrington Primary School.	2015 - 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.

No.	Measure	Focus	EU Category / EU Classification	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
COWFOLD Specific Action Plan Measures 1	Traffic Management Study	Assessment of vehicle restrictions /measures to reduce traffic volume and improve flow through Cowfold AQMA	Promoting Low Emission Transport/ Low Emission Zone (LEZ)	HDC / WSCC	2014/15	2015/16	Reduction in nitrogen dioxide concentrations in Cowfold. Improved traffic flow / reduction in traffic congestion.	10%	Outcome of Storrington AQ feasibility study used to inform options for Cowfold. A272 road realignment project 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. Feasibility of the scheme is unclear due to potential impacts on character of village and business case. Following decision on whether to further progress scheme, further AQ modelling wouldl be undertaken to estimate likely reduction in NO_2.	2016/17	Road realignment will move A272 further from Huntscroft Cottages which experience the highest NO_2 concentrations within the Cowfold AQMA. NO_2 concentrations will be reduced at receptor locations. Outcome of Storrington LEZ trial will be reviewed in terms of feasibility for implementation in Cowfold.
2	Congestion Improvement Measures	Improvement to existing highway through Cowfold to reduce traffic congestion	Traffic Management/ UTC, congestion management, traffic reduction	HDC / WSCC	2013/14	2014/15	Reduction in NO_2 concentrations in Cowfold. Improved traffic flow / reduction in traffic congestion.	1%	Identification of traffic control mechanisms in village. A review of current loading bays and on-street parking provision identified no particular issues.	Further consideration being given to whether it is possible to 'gate' traffic within Cowfold to reduce air quality problems. Recently, the pedestrian crossing on 'The Street' between the mini-roundabouts was upgraded to a puffin crossing, which means it should operate more efficiently using kerbside detectors to cancel no longer required demands. Planters have recently been installed outside the Co-op store on 'The Street' in order to	Completed in beginning of 2016	Potential emission reductions anticipated as a result of reduced congestion caused by blockages on High Street / West Street. Decreased traffic waiting times if pedestrian crossing updated to 'Puffin'type.

No.	Measure	Focus	EU Category / EU Classification	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
										prevent vehicles parking on the pavement there. The measure should reduce congestion in this section of road.		
3	Promotion of Alternative Transport / Fuelling options	Local initiatives to incentivise the uptake of low emission vehicles / sustainable transport.	Alternatives to private vehicle use/ Car Clubs	HDC / WSCC	2013/14	2014/15	Reduce emissions from traffic in Cowfold	1%	Planning Advice Document incorporates local mitigation measures. Current planning applications will be required to provide incentives to encourage low emission vehicles.	Possible site identified for electric vehicle rapid charger as part of Energise Network. Site discounted as facilities in Cowfold not suitable. Village being scoped as possible location for car club vehicle.	2015 - ongoing	Emission reductions anticipated as a result of reduction in local car journeys and increase in LE vehicles & improved sustainable transport options.

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

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

The major sources of primary $PM_{2.5}$ are industrial combustion, road transport, off-road transport, residential sources and small-scale waste burning[7]. Road transport sources of $PM_{2.5}$ 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 $PM_{2.5}$ consists of nitrates, sulphates and organic and elemental/black carbon[8]. 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[9].

Horsham District Council is working to address $PM_{2.5}$ through measures aimed at reducing emissions from road transport, in particular, measures increasing the uptake of low emission vehicles.

The principles of the Planning Advice Document: Air Quality and Emissions Reduction Guidance (May 2014) endorse the objective of reducing traffic emissions associated with new development. All developments are required to implement mitigation/offsetting measures commensurate with its size/predicted impacts.

In cooperation with Sussex-Air Partnership, Horsham DC has supported the development and maintenance of the “Energise” eV charge point network[10]. The publicly available network is linking up new and existing electric vehicle charge points across the South East. The network numbered in excess of 150 charge points by the end of 2015 and stretches across Surrey, Sussex and Kent. It has been developed from Government grant funding under the Office of Low Emission Vehicles (OLEV) which has supported the installation of over 25 rapid chargers and over 75 fast chargers with the SE Energise Network partners. The plans are to

[7] Air Quality Expert Group (2012) *Fine Particulate Matter (PM2.5) in the United Kingdom*
[8] 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*
[9] WHO (2013) *Review of evidence on health aspects of air pollution – REVIHAAP Project*
[10] http://www.energisenetwork.co.uk/

connect the existing points to other UK regional networks and to Continental Europe to enable eV drivers in our region to move freely across the UK and beyond without range anxiety. The main advantage of the Sussex-Air network lies in the simplicity of use as it enables the user to have one charging card, which works on the Energise network as well as other networks such as “Charge-Your-Car” (CYC) network and Ecotricity’s network.

The Energise network in Horsham District includes five charging points; two points are classified as ‘rapid’ and have been installed in Billingshurst (Six Bells car park) and Storrington (Library car park).

The Council has secured funding from the Office for Low Emission Vehicles, 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

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, monitoring NO_2 and PM_{10} TEOM particulate analyser;
- **Storrington** village, housing a nitrogen dioxide analyser, and PM_{10} and $PM_{2.5}$ analysers. This station is affiliated to the Automatic Urban and Rural Network (AURN).
- **Cowfold** village, housing a nitrogen dioxide analyser.

All stations are roadside sites with relevant public exposure[11]. Further details of these monitoring stations are provided in Table A1 in Appendix A. The location of the automatic monitoring stations are shown in Figure E1 through to Figure E3, Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix D.

All monitoring stations are collocated with triplicate NO_2 diffusion tubes.

The Storrington monitoring site is part of the AURN. A recent review of the monitoring requirements by Defra found that the South East region had a greater number of PM_{10} and $PM_{2.5}$ instruments than required under the Air Quality Directive[12] whilst some other zones and agglomerations in the UK were identified as requiring additional measurement for those pollutants. Therefore, the two FDMS instruments for PM_{10} and $PM_{2.5}$ currently located at the Storrington AURN site are to be moved over the coming months to another AURN site. The NO_2 analyser at this site will remain affiliated.

[11] 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/

[12] Directive 2008/50/EC on ambient air quality and cleaner air for Europe

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 Sussex-air and they provide data calibration and ratification of results. All data from the network is published at www.sussex-air.net.

3.1.2 Non-Automatic Monitoring Sites

Since the Updating and Screening Assessment 2015 there have been no changes to the nitrogen dioxide diffusion tube monitoring network which incorporates 39 sites across the district. The total number of diffusion tubes was 47. Details of the monitoring sites are shown in Table A2 in Appendix A. The site locations are shown in Figures E4-E9 in Appendix E.

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

- Horsham 6N - receptor at Rusper Road located a distance of 11.2m from kerbside;
- Horsham 7N - receptor at Warnham Road located a distance of 12m from kerbside;
- Storrington 14 - receptor at Washington Road located a distance of 19m from kerbside; and
- Storrington 19 - receptor at Manley's Hill located a distance of 15m from kerbside.

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

- HO2 Park Way – AQM Horsham;
- HO4 Storrington 8,9,10 AURN – Manleys Hill; and
- HO5 Cowfold AU A,B,C – Bolney Road/The Street, Cowfold.

There were two duplicate sites in 2015; these were Storrington 1,2 - Manleys Hill and Cowfold 1,2 - Olde House, The Street, Cowfold.

In April 2016 monitoring commenced at four new diffusion tube sites:

- Gatwick (Hyder's Fram, Bonnetts Lane, Crawley) - The assessment of sources carried out in the 2015 USA identified relevant exposure close to the Gatwick airport boundary that has not been previously assessed. This new site has been set up at a

receptor located close to the airport boundary in order to determine the NO2 concentrations in this area;

- Henfield (Golden Square, Henfield) – The new site is located at a junction of three major commuting routes – the A281 High Street, A281 Brighton Road and A2037;
- Kingsfold (Leith View Cottages, A24 Dorking Road, Kingsfold,) – The new site is located noth of Horsham, on the A24. The location was chosen to determine existing NO_2 concentrations near the A24 as the area of North Horsham has been identified in the Planning Framework as the main location for new housing (2,500 new homes planned as committed development); and
- Manley's Hill/School Hill mini-roundabout, Storrington – a new site at a receptor located at the mini-roundabout.

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 from the Lullington Heath site in East Sussex for sulphur dioxide. The air quality monitoring results presented in this section are, where relevant, adjusted for "annualisation" and bias. Further details on adjustments are provided in Appendix D.

3.2.1 Nitrogen Dioxide (NO_2)

Automatic Monitoring Data

The Council monitored NO_2 at three locations during 2015: HO2 Horsham Park Way, HO4 Storrington AURN and HO5 Cowfold. Table A3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for all the years where monitoring was undertaken with the air quality objective of 40µg/m^3. Table A4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for all the monitoring years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The monitoring station located in Horsham (Park Way) experienced power problems during 2015, which affected data capture for both NO_2 and PM_{10}. Adjustment of the NO_2 annual mean concentration values from short-term monitoring data from the site has been carried out in accordance with Box 7.9 of the Technical Guidance LAQM.TG(16). The adjustment calculations are provided in Appendix D.

Data capture for the Cowfold and Storrington sites was under 90% but results were not 'annualised' as both sites achieved 75% capture rate. The monitor at Cowfold was switched off in January and part of February due to faulty air conditioning unit. Data was also unavailable at the end of August/September due to analyser break down. Data capture at Storrington was affected by analyser break down and the change of modem connection from 3G to 2G, which resulted in signal problems.

As data capture was below 90% at all three sites during 2015 the 99.8th percentile has also been reported for the hourly objective for all sites.

The results at the three monitoring stations indicate that the NO_2 objectives for 2015 were not exceeded, with annual mean concentrations below the annual mean objective level of 40µg/m^3 and no measured exceedences of the 1-hour objective.

The 'annualised' mean nitrogen dioxide concentration for Park Way, Horsham for 2015 was 26.5µg/m^3; this showed a small increase on 2014 although it must be noted that the 2015 result was 'annualised' so should be treated with caution. As data capture problems precluded assessment of the hourly objective, the 99.8th percentile was also calculated. The result of 102.9µg/m^3 indicated no exceedences of the hourly mean objective at the Park Way site. The highest concentrations in the year were recorded in February (average

mean concentration of 38.2µg/m^3) and July (average mean concentration of 36.2µg/m^3); this is shown in Figure B3. From the analysis of hourly mean concentrations it can be seen that the highest hourly mean concentrations (exceeding 40µg/m3) were recorded in the morning and afternoon traffic peaks from Monday through to Friday (Figure B9).

For the Storrington AURN site the annual mean NO_2 concentration for 2015 was 21.3µg/m^3, a slight decrease on 2014. Again data capture problems precluded assessment of the 1-hour mean objective, however the 99.8th percentile was 85.1µg/m^3 indicating no exceedences of the hourly mean objective at the Storrington site. The highest concentrations in the year were recorded in March (average mean concentration of 28.4µg/m^3) and October (average mean concentration of 28.3µg/m^3); the period of the lowest concentrations was over the summer months July-August and autumn/winter months November-December (Figure B8). From the analysis of hourly mean concentrations it can be seen that the highest hourly mean concentrations (exceeding 40µg/m^3) were recorded in the morning traffic peaks for Wednesday and Friday (Figure B9).

The measured annual mean NO_2 concentration at the Cowfold station in 2015 was 25.5µg/m³, a small decrease on 2014. The 99.8th percentile was 98.7µg/m^3 indicated no exceedences of the hourly mean objective at the Cowfold site. The highest concentrations in the year were recorded in the beginning of the year, over February, March and April (average mean concentration of 35µg/m^3, 29µg/m^3 and 31µg/m^3 respectively); the lowest concentrations occurred in May and June (Figure B11). The analysis of hourly mean concentrations by day of the week indicates that the highest concentrations were recorded during the morning and afternoon traffic peaks throughout the working week from Monday to Friday, with results showing hourly mean concentrations of 40 – 50 µg/m^3 (Figure B12).

Figure A1 shows the trend in NO_2 concentrations at the monitoring locations for all the years of monitoring. This shows that the annual mean concentrations have decreased in 2015 from the previous year at the Storrington site. The Storrington site shows an overall decreasing trend since 2010. The trend at the Horsham site also appears to be decreasing, however the 2015 concentration was slightly higher than the result shown in 2014. The Cowfold site showed a decrease in concentrations from the previous year, however the overall trend at the site is not clear with concentrations increasing in 2011, 2012 and 2014 and decreasing in 2013 and 2015. The peak concentration was 29.1µg/m^3 in 2012.

Diffusion Tube Monitoring Data

Nitrogen dioxide diffusion tube monitoring was undertaken at 39 locations throughout Horsham District during 2015. Data capture for the survey in 2015 was between 75-83% (9-10 months) for all sites except one - Horsham 5N (Harwood Road, Horsham) had a data capture of 67% and the results from this site were ‘annualised’ in accordance with Box 7.10 of the Technical Guidance LAQM.TG(16). February and March results for 2015 had to be excluded due to the over-exposure of tubes in February (tubes exposed for 8 weeks). The details of the annualisation for Horsham 5N can be found in Appendix D.

The results for 2015 (shown in Table A5 and Table A6) have been corrected using a local bias correction factor of 0.81, as obtained from a co-location study at HO5 Cowfold. Full details of the bias adjustment and QA/QC procedure are provided in Appendix D.

The monitoring results indicated that only one diffusion tube site (Cowfold 7n, located at 3 Huntscroft Gardens, Bolney Road) exceeded the nitrogen dioxide annual mean objective of 40µg/m³. This tube is within the existing Cowfold AQMA and has shown an exceedence in the previous years. There were four other monitoring sites with measured concentrations within 10% of the annual mean objective (i.e. 36µg/m³ or more), three of these sites are within the Storrington AQMA and one within the Cowfold AQMA:

- Storrington 1,2 (Manleys Hill) – located within the Storrington AQMA;
- Storrington 4 (22 High Street) - located within the Storrington AQMA;
- Storrington 11n (53 West Street) - located within the Storrington AQMA; and
- Cowfold 1,2 (Olde House, The Street) - located within the Cowfold AQMA.

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, however the 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 diffusion tube measured an annual mean concentration of 43.3µg/m³ for 2015. In 2014 an additional diffusion tube – Storrington 19n - was installed opposite Storrington 14n to verify NO_2 concentration at that section of Manleys Hill/Washington Road. Storrington 19n showed an exceedence for both 2014 and 2015 with results close to or exceeding 50µg/m³. Storrington 19n is located at a distance of approximately 15m from the nearest residential property. The elevated concentrations recorded at both sites are likely due to the road gradient of this section of Washington Road resulting in the sites being exposed to increased emissions from vehicles travelling uphill. A possible reason why Storrington 19n has shown higher concentrations compared to Storrington 14n is that Storrington 19n is located nearer vehicles driving uphill whereas Storrington 14n, placed on the opposite side of the road, is closer to vehicles travelling downhill. The 'Nitrogen Dioxide Fall off with Distance Calculator'[13] was used to estimate the concentration at the façade of the nearest residential property for both monitoring sites. The calculation has shown the annual mean NO_2 concentration for Storrington 14n and Storrington 19n at the point of relevant exposure in 2015 to be 23.2µg/m^3 and 31.1µg/m^3 respectively, which is well below the objective. The calculation results are shown in Figure C1 and Figure C2 in Appendix C.

The measured concentrations for the sites Storrington 14n and Storrington 19n are of limited benefit in determining exposure to nitrogen dioxide due to the distance to the nearest relevant receptor. However, the siting of these diffusion tubes on the main route through Storrington village (A283) provides additional

[13] http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html

baseline data against which the impact of any action plan measures can be gauged and for this reason the site Storrington 14n (installed in 2011) is retained. The recently added Storrington 19 confirmed that the concentrations in that section of Manleys Hill/Washington Road are likely to exceed the annual mean objective for NO_2 at kerbside locations, which is due to increased emissions from vehicles travelling uphill. As residential properties in that area are set back minimum 10m of the kerb there is no risk of the annual mean objective for NO_2 being exceeded on Manleys Hill. Therefore, the site Storrington 19 will be removed in 2016.

Figure A2 through to Figure A5 show the trend in annual mean NO_2 concentrations over the monitoring period 2008-2015 at the diffusion tube monitoring sites. The diffusion tube results indicate a general reduction in NO_2 concentrations in the past two years 2014-2015 when compared with previous years.

The decreasing trend for Horsham town (Figure A2) observed last year has continued into 2015. The majority of sites in 2015 have recorded the lowest measured concentration since 2008. Three sites have shown a slight increase on 2013; this includes two roadside sites Horsham 1N and Horsham 5N. The concentration at Horsham 1N was similar to the 2014 concentration, which is noticeably higher than for 2013 although the overall trend (2008 – 2015) was still downward. The difference in measured concentrations between the Horsham 1N site and the other Horsham sites is difficult to pinpoint definitively but as it is a roadside site close to a busy junction it may reflect an increase in localised traffic congestion in the past two years. Horsham 5N also showed an increase on 2014, however the results for this site had to be 'annualised', therefore should be treated with some caution. Similar to Horsham 1N, Horsham 5N is also located near a busy junction.

For the Storrington monitoring sites, 9 diffusion tubes have showed a slight increase on 2014, however 2014 and 2015 concentrations have generally been the lowest in the monitoring period. The majority of long-term sites show a continuing overall downward trend between 2008 and 2015. One factor which may have contributed to the reduction in NO_2 concentrations in Storrington for 2014 is the impact of long term roadworks on the A283 to the east of the village during 2014, which included the deployment of advisory signs suggesting the use of alternative routes to drivers. The traffic count data for A283 Manleys Hill showed a 5.9% reduction in 5-day average traffic flows in 2014 when compared to 2013. The flows in 2015 increased 5.6% on 2014 but still were 0.6% lower than in 2013.

The measured annual mean NO_2 concentrations in Cowfold for 2014 were slightly higher than in 2015 at half of the diffusion tube monitoring sites and slightly lower at the remaining sites when compared to the previous year. The overall trend is decreasing for all sites except Cowfold 7n and Cowfold 5n. The Cowfold 7n site, located on the A272 to the east of the town, is the only monitoring site in Cowfold which exceeded the annual mean objective in the past three years. The trend for this site is not clear as concentrations stabilised in 2013, to increase in 2015. The concentrations at the Cowfold 5n site, located on the A272 to the west of the town, have remained below the objective for all the monitoring years, with peak concentrations recorded in 2012 and 2015.

The monitoring sites in Steyning, Pulborough and Billingshurst have remained below the objective throughout the monitoring period. The two sites in Steyning (Steyning 3N and Steyning 4N) have followed similar trends until 2014. In 2015 Steyning 4N showed a small increase whilst Steyning 3N remained at similar level to 2014. The concentrations at the Bilingshurst site seem to remain stable with no significant increase or decrease over the past three years. The Pulborough monitoring sites have shown a decrease in concentrations in the last two years.

Whilst there is a degree variation in nitrogen dioxide concentrations between monitoring sites across the district in 2015, there is still a distinct overall downward trend in measured concentrations of NO_2 in the eight years since the first monitoring sites were established. This can be attributed to decreasing background concentrations and is also indicative of a gradual improvement in fleet emissions.

3.2.2 Particulate Matter (PM_{10})

The Council monitored PM_{10} at two locations during 2015: HO2 Horsham Park Way and HO4 Storrington AURN. Table A7 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for all the years where monitoring was undertaken with the air quality objective of 40µg/m^3. Table A8 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for all the monitoring years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

An automatic TEOM particulate monitor has been permanently located at Park Way in Horsham town centre for the past six 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 D. The monitoring station located in Horsham (Park Way) experienced power problems during 2015, which affected data capture for both NO_2 and PM_{10} during the year. Adjustment of the PM_{10} annual mean concentration values from short-term monitoring data from the site has been carried out in accordance with Box 7.9 of the Technical Guidance LAQM.TG(16). The adjustment calculations are provided in Appendix D.

The Storrington monitoring station is an AURN affiliated site, housing both $PM_{2.5}$ and PM_{10} FDMS analysers. Data collection and ratification of the Storrington station has been undertaken by Ricardo-AEA as it is an AURN affiliated site. Data capture at Storrington was affected by the change of modem connection from 3G to 2G, which resulted in signal problems. Data capture in 2015 for the Storrington AURN analyser was under 90% but results were not 'annualised' as the site achieved 75% capture rate.

As data capture was below 90% at both monitoring sites during 2015 the 90.4th percentile has also been reported for the 24-hour objective for the sites.

Automatic monitoring of PM_{10} at the Horsham Park Way site and the Storrington AURN indicated that both the annual mean and 24-hour UK objective for PM_{10} were complied with in 2015.

The annual mean PM_{10} concentration in 2015 for Park Way Horsham was 18.6µg/m³ ('annualised' value) and the daily mean objective (expressed as the 90th percentile) was 29.3µg/m³. The 2015 data for this site shows a small decrease in the annual mean concentration and in the number of exceedences of the daily mean concentration objective when compared to the 2014 data.

For the Storrington AURN site the annual mean PM_{10} concentration for 2015 was 15.8µg/m^3 and the daily mean objective (expressed as the 90th percentile) was 24.8µg/m^3. The 2015 annual mean result shows a significant decrease in PM_{10} concentrations when compared with the latest (2013) data available for this site.

Figure A6 shows the trend in PM_{10} concentrations at the two monitoring locations for all the years of monitoring. The concentrations at Horsham Park Way have generally showed higher annual mean results compared to the Storrington AURN site, both sites remaining well below both the long term and short term air quality objectives for PM_{10}. Data from the Horsham Park Way analyser shows an overall gradual reduction in measured concentrations since monitoring at this location begun in 2007. A decreasing trend has also been observed in the recent years at the Storrington AURN site.

3.2.3 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ 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 $PM_{2.5}$ against these objectives as part of the LAQM regime, results have been reported as recommended by Technical Guidance LAQM.TG(16).

$PM_{2.5}$ is measured at the Storrington (AURN) site. For the Horsham Park Way site, the annual mean concentrations of $PM_{2.5}$ were estimated from the PM_{10} measurements using a local ratio of $PM_{2.5}$ to $PM_{10,}$ as per method described in Box 7.7 of Technical Guidance TG(16).

The $PM_{2.5}$ results presented in Table A9 indicate that concentrations are well below the target value of 25µg/m^3 in 2015 at both locations[14].

Figure A6 shows the trend in both PM_{10} and $PM_{2.5}$ concentrations at the two monitoring locations (values plotted for the Horsham Parkway sites are estimated values). This shows an overall gradual reduction in the $PM_{2.5}$ concentrations over the recent years at both sites.

[14] National target value as per *The Air Quality Standards Regulations 2010*

3.2.4 Sulphur Dioxide (SO_2)

Automatic sulphur dioxide monitoring was undertaken at one permanent station in Sussex, located at Lullington Heath (rural). The 2015 data from the Lullington Heath AURN air quality station did not show any exceedence of the national objectives. This is in line with previous years data.

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 2015.

The monitoring data is summarised in Table A10 in Appendix A.

3.2.5 Summary of Compliance with AQS Objectives

There was one monitoring location within the Cowfold AQMA (Cowfold 7n at 3 Huntscroft Gardens, Bolney Road) which exceeded the annual mean objective for nitrogen dioxide in 2015 and four further sites with measured concentrations within 10% of the objective (> 36µg/m^3) - three of these sites are within the Storrington AQMA (Storrington 1,2 at Manleys Hill, Storrington 4 at 22 High Street and Storrington 11n at 53 West Street) and one within the Cowfold AQMA (Cowfold 1,2 at Olde House, The Street).

No other monitoring sites within the district exceeded the air quality objectives for either nitrogen dioxide or particulate matter in 2015.

4 Conclusions and Proposed Actions

4.1 Conclusions from New Monitoring Data

The results from automatic monitoring for NO_2 within Horsham District indicate that the objectives were met at the three monitoring stations in 2015.

The results of diffusion tube monitoring for 2015 indicate that the air quality objective for annual mean NO_2 has been exceeded at only one monitoring site within the existing Cowfold AQMA - site Cowfold 7n, located at 3 Huntscroft Gardens, Bolney Road. This site has shown an exceedence in the previous years. There were four other monitoring sites which measured concentrations within 10% of the annual mean objective (i.e. 36µg/m³ or more); three of these sites are within the Storrington AQMA (Storrington 1,2 at Manleys Hill, Storrington 4 at 22 High Street and Storrington 11n at 53 West Street) and one within the Cowfold AQMA (Cowfold 1,2 at Olde House, The Street).

The results from NO_2 monitoring in 2015 indicate a general reduction in NO_2 concentrations in the past two years 2014-2015 when compared with previous years. The decreasing trend for Horsham town observed last year has continued into 2015. The majority of sites in Horsham in 2015 have recorded the lowest measured concentration over the monitoring period. For the Storrington monitoring sites, although some diffusion tubes have showed a slight increase on 2014, the 2014 and 2015 concentrations have generally been the lowest in the monitoring period. The majority of long-term sites in Storrington show a continuing overall downward trend between 2008 and 2015. The overall trend for Cowfold diffusion tube monitoring is decreasing for all sites except Cowfold 7n and Cowfold 5n. The Cowfold 7n site, located on the A272 to the east of the town, is the only monitoring site in Cowfold which exceeded the annual mean objective in the past three years. The trend in NO_2 concentrations for the Cowfold continuous monitoring is not clear with concentrations increasing in 2011, 2012 and 2014 and decreasing in 2013 and 2015.

Monitoring in 2015 has not identified any potential or actual exceedences at relevant locations outside existing AQMAs, and it is not therefore necessary to proceed to detailed assessment at any additional locations.

Whilst there is a degree variation in nitrogen dioxide concentrations between monitoring sites across the district in 2015, there is still a distinct overall downward trend in measured concentrations of NO_2 in the eight years since the first monitoring sites were established.

This can be attributed to decreasing background concentrations and is also indicative of a gradual improvement in fleet emissions.

There were no exceedences of the PM_{10} air quality objectives at the two monitoring sites in the district. Data from the Horsham Park Way analyser shows an overall gradual reduction in measured concentrations since monitoring at this location begun in 2007. A decreasing trend has also been observed in the recent years at the Storrington AURN site.

4.2 Conclusions from Action Planning

Horsham District Council has taken forward a number of measures during the current reporting year of 2015 in pursuit of improving local air quality. The key actions completed in 2015 are: the completion and adoption of the Planning Advice Document: Air Quality and Emissions Reduction Guidance (May 2014); expanding the “Energise” electric vehicle charge point network by adding two rapid eV charging points in Storrington and Billingshurst; and lease of three electric vehicles, procured with the support from a successful bid from the Office for Low Emission Vehicles under Phase Two of the ULEV Readiness Project.

The achievement of congestion improvement measures in Storrington and Cowfold has been challenging as there are no easy solutions. 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 Council’s priorities for the coming year are finalising the Low Emission Zone (LEZ) trial at Storrington and progressing further evaluation of the traffic management / congestion improvement schemes for Storrington and Cowfold. The plans are to reconvene the Action Plan Steering Group in Cowfold with the aim of progressing the identified measures and communicating with local residents and the wider public.

Following the completion of those actions, the Action Plans for Storrington and Cowfold will be duly updated.

4.3 Proposed Actions

- The Annual Status Report for 2015 has identified no need to proceed to Detailed Assessment for any pollutant;

- The new monitoring data for 2015 has indicated that there is no need to revise the current boundaries of the Storrington or Cowfold AQMAs;
- Horsham District Council will continue to monitor air quality in line with the Environment Act 1995. The existing monitoring network will be maintained;
- Data from both automatic and non-automatic monitoring will be incorporated into further modelling studies for Storrington and Cowfold as part of the Action Planning process as appropriate;
- Finalising the Low Emission Zone (LEZ) trial at Storrington;
- Progressing further evaluation of the traffic management / congestion improvement schemes for Storrington and Cowfold;
- Update the Air Quality Action Plans for Storrington and Cowfold; and
- The 2017 Annual Progress Report will be submitted to Defra in April 2017.

Appendices

Appendix A: Monitoring Results for 2015

Appendix B: Full Monitoring Results for 2015

Appendix C: Monitoring Results – Distance Correction

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

Appendix E: Maps of Monitoring Locations

Appendix F: Industrial Processes

Appendix G: Summary of Air Quality Objectives in England

Appendix A: Monitoring Results for 2015

Table A1 - Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS GridRef	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Inlet Height	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
HO2	**Horsham Park Way**	Roadside	517485	130590	NO_2; PM_{10}	N	Chemiluminescence (APNA-370); TEOM	3.0m	Y (7.0m)	1.5m	Y
HO4	**Storrington AURN**	Roadside	509083	114198	NO_2; $PM_{2.5}$; PM_{10}	N	Chemiluminescence (Thermo 32i); TEOM FDMS; TEOM FDMS	3.3m	Y (9.6m)	4.6m	N
HO5	**Cowfold**	Roadside	521356	122553	NO_2	Y	Chemiluminescence (ML9841B)	2.0m	Y (4.0m)	6.5m	N

Table A2 - Details of Non-Automatic Monitoring Sites

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)*	Worst-case Location?
Horsham Sites											
1	Horsham 1N	Park Way, Horsham	Roadside	N	517400	130600	N	2.2m	Y (3.5m)	2.0m	Y
3	Horsham 3N	69 Hillside, Horsham	Urban Background	N	516000	130600	N	2.9m	Y (7.6m)	1.5m	N
4	Horsham 4N	45 Gorings Mead, Horsham	Urban Background	N	517600	130100	N	2.5m	Y (9.8m)	1.2m	N
8	Horsham 5N	Harwood Rd, Horsham	Roadside	N	518230	131140	N	2.4m	Y (9.6m)	1.4m	Y
9	Horsham 6N	130 Rusper Rd, Horsham	Roadside	N	518650	132490	N	2.6m	Y (11.2m)	1.5m	N
10	Horsham 7N	30 Mill House, Warnham Rd, Horsham	Roadside	N	516952	132215	N	2.2m	Y (12.0m)	2.0m	N
11	Horsham 8N	54 Worthing Rd, Horsham	Roadside	N	516650	130220	N	3.0m	Y (8.0m)	1.6m	Y
5,6,7	Park Way	AQMS Horsham	Roadside	Triplicate	517486	130586	N	2.8m	Y (8.9m)	2.1m	Y
23	N. Horsham 1N	Home Fm, Langhurstwd Rd, Horsham	Roadside	N	517702	133570	N	2.4m	Y(4.9m)	1.9m	N
24	N. Horsham 2N	Graylands Fm Cotts, Horsham	Roadside	N	517476	134013	N	2.8m	Y (5.5m)	1.0m	Y
Storrington Sites											
13,14	Storrington 1,2	Manleys Hill, Storr duplicate	Roadside	Duplicate	508960	114270	Y	3.0m	Y (4.0m)	1.1m	Y
15	Storrington 3	3 School Hill, Storrington	Roadside	N	508935	114297	Y	3.2m	Y (2.0m)	1.2m	Y
16	Storrington 4	22 High Street, Storrington	Roadside	N	508832	114272	Y	3.0m	Y (2.8m)	2.2m	Y
17	Storrington 5	2 West Street, Storrington (Post Office)	Roadside	N	508742	114288	N	3.5m	Y (1.9m)	1.9m	Y
18	Storrington 6	1-4 Holly Court, Pulborough Rd Storrington	Roadside	N	508396	114449	N	2.4m	Y (7.7m)	1.9m	Y

19	Storrington 7	The Willows, Amberley Rd, Storrington	Roadside	N	508338	114374	N	3.0m	Y (6.7m)	1.6m	Y
29,30,31	Storrington 8/9/10 AURN	Manleys Hill AURN co-located	Roadside	Triplicate	509083	114198	N	3.3m	Y (9.6m)	4.6m	N
34	Storrington 11n	53 West Street, Storrington	Roadside	N	508511	114365	Y	3.0m	Y (1.0m)	3.0m	Y
33	Storrington 12n	3 Rectory Cottage Storrington	Roadside	N	508598	114323	Y	2.6m	Y (7.0m)	2.3m	Y
32	Storrington 13n	18 West Street, Storrington	Roadside	N	508675	114306	Y	2.2m	Y (0.5m)	3.0m	Y
38	Storrington 14n	Cobden, Manleys Hill, Storrington	Roadside	N	509319	114160	N	2.6m	Y (20.0m)	0.9m	N
40	Storrington 15n	Fryern Road, Storrington	Roadside	N	509103	114532	N	2.2m	Y (12.0m)	1.7m	N
39	Storrington 16n	Mill Parade, Waitrose car park, Storrington	Roadside	N	508905	114325	N	2.6m	Y (0m)	1.3m	N
41	Storrington 17n	33 Church Street, Storrington	Urban Background	N	508677	114149	N	2.2m	Y (1.0m)	1.5m	Y
42	Storrington 18n	20 Amberley Road, Storrington (Barges End)	Roadside	N	508215	114348	N	2.2m	Y (5.0m)	1.9m	Y
47	Storrington 19n	Magpies, Manleys Hill, Storrington	Roadside	N	509298	114156	N	2.6m	Y (15.0m)	2.0m	N
Cowfold Sites											
12,20	Cowfold 1,2	Olde House, The Street, Cowfold	Roadside	Duplicate	521320	122610	N	2.7m	Y (2.5m)	1.7m	Y
21	Cowfold 3	6 Margaret Cotts, A272, Cowfold	Roadside	N	521267	122678	N	2.7m	Y (9.7m)	3.1m	Y
35	Cowfold 4	Trelawny House, A281, Cowfold	Roadside	N	521309	122702	N	2.4m	Y (9.3m)	2.0m	Y
22	Cowfold 5n	Junction Station Road/Thorndon, Station Road, Cowfold	Roadside	N	521062	122708	Y	2.5m	Y (23.0m)	3.6m	Y
36	Cowfold 6n	Millers Cott. Henfield Road, Cowfold	Roadside	N	521297	122254	N	2.2m	Y (3.0m)	1.8m	Y
37	Cowfold 7n	3 Huntscroft Gardens, Bolney Road, Cowfold	Roadside	N	521459	122472	Y	2.2m	Y (2.0m)	1.1m	Y
43	Cowfold 8n	5-6 Fairfield Cottages, Cowfold	Urban Background	N	521411	122667	Y	2.0m	Y (7.0m)	0.3m	N

44,45,46	Cowfold AU A/B/C	Bolney Road/The Street, Cowfold	Roadside	Triplicate	521356	122552	Y	2.0m	Y (20.0m)	6.5m	Y
Steyning Sites											
2	Steyning 3N	61 High St, Steyning	Roadside	N	517550	111284	N	3.0m	Y (2.9m)	3.1m	Y
25	Steyning 4N	Church St, Steyning	Kerbside	N	517732	111198	N	2.7m	Y (1.5m)	0.9m	Y
Pulborough Sites											
26	Pulborough 1	Swan Corner, Station Road, Pulborough	Kerbside	N	504584	118568	N	3.2m	Y (1.7m)	0.4m	Y
27	Pulborough 2	42A Lower Street, Pulborough	Roadside	N	505185	118623	N	3.0m	Y (1.8m)	1.5m	Y
Billingshurst Sites											
28	Billingshurst 1	96 High Street	Roadside	N	508623	125834	N	2.2m	Y (1.0m)	1.5m	Y

Table A3 - Results of Automatic Monitoring of NO_2: Comparison with Annual Mean Objective 2006 - 2015

Site ID/Name	Site Type	Within AQMA ?	Relevant public exposure? Y/N	Valid Data Capture 2015 % [b]	Annual Mean Concentration µg/m^3									
					2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
HO2 Horsham Park Way	Roadside	N	Y	59.0	26	30	29	31	30.4	27.0	28.6	29.9	25.4	26.5[a]
HO4 Storrington AURN	Roadside	N	Y	76.1	-	-	-	21[*]	27.6	23.4	24.8	26.9	22.4[a]	21.3
HO5 Cowfold	Roadside	Y	Y	86.0	-	-	-	-	-	27.0	29.1	24.7	27.9[a]	25.5

[*] Indicative value only. The NO_2 annual mean has been estimated from unratified data for period 21.10.09 - 31.12.2009.
[a] Annual mean concentration "annualised" as per Box 7.9 of TG(16) as data capture less than 75%. Appendix D gives details of 'annualisation' for 2015.
[b] Data capture for the full calendar year

Table A4 - Results of Automatic Monitoring of NO_2: Comparison with 1-hour Mean Objective 2006 - 2015

Site ID/Name	Site Type	Within AQMA ?	Relevant public exposure? Y/N	Valid Data Capture 2015 %[a]	Number of Exceedences of Hourly Mean (200 µg/m^3)									
					2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
HO2 Horsham Park Way	Roadside	N	Y	59.0	0	0	0	0	0	0	0	0	0	0 (102.9)
HO4 Storrington AURN	Roadside	N	Y	76.1	-	-	-	n/a	0	0	0	0	0 (78.7)[b]	0 (85.1)
HO5 Cowfold	Roadside	Y	Y	86.0	-	-	-	n/a	n/a	0	0	0	0 (120)[b]	0 (98.7)

[a] Data capture for the full calendar year. If the period of valid data is less than 90%, the 99.8th percentile of hourly means is included in brackets.

Figure A1 - Trends in Annual Mean NO_2 Concentrations Measured at Automatic Monitoring Sites 2006 - 2015

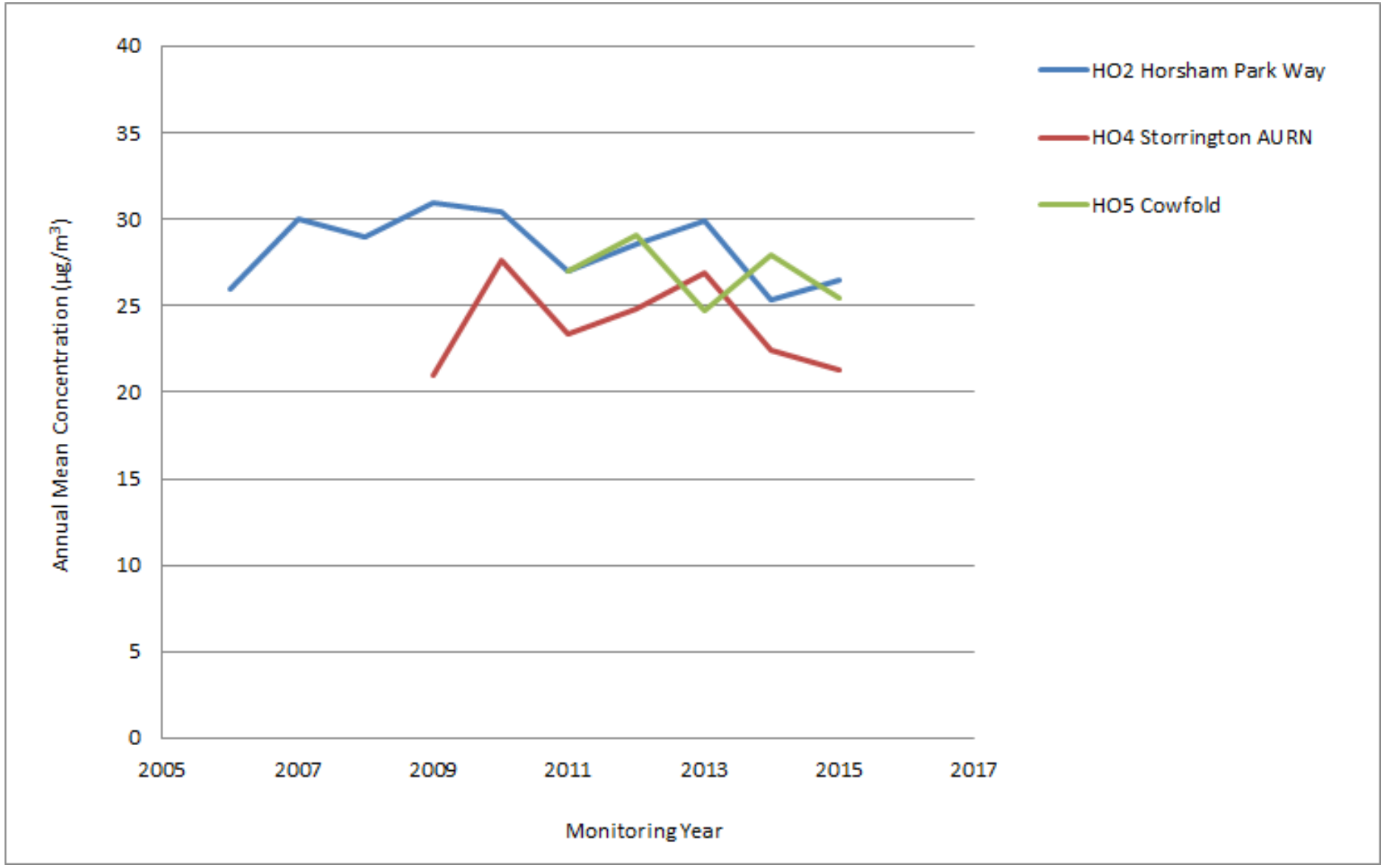


Table A5 - Results of Nitrogen Dioxide Diffusion Tubes in 2015

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2015 (%)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual Mean Concentration (Local Bias Adjustment factor = 0.81)
								2015 (µg/m^3)
Horsham Sites								
Horsham 1N	Park Street, Horsham	Roadside	N	N	75.0	N	N	32.4
Horsham 3N	69 Hillside, Horsham	Urban Background	N	N	83.3	N	N	10.3
Horsham 4N	45 Gorings Mead, Horsham	Urban Background	N	N	83.3	N	N	11.0
Horsham 5N	Harwood Rd, Horsham	Roadside	N	N	66.7	Y	N	30.4[a]
Horsham 6N	130 Rusper Rd, Horsham	Roadside	N	N	83.3	N	N	21.2
Horsham 7N	30 Warnham Rd, Horsham	Roadside	N	N	83.3	N	N	26.6
Horsham 8N	54 Worthing Rd, Horsham	Roadside	N	N	83.3	N	N	21.1
Park Way	AQMS Horsham	Roadside	N	Triplicate	83.3	N	N	23.5
N. Horsham 1N	Home Fm, Langhurstwd Rd, Horsham	Roadside	N	N	83.3	N	N	22.9
N. Horsham 2N	Graylands Fm Cotts, Horsham	Roadside	N	N	83.3	N	N	17.4
Storrington Sites								
Storrington 1/2	Manleys Hill, Storr duplicate	Roadside	Y	Duplicate	83.3	N	N	39.2
Storrington 3	3 School Hill, Storrington	Roadside	N	N	83.3	N	N	27.7
Storrington 4	22 High Street, Storrington	Roadside	Y	N	83.3	N	N	36.1
Storrington 5	2 West Street, Storrington	Roadside	N	N	75.0	N	N	23.5

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2015 (%)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual Mean Concentration (Local Bias Adjustment factor = 0.81)
								2015 (μg/m^3)
Storrington 6	1-4 Holly Court, Pulborough Rd Storrington	Roadside	N	N	83.3	N	N	21.7
Storrington 7	The Willows, Amberley Rd, Storrington	Roadside	N	N	83.3	N	N	20.5
Storrington 8/9/10 AURN	Manleys Hill AURN co-located	Roadside	N	Triplicate	83.3,75.0,83.3	N	N	24.1
Storrington 11n	Limited Edition 53 West Street, Storrington	Roadside	Y	N	83.3	N	N	37.8
Storrington 12n	3 Rectory Cottage Storrington	Roadside	Y	N	83.3	N	N	25.8
Storrington 13n	18 West Street, Storrington	Roadside	Y	N	83.3	N	N	27.5
Storrington 14n	Cobden, Washington Rd	Roadside	N	N	83.3	N	**Y**	23.2
Storrington 15n	Fryern Road, Storrington	Roadside	N	N	83.3	N	N	18.3
Storrington 16n	Mill Parade, Waitrose car park, Storrington	Roadside	N	N	83.3	N	N	23.1
Storrington 17n	33 Church Street, Storrington	Urban Background	N	N	83.3	N	N	11.8
Storrington 18n	20 Amberley Road, Storrington	Roadside	N	N	83.3	N	N	16.4
Storrington 19n	Magpies, Manleys Hill, Storrington	Roadside	N	N	83.3	N	**Y**	31.1
Cowfold Sites								
Cowfold 1,2	Olde House, The Street, Cowfold	Roadside	N	Duplicate	83.3	N	N	36.0

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2015 (%)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual Mean Concentration (Local Bias Adjustment factor = 0.81)
								2015 (µg/m^3)
Cowfold 3	6 Margaret Cotts, A272, Cowfold	Roadside	N	N	83.3	N	N	31.8
Cowfold 4	Trelawny House, A281, Cowfold	Roadside	N	N	83.3	N	N	24.6
Cowfold 5n	Junction Station Road/Thornden. Station Road, Cowfold	Roadside	Y	N	83.3	N	N	29.9
Cowfold 6n,	Millers Cott. Henfield Road, Cowfold	Roadside	N	N	83.3	N	N	24.6
Cowfold 7n	3 Huntscroft Gardens, Bolney Road, Cowfold	Roadside	Y	N	83.3	N	N	**42.9**
Cowfold 8n	5-6 Fairfield Cottages, Cowfold	Background	Y	N	83.3	N	N	12.4
Cowfold AU A,B,C	Bolney Road/The Street, Cowfold	Roadside	Y	triplicate	83.3	N	N	25.4
Steyning Sites								
Steyning 3N	61 High St Steyning	Roadside	N	N	75.0	N	N	17.8
Steyning 4N	Church St Steyning	Kerbside	N	N	75.0	N	N	29.2
Pulborough Sites								
Pulborough 1	Swan Corner Station Road, Pulborough	Kerbside	N	N	83.3	N	N	31.3
Pulborough 2	42A Lower Street, Pulborough	Roadside	N	N	83.3	Y	N	20.1
Billingshurst Sites								
Billingshurst 1	96 High Street	Roadside	N	N	83.3	N	N	30.0

[a] Annual mean concentration "annualised" as per Box 7.10 of TG(16) as data capture less than 75%. Appendix D gives details of 'annualisation' for 2015.
In **bold**, exceedence of the NO_2 annual mean objective of 40 µg/m^3

Table A6 - Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2015)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/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 (Local Bias Factor = 0.81)
Horsham Sites										
Horsham 1N	Roadside	N	38.2	37.1	36.0	33.7 (32.0)	33.2(37.4)	25.6 (29.5)	32.3	32.4
Horsham 3N	Urban background	N	16.2	14.0	15.5	12.8 (12.2)	12.4(14.0)	13.6 (15.7)	11.6	10.3
Horsham 4N	Urban background	N	15.2	13.2	15.3	12.9 (12.3)	12.4(14.0)	12.9 (14.8)	9.4	11.0
Horsham 5N	Roadside	N	36.9	32.1	33.2	27.8 (26.5)	27.4 (30.8)	28.0 (32.2)	23.8	30.4[a]
Horsham 6N	Roadside	N	30.9	27.7	28.8	25.0 (23.7)	26.6 (30.0)	23.8 (27.4)	21.8	21.2
Horsham 7N	Roadside	N	32.2	28.9	29.3	26.6 (25.3)	26.0 (29.3)	26.3 (30.2)	26.8	26.6
Horsham 8N	Roadside	N	30.0	29.5	29.5	23.8 (22.6)	22.5 (25.3)	23.8 (27.3)	22.5	21.1
Park Way (triplicate)	Roadside	N	30.8	28.7	30.3	26.0 (24.7)	25.0 (28.2)	25.9 (29.8)	24.0	23.5
N. Horsham 1N	Roadside	N	29.6	27.9	23.7	24.2 (23.0)	25.8 (29.1)	21.9 (25.2)	23.0	22.9
N. Horsham 2N	Roadside	N	24.2	22.1	19.4	18.8 (17.9)	19.9 (22.5)	19.2 (22.0)	18.9	17.4
Storrington Sites										
Storrington 1,2 (duplicate)	Roadside	N	**49.8**	**50.7**	**50.2**	**45.1 (42.9)**	**42.7 (41.6)**	**41.0 (42.0)**	37.3	39.2
Storrington 3	Roadside	N	**39.7**	38.0	37.5	33.4 (31.8)	35.1 (34.2)	31.9 (32.7)	28.8	27.7
Storrington 4	Roadside	N	39.8	**43.4**	**42.0**	**42.0** (40.0)	**40.9** (39.9)	38.2 (39.2)	35.1	36.1
Storrington 5	Roadside	N	32.2	27.9	32.4	25.8 (24.6)	26.9(26.2)	27.0 (27.6)	23.3	23.5
Storrington 6	Roadside	N	27.6	28.1	27.4	21.0 (19.9)	23.9(23.3)	24.5 (25.2)	24.2	21.7
Storrington 7	Roadside	N	27.1	25.2	21.6	24.6 (23.4)	22.4(21.8)	23.1 (23.7)	18.7	20.5
Storrington 8,9,10 AURN (triplicate)	Roadside	N	-	29.2*	27.4	24.5 (23.3)	25.6 (25.0)	25.8 (24.2)	22.4	24.1
Storrington 11n	Roadside	Y	-	-	35.8*	39.3 (37.4)	38.4(37.4)	39.0 **(40.0)**	36.2	37.8

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/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 (Local Bias Factor = 0.81)
Storrington 12n	Roadside	Y	-	-	31.6*	32.8 (31.2)	31.2(30.4)	30.5 (31.3)	28.0	25.8
Storrington 13n	Roadside	Y	-	-	35.3*	30.5 (29.0)	32.1(31.3)	33.7 (34.5)	28.2	27.5
Storrington 14n	Roadside	N	-	-	-	**45.8 (43.6)**	22.6[b]	22.9[b]	22.2[b]	23.2[b]
Storrington 15n	Roadside	N	-	-	-	20.5 (19.5)	19.1(18.6)	20.8 (21.3)	19.7	18.3
Storrington 16n	Roadside	N	-	-	-	25.5 (24.3)	24.0(23.4)	25.6 (26.3)	26.3	23.1
Storrington 17n	Background	N	-	-	-	15.4 (14.6)	16.1(15.7)	15.8 (16.2)	12.9	11.8
Storrington 18n	Roadside	N	-	-	-	21.4 (20.4)	19.7(19.2)	21.0 (21.5)	17.2	16.4
Storrington 19n	Roadside	N	-	-	-	-	-	-	30.6[b]	31.1[b]
Cowfold Sites										
Cowfold 1,2 (duplicate)	Roadside	N	**46.3**	**45.4**	**43.4**	**40.5** (39.5)	39.2 **(40.6)**	37.5 (33.3)	37.8	36.0
Cowfold 3	Roadside	N	**41.2**	39.1	36.4	35.2 (34.4)	32.5(33.7)	33.8 (30.0)	31.6	31.8
Cowfold 4	Roadside	N	34.7	35.4	33.3	29.4 (28.7)	29.5(30.6)	28.7 (25.5)	29.7	24.6
Cowfold 5n	Roadside	Y	-	-	30.5*	27.4 (26.8)	28.7(29.8)	25.7 (22.8)	23.9	29.9
Cowfold 6n	Roadside	N	-	-	32.4*	27.4 (26.7)	28.9(30.0)	26.0 (23.1)	26.6	24.6
Cowfold 7n	Roadside	Y	-	-	**47.8***	**45.9** (44.8)	**43.8(45.4)**	**41.0** (36.4)	**40.7**	**42.9**
Cowfold 8n	Background	Y	-	-	-	16.0 (15.6)	15.0(15.5)	14.3 (12.7)	11.8	12.4
Cowfold AU A,B,C (triplicate)	Roadside	Y	-	-	-	26.7 (26.1)	28.2 (29.3)	27.0 (25.0)	27.2	25.4
Steyning Sites										
Steyning 3N	Roadside	N	23.0	23.0	23.2	20.6 (19.6)	20.5	20.3	17.7	17.8
Steyning 4N	Kerbside	N	27.4	26.2	26.8	28.4 (27.1)	22.3	24.4	20.1	29.2
Pulborough Sites										

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/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 (Local Bias Factor = 0.81)
Pulborough 1	Kerbside	N	37.2	**39.2**	**40.2**	33.1 (31.5)	31.7	**40.5** (41.5) 32.5[b]	31.1	31.3
Pulborough 2	Roadside	N	**52.1***	26.3	28.0	22.3 (21.2)	24.7	39.1 (31.3)[a]	21.5	20.1
Billingshurst Sites										
Billingshurst 1	Roadside	N	-	-	-	-	-	30.8	28.8	30.0

[a] Annual mean concentration "annualised" as per Box 7.10 of TG(16) as data capture less than 75%. Appendix D gives details of 'annualisation' for 2015.

[b] Tubes adjusted using the Defra 'Distance from Roads Calculator' to calculate exposure at the facade of the nearest residential property.

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

In **red bold**, exceedence of the NO_2 annual mean objective of 40µg/m^3.

In red, concentrations equal or above 36µg/m^3 (within 10% of the NO_2 annual mean objective of 40µg/m^3).

Figure A2 - Trends in Annual Mean NO_2 Concentrations measured at Diffusion Tube Monitoring Sites 2008 – 2015: Horsham

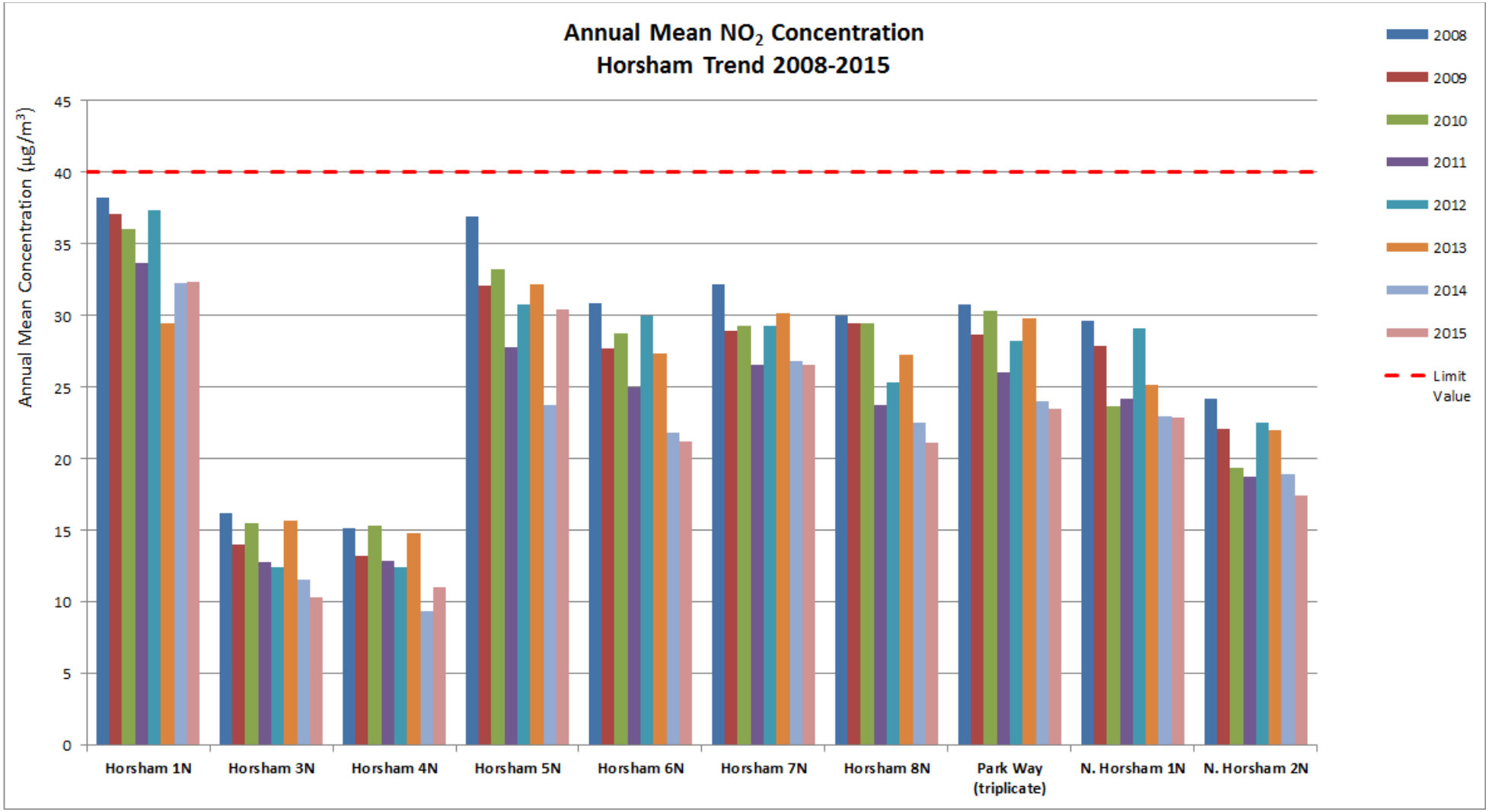


Figure A3 - Trends in Annual Mean NO_2 Concentrations measured at Diffusion Tube Monitoring Sites 2008 – 2015: Storrington

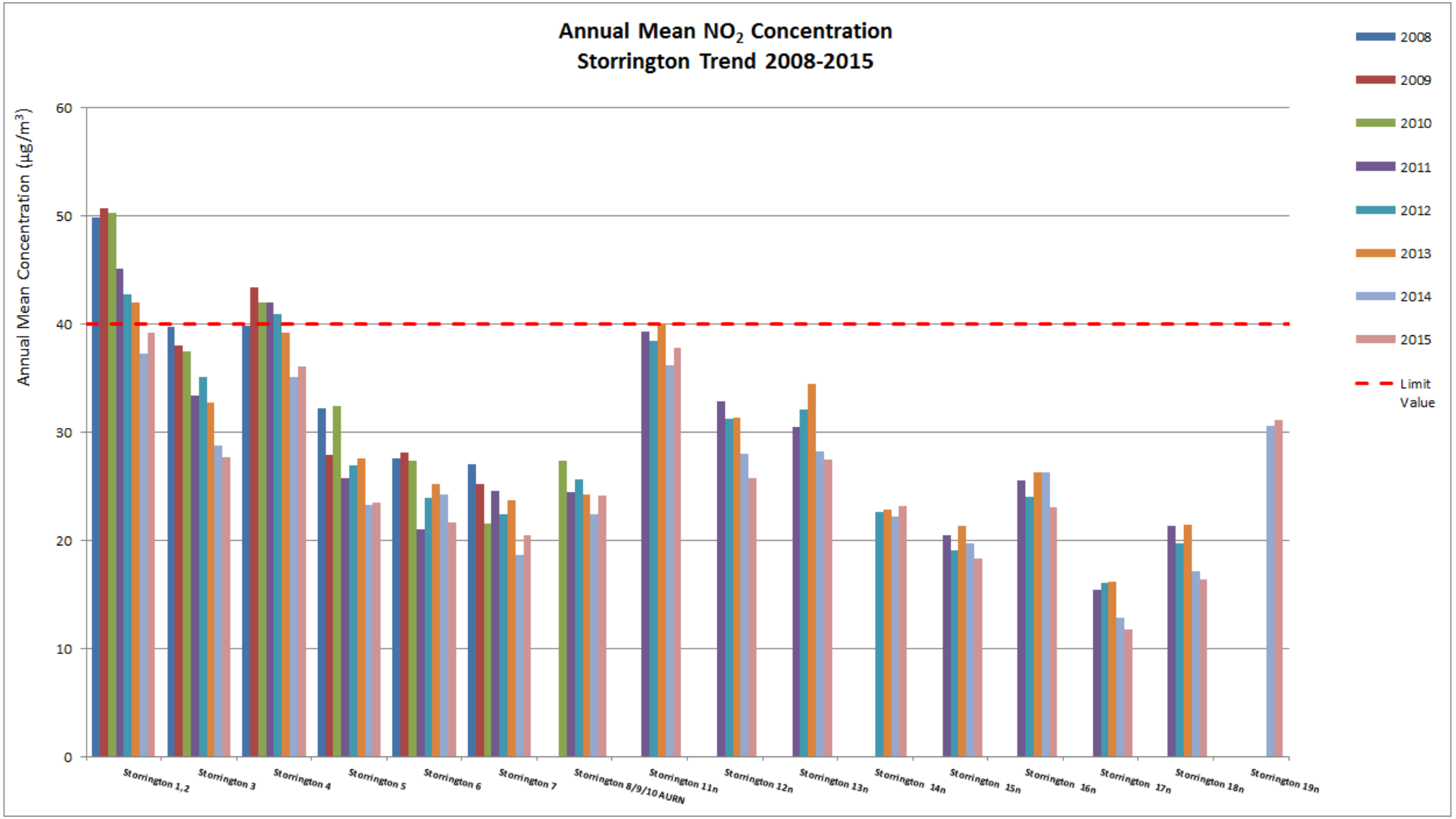


Figure A4 - Trends in Annual Mean NO_2 Concentrations measured at Diffusion Tube Monitoring Sites 2008 – 2015: Cowfold

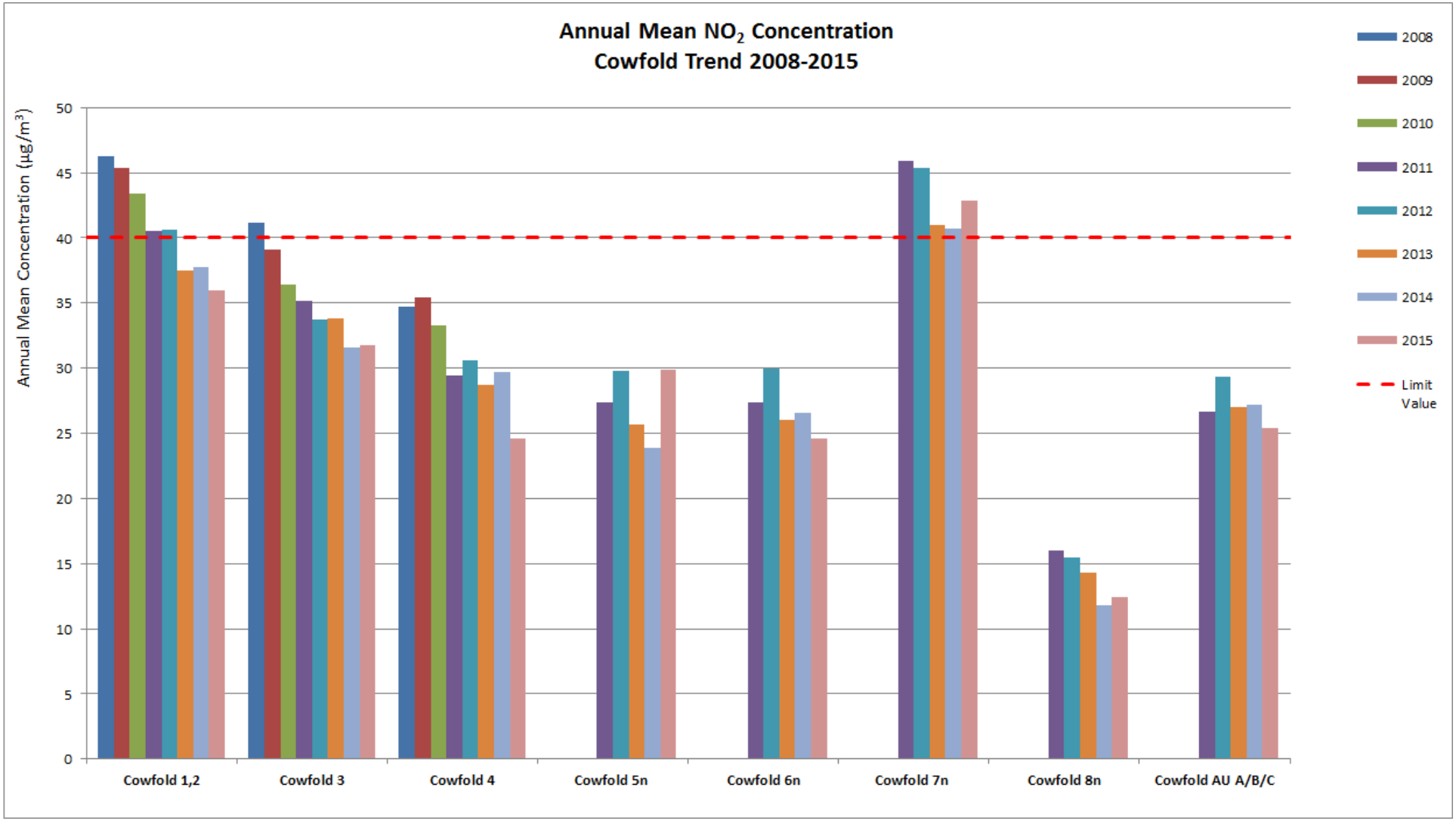


Figure A5 - Trends in Annual Mean NO_2 Concentrations measured at Diffusion Tube Monitoring Sites 2008 – 2015: Steyning/Pulborough/Billingshurst

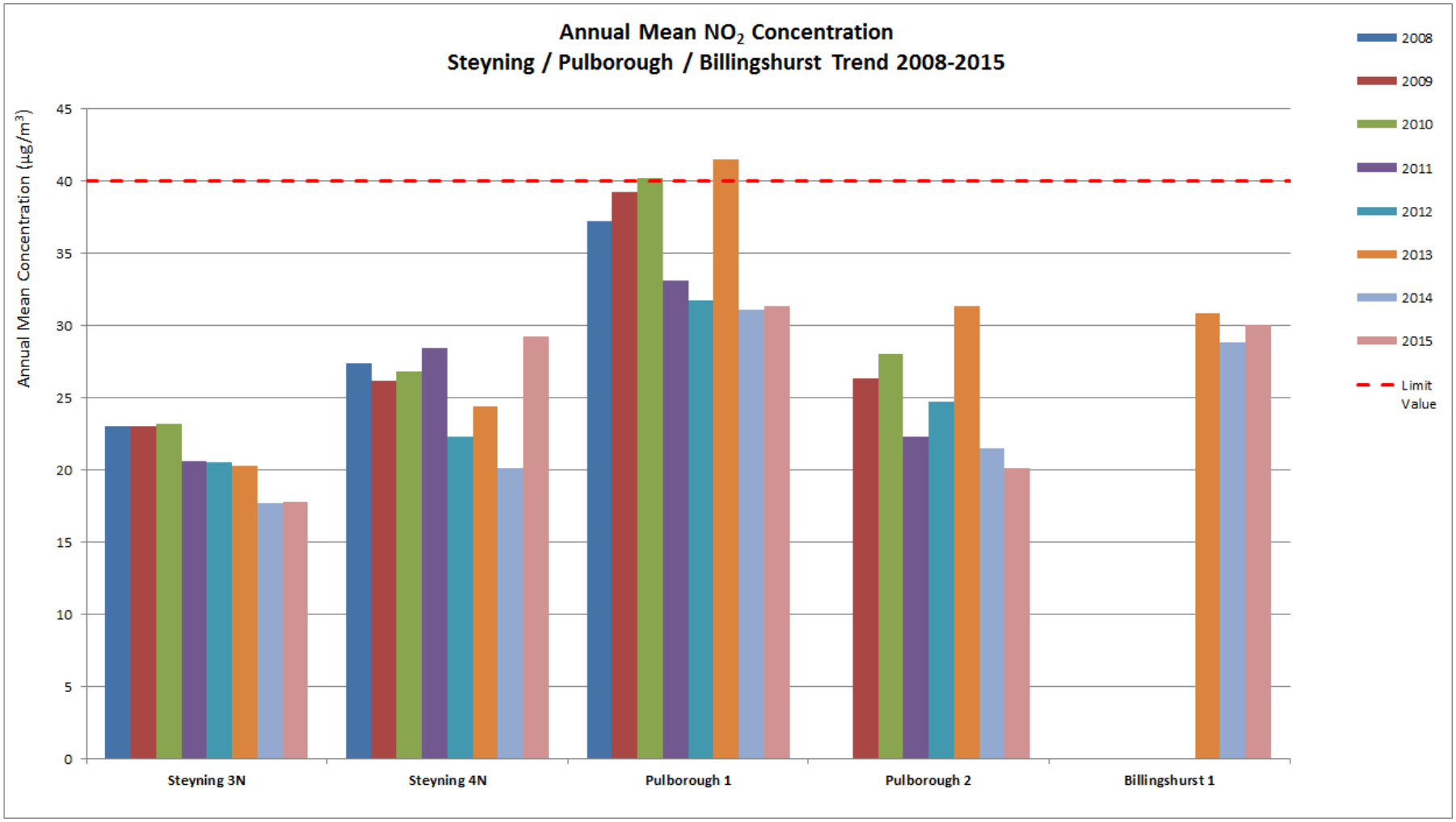


Table A7 - Results of Automatic Monitoring of PM_{10}: Comparison with Annual Mean Objective 2007 - 2015

Site ID	Site Type	Within AQMA?	Relevant public exposure? Y/N	Valid Data Capture 2015 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3								
						2007	2008	2009	2010	2011	2012	2013	2014	2015
HO2 Horsham Park Way	Roadside	N	Y	60.8	Y	24.9	23.8	23.9	18.3	24.0	23.2	22.3	20.9	18.6[a]
HO4 Storrington AURN	Roadside	N	Y	87.9	Y	-	-	20.4*	20.4	22.4**	20.6	23.0	-	15.8

* Data capture for 5 month monitoring period August – December 2009. Data was not ratified.

** Data not fully ratified

[a] Annual mean concentration "annualised" as per Box 7.9 of TG(16) as data capture less than 75%. Appendix D gives details of 'annualisation' for 2015.

[b] Data capture for the full calendar year

Table A8 - Results of Automatic Monitoring of PM_{10}: Comparison with 24-hour Mean Objective 2007 - 2015

Site ID	Site Type	Within AQMA?	Relevant public exposure? Y/N	Valid Data Capture 2015 %[a]	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 μg/m^3 not to be exceeded more than 35 times a year)								
						2007	2008	2009	2010	2011	2012	2013	2014	2015
HO2 Horsham Park Way	Roadside	N	Y	60.8	Y	17	9	3	0	11 (39)	9 (38)	2 (33)	4 (32)	2 (29.3)
HO4 Storrington AURN	Roadside	N	Y	87.9	Y	-	-	0 (27)*	2 (36)	15**	9	7 (39.9)	-	2 (24.8)

* Data capture for 5 month monitoring period August – December 2009. Data was not ratified.

** Data not fully ratified

[a] Data capture for the full calendar year. If the period of valid data is less than 90%, the 90.4th percentile of daily means is included in brackets.

Table A9 - Results of Automatic Monitoring of $PM_{2.5}$: Comparison with Annual Mean Objective 2010 - 2015

Site ID	Site Type	Within AQMA?	$PM_{2.5}$ Annual Mean 2015 (µg/m^3)* / (Valid Data Capture)					
			2010	2011	2012	2013	2014	2015
HO2 Horsham Park Way	Roadside	N	13.0[e] (98.9)	16.8[e] (89.1)	18.3[e] (86.2)	16.1[e] (88)	14.6[e] (84)	13.2[e] (60.8)
HO4 Storrington AURN	Roadside	N	14.5 (93.1%)	15.6 (98.3%)	16.2 (92.1%)	16.6 (91.2%)	11.3 (85.1%)	11.2 (87.9%)

* As a comparison, the UK Air Quality Standard objective for $PM_{2.5}$ is 25µg/m^3 (target value) for England

[e] $PM_{2.5}$ values for HO2 Horsham Park Way were estimated from the PM_{10} data using Storrington AURN ration of $PM_{2.5}/PM_{10}$ as per method described in Box 7.7 of TG(16).

A 'national' factor of 0.7 was used for 2012 were local data were not available.

Figure A6 - Trends in Annual Mean PM_{10} and $PM_{2.5}$ Concentrations Measured at Automatic Monitoring Sites 2007 - 2015

Table A10 - Results of SO_2 Automatic Monitoring: Comparison with Objectives 2015

SiteType	Location	Within AQMA?	Data Capture 2015 %	Number of Exceedences of:		
				15-minute Objective (266 μg/m^3)	1-hour Objective (350 μg/m^3)	24-hour Objective (125 μg/m^3)
Rural	Lullington Heath	N	96.7%	0	0	0

Appendix B: Full Monitoring Results for 2015

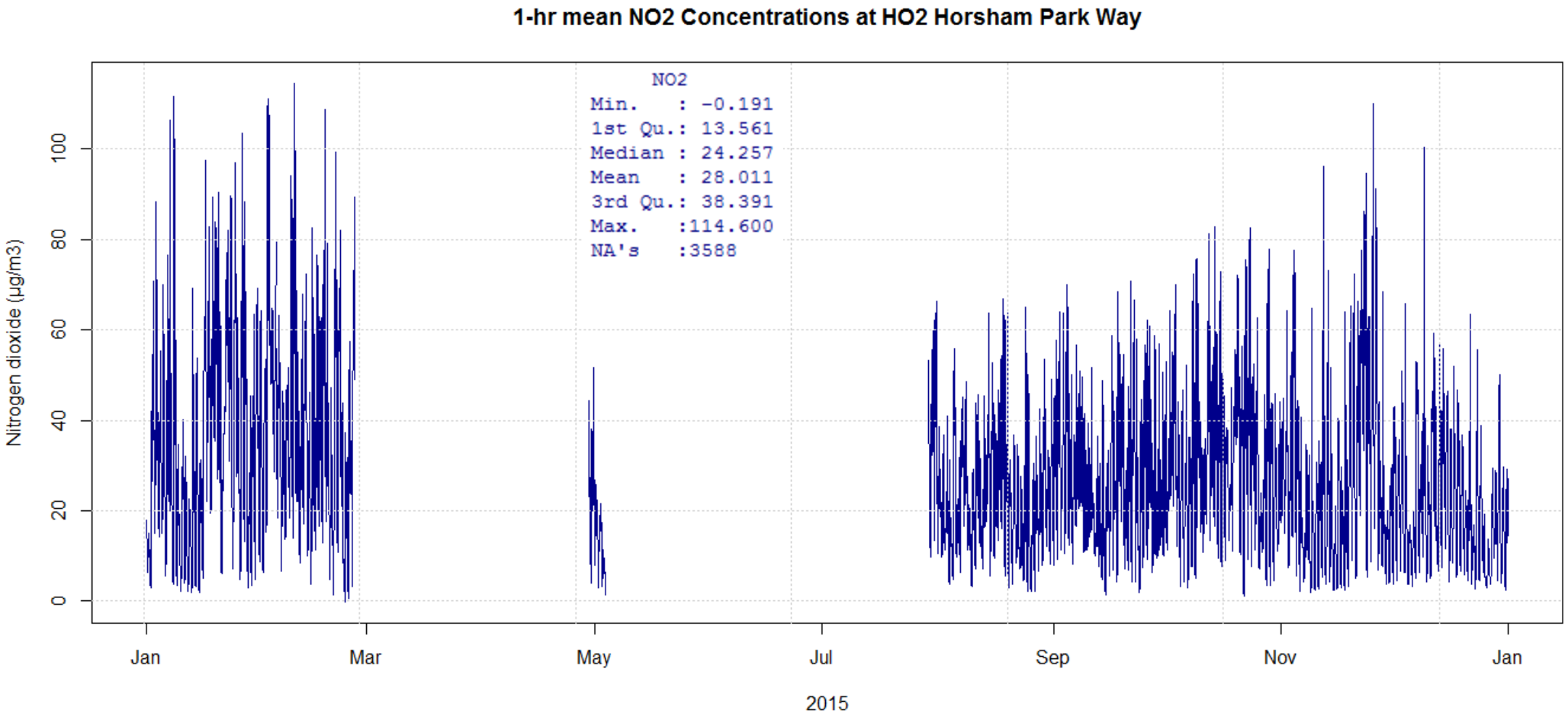
Table B1 - Full Monthly Diffusion Tube Results for 2015

Lab Ref.	Site Name	NO_2 Concentrations µg/m^3														
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	COUNT	% DATA CAPTURE	AVERAGE
1	Horsham 1N	48.5			40.9	41.0	35.3	33.6	32.3	37.7	43.4	43.4		9	75.0	39.6
2	Steyning 3N	25.8			23.1	18.2	17.0	15.8	19.8	21.9	31.0	22.6		9	75.0	21.7
3	Horsham 3N	20.7			14.6	12.2	8.6	8.4	10.8	7.8	18.9	13.6	10.4	10	83.3	12.6
4	Horsham 4N	20.5			16.9	12.0	8.3	8.0	9.7	12.7	19.4	14.0	12.4	10	83.3	13.4
5	Park Way	39.1			29.9	29.3	21.2	21.2	26.6	29.0	36.3	31.4	28.5	10	83.3	29.3
6	Park Way	37.8			28.0	26.7	23.7	22.5	25.0	27.9	34.0	28.5	30.1	10	83.3	28.4
7	Park Way	40.4			29.4	26.6	18.2	22.6	26.7	29.4	33.9	29.0	27.1	10	83.3	28.3
8	Horsham 5N	42.4					45.3	21.0	25.5	41.2	52.3	29.6	19.3	8	66.7	34.6
9	Horsham 6N	36.1			25.5	23.2	16.7	18.2	22.7	28.7	35.7	24.1	27.6	10	83.3	25.9
10	Horsham 7N	45.9			34.1	25.4	24.3	25.4	28.4	34.3	44.5	32.5	29.1	10	83.3	32.4
11	Horsham 8N	36.0			33.9	21.4	15.2	13.0	22.3	25.1	36.2	26.4	27.5	10	83.3	25.7
12	Cowfold 1	46.0			46.6	39.1	38.5	33.7	42.1	45.3	52.1	46.9	47.8	10	83.3	43.8
13	Storrington 1	63.0			46.7	50.0	41.9	33.6	48.8	55.0	59.5	40.4	34.8	10	83.3	47.4
14	Storrington 2	56.2			43.8	47.5	43.8	37.6	47.3	58.2	64.8	46.3	36.6	10	83.3	48.2
15	Storrington 3	44.1			32.1	32.7	30.9	29.0	31.3	37.6	42.7	33.0	24.0	10	83.3	33.7
16	Storrington 4	52.8			43.0	47.9	39.7	37.1	39.9	42.5	48.6	43.8	44.9	10	83.3	44.0
17	Storrington 5				27.1	27.7	23.7	24.6	28.4	34.0	43.0	27.8	21.9	9	75.0	28.7
18	Storrington 6	34.6			29.2	25.4	23.9	24.8	22.3	23.3	28.0	27.5	26.0	10	83.3	26.5
19	Storrington 7	31.9			24.3	25.7	22.8	18.5	23.7	28.0	35.5	25.5	14.7	10	83.3	25.1
20	Cowfold 2	44.2			44.8	42.0	30.2	41.7	43.3	46.9	52.0	47.9	47.3	10	83.3	44.0
21	Cowfold 3	41.8			43.6	35.0	41.7	26.8	33.9	42.3	52.5	38.3	32.5	10	83.3	38.8
22	Cowfold 5n	43.6			41.0	32.8	26.2	29.1	32.7	34.9	40.1	36.5	47.2	10	83.3	36.4
23	N. Horsham 1N	40.9			23.8	24.0	23.2	25.1	17.0	25.0	29.0	39.3	31.9	10	83.3	27.9
24	N. Horsham 2N	25.1			20.7	17.7	16.8	17.0	18.8	22.3	27.4	25.4	21.6	10	83.3	21.3
25	Steyning 4N	107.6			31.0	19.2	20.8	37.5		24.2	33.5	23.2	23.6	9	75.0	35.6
26	Pulborough 1	45.6			51.5	33.8	24.9	31.5	34.5	42.7	52.3	34.9	29.7	10	83.3	38.1
27	Pulborough 2	37.8			25.9	20.9	21.2	16.1	21.5	27.4	32.9	23.9	17.3	10	83.3	24.5
28	Billingshurst 1	50.6			40.0	28.9	26.1	28.0	33.0	36.7	43.7	39.3	39.0	10	83.3	36.5
29	Storrington 8 AURN	34.5			27.7	26.5	24.5	25.8	32.1	31.1	41.5	25.9	20.7	10	83.3	29.0
30	Storrington 9 AURN	33.1			33.6	29.4	27.2	20.7	29.8	33.3	40.9		20.4	9	75.0	29.8
31	Storrington 10n AURN	35.3			31.6	25.0	26.3	27.2	29.1	32.8	40.2	25.8	21.3	10	83.3	29.5
32	Storrington 13n	26.7			44.6	29.2	31.5	26.6	35.1	38.1	50.6	31.1	21.7	10	83.3	33.5
33	Storrington 12n	36.7			35.4	28.7	28.2	21.6	32.2	35.2	39.7	33.5	24.0	10	83.3	31.5
34	Storrington 11n	48.3			49.9	43.9	38.8	41.0	45.9	47.9	53.7	49.1	42.1	10	83.3	46.1
35	Cowfold 4	40.0			25.8	33.1	15.1	28.4	25.2	34.0	30.2	37.5	31.3	10	83.3	30.1
36	Cowfold 6n	41.5			26.8	28.5	21.8	28.5	28.4	30.0	34.3	35.0	25.6	10	83.3	30.0

37	**Cowfold 7n**	68.2			47.0	48.3	44.3	44.9	52.1	47.5	57.2	59.4	54.2	10	83.3	52.3
38	**Storrington 14n**	56.5			55.8	53.6	54.8	53.0	52.5	54.5	60.3	43.5	43.3	10	83.3	52.8
39	**Storrington 16n**	34.9			29.4	29.9	27.1	25.5	24.6	23.2	35.6	27.6	23.8	10	83.3	28.2
40	**Storrington 15n**	27.7			24.1	21.9	14.0	19.1	16.0	21.3	26.5	25.2	27.2	10	83.3	22.3
41	**Storrington 17n**	19.4			15.6	12.8	9.6	8.8	12.3	14.1	21.7	15.0	14.1	10	83.3	14.3
42	**Storrington 18n**	27.6			20.8	14.0	13.1	15.2	19.2	24.1	29.9	18.9	17.2	10	83.3	20.0
43	**Cowfold 8n**	25.2			15.3	12.4	10.7	10.5	11.4	15.6	22.8	17.6	9.6	10	83.3	15.1
44	**Cowfold AU A**	38.5			32.9	24.1	20.6	20.1	36.1	29.2	36.5	32.2	36.7	10	83.3	30.7
45	**Cowfold AU B**	33.4			31.7	28.2	23.6	20.9	27.7	31.8	32.1	37.0	39.2	10	83.3	30.6
46	**Cowfold AU C**	35.6			31.5	26.4	22.1	27.2	32.2	30.4	38.5	33.7	38.6	10	83.3	31.6
47	**Storrington 19n**	64.0			55.3	65.0	65.3	67.0	65.2	66.2	69.7	65.8	43.6	10	83.3	62.7

Value = Value removed from the dataset prior to processing (low value)

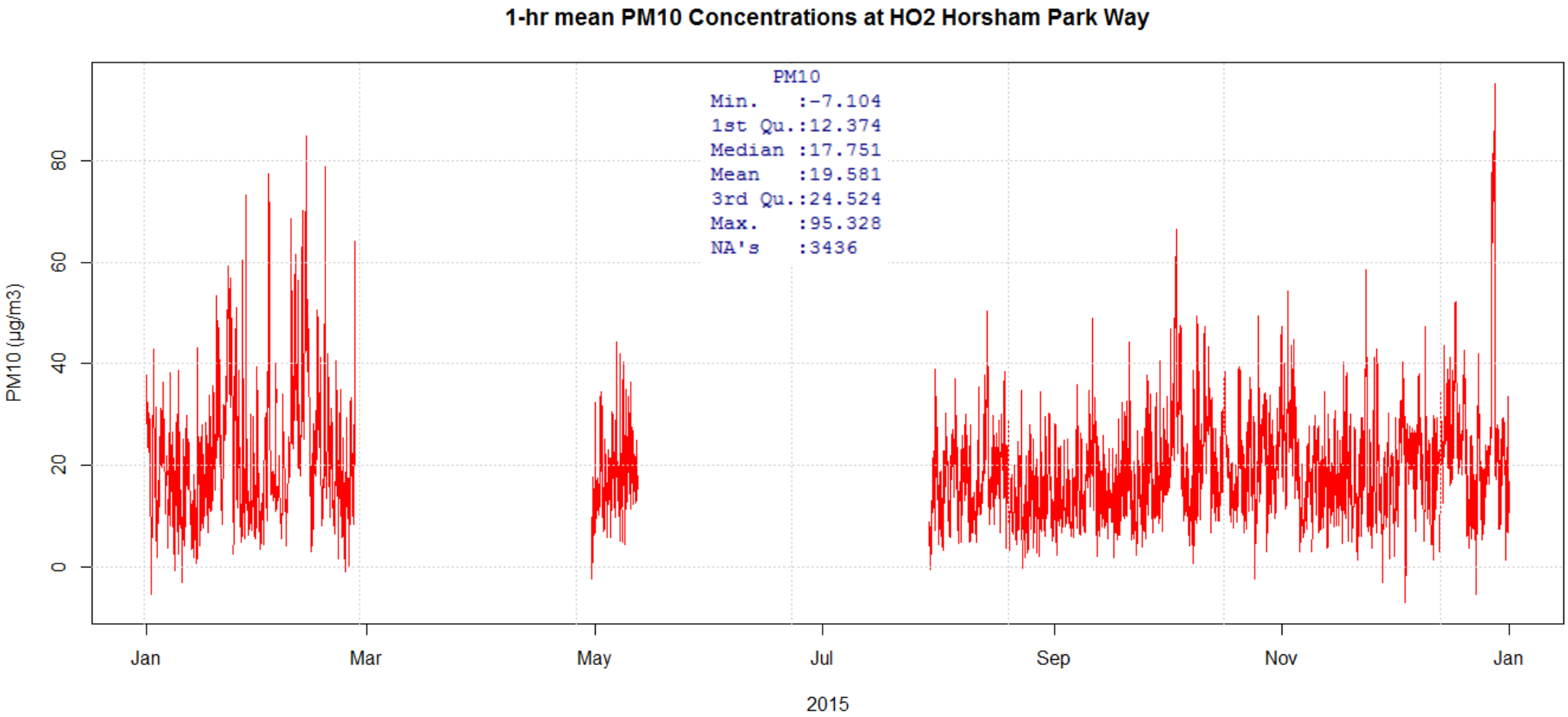
Figure B1 - Continuous Monitoring Results: 1-hr mean NO_2 Concentrations, HO2 Horsham Park Way, 2015



Min = minimum; Max = maximum, mean, 1st Qu. = First quantile; 3rd Qu. = Third quantile; NA's = missing data

Data plotted using openair.

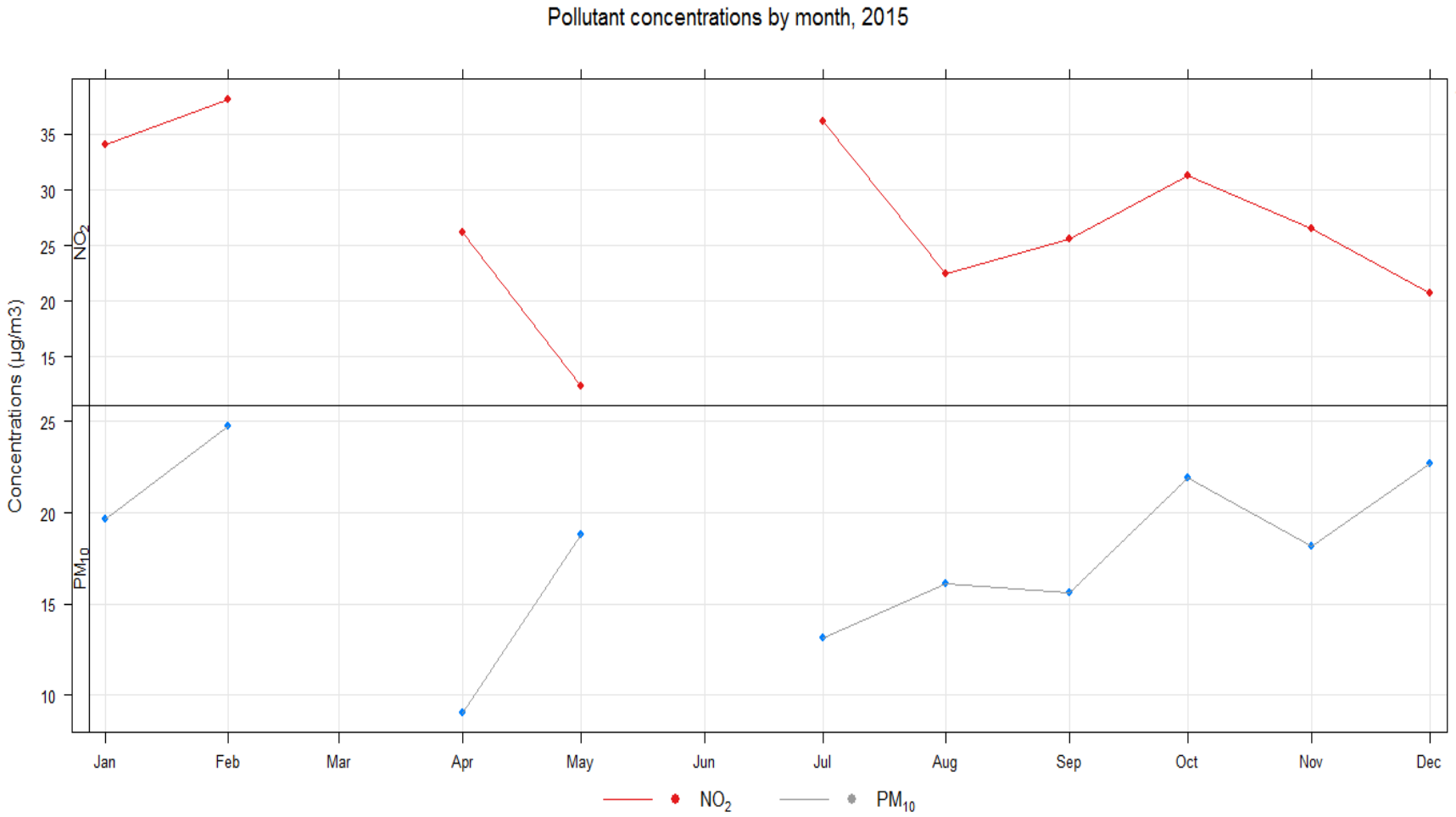
Figure B2 - Continuous Monitoring Results: 1-hr mean PM_{10} Concentrations, HO2 Horsham Park Way, 2015



Min = minimum; Max = maximum, mean, 1st Qu. = First quantile; 3rd Qu. = Third quantile; NA's = missing data

Data plotted using openair.

Figure B3 - Continuous Monitoring Results: Monthly Concentrations for NO_2 and PM_{10} at HO2 Horsham Park Way, 2015

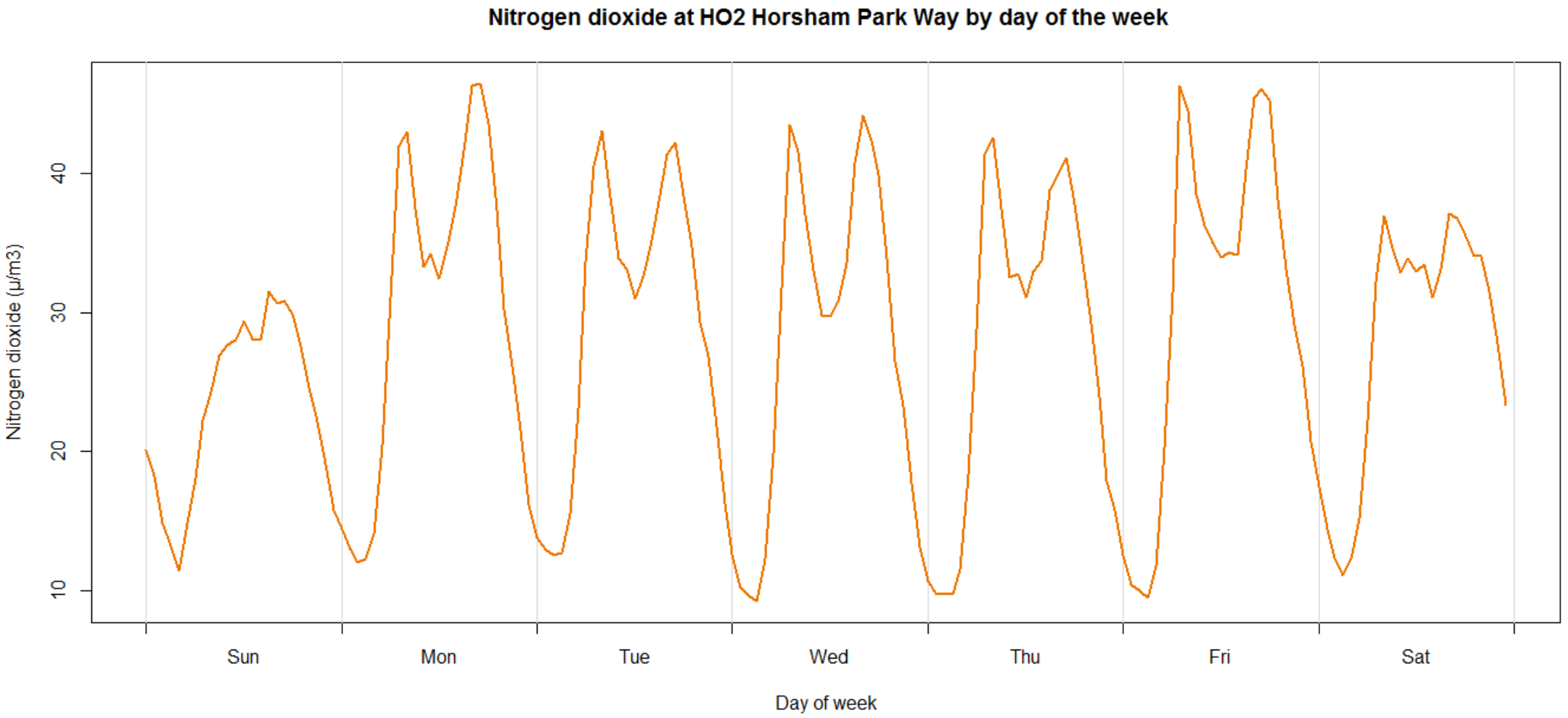


	date	NO2
1	2015-01	34.06218
2	2015-02	38.16225
3	2015-03	NaN
4	2015-04	26.13426
5	2015-05	12.41500
6	2015-06	NaN
7	2015-07	36.18277
8	2015-08	22.43480
9	2015-09	25.64348
10	2015-10	31.23737
11	2015-11	26.58221
12	2015-12	20.79381

	date	PM10
1	2015-01	19.674337
2	2015-02	24.755824
3	2015-03	NaN
4	2015-04	9.031243
5	2015-05	18.805746
6	2015-06	NaN
7	2015-07	13.164052
8	2015-08	16.106942
9	2015-09	15.643936
10	2015-10	21.881061
11	2015-11	18.128362
12	2015-12	22.688055

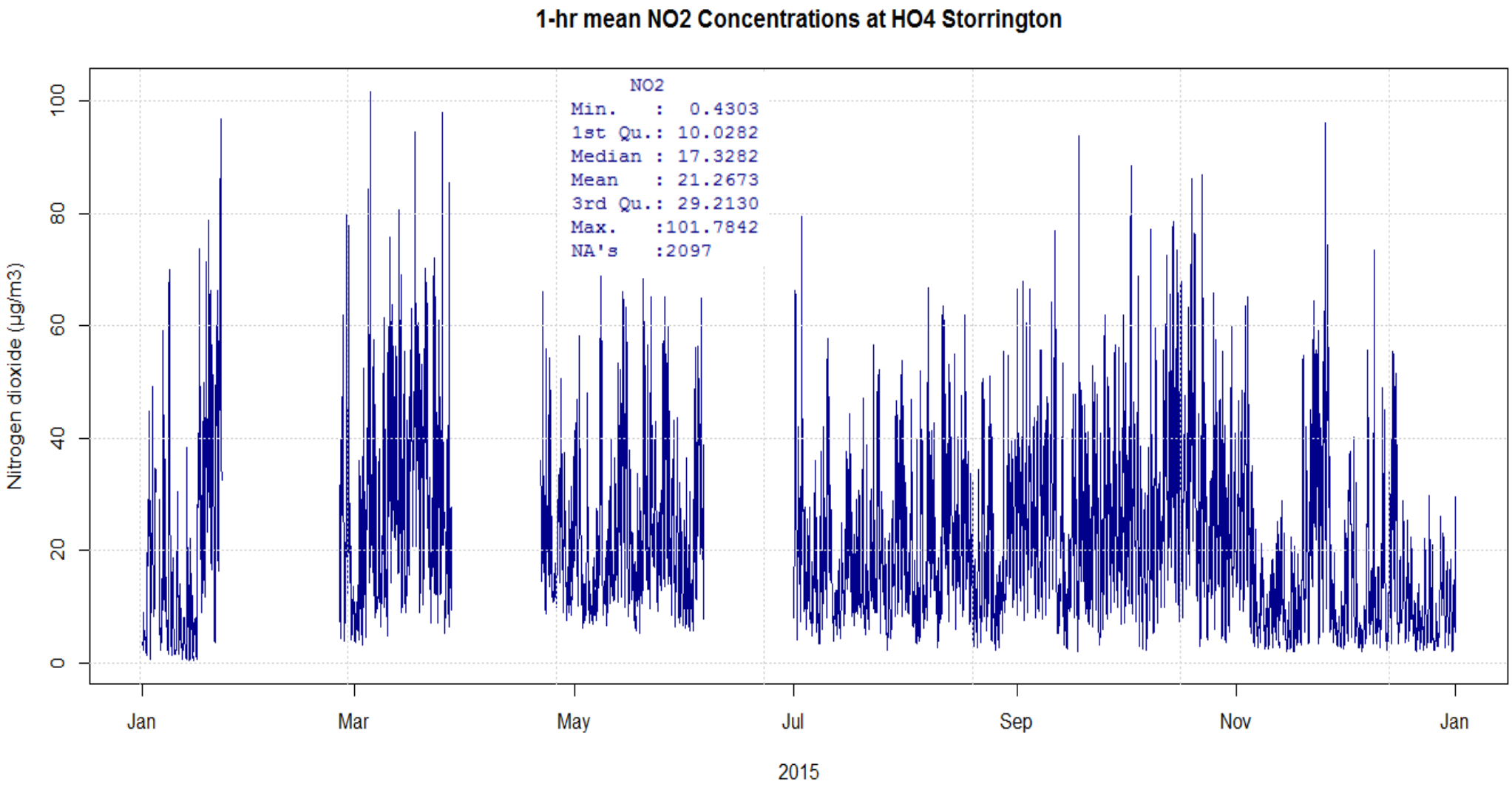
Data plotted using openair.

Figure B4 - Continuous Monitoring Results: Day of Week Concentrations for NO_2 at HO2 Horsham Park Way, 2015



Data plotted using openair.

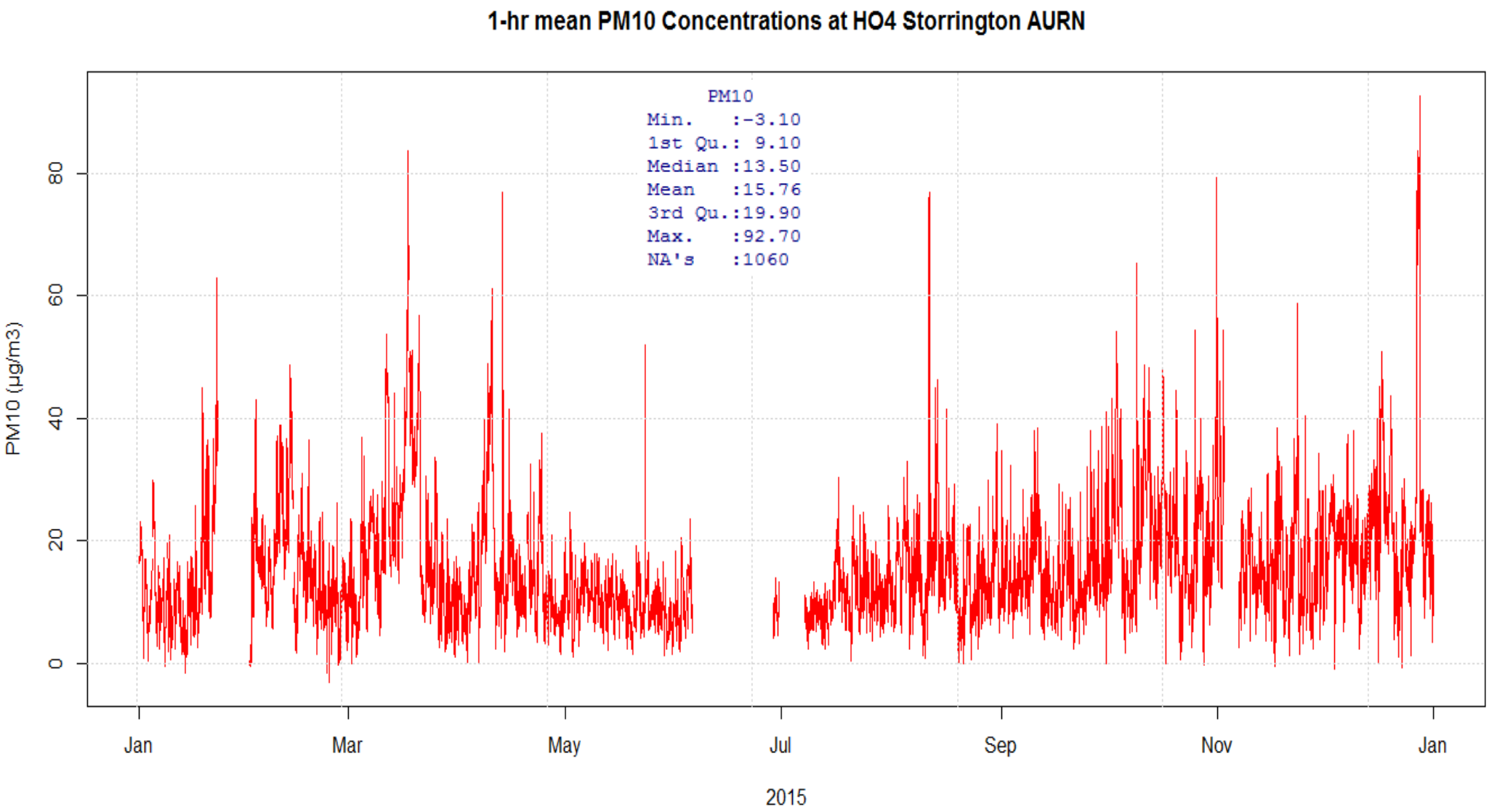
Figure B5 - Continuous Monitoring Results: 1-hr mean NO_2 Concentrations, HO4 Storrington AURN, 2015



Min = minimum; Max = maximum, mean, 1st Qu. = First quantile; 3rd Qu. = Third quantile; NA's = missing data

Data plotted using openair.

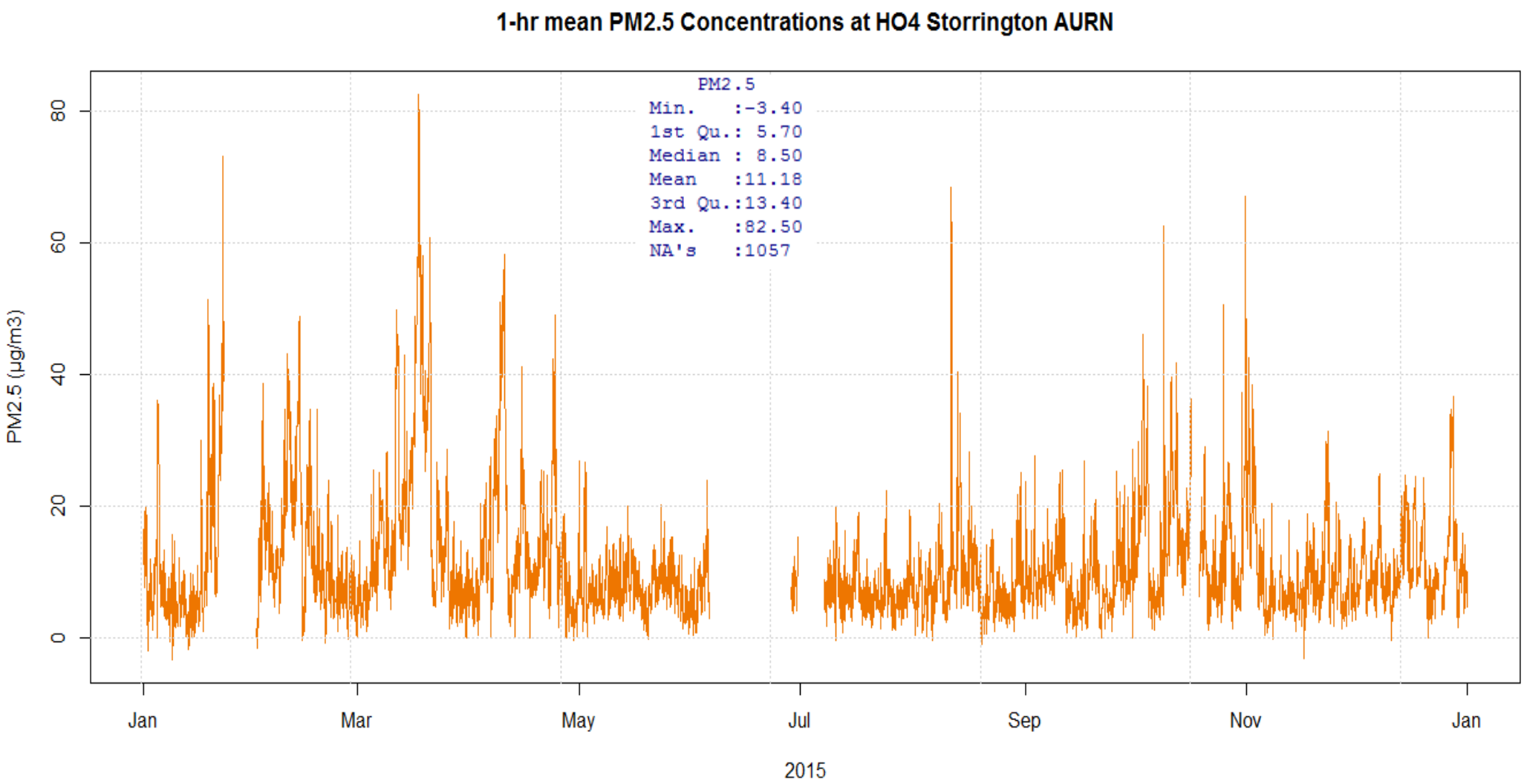
Figure B6 - Continuous Monitoring Results: 1-hr mean PM_{10} Concentrations, HO4 Storrington AURN, 2015



Min = minimum; Max = maximum, mean, 1st Qu. = First quantile; 3rd Qu. = Third quantile; NA's = missing data

Data plotted using openair.

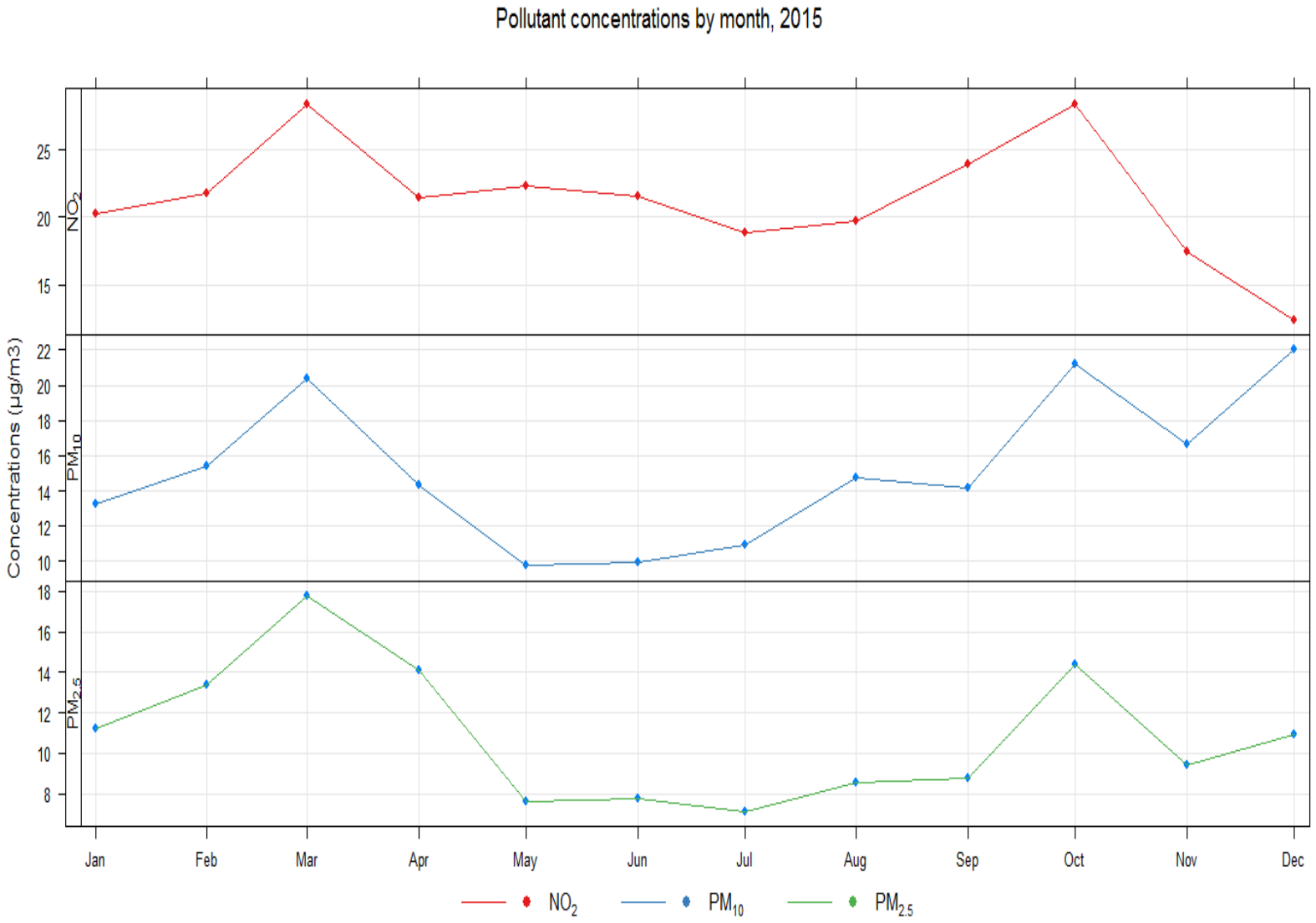
Figure B7 - Continuous Monitoring Results: 1-hr mean $PM_{2.5}$ Concentrations, HO4 Storrington AURN, 2015



Min = minimum; Max = maximum, mean, 1st Qu. = First quantile; 3rd Qu. = Third quantile; NA's = missing data

Data plotted using openair.

Figure B8 - Continuous Monitoring Results: Monthly Concentrations for NO_2, PM_{10} and $PM_{2.5}$ at HO4 Storrington AURN, 2015



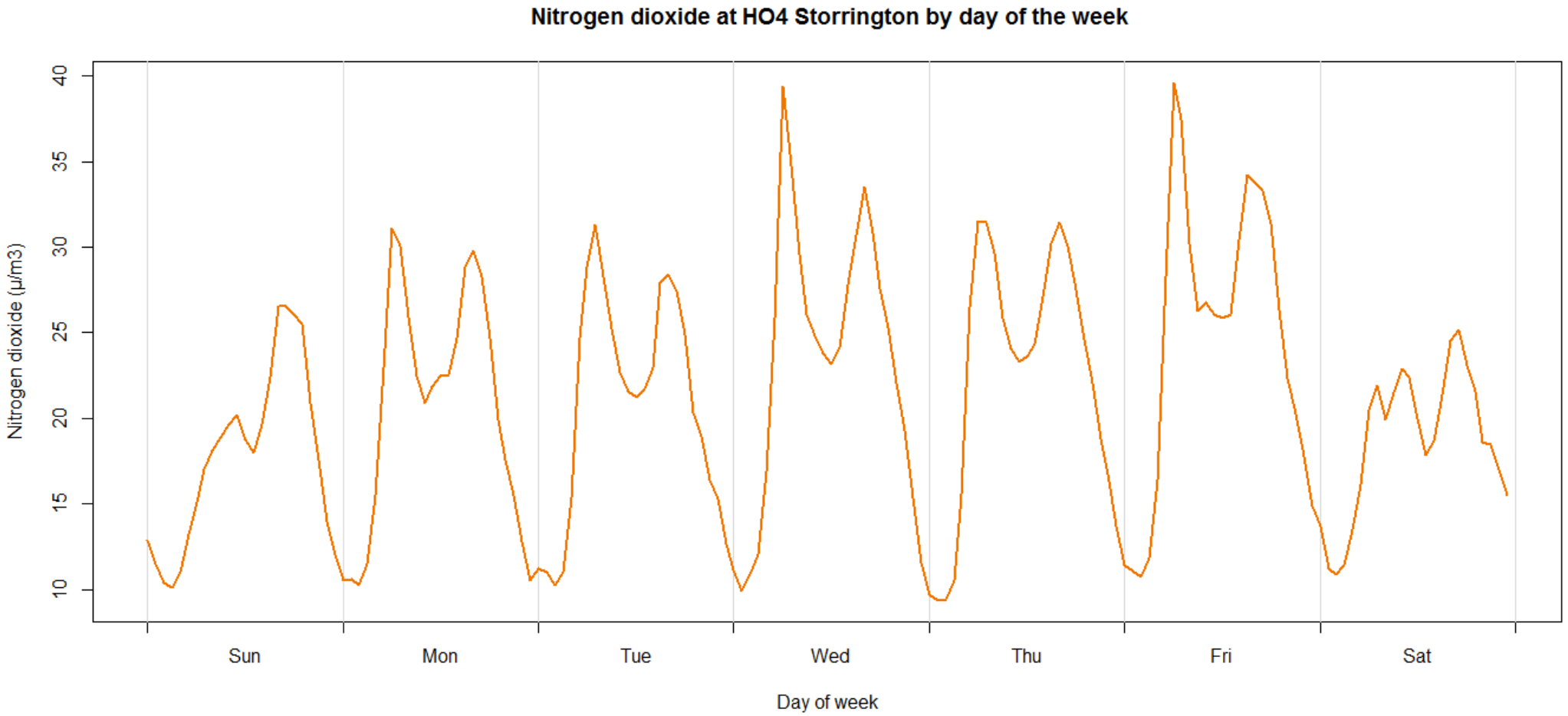
	date	NO2
1	2015-01	20.23956
2	2015-02	21.74815
3	2015-03	28.39412
4	2015-04	21.42734
5	2015-05	22.31325
6	2015-06	21.49662
7	2015-07	18.90374
8	2015-08	19.71122
9	2015-09	23.92304
10	2015-10	28.32150
11	2015-11	17.47753
12	2015-12	12.42323

	date	PM10
1	2015-01	13.216036
2	2015-02	15.440690
3	2015-03	20.350539
4	2015-04	14.328619
5	2015-05	9.748058
6	2015-06	9.936358
7	2015-07	10.966625
8	2015-08	14.755645
9	2015-09	14.165786
10	2015-10	21.223925
11	2015-11	16.674359
12	2015-12	22.008931

	date	PM2.5
1	2015-01	11.184280
2	2015-02	13.383510
3	2015-03	17.761134
4	2015-04	14.074444
5	2015-05	7.641970
6	2015-06	7.730625
7	2015-07	7.100681
8	2015-08	8.565457
9	2015-09	8.737047
10	2015-10	14.402586
11	2015-11	9.406331
12	2015-12	10.941713

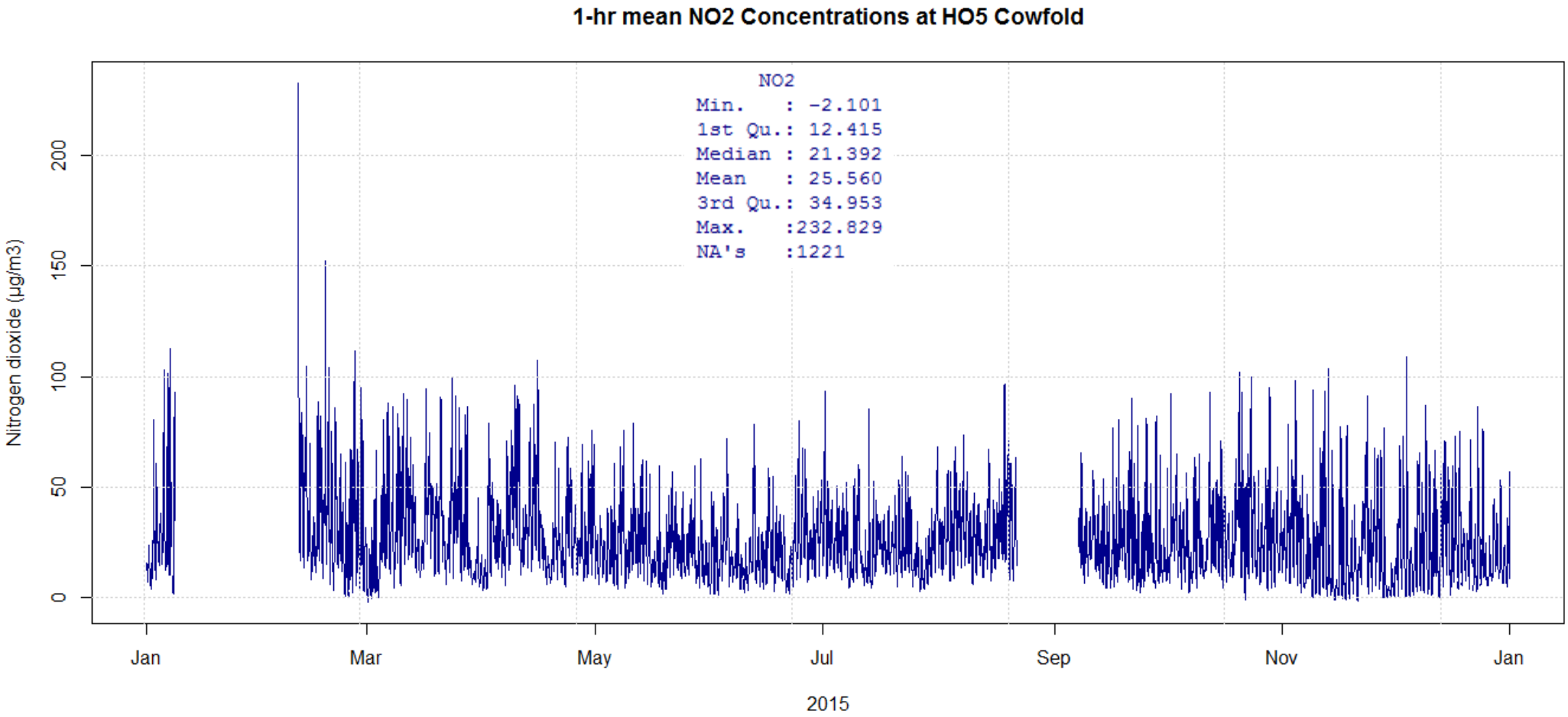
Data plotted using openair.

Figure B9 - Continuous Monitoring Results: Day of Week Concentrations for NO_2 at HO4 Storrington AURN, 2015



Data plotted using openair.

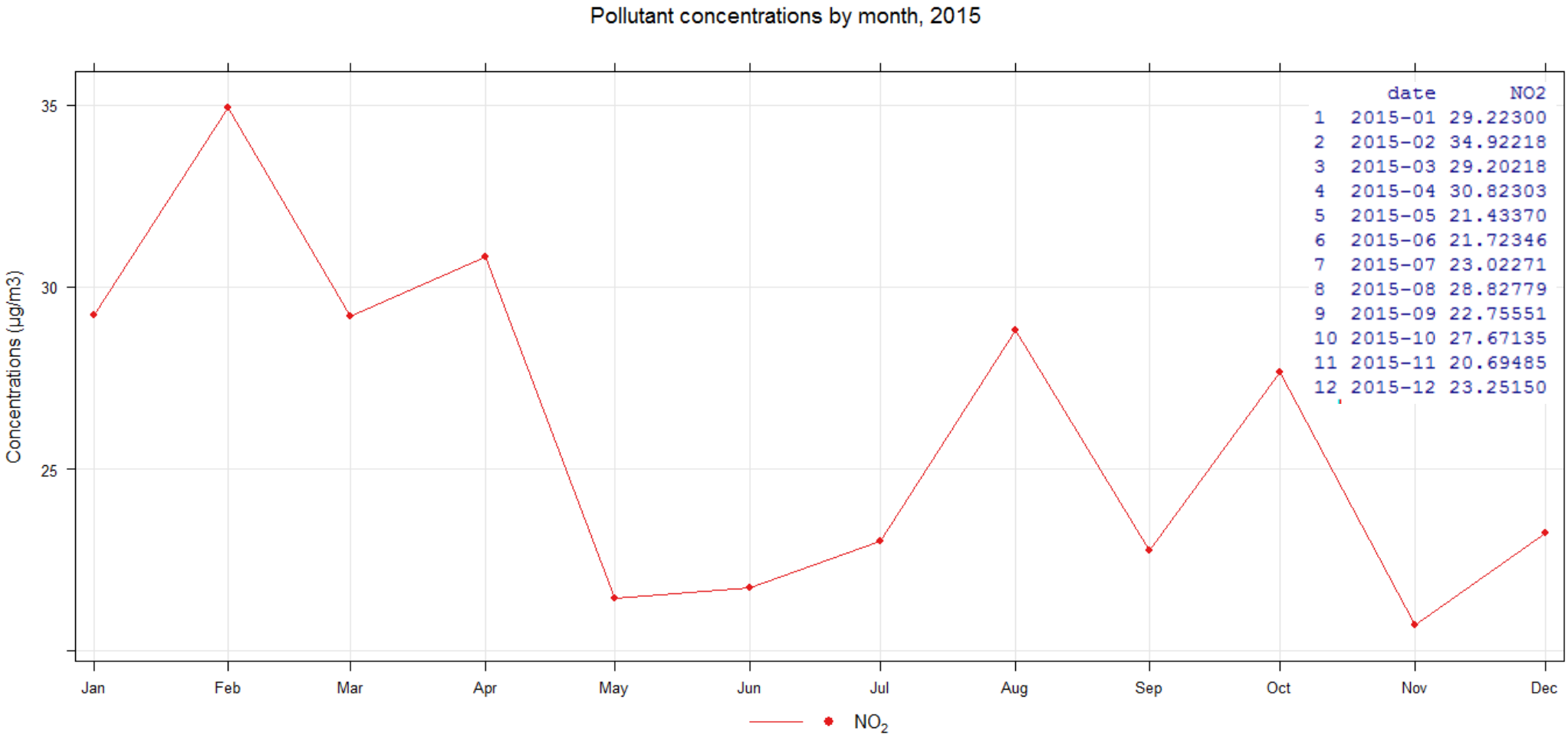
Figure B10 - Continuous Monitoring Results: 1-hr mean NO_2 Concentrations, HO5 Cowfold, 2015



Min = minimum; Max = maximum, mean, 1st Qu. = First quantile; 3rd Qu. = Third quantile; NA's = missing data

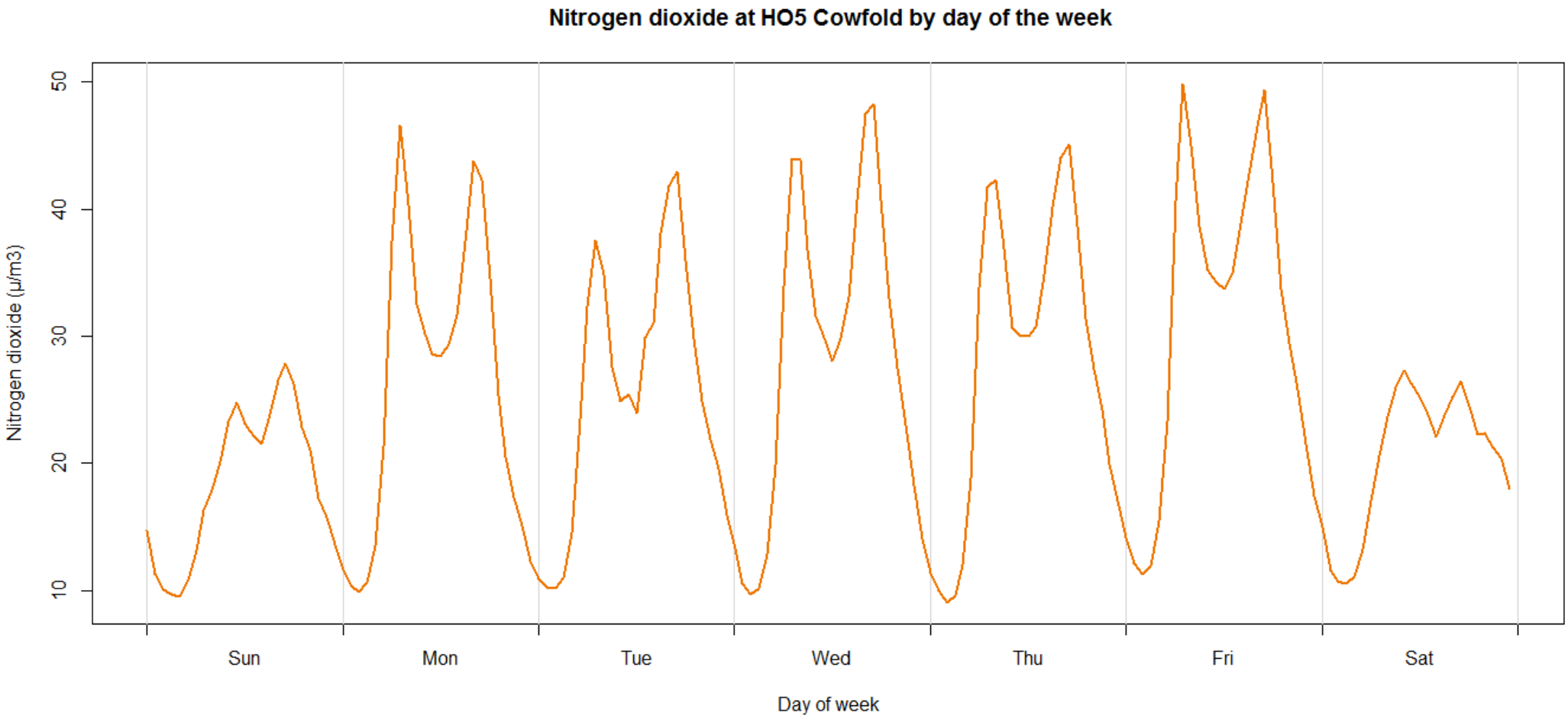
Data plotted using openair.

Figure B11 - Continuous Monitoring Results: Monthly Concentrations for NO_2 at HO5 Cowfold, 2015



Data plotted using openair.

Figure B12 - Continuous Monitoring Results: Day of Week Concentrations for NO_2 at HO5 Cowfold, 2015



Data plotted using openair.

Appendix C: Monitoring Results – Distance Correction

Site – Storrington 14n - Cobden, Manleys Hill (Washington Road), Storrington

Figure C1 - Nitrogen Dioxide Fall off with Distance Calculation – Diffusion Tube Storrington 14n (2015)

This calculator allows you to predict the annual mean NO_2 concentration for a locatic ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality CONSULTANTS

Enter data into the yellow cells

Step 1	**How far from the KERB was your measurement made (in metres)?**	(Note 1)	**0.9**	metres
Step 2	**How far from the KERB is your receptor (in metres)?**	(Note 1)	**20.9**	metres
Step 3	**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)	**10.9**	µg/m^3
Step 4	**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)	**43.3**	µg/m^3
Result	**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)	**23.2**	µg/m^3

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

Issue 4: 25/01/11. Created by Dr Ben Marner; Approved by Prof Duncan Laxen. Contact: benmarner@aqconsultants.co.uk

Site – Storrington 19n - Magpies, Manleys Hill (Washington Road), Storrington

Figure C2 - Nitrogen Dioxide Fall off with Distance Calculation – Diffusion Tube Storrington 19n (2015)

This calculator allows you to predict the annual mean NO_2 concentration for a locatic ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality CONSULTANTS

Enter data into the yellow cells

Step 1	**How far from the KERB was your measurement made (in metres)?**	(Note 1)	**2**	metres
Step 2	**How far from the KERB is your receptor (in metres)?**	(Note 1)	**17**	metres
Step 3	**What is the local annual mean background NO_2 concentration (in µg/m^3)?**	(Note 2)	**10.9**	µg/m^3
Step 4	**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)	**51.4**	µg/m^3
Result	**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)	**31.1**	µg/m^3

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

Issue 4: 25/01/11. Created by Dr Ben Marner; Approved by Prof Duncan Laxen. Contact: benmarner@aqconsultants.co.uk

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

Diffusion Tube Bias Adjustment Factors

The diffusion tubes are sourced from 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 03/16 published in March 2016) based on 21 co-location studies. The bias adjustment factor given for this methodology was 0.81.

Factor from Local Co-location Studies

Co-location studies are undertaken at three automatic analyser sites in Park Way Horsham, Cowfold and Storrington AURN. All three stations represent roadside sites. Using the AEA Precision and Accuracy spreadsheet tool a local bias adjustment factor of 0.89 for Park Way, 0.72 for Storrington and 0.81 for Cowfold site have been calculated. Results of the 2015 co-location studies are given in Table D1 - , Table D2 and Table D3 below.

Table D1 - Co-location Study Data for HO2 Horsham Park Way, 2015

Location	Diffusion Tube Data Capture for Periods Used (site Park Way)	Continuous Monitor Data Capture for Periods Used	Diffusion Tube Annual Mean (µg/m^3)	Continuous Monitor Annual Mean (µg/m^3)	Ratio
HO2 Horsham Park Way	100%	100%	31	28	0.89

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	07/01/2015	04/02/2015	39.1	37.8	40.4	39	1.3	3	3.2
2	04/02/2015	04/03/2015							
3	04/03/2015	01/04/2015							
4	01/04/2015	29/04/2015	29.9	28.0	29.4	29	1.0	3	2.4
5	29/04/2015	27/05/2015	29.3	26.7	26.6	28	1.5	6	3.8
6	27/05/2015	01/07/2015	21.2	23.7	18.2	21	2.8	13	6.8
7	01/07/2015	29/07/2015	21.2	22.5	22.6	22	0.8	4	1.9
8	29/07/2015	26/08/2015	26.6	25.0	26.7	26	1.0	4	2.4
9	26/08/2015	30/09/2015	29.0	27.9	29.4	29	0.8	3	1.9
10	30/09/2015	28/10/2015	36.3	34.0	33.9	35	1.4	4	3.4
11	28/10/2015	02/12/2015	31.4	28.5	29.0	30	1.6	5	3.9
12	02/12/2015	06/01/2016	28.5	30.1	27.1	29	1.5	5	3.7
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
36.5	100	Good	Good
36.2	76.3		Good
	0		or Data Capture
	0	Good	or Data Capture
17	15.9	Good	or Data Capture
	0	Good	or Data Capture
	0	Good	or Data Capture
24	99.6	Good	Good
25	99.8	Good	Good
32	99.9	Good	Good
26.4	99.9	Good	Good
22.5	99.9	Good	Good
Overall survey -->		Good precision	Poor Overall DC

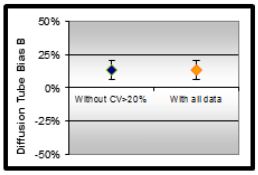
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision: 10 out of 10 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 6 periods of data
Bias factor A: 0.89 (0.83 - 0.95)
Bias B: 13% (6% - 20%)
Diffusion Tubes Mean: 31 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 28 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 28 (26 - 30) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 6 periods of data
Bias factor A: 0.89 (0.83 - 0.95)
Bias B: 13% (6% - 20%)
Diffusion Tubes Mean: 31 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 28 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 28 (26 - 30) µgm^{-3}



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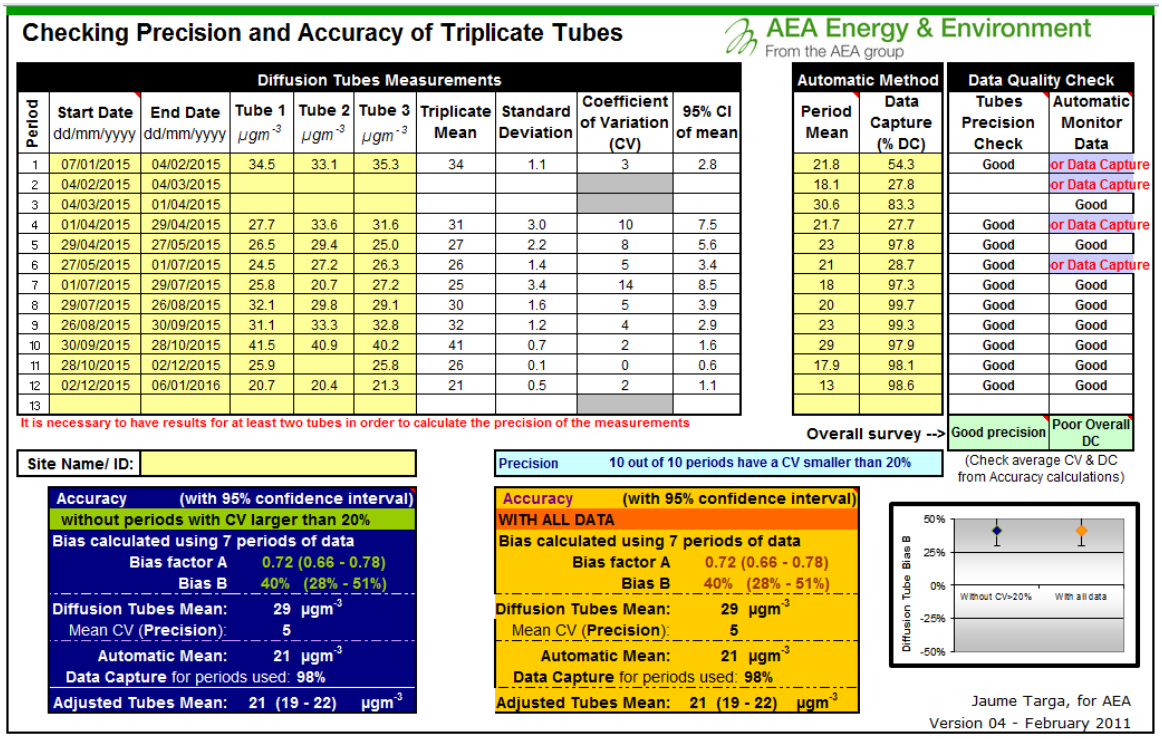
Version 04 - February 2011

Table D2 - Co-location Study Data for HO4 Storrington AURN, 2015

Location	Diffusion Tube Data Capture for Periods Used (site Storrington 8,9,10 AURN)	Continuous Monitor Data Capture for Periods Used	Diffusion Tube Annual Mean (µg/m^3)	Continuous Monitor Annual Mean (µg/m^3)	Ratio
HO4 Storrington AURN	95%	98%	29	21	0.72



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	07/01/2015	04/02/2015	34.5	33.1	35.3	34	1.1	3	2.8
2	04/02/2015	04/03/2015							
3	04/03/2015	01/04/2015							
4	01/04/2015	29/04/2015	27.7	33.6	31.6	31	3.0	10	7.5
5	29/04/2015	27/05/2015	26.5	29.4	25.0	27	2.2	8	5.6
6	27/05/2015	01/07/2015	24.5	27.2	26.3	26	1.4	5	3.4
7	01/07/2015	29/07/2015	25.8	20.7	27.2	25	3.4	14	8.5
8	29/07/2015	26/08/2015	32.1	29.8	29.1	30	1.6	5	3.9
9	26/08/2015	30/09/2015	31.1	33.3	32.8	32	1.2	4	2.9
10	30/09/2015	28/10/2015	41.5	40.9	40.2	41	0.7	2	1.6
11	28/10/2015	02/12/2015	25.9		25.8	26	0.1	0	0.6
12	02/12/2015	06/01/2016	20.7	20.4	21.3	21	0.5	2	1.1
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
21.8	54.3	Good	or Data Capture
18.1	27.8		or Data Capture
30.6	83.3		Good
21.7	27.7	Good	or Data Capture
23	97.8	Good	Good
21	28.7	Good	or Data Capture
18	97.3	Good	Good
20	99.7	Good	Good
23	99.3	Good	Good
29	97.9	Good	Good
17.9	98.1	Good	Good
13	98.6	Good	Good
Overall survey -->		Good precision	Poor Overall DC

(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision: 10 out of 10 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 7 periods of data
Bias factor A: 0.72 (0.66 - 0.78)
Bias B: 40% (28% - 51%)
Diffusion Tubes Mean: 29 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 21 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 21 (19 - 22) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 7 periods of data
Bias factor A: 0.72 (0.66 - 0.78)
Bias B: 40% (28% - 51%)
Diffusion Tubes Mean: 29 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 21 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 21 (19 - 22) µgm^{-3}

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Version 04 - February 2011

Table D3 - Co-location Study Data for HO5 Cowfold, 2015

Location	Diffusion Tube Data Capture for Periods Used (site Cowfold AU A,B,C)	Continuous Monitor Data Capture for Periods Used	Diffusion Tube Annual Mean (µg/m3)	Continuous Monitor Annual Mean (µg/m3)	Ratio
HO5 Cowfold	100%	98%	30	25	0.81

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	07/01/2015	04/02/2015	38.5	33.4	35.6	36	2.6	7	6.4	27.8	3.3	Good	or Data Capture
2	04/02/2015	04/03/2015								29.7	77.7		Good
3	04/03/2015	01/04/2015								31.3	99.9		Good
4	01/04/2015	29/04/2015	32.9	31.7	31.5	32	0.8	2	1.9	30.9	99.4	Good	Good
5	29/04/2015	27/05/2015	24.1	28.2	26.4	26	2.1	8	5.1	23	99.7	Good	Good
6	27/05/2015	01/07/2015	20.6	23.6	22.1	22	1.5	7	3.7	21	99.8	Good	Good
7	01/07/2015	29/07/2015	20.1	20.9	27.2	23	3.9	17	9.7	22	99.7	Good	Good
8	29/07/2015	26/08/2015	36.1	27.7	32.2	32	4.2	13	10.4	29	84.2	Good	Good
9	26/08/2015	30/09/2015	29.2	31.8	30.4	30	1.3	4	3.2	23	65.5	Good	or Data Capture
10	30/09/2015	28/10/2015	36.5	32.1	38.5	36	3.3	9	8.1	27	99.9	Good	Good
11	28/10/2015	02/12/2015	32.2	37.0	33.7	34	2.5	7	6.1	21.3	100	Good	Good
12	02/12/2015	06/01/2016	36.7	39.2	38.6	38	1.3	3	3.2	22.4	98.2	Good	Good
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision | Poor Overall DC

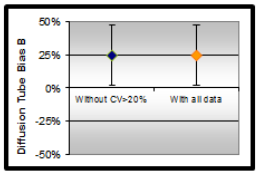
Site Name/ ID:

Precision: 10 out of 10 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 8 periods of data
Bias factor A: 0.81 (0.69 - 0.99)
Bias B: 23% (1% - 46%)
Diffusion Tubes Mean: 30 µgm^{-3}
Mean CV (Precision): 8
Automatic Mean: 25 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 25 (21 - 30) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 8 periods of data
Bias factor A: 0.81 (0.69 - 0.99)
Bias B: 23% (1% - 46%)
Diffusion Tubes Mean: 30 µgm^{-3}
Mean CV (Precision): 8
Automatic Mean: 25 µgm^{-3}
Data Capture for periods used: 98%
Adjusted Tubes Mean: 25 (21 - 30) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Discussion of Choice of Factor to Use

Local bias adjustment factors for 2015 monitoring data were derived from three separate co-location sites within Horsham district: HO2 Horsham Park Way (0.89, obtained using 6 periods of data), HO4 Storrington AURN (0.72, obtained using 7 periods of data) and HO5 Cowfold (0.81, obtained using 8 periods of data). The national bias adjustment factor for 2015 is 0.81.

Data capture for the diffusion tube monitoring survey in 2015 was between 75-83% (9-10 months) for all sites except one (Horsham 5N had a data capture of 67% and the results from this site were 'annualised'). The February and March results had to be excluded due to the over-exposure of tubes in February (tubes exposed for 8 weeks).

The results obtained from the three co-location studies could not be included in the national bias adjustment database due to low data capture (less than 9 periods of usable data), which made the data not suitable for diffusion tubes exposed for a full year.

However, as the diffusion tubes in Horsham district were exposed for 9-10 months in 2015 (February and March excluded), it was considered appropriate to use the locally-derived bias adjustment factor from the HO5 Cowfold co-location study (8 periods of usable data; January, February, March and September periods excluded) to correct the results as the adjustment is made for a relatively well-matched period of time. In addition, the Cowfold-co-location survey had good data capture and precision for the periods used. The operation and data management for the Cowfold continuous monitor are carried out to the AURN standards (further details are provided in the QA/QC of Automatic Monitoring section below).

Therefore, the local bias adjustment factor has been used in preference to a factor obtained from the national database. As the value of the national bias factor is the same as the local bias adjustment factor for Cowfold, the choice of bias factor does not influence whether or not the site exceeds the annual mean objective for NO_2.

The use of bias adjustment factors over the past few years has varied. A summary of factors used since 2007 is provided below in Table D4.

Table D4 - Co-location Study Data for HO5 Cowfold, 2015

Year	Local or National	Bias adjustment factors	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.

Year	Local or National	Bias adjustment factors	Comments
2011	Local	0.78 & 0.8	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.
2012	National and Local	0.79 (national); 0.89, 0.77 & 0.82 (local)	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.
2013	National and Local	0.8 (national); 0.92, 0.82 & 0.71 (local)	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.
2014	National	0.81	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.

Short-term to Long-term Data Adjustment

Annualisation (short to long term data adjustment) was applied to data capture below 75%. The adjustment has been undertaken for the automatic analyser at Horsham Park Way, which returned poor data capture for both NO_2 and PM_{10}, and for one diffusion tube monitoring site Horsham 5N (Harwood Road, Horsham).

Only two monitoring sites were used for the annualisation of the PM_{10} results for Horsham Park Way; this is due due to poor availability of long-term background sites with adequate data capture.

The calculations presented below were carried out in line with LAQM Technical Guidance LAQM Guidance TG(16) Box 7.9.

Nitrogen Dioxide

Continuous Monitoring Data

Table D5 - HO2 Horsham Park Way Continuous Monitoring Station – Short to Long Term Adjustment for NO_2

Long Term Site	Site Type	Data Capture	Annual Mean 2015 (Am)	Period Mean 2015 (Pm)	Ratio (Am/Pm)
Lewes Denton Community Centre	Urban Background	99.6	10.1	10.3	0.98
Sevenoaks Greatness Park	Urban Background	97.2	16.3	18.1	0.90
Brighton Preston Park	Urban Background	98.4	14.7	15.5	0.94
Eastbourne	Urban Background	98.8	10.6	11.0	0.96
				Average Annualisation Factor	0.95

Annualised Site	Site Type	Data Capture (%)	Unadjusted Annual Mean Concentration (µg/m^3)	Annualised Annual Mean Concentration (µg/m^3)
HO2 Horsham Park Way	Roadside	59.0	28.0	26.5

Diffusion Tube Monitoring Data

Table D6 – Diffusion Tube Data – Short to Long Term Adjustment for NO_2

Long Term Site	Site Type	Annual Mean 2015 (Am)	Period Mean 2015 (Pm)	Ratio (Am/Pm)
Lewes Denton Community Centre	Urban Background	10.2	9.3	1.093
Sevenoaks Greatness Park	Urban Background	16.4	15.9	1.030
Brighton Preston Park	Urban Background	14.7	13.9	1.059

Eastbourne	Urban Background	10.7	9.7	1.105
			Average Annualisation Factor	1.072

Annualised Site	Site Type	Data Capture (%)	Unadjusted Annual Mean Concentration (µg/m^3)	Annualised Annual Mean Concentration (µg/m^3)	Bias Adjusted & Annualised Annual Mean Concentration (µg/m^3)
Horsham 5N	Roadside	66.7	34.6	37.1	30.4

Particulate Matter PM_{10}

Table D7 - HO2 Horsham Park Way Continuous Monitoring Station – Short to Long Term Adjustment for PM_{10}

Long Term Site	Site Type	Data Capture	Annual Mean 2015 (Am)	Period Mean 2015 (Pm)	Ratio (Am/Pm)
Rochester Stoke	Rural Background	99.0	13.0	13.9	0.94
Thurrock	Urban Background	97.3	25.6	26.6	0.96
				Average Annualisation Factor	0.95

Annualised Site	Site Type	Data Capture (%)	Unadjusted Annual Mean Concentration (µg/m^3)	Annualised Annual Mean Concentration (µg/m^3)
HO2 Horsham Park Way	Roadside	60.8	19.6	18.6

PM_{10} Monitoring Adjustment

The PM_{10} monitoring data from the HO2 Horsham Parkway analyser has been corrected in accordance with the Volatile Correction Model (VCM)[15] using data from three default selected FDMS sites - Reigate and Banstead 1 co-location (RG5), Sutton - Worcester Park (ST6) and the FDMS Site 3, which was the average of remaining sites within range. The FDMS Site 3 correction included unratified data.

QA/QC of Automatic Monitoring

For the Park Way and Cowfold monitoring stations, data collection and ratification 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 the Cowfold and Horsham Park Way monitoring 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).

[15] http://www.volatile-correction-model.info/Default.aspx

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 external Local Site Operators and the analysers are maintained under contract with instrument suppliers/manufacturers for all three stations.

QA/QC of Diffusion Tube Monitoring

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 managed by the AEA. DEFRA advises that local authorities should use diffusion tubes supplied by laboratories that have demonstrated satisfactory performance under the QA/QC schemes.

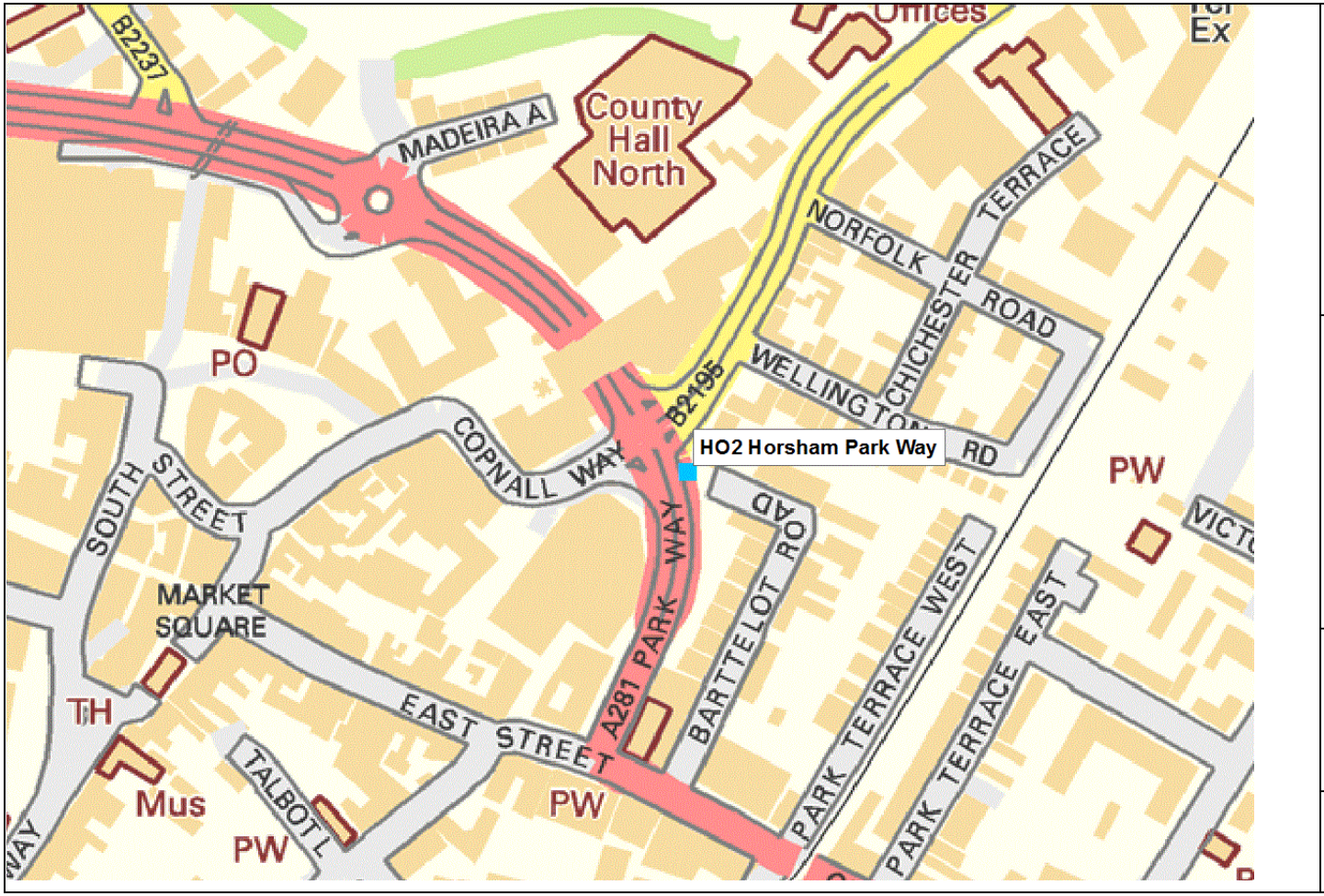
ESG Didcot is a UKAS accredited laboratory and participates in both QA/QC schemes described above. The list of those laboratories which have performed satisfactorily in the AIR-PT scheme is provided to local authorities on the LAQM Support website[16]. In the latest available AIR-PT results, rounds AR006 (January to February 2015), AR 007 (April to May 2015), AR008 (July to August 2015) and AR010 (October to November 2015) ESG Didcot have scored 87.5%, 100%, 100% and 100% respectively. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < ± 2. Based on 21 studies from ESG Didcot utilising the 50% TEA, 71% of all local Authority co-location studies in 2015 were 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%).

Regarding the inter-comparison co-location study, the study from Marylebone Road from the national database in 2015 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%).

[16] http://laqm.defra.gov.uk/documents/LAQM-WASP-Rounds-121--124-and-AIR-PT-Rounds-1-3-4-6-(April-2013--February-2015)-NO2-report.pdf
http://laqm.defra.gov.uk/documents/LAQM-WASP-Round-124-and-AIR-PT-Rounds-1--10-(March-2014--November-2015)-NO2-report.pdf

Appendix E: Monitoring Results for 2015

Figure E1 - Location of Horsham Air Quality Monitoring Station

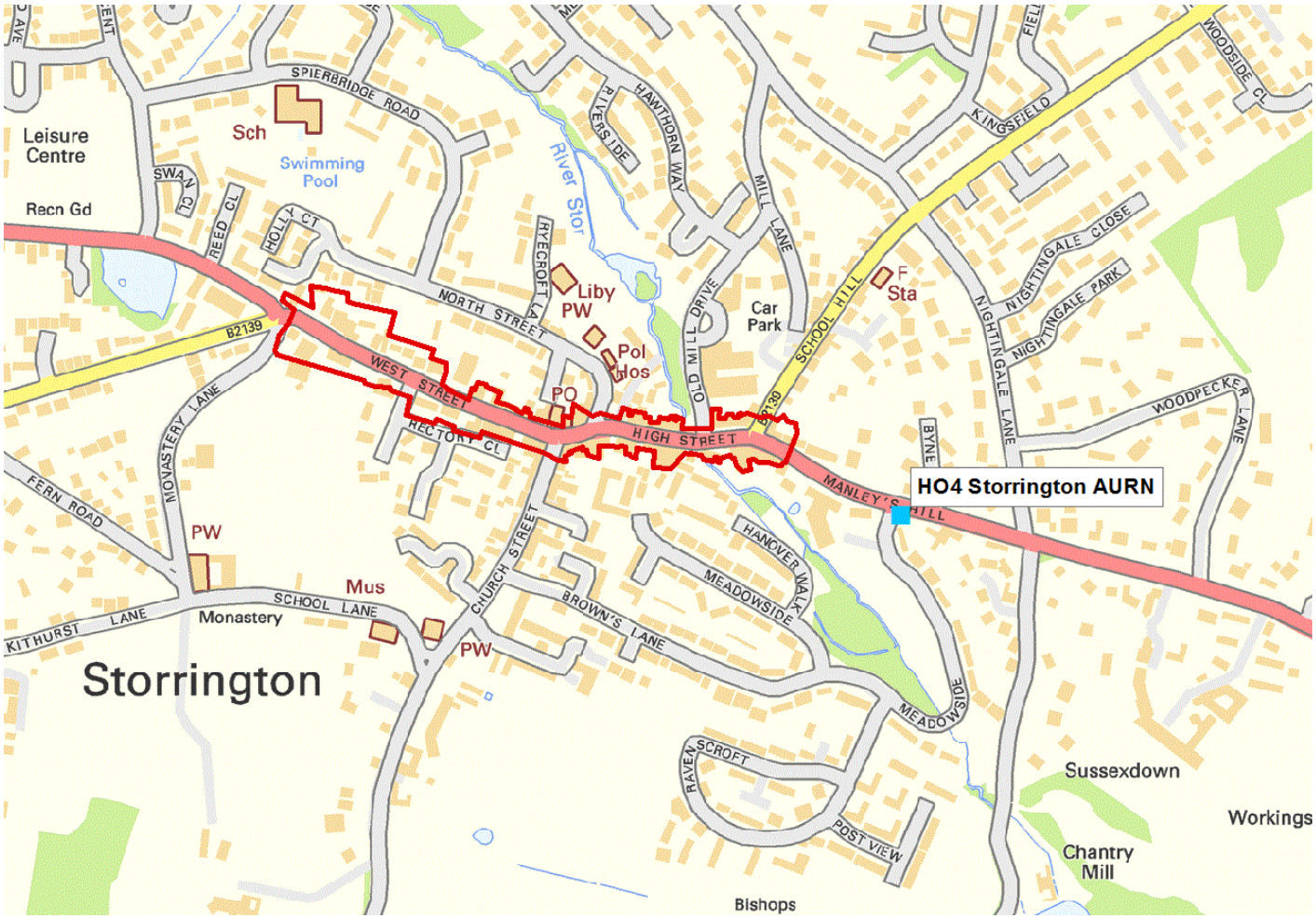


Legend

Continuous Monitoring Site

Scale	Title
Not To Scale	Automatic Monitoring Sites - Horsham
Date	**Figure No. E1**
April 2016	

Figure E2 - Location of Storrington Air Quality Monitoring Station

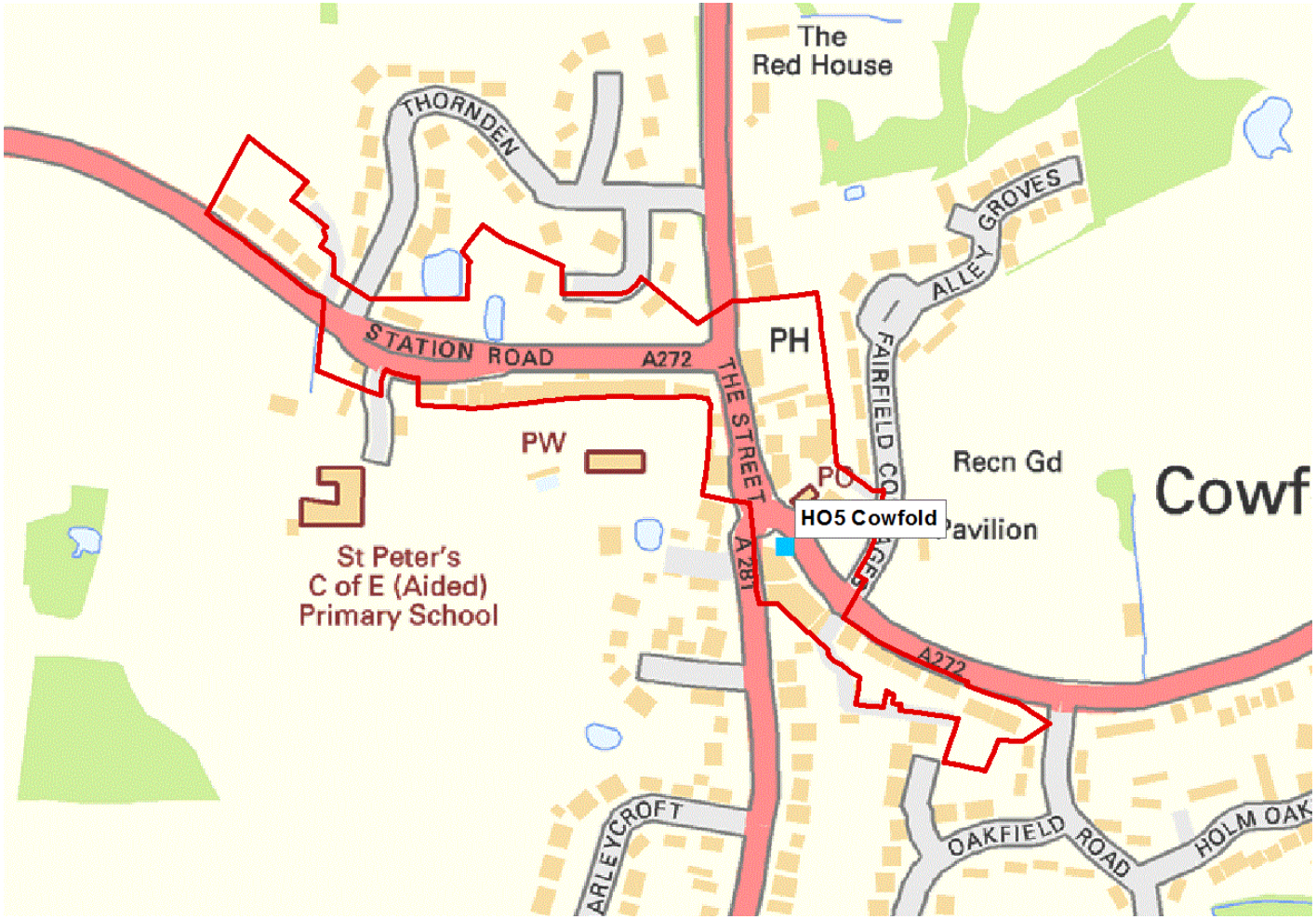


Legend

- Continuous Monitoring Site
- AQMA Boundary

Scale	**Title**
Not To Scale	Automatic Monitoring Sites - Storrington
Date	**Figure No. E2**
April 2016	

Figure E3 - Location of Cowfold Air Quality Monitoring Station

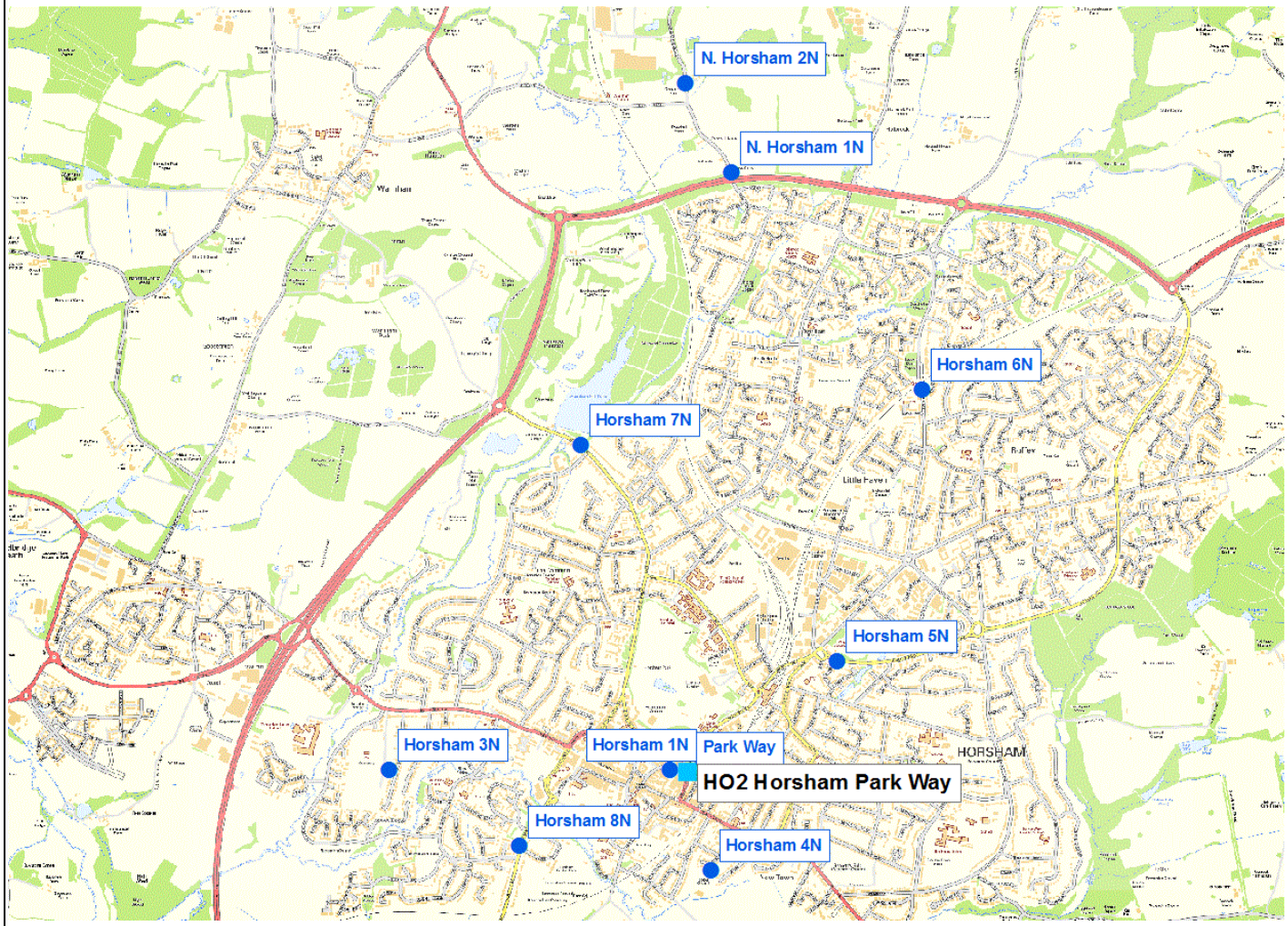


Legend

- Continuous Monitoring Site
- AQMA Boundary

Scale Not To Scale	**Title** Automatic Monitoring Sites - Cowfold
Date April 2016	**Figure No. E3**

Figure E4 - Location of Horsham Air Quality Monitoring Station and Diffusion Tube Network

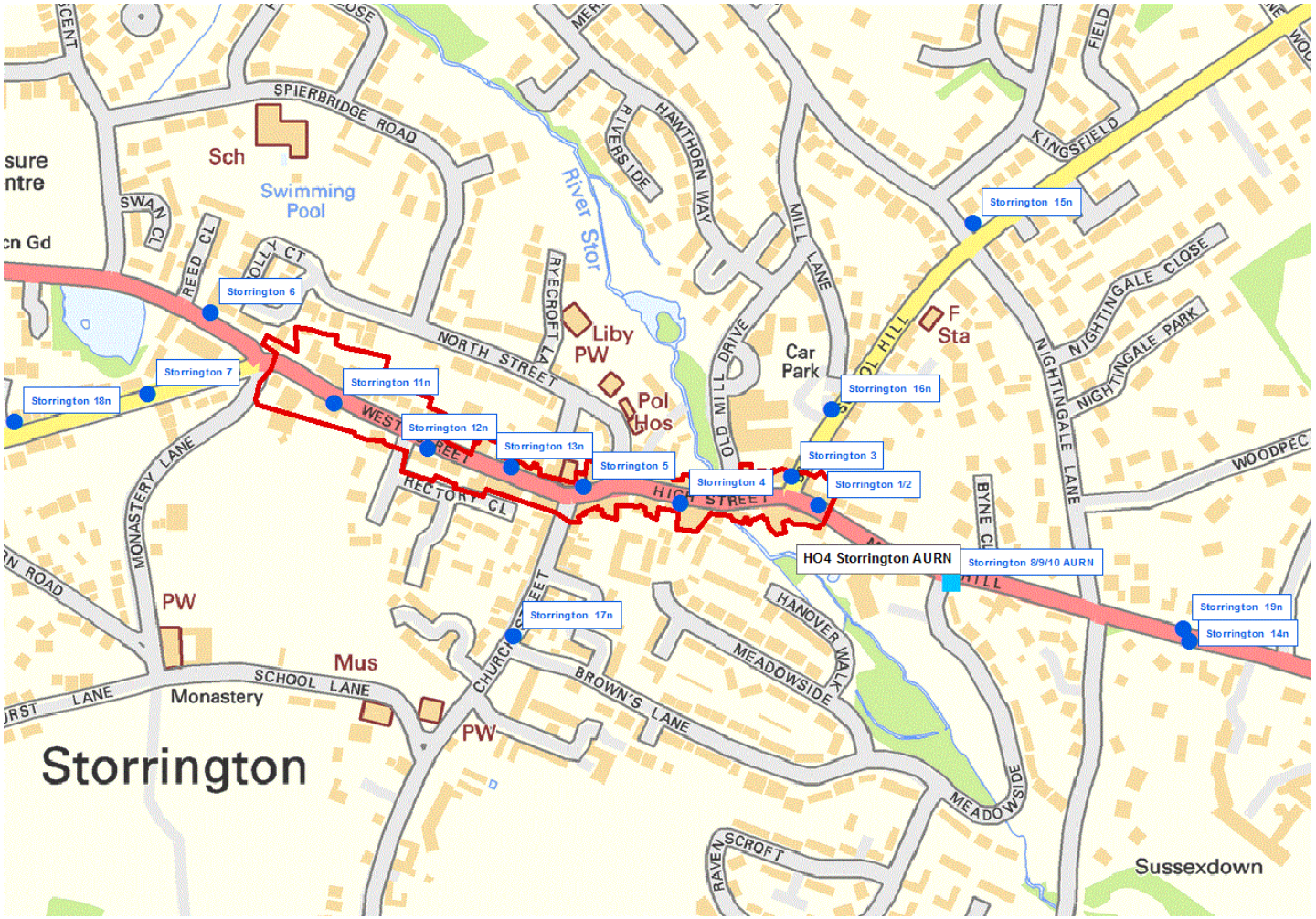


Legend

- Diffusion Tube Monitoring Site
- Continuous Monitoring Site

Scale	**Title**
Not To Scale	Non-Automatic Monitoring Sites - Horsham
Date	**Figure No. E4**
April 2016	

Figure E5 - Location of Storrington Air Quality Monitoring Station and Diffusion Tube Network

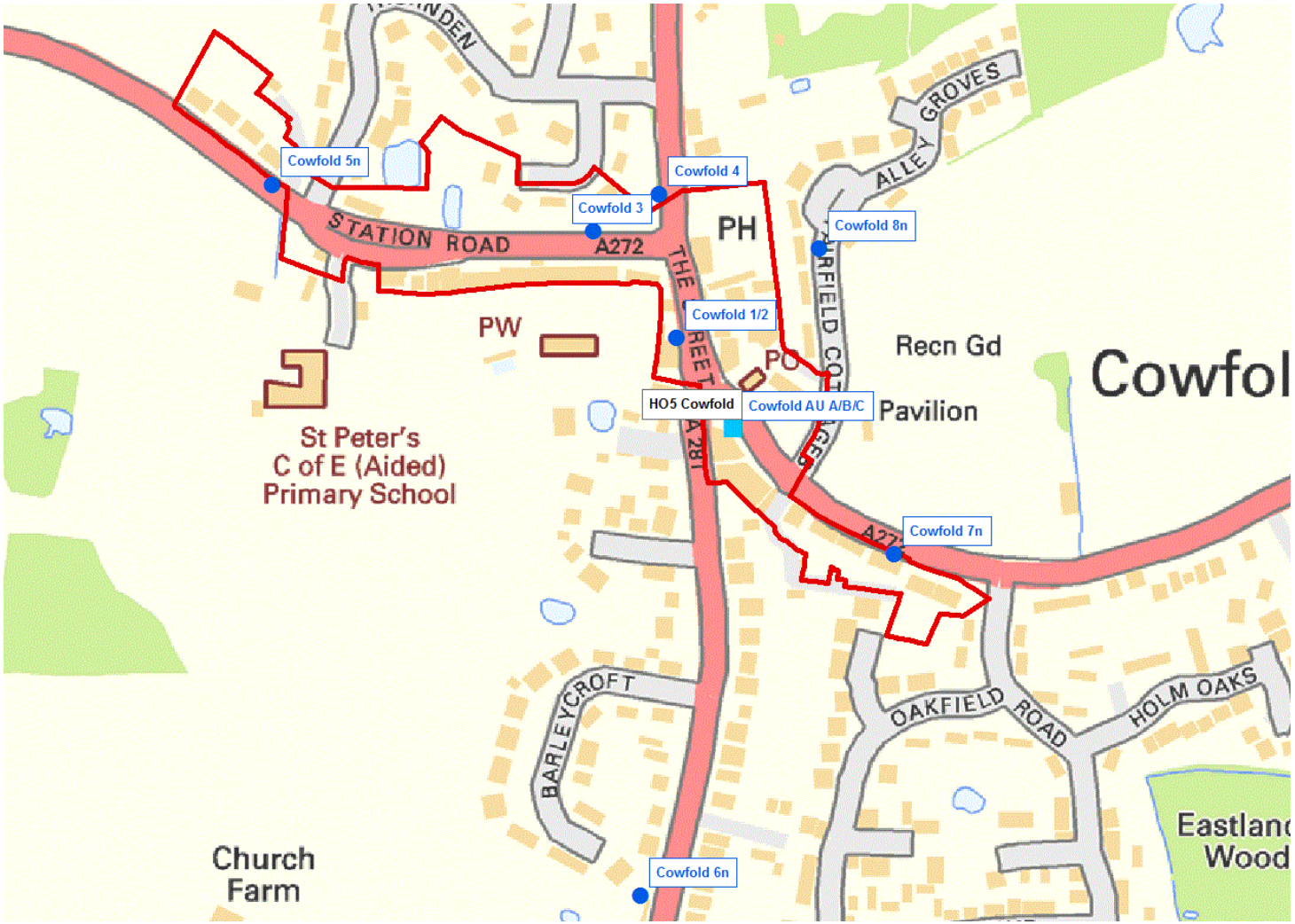


Legend

- Diffusion Tube Monitoring Site
- Continuous Monitoring Site
- AQMA Boundary

Scale	Title
Not To Scale	Non-Automatic Monitoring Sites - Storrington
Date	**Figure No. E5**
April 2016	

Figure E6 - Location of Cowfold Air Quality Monitoring Station and Diffusion Tube Network

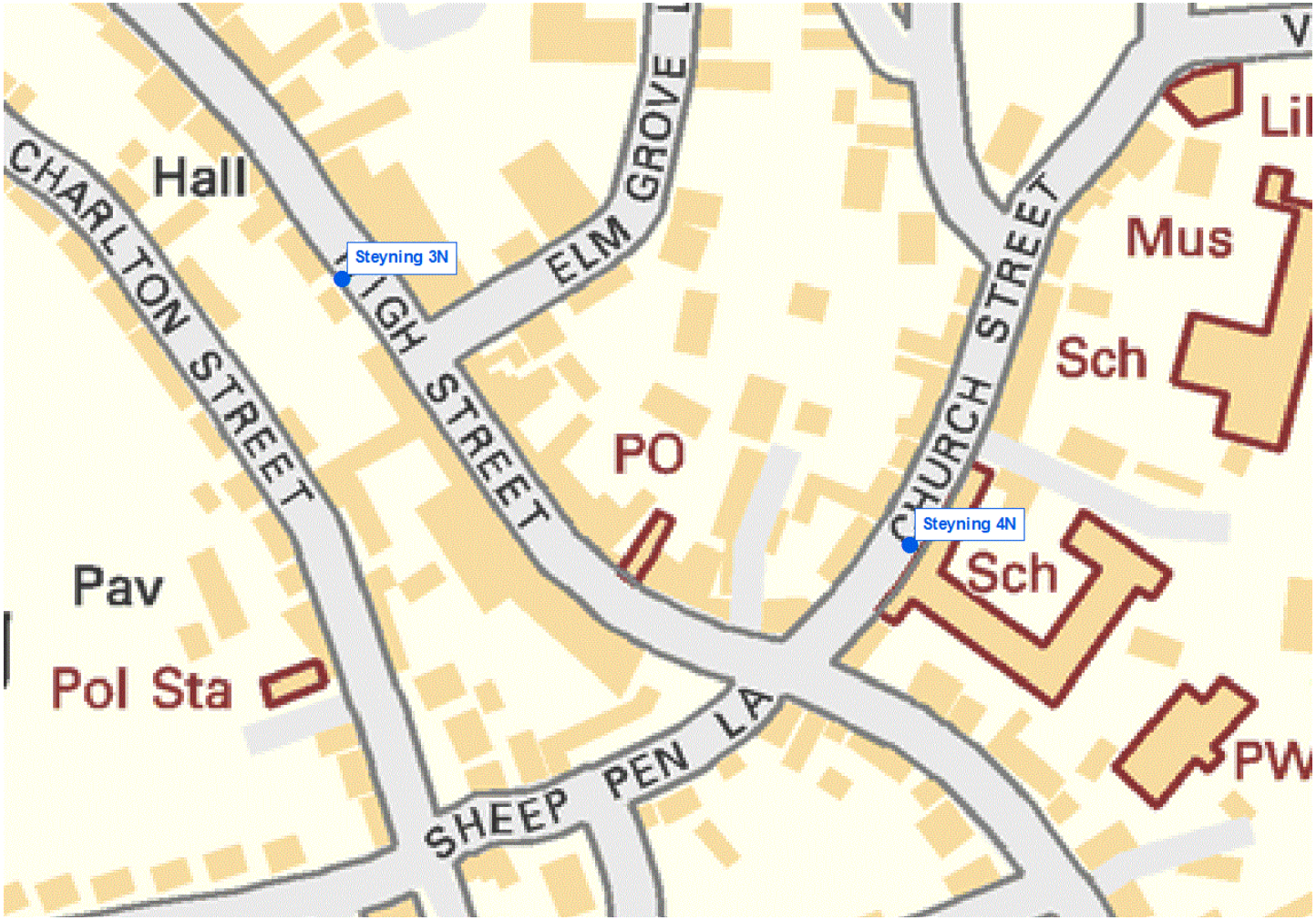


Legend

- Diffusion Tube Monitoring Site
- Continuous Monitoring Site
- AQMA Boundary

Scale	Title
Not To Scale	Non-Automatic Monitoring Sites - Storrington
Date	**Figure No. E6**
April 2016	

Figure E7 - Location of Steyning Air Quality Monitoring Station and Diffusion Tube Network

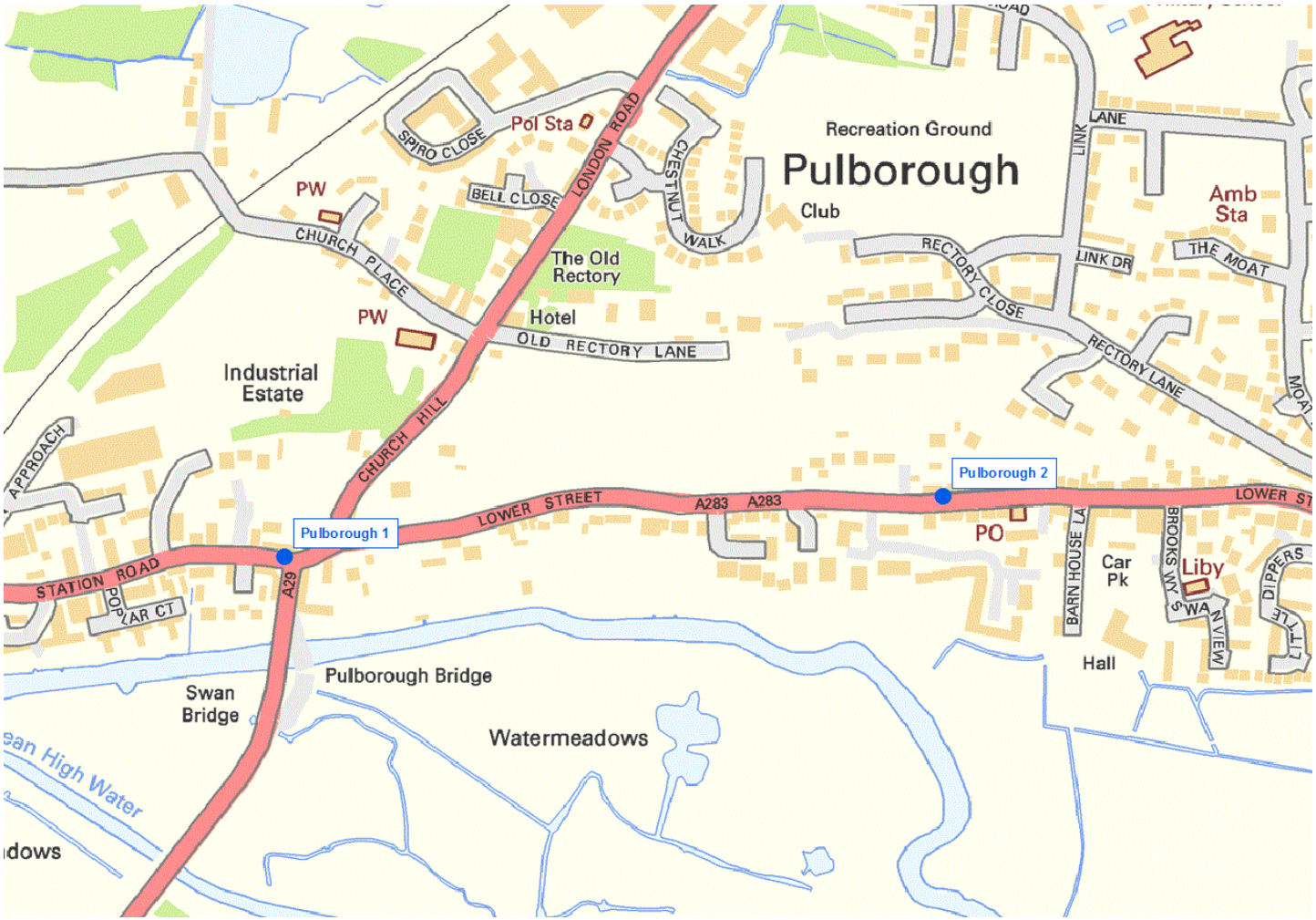


Legend

- Diffusion Tube Monitoring Site

Scale	Title
Not To Scale	Non-Automatic Monitoring Sites - Storrington
Date	**Figure No. E7**
April 2016	

Figure E8 - Location of Pulborough Air Quality Monitoring Station and Diffusion Tube Network



Legend

- Diffusion Tube Monitoring Site

Scale	**Title**
Not To Scale	Non-Automatic Monitoring Sites - Storrington
Date	**Figure No. E8**
April 2016	

Figure E9 - Location of Billingshurst Air Quality Monitoring Station and Diffusion Tube Network

Legend

- Diffusion Tube Monitoring Site

Scale Not To Scale	**Title** Non-Automatic Monitoring Sites - Storrington
Date April 2016	**Figure No. E9**

Appendix F: Industrial Processes

Within Horsham District Council there are a number of industrial processes that are controlled through permits issued under the Environmental permitting regime. Depending on the nature of the process, permits are issued either by the Environment Agency or by Horsham District Council

There are 8 Part A1 installations in the Horsham District Council area operating under permits issued by the Environment Agency. Details of these processes are given in Table F1 below. There are also 42 Part B/A2 processes in the district with permits issued by Horsham District Council ; details of those are provided in Table F2.

Table F1 - Industrial Processes with Permits Issued by the Environment Agency 2015

Biffa Waste Services Ltd Brookhurstwood Landfill Langhurstwood Road Warnham West Sussex RH12 4QD Permits : BV9896IY, RP3232UU, HP3238GW	Island Gas Ltd Storrington Oilfield East of A283 Cootham Storrington Pulborough Permit XP3031CF Permit SP3533UN
Cemex UK Materials Ltd Small Dole Leachate Treatment Plant Small Dole Landfill Henfield Road Small Dole West Sussex BN59XJ Permit LP3031LK	Kinswood Eggs Limited Lackenhurst Lane Brooks Green Horsham RH13 0JO
Faccenda Group Limited Homefield Poultry Farm Broadford Bridge Road Billingshurst RH14 9EB Permit KP3237MP	Viridor Waste Management Small Dole Landfill Henfield Road Small Dole Permit BV9900IS
Four Seasons Fuel Four Seasons Farm Coneyhurst Nr. Billingshurst RH14 9DG Permit SP3632UN	

Table F2 - Industrial Processes with Permits Issued by HDC in 2015

Horsham DC Processes 2015/16

Permit No.	Name	Process Type	Date Issued	Status	Grid Reference
Part B Processess					
WOB2	Godfreys of Horsham	Waste Oil Burner	15/06/1992	Current	515684, 126710
WOB7	Wiggs Auto-Repairs	Waste Oil Burner	12/06/2013	Current	509461, 115215
WOB5	Daves Commercials Ltd	Waste Oil Burner	14/02/2011	Current	524726, 117682
PPC1	Paula Rosa Kitchens	Timber Activities	30/04/2004	Current	509356, 115063
EPR4	Eurovia	Mobile Roadcoating	08/05/2013	Current	517107, 130838
EPR8	Eurovia	Mobile Roadcoating	25/10/2013	Current	517107, 130838
PPC10	Cemex	Bulk Cement	07/05/2008	Current	510035, 114152
PPC11	Hawkins	Animal Incineration	02/01/2004	Current	520793, 121379
EPR19	Thakeham Tiles	Bulk Cement	24/03/1993	Current	510343, 115074
PPC22	Frosts Body Repair Centre	Vehicle Refinishing	31/01/1994	Current	521509, 112645
EPR33	Apollo Motor Company	Vehicle Refinishing	14/11/2011	Current	516988, 136798
PPC34	Harwoods Bodyshop Five Oaks	Vehicle Refinishing	29/01/2007	Current	509877, 128507
PPC53	PJ Brown Ltd	Mobile Crusher	18/03/2008	Current	524039, 139393
EPR5	Edburton (Metrotrak)	Mobile Crusher	03/06/2013	Current	522381, 111584
EPR41	Revival, Southwater	Dry Cleaning	01/12/2005	Current	515746, 126351
EPR13	Dudman Group Ltd, Storrington	Bulk Cement	10/01/2013	Current	509219, 113677
PPC50	Edburton (Apollo)	Mobile Crusher	10/04/2007	Current	522381, 111584
EPR43	Taylors Dry Cleaners	Dry Cleaning	10/09/2007	Current	516284, 131098
EPR44	Pulborough Cleaners	Dry Cleaning	17/09/2007	Current	505192, 186007
EPR45	Hurst Cleaners	Dry Cleaning	17/09/2007	Current	508689, 126127
EPR46	Rapide Dry Clean	Dry Cleaning	24/09/2007	Current	516813, 130733
EPR47	Johnson Cleaners UK Ltd	Dry Cleaning	17/02/2010	Current	517339, 130595
EPR48	JD Cleaners (Henfield) Ltd	Dry Cleaning	17/02/2010	Current	521486, 116009
EPR49	Gem Cleaners, Storrington	Dry Cleaning	10/02/2010	Current	508955, 114461
PPC54	Washington Coachworks Ltd	Vehicle Refinishing	03/04/2008	Current	512105, 113826
EPR15	Hanson Concrete, Foundry Lane	Cement Storage	22/11/2010	Current	518037, 131450
Part B Petrol Filling Stations					
PSS1	Horsham Service Station, Redkiln Way	Petrol Storage	10/11/1997	Current	518630, 131620
PSS2	J Sainsbury PFS, Worthing Road, Horsham	Petrol Storage	19/08/1998	Current	516870, 130396
PSS3	Tesco PFS, Broadbridge Heath	Petrol Storage	02/06/2008	Current	515065, 130944
PSS4	Harwoods Garages Ltd, Pulborough	Petrol Storage	23/11/1998	Current	504978, 119042
PSS6	Motor Fuel Group, Beeding Garage	Petrol Storage	18/02/2009	Current	519674, 110411
PSS7	Shell UK Ltd, Hop Oast, Horsham	Petrol Storage	21/12/1998	Current	516066, 128571
PSS8	Shell Uk Ltd, Broadbridge Heath	Petrol Storage	21/12/1998	Current	515446, 131355
PSS10	Storrington Service Station	Petrol Storage	23/11/1998	Current	508383, 114431
PSS11	Elite Garages Ltd, Pulborough	Petrol Storage	13/05/1999	Current	504793, 118862
PSS12	Elite Garages Ltd, Mannings Heath	Petrol Storage	11/05/1999	Current	519933, 128705
PSS14	Shell Service Station (804) Henfield	Petrol Storage	03/03/1999	Current	521480, 115741
PSS18	Harwoods Garages Ltd, Five Oaks	Petrol Storage	26/02/2007	Current	509916, 128496
PSS19	Godfreys of Horsham, Southwater	Petrol Storage	22/02/1999	Current	515683, 126711
PSS20	Buck Barn Garage, West Grinstead	Petrol Storage	25/03/2013	Current	516496, 122631
IPPC A2					
IPPC3	Wienerberger Ltd, Warnham Works	Brickworks	23/05/2006	Current	517057, 134348
IPPC7	Ibstock Brick, Laybrook Factory	Brickworks	1/18/2011	Current	511388, 118887

Appendix G: Summary of Air Quality Objectives in England

Table G1 - Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

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)
CYC	Charge-Your-Car eV charge point network
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EH	Environmental Health
EV	Electric Vehicle
FDMS	Filter Dynamics Measurement System
HDC	Horsham District Council
HE	Highways England
LAQM	Local Air Quality Management
LSTF	Local Sustainable Transport Fund
LE	Low Emission
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
OLEV	Office for Low Emission Vehicles
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance/Quality Control
ULEV	Ultra-Low Emission Vehicles
WASP	Workplace Analysis Scheme for Proficiency
WSCC	West Sussex County Council
TEA	Triethanolamine

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