

2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 2021
Local Air Quality Management

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Executive Summary: Air Quality in Our Area

Air Quality in Wealden

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

The District of Wealden is the largest district in East Sussex, and one of the most rural districts in England. Road traffic is the dominant source of air pollution in the area, the major routes being the A22, the A26, the A267, the A259, the A27 and the A272. The main pollutants of concern with respect to road traffic are nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). Currently, there are no areas in Wealden where members of the public are exposed to concentrations of these pollutants in excess of the UK Air Quality Strategy (AQS) objectives.

Wealden District Council (WDC) manages local air quality in close collaboration with East Sussex County Council (ESCC) (which contributed to monitoring until 2014) and with the Sussex Air Quality Partnership (Sussex Air). The partnership provides assistance to members and information to the public via its website with recent air quality data, news updates, educational resources, links and other services such as airAlert.

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

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

³ Defra. Air quality appraisal: damage cost guidance, July 2020

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

In previous years, local monitoring has identified high concentrations of NO₂ at three roadside locations (A267 East of Cross in Hand (W7), West of Boship Roundabout (W8) and Forest Row High Street (W10)). In March 2017 the A267 East of Cross in Hand (W7) monitoring location was changed, due to difficult access and as it was not a representative site, with the monitor moved further down the road nearer to residential properties. In more recent years (2018 – 2021), concentrations at all these locations achieved the UK air quality objective for annual mean NO₂, with concentrations lower than 40 µg/m³.

Two new locations for monitoring NO₂ were introduced in 2021. Stone Cross B2104 Red Lion Pub (W13) and Stone Cross Dittons Road (W14). In 2021, the annual mean NO₂ concentration observed at W13 was 22.9 µg/m³ and at W14 was 17.8 µg/m³, both well below the annual mean AQS NO₂ objective.

In the Wealden District, NO₂ concentrations were measured at Lullington Heath continuous monitoring site. In 2021, data capture for Lullington Heath site was low (18%).

PM₁₀ and PM_{2.5} are not monitored in Wealden District, but data from neighbouring Eastbourne suggests concentrations are consistently well below the annual mean AQS objectives, generally decreasing slightly but with year-to-year variations. In 2021, PM₁₀ and PM_{2.5} concentrations decreased further.

As in other suburban and rural areas of East Sussex, ozone (O₃) is of considerable concern. The Isfield O₃ monitoring site was decommissioned at the end of 2020, therefore the pollutant is now only monitored in Lullington Heath. Annual average O₃ concentrations at Lullington Heath have increased since 2011. The number of days with high ozone concentrations (above the 8-hour objective) has also been exceeded each year from 2018 to 2021. However, a decrease in both O₃ annual mean concentration, and O₃ 8-hour exceedences, was observed at Lullington Heath between 2020 to 2021.

Sulphur dioxide (SO₂) is also measured at the Lullington Heath station. However, in recent years there have been no exceedances of any of the three AQS objectives (15-minute, 1-hour and 24-hour).

Two-thirds of the district is designated as the High Weald and Sussex Downs Areas of Outstanding Natural Beauty (AONB) with 34 other conservation areas. The impact of traffic-related air pollution on some of these areas has been assessed in past years. This involved monitoring the impact of traffic on the Ashdown Forest Special Protection Area (SPA) and Special Area of Conservation (SAC). More recently, there has been the

introduction of tariffs for new developments to reduce the impact of cumulative development upon the Ashdown Forest SPA/SAC.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy⁵ sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero⁶ sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

WDC is helping the public to avoid the worst effects of O₃ pollution by informing the public of pollution events through the airAlert pollution warning service using the O₃ monitoring data obtained from Lullington Heath. This service is provided and maintained through the Sussex Air partnership.

WDC contributes to the Air Quality and Emissions Mitigation Guidance for Sussex. The guidance supports the principles of the Sussex Air Quality Partnership to improve air quality across Sussex and encourage emissions reductions to improve the environment and health of the population. Other actions being implemented to improve public health include promoting active modes of transport like walking, cycling and using public transport, as well as car clubs and car sharing.

In 2021, WDC also had constructive discussions around planning policy to ensure air quality mitigation requirements are integrated as policy into the future Local Plan. The Council increased the use of the Air Quality Guidance produced by Sussex Air to apply conditions to major planning applications. This has ensured that air quality mitigation cost calculations have been undertaken and measures to improve air quality are starting to get

⁵ Defra. Clean Air Strategy, 2019

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

integrated into major developments. At the end of 2021, funding was agreed for two additional diffusion tubes in Wadhurst, in the north of the district where coverage was light. One will be at an urban background location and the other at a roadside location.

Conclusions and Priorities

This ASR confirms that concentrations within Wealden continue to be well within the NO₂ annual mean AQS objective at relevant locations. No significant changes in emissions sources within the Council's area have been identified in the last year.

The priorities for the coming year will be to continue monitoring in the area and continue to implement measures to increase sustainable travel options and improve transport infrastructure. The Council will also add some additional monitoring points the north of the district where coverage is currently light. The Council will ensure assessment and mitigation measures for new developments, particularly those allocated around the main urban centres. The Council will continue discussions around planning policy to ensure that air quality mitigation requirements become policy in the new Local Plan and continue work with Sussex Air and other Local Authorities.

The main challenge for air quality management in Wealden is balancing the planned population growth in the district with conservation of the natural habitats that constitute most of the district's territory. WDC will address this challenge by managing a sustainable level of development to reduce the impact of cumulative development on conservation areas such as the Ashdown Forest. There are also challenges associated with increasing traffic as a result of development in the district.

WDC will continue to promote active travel such as walking, cycling. Furthermore, there may be a reduction in car use post COVID-19, as more people continue to undertake forms of smart working, such as working from home. These initiatives will be encouraged and promoted through the Sussex Air website

Local Engagement and How to get Involved

Everyone concerned about air quality in Wealden and the rest of Sussex can find real-time information on pollution levels on the Sussex Air website sussex-air.net, and sign up for advance warnings with the airAlert service at airalert.info. Warnings are provided by text or voice message, email, or using an Android or iOS app. The service is also available to schools and is a great way to get everyone engaged in thinking about the importance of air

quality. The reduction in using cars to travel to work, further home working and increasing walking and cycling are all encouraged.

Local Responsibilities and Commitment

This ASR was prepared by the Pollution Control Department of Wealden District Council.

If you have any comments on this ASR please send them to Philip Wright at:

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1 Local Air Quality Management

This report provides an overview of air quality in Wealden during 2021. 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 UK Air Quality Strategy (AQS) objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the AQS objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Wealden District Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

Air Quality Management Areas

AQMAs are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an AQAP within 12 months setting out measures it intends to put in place in pursuit of compliance with the AQS objectives.

Wealden currently does not have any declared AQMAs. Therefore, no formal AQAP has been set up and implemented for the district.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Wealden District has no declared AQMAs.								

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

☒ **Wealden District Council confirm that all current AQAPs have been submitted to Defra.**

Progress and Impact of Measures to address Air Quality in Wealden

Defra's appraisal of last year's ASR concluded that the report as acceptable with the following comments:

- 1. The Council have presented a detailed and insightful ASR. Though there are no AQMAs within the district, a good level of detail and discussion is provided around measures to reduce and manage air quality.*
- 2. Monitoring results are clearly presented and the context of the effect of COVID-19 on results is discussed though prior to this there is a general downward trend within the district.*
- 3. The national bias adjustment factor has been taken from the 03/21 release when the 06/21 release is available. This should be checked before the data calculations are completed and the ASR is submitted to ensure the most recent release has been used.*
- 4. Comments from the previous appraisal are included in summary. This is welcomed.*
- 5. A link was provided to the Public Health Outcomes Frameworks, however the report could present the estimated proportion of mortality attributed to PM_{2.5} in Rother District Council. Please contact the LAQM Helpdesk if support is required.*
- 6. Not relevant to LAQM but regarding the PM_{2.5} annual mean objective:*
 - a. Under the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 the Air Quality Standard limit value for PM_{2.5} is 20µg/m³ measured as an annual mean.*
- 7. A map showing monitoring locations is presented. This is welcomed.*
- 8. Clear discussions are provided in Appendix F around the impact of COVID-19 on the LAQM regime in 2020 including disruptions to monitoring and effects on AQAP measures. This is commended.*
- 9. The continual collaborative approach that Wealden District Council is taking with East Sussex County Council and Sussex Air is welcomed.*
- 10. Appropriate QA/QC has been applied to the results; the inclusion of the output from the Diffusion Tube Data Processing Tool is welcomed.*

This ASR provides the same level of detail as the previous report with updated information. As requested, there has been included the addition of an estimated proportion of mortality attributed to PM_{2.5} in the Wealden district, which can be found below under '*PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations*'.

At the time of submitting the ASR, the latest national bias adjustment bias factor (03/22) has been used.

WDC will continue to carry out measures during the current reporting year of 2021 in pursuit of improving local air quality.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Air Quality and Emissions Mitigation Guidance for Sussex	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2014	2014	Sussex Air Quality Partnership	-	-	-	-	Completed	N/A	N/A	Completed - Guidance published	Under review by the partnership.
2	Air Quality Strategic Plan 2010	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2010	2010	Sussex Air Quality Partnership	-	-	-	-	Completed	N/A	N/A	Completed - Plan published and currently implemented	None.
3	Sussex Air website	Public Information	Via the Internet	2012	2012 - Ongoing	Sussex Air Quality Partnership	-	-	-	-	Implementation	N/A	N/A	The website is online and reporting on monitored pollution levels	Under review by the partnership.
4	airAlert	Public Information	Via other mechanisms	2011	2011 - Ongoing	Sussex Air Quality Partnership	-	-	-	-	Implementation	N/A	921 registered subscribers, 70 from Wealden District	The service is running and the number of subscribers increasing every year	None.
5	Energise Network	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2014	2014 - Ongoing	Sussex Air Quality Partnership	-	-	-	-	Implementation	N/A	5 charging points installed in Wealden District	The service is running and several charging points are available in Wealden District	None.
6	Suitable Accessible Natural Green Space (SANGS) guidelines	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2013	2013	Wealden District Council	-	-	-	-	Completed	N/A	N/A	Guideline document to help identify SANGS sites published.	None.
7	Nitrogen Reduction Guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2013	2013	Wealden District Council	-	-	-	-	Completed	N/A	N/A	Guidance note published for small scale developments on reducing traffic impacts on Ashdown Forest.	None.
8	Ashdown Forest Monitoring	Other	Other	2017	2017	Wealden District Council	-	-	-	-	Completed	N/A	N/A	Monitoring started 2014	None.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
9	Publicly available advice on sustainability	Public Information	Via the Internet	2017	2017 - ongoing	Wealden District Council	-	-	-	-	Completed	N/A	N/A	The website is online and fully available	None.
10	Encouraging home working using IT solutions	Promoting Travel Alternatives	Encourage / Facilitate home-working	2017	2017 - ongoing	Wealden District Council	-	-	-	-	Completed	N/A	N/A	IT solutions in place for staff wishing to home-work	None.
11	Employee tax incentive scheme for purchasing bikes	Promoting Travel Alternatives	Promotion of cycling	2017	2017 - ongoing	Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	None.
12	Car sharing for employees and associated priority staff parking	Promoting Travel Alternatives	Workplace Travel Planning	2017	2017 - ongoing	Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	None.
13	Implementation of ESCC Local Transport Plan 3	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2016	2016 - ongoing	East Sussex County Council & Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	Under review
14	Bus route improvements in Wealden via Local Transport Plan 3	Transport Planning and Infrastructure	Bus route improvements	2016	2016 - ongoing	East Sussex County Council & Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	Under review
15	Cycle network improvements in Wealden via Local Transport Plan 3	Transport Planning and Infrastructure	Cycle network	2016	2016 - ongoing	East Sussex County Council & Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	Under review
16	Public transport improvements in Wealden via Local Transport Plan 3	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2016	2016 - ongoing	East Sussex County Council & Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	Under review

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
17	Introduction of tariffs for new developments to reduce the impact of cumulative development upon the Ashdown Forest SPA/SAC	Policy Guidance and Development Control	Other policy	2018	2018-Ongoing	Wealden District Council	-	-	-	-	Implementation	N/A	N/A	Ongoing	None
18	Commitment to a sustainable procurement strategy	Policy Guidance and Development Control	Sustainable Procurement Guidance	2014	2014-2017	Wealden District Council	-	-	-	-	Completed	N/A	N/A	WDC encourages key suppliers to demonstrate an awareness of sustainability issues and to promote practices that are consistent with their policies.	None
19	Promote health activities and encourage public to participate	Public Information	Via Other	2018	2018-Ongoing	Wealden District Council	-	-	-	-	Implementation	N/A	N/A	Introduced various 'Healthy Wealden' activities to encourage use of the Cuckoo Trail in 2018	None
20	Ensuring air quality mitigation is policy in the new local plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	-	Ongoing	Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	None
21	Use of Sussex Air Guidance and incorporation of planning conditions on major plans	Policy Guidance and Development Control	Other policy	-	Ongoing	Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	None
22	Support and involvement with Sussex Air and its initiatives	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	-	Ongoing	Wealden District Council	-	-	-	-	Implementation	N/A	N/A	-	None

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 particulate matter with an aerodynamic diameter of 2.5µm or less (PM_{2.5}). There is clear evidence that PM_{2.5} has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Wealden District Council currently does not undertake PM_{2.5} monitoring within the district. Concentrations monitored at the Holly Place urban background site in Eastbourne indicate that levels are well within required levels.

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

- Supporting the Energise Network of electric vehicle charging points, together with the Sussex Air Quality Partnership;
- Requiring the assessment of PM_{2.5} as part of Air Quality Assessments for planning applications.

Although there are no new specific measures targeting PM_{2.5} currently, it is expected that the combination of actions and that are currently in force or coming into force will help to bring about a reduction in PM_{2.5}. However, discussions are being held with Public Health and other Local Authorities as part of Sussex Air to devise policies that will specifically target the reduction in PM_{2.5}. Any links measures have to the Public Health Outcomes Framework (available at <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework>) will be considered.

The latest information from the Public Health Outcomes Framework stated that, in 2020, the fraction of mortality attributable to particulate air pollution in the Wealden District was 5.4%, which is lower than the regional (6.0%) and national averages (5.6%).

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

This section sets out the monitoring undertaken within 2021 by WDC and how it compares with the relevant AQS objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

WDC undertook automatic (continuous) monitoring at one site during 2021. This was Lullington Heath (for nitrogen dioxide (NO₂) sulphur dioxide (SO₂) and O₃). Particulate matter (PM₁₀ and PM_{2.5}) was not monitored in the district, so this report includes the results from two sites in the neighbouring Eastbourne District: Devonshire Park and Holly Place for information. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

Lullington Heath and Eastbourne Holly Place are part of the Automatic Urban and Rural Network (AURN), managed by the Environment Agency. National monitoring results are available at <https://uk-air.defra.gov.uk/>.

Devonshire Park is part of the Sussex Air Quality Monitoring Network (SAQMN), managed on behalf of Sussex Air by the London Environmental Research Group. Regional monitoring results are available at www.sussex-air.net.

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

3.1.2 Non-Automatic Monitoring Sites

WDC undertook non-automatic (i.e. passive) monitoring of NO₂ at 14 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic sites.

Data capture for 2021 was generally very good. The two new monitoring locations at Stone Cross B2104 Red Lion Pub (W13) and Stone Cross Dittons Road (W14) required annualisation, as data capture for these sites began in May 2021.

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

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias and annualisation (where the annual mean data capture is below 75% and greater than 25%). No distance correction was required. Further details on adjustments are provided in Appendix C.

3.1.3 Nitrogen Dioxide (NO₂)

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

Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B. No distance correction has been applied as all concentrations were below 36 µg/m³.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the AQS objective of 200µg/m³, not to be exceeded more than 18 times per year.

The results indicate that the annual mean NO₂ concentrations at all monitoring sites were well within the AQS objective (40 µg/m³) in 2021. Neither of the automatic monitoring sites exceeded the 200 µg/m³ standard on any occasion in 2021, nor in any year since 2015. The results indicate that the 1-hour NO₂ AQS objective is unlikely to be exceeded at any location in the district.

At Lullington Heath, data capture for NO₂ concentrations was 18.7% for 2021. This was below the 25% data capture threshold therefore was not suitable for annualisation.

Diffusion tubes do not provide hourly measurements of NO₂; however, the Defra Technical Guidance states that where annual mean NO₂ concentrations measured by diffusion tubes exceed 60 µg/m³ there is a likelihood that the 1-hour AQS objective may be exceeded. All of the annual mean NO₂ concentrations at diffusion tube monitoring locations between 2015 and 2021, inclusive, were well below 60 µg/m³ and so the 1-hour AQS objective is very unlikely to have been exceeded.

Figure A.1 shows the trend in NO₂ concentrations monitored at the Lullington Heath, Devonshire Park and Holly Place automatic monitoring stations. The results indicate there was a gradual downward trend in NO₂ concentrations over the time period shown, with a sharper decrease at these locations in 2020 that was likely to have been influenced by the reduction of traffic due to the COVID-19 pandemic. In 2021, there was an increase in NO₂ concentrations at Devonshire Park and Holly Place, likely caused by an increase in traffic after COVID-19 restrictions were lifted. Concentrations have also been well below the annual mean AQS objective of 40 µg/m³ in all years.

Figure A.2 shows trends in annual mean NO₂ concentrations measured at non-automatic (diffusion tube) sites. All sites show decreasing concentrations since 2018. In 2020 the impact of the COVID-19 pandemic likely caused concentrations to be lower than might have been expected following the trends observed. In 2021, there was an increase in NO₂ concentrations, with many sites returning to 2019 concentration levels, likely due to the increase in traffic after COVID-19 restrictions were lifted.

Annual mean NO₂ concentrations at W4 (Uckfield Town Centre), had been increasing from 2014 to 2017. However, since 2017, concentrations have fallen at this location. At other roadside sites, there has been some year-to-year variability, with a decreasing trend in concentrations in the last couple of years.

3.1.4 Particulate Matter (PM₁₀)

There has been no PM₁₀ monitoring undertaken within the Council's area. Concentrations monitored at two urban background sites in Eastbourne (Devonshire Park and Holly Place) are, therefore, provided for indicative purposes. No data is available for Eastbourne Holly Place for 2017 and 2018 as the PM₁₀ analyser was withdrawn on 4th January 2017.

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the AQS objective of 40µg/m³. The results indicate that annual mean PM₁₀ concentrations were well below the AQS objective between 2017 and 2021.

Figure A.3 shows a trend in annual mean PM₁₀ concentrations. PM₁₀ concentrations have shown a downward trend since 2017 at Devonshire Park. In 2021, PM₁₀ concentrations at Holly Place continued to decrease. Concentrations have remained consistently well below the annual mean AQS objective.

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the AQS objective of 50µg/m³, not to be exceeded more than 35 times per year. These results show that both Eastbourne sites achieved the daily mean PM₁₀ AQS objective every year from 2017 to 2021.

Figure A.4 shows the trend in number of exceedances of the daily mean PM₁₀ AQS objective. The number of days which exceeded the AQS objective has decreased at both sites since 2012.

3.1.5 Particulate Matter (PM_{2.5})

There is no PM_{2.5} monitoring undertaken within Wealden District. Concentrations monitored at the Holly Place urban background site in Eastbourne are, therefore, provided for indicative purposes.

Table A.8 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past five years. Between 2017 and 2021, the measured concentrations have been below the AQS objective of 20 µg/m³.

Figure A.5 shows the trend in annual mean PM_{2.5} concentrations. Since 2009, there has been a varying trend shown across the results. In recent years, from 2018 to 2021, annual mean PM_{2.5} concentrations have shown a downward trend.

3.1.6 Sulphur Dioxide (SO₂)

Table A.9 in Appendix A compares the ratified continuously monitored SO₂ concentrations for 2021 at the Lullington Heath rural site with the AQS objectives for SO₂. There have been no exceedances in 2021 of any of the three AQS objectives for SO₂ (15-minute, 1-hour or 24-hour).

3.1.7 Ozone (O₃)

The Isfield Ozone monitoring site was decommissioned at the end of 2020 due to Sussex Air funding ending. In 2021, the monitoring data for O₃ concentrations were recorded at only the Lullington Heath site.

Table A.10 in Appendix A presents the ratified continuous monitored annual mean O₃ concentrations at the Isfield and Lullington Heath rural sites. Between 2016 and 2020, the annual mean concentrations monitored at Isfield were between 45.2 µg/m³ and 53.2 µg/m³. Between 2017 and 2021, annual mean concentrations have been between 55 µg/m³ and 65.2 µg/m³ at the Lullington Heath station. There is no annual mean AQS objective or target value for annual mean O₃ concentrations.

Figure A.6 shows the trend in annual mean O₃ concentrations at the two monitoring stations. There was no clear trend is evident in the results at Isfield between 2011 and 2020. There was a general upward trend observed at Lullington Heath between 2016 and 2020. In 2021, this trend has appeared to reverse, as there was a decrease annual mean O₃ concentrations.

Table A.11 in Appendix A compares the ratified continuous monitored O₃ running 8-hour mean concentrations for the past 5 years with the AQS objective of 100 µg/m³, not to be exceeded on more than 10 days per year. The monitoring results show that the Isfield station exceeded the O₃ AQS objective every year from 2013 to 2020, except for 2019 (7 days). The Lullington Heath station has measured days exceeding the AQS objective in 2018 (13 days), 2019 (10 days) and 2020 (39 days). In 2021, the number of days exceeding the O₃ running 8- hour mean was 15 for Lullington Heath.

Figure A.7 shows the trend in the number of days exceeding the O₃ AQS objective between 2011 and 2021. Isfield Station shows a varying trend with sharp increases in 2013, 2017 and 2020. Lullington Heath Station shows an overall decreasing trend between 2011 and 2016 and an increase between 2016 and 2018. The number of days exceeding the AQS objective between 2018 to 2019 decreased for both sites but increased sharply in 2020. In 2021, the number of days exceeding the AQS objective at Lullington Heath station decreased again.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
LL1	Lullington Heath AURN	Rural	553800	101600	NO ₂ ; SO ₂ ; O ₃	No	Chemiluminiscence; UV Fluorescence; UV Absorption	> 1000	> 1000	3
EB1	Eastbourne - Devonshire Park	Urban Background	561180	98360	NO ₂ ; PM ₁₀ ; O ₃	No	Chemiluminiscence; FDMS; UV Absorption	40	10	1.5
EB3	Holly Place AURN	Urban Background	560085	103118	NO ₂ ; PM ₁₀ ; PM _{2.5}	No	Chemiluminiscence; FIDAS	10	10	4

Notes:

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

(2) N/A if not applicable

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
W1	Crowborough Background	Urban Background	552591	130667	NO ₂	No	7.5	2.0	No	2.5
W2	Crowborough Town Centre	Roadside	551626	131090	NO ₂	No	7.5	2.0	No	2.5
W3	Uckfield Background	Urban Background	547828	121954	NO ₂	No	15.0	1.0	No	2.5
W4	Uckfield Town Centre	Roadside	547250	120977	NO ₂	No	7.5	2.0	No	2.5
W5	Eastbourne Road, Polegate	Roadside	558079	104481	NO ₂	No	13.0	1.0	No	2.0
W6	London Road, Hailsham	Roadside	558845	109783	NO ₂	No	0.5	1.0	No	2.5
W7	Outside Rydale-A267	Roadside	557503	121318	NO ₂	No	7.5	1.0	No	2.0
W8	A22 W of Boship roundabout	Roadside	556933	111165	NO ₂	No	8.0	2.0	No	2.0
W9	Forest Row Riverside	Urban Background	542336	135324	NO ₂	No	5.0	0.1	No	2.0
W10	Forest Row A22	Kerbside	542464	135279	NO ₂	No	1.0	2.0	No	2.0
W11	Hailsham - Lower Horsebridge	Roadside	558024	111237	NO ₂	No	0.5	1.0	No	2.0
W12	Hailsham A295 car park	Roadside	558892	109272	NO ₂	No	8.5	1.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
W13	Stone Cross B2104	Roadside	561558	104356	NO ₂	No	5.0	2.0	No	2.5
W14	Stone Cross Dittons Road	Roadside	560501	104629	NO ₂	No	15.0	3.0	No	2.5

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
LL1	553855	101740	Rural	18	18.7	7.7	7.6	7.4	6.1	-
EB1	561180	98360	Urban Background	97	97.5	16.1	14.5	15.0	10.7	13.3
EB3	560085	103118	Urban Background	91	91	12.3	10.7	10.8	8.8	9.4

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

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean AQS objective of 40µg/m³ are shown in **bold**.

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

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

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

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

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
W1	552591	130667	Urban Background	92.3	92.3	13.1	13.9	12.0	9.2	15.7
W2	551626	131090	Roadside	100	100.0	23.6	23.6	21.9	14.1	10.3
W3	547828	121954	Urban Background	100	100.0	15.6	14.9	13.4	12.1	11.2
W4	547250	120977	Roadside	100	100.0	37.1	36.7	33.6	23.0	25.0
W5	558079	104481	Roadside	100	100.0	30.0	32.6	27.9	19.9	22.4
W6	558845	109783	Roadside	100	100.0	26.1	27.1	24.0	16.9	19.2
W7	557503	121318	Roadside	100	100.0	23.0	20.8	19.1	13.4	13.4
W8	556933	111165	Roadside	100	100.0	35.0	34.2	33.2	25.1	24.3
W9	542336	135324	Urban Background	100	100.0	10.7	12.6	9.5	6.9	7.3
W10	542464	135279	Kerbside	100	100.0	40.6	34.6	28.6	23.7	24.1
W11	558024	111237	Roadside	100	100.0	-	-	-	11.1	12.7
W12	558892	109272	Roadside	100	100.0	-	-	-	17.7	22.0
W13	561558	104356	Roadside	100	67.3	-	-	-	-	22.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
W14	560501	104629	Roadside	87.5	57.7	-	-	-	-	17.8

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

☒ Diffusion tube data has been bias adjusted.

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

Notes:

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

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 1-hour mean AQS objective are shown in **bold and underlined**.

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

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

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

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

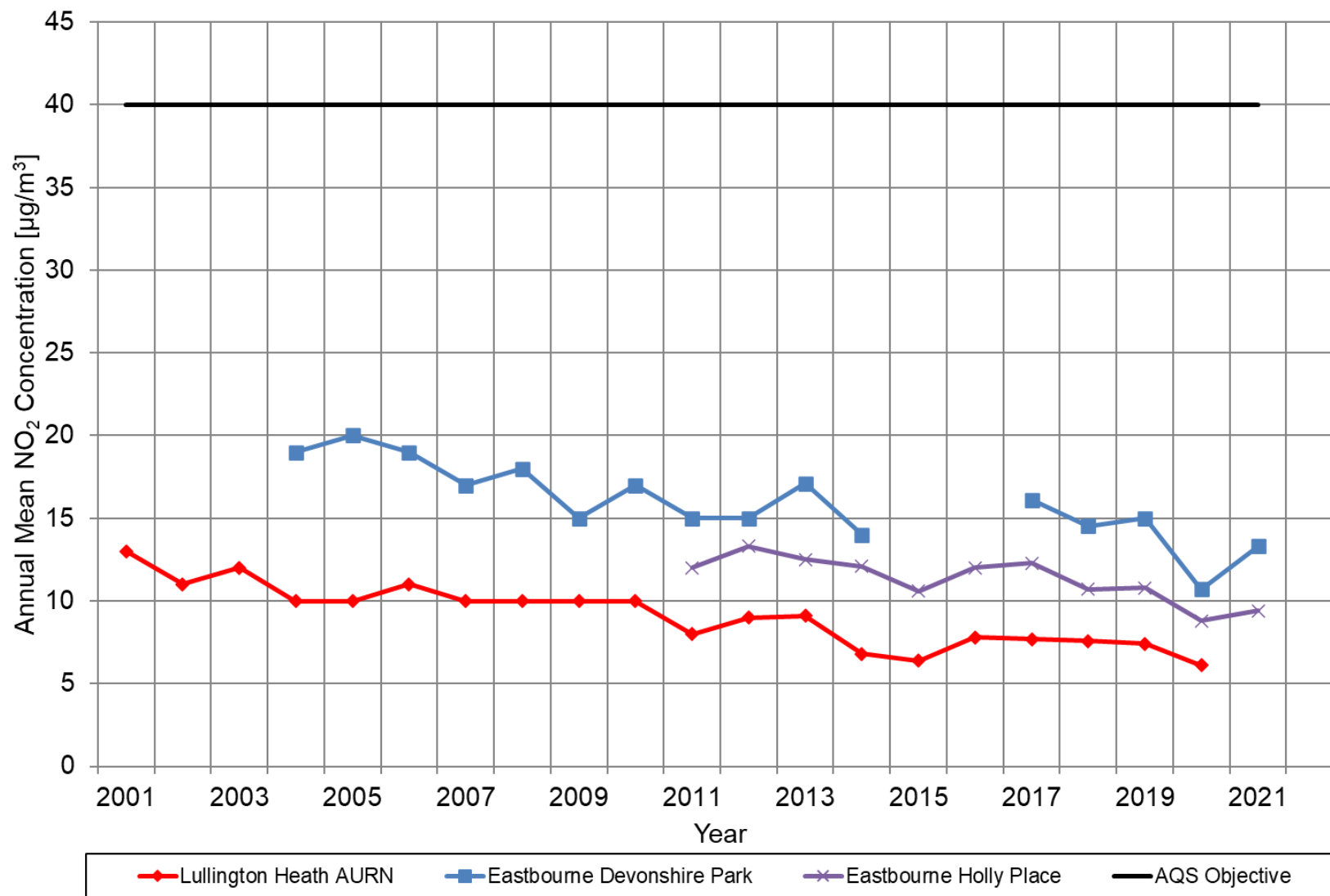
Figure A.1 – Trends in Annual Mean NO₂ Concentrations measured at Automatic Monitoring Sites

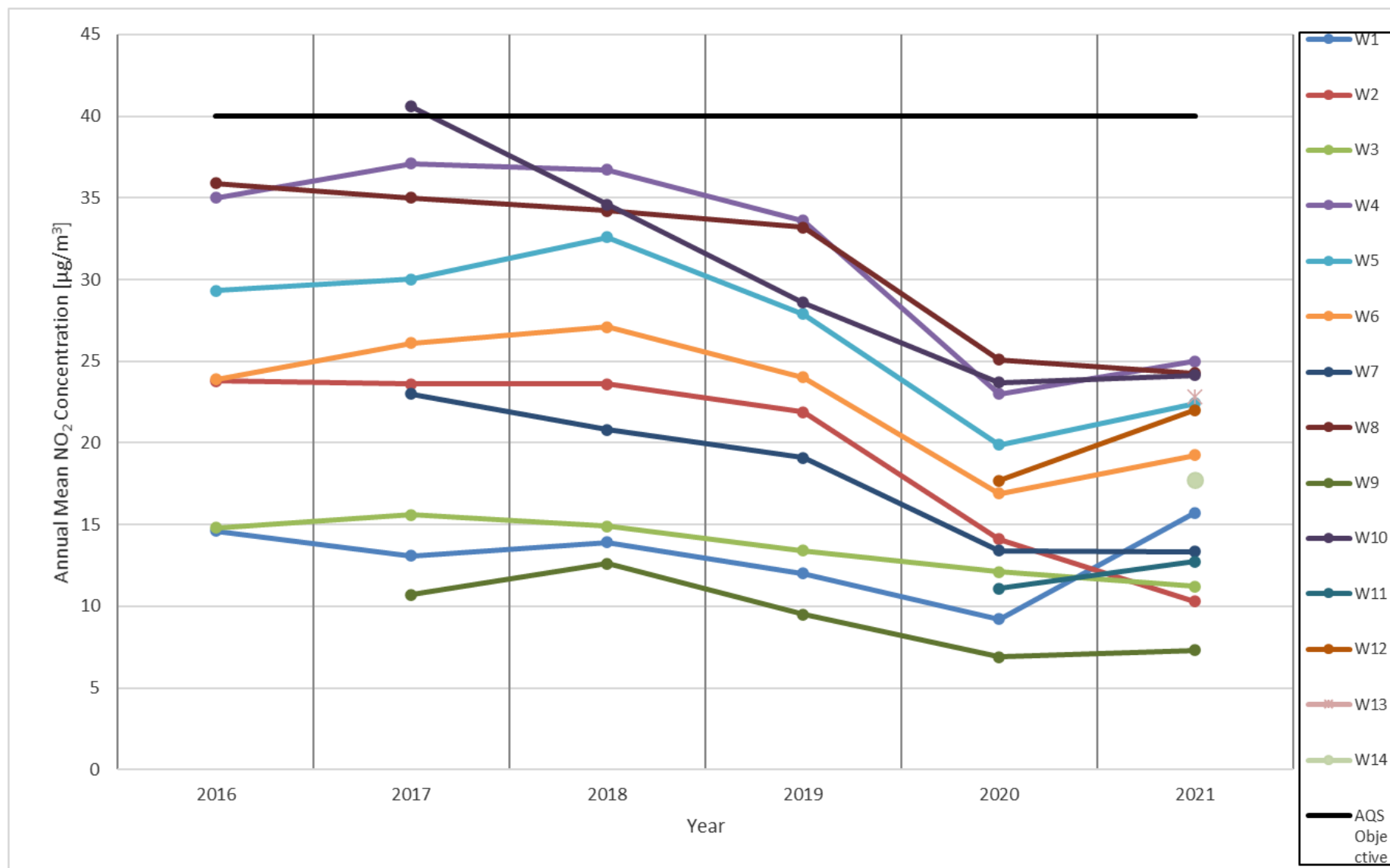
Figure A.2 –Trends in Annual Mean NO₂ Concentrations measured at Diffusion Tube Monitoring Sites

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
LL1	553855	101740	Rural	Automatic	18.7	0	0	0	0 (38.2)	- (35.4)
EB1	561180	98360	Urban Background	Automatic	97.8	0 (68.9)	0	0	0	0
EB3	560085	103118	Urban Background	Automatic	91	0	0 (59.8)	0	0 (58.4)	0

Notes:

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

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Table A.6 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
EB1	561180	98360	Urban Background	88	88	18.9	18.5	17.2	17.5	17.3
EB3	560085	103118	Urban Background	99	99.8	-	-	15.5	14.5	13.2

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

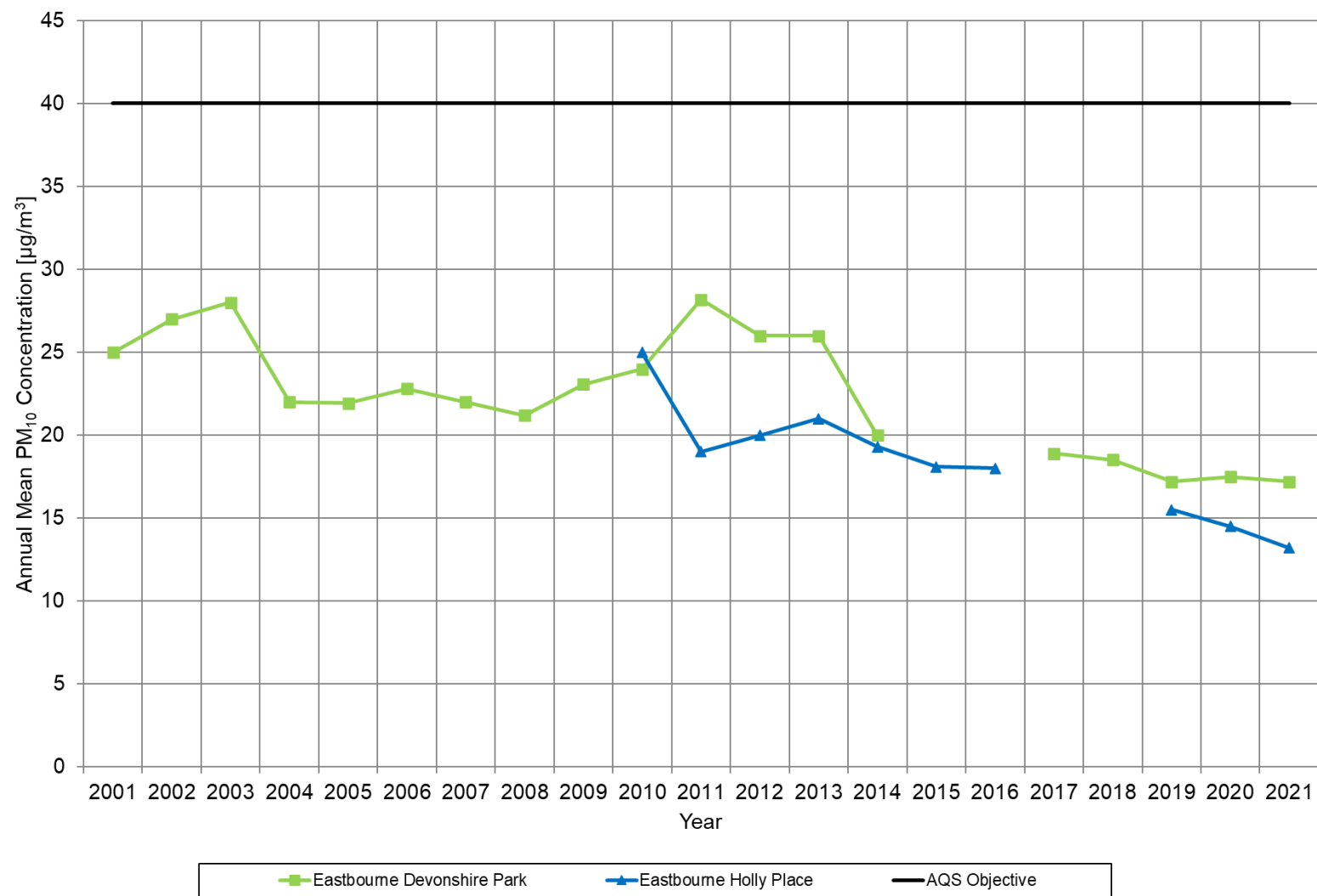
Figure A.3 – Trends in Annual Mean PM₁₀ Concentrations

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
EB1	561180	98360	Urban Background	88	88	0 (22)	2	1	1	0
EB3	560085	103118	Urban Background	99	99.8	-	-	0	0	1

Notes:

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

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

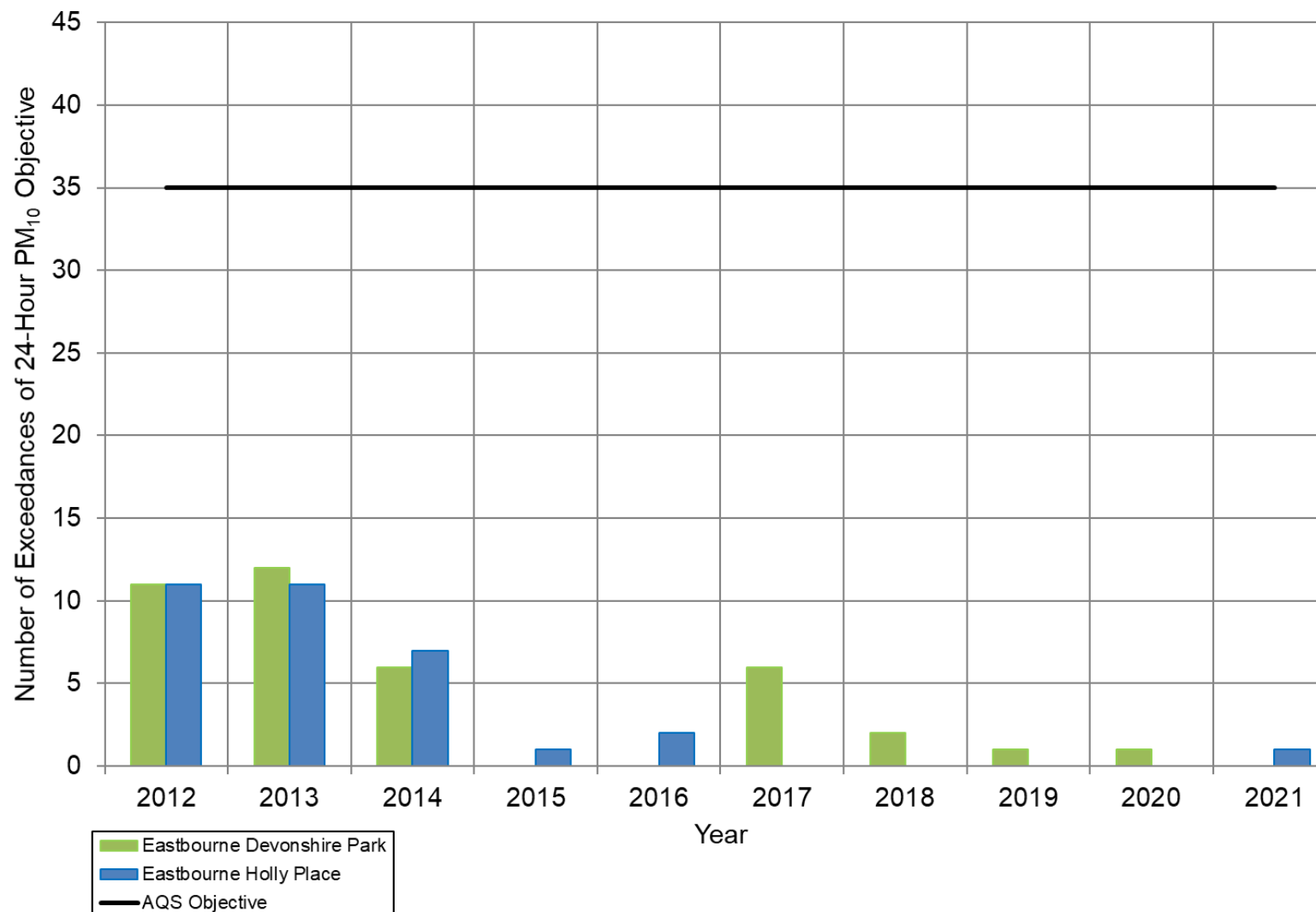
Figure A.4 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³

Table A.8 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
EB3	560085	103118	Urban Background	99.8	99.8	11.3	12.7	10.5	8.7	8.4

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

Notes:

The annual mean concentrations are presented as µg/m³.

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

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

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

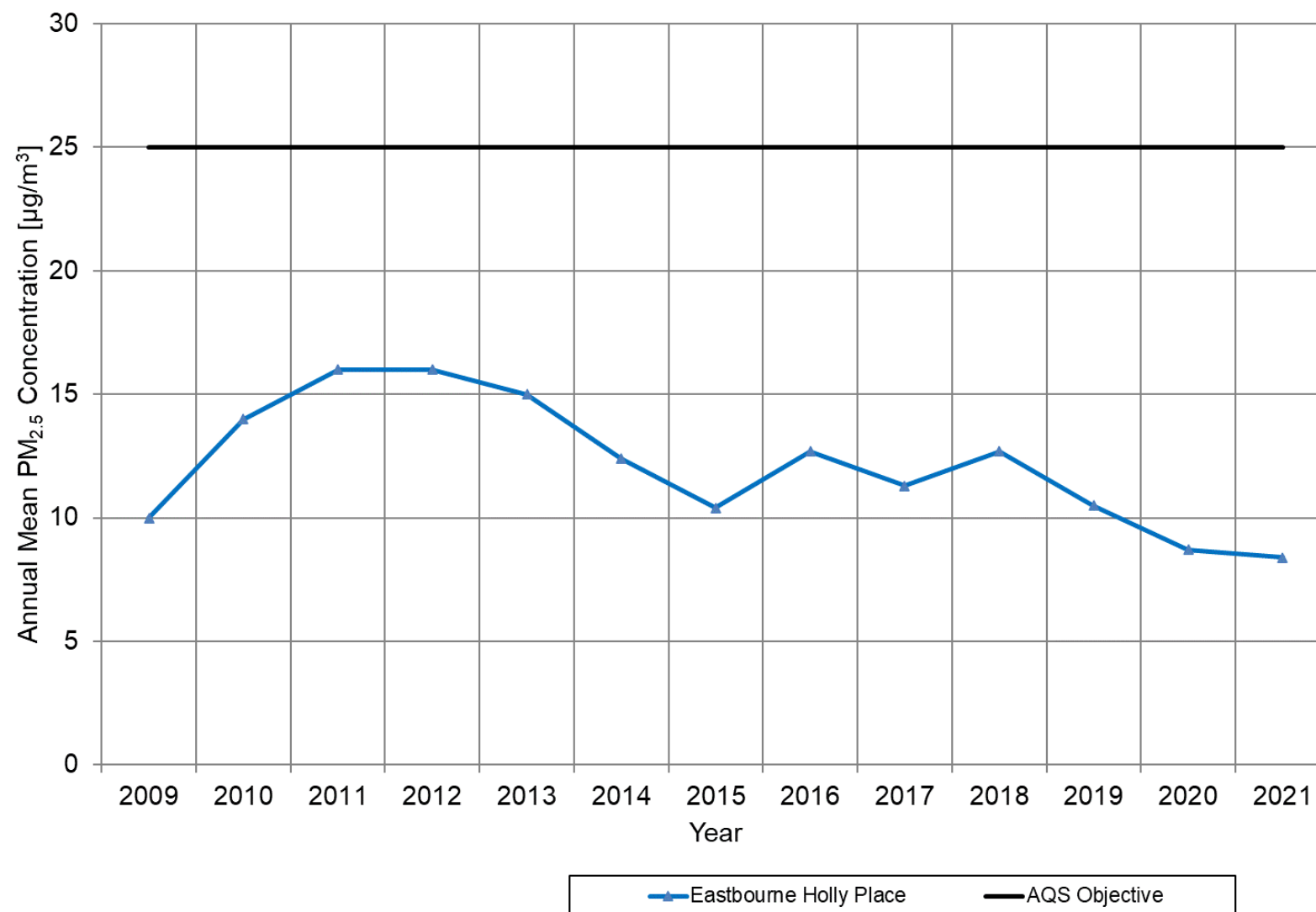
Figure A.5 – Trends in Annual Mean PM_{2.5} Concentrations

Table A.9 – SO₂ 2021 Monitoring Results, Number of Relevant Instances

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	Number of 15-minute Means > 266µg/m ³	Number of 1-hour Means > 350µg/m ³	Number of 24-hour Means > 125µg/m ³
LL1	553855	101740	Rural	50.3	50.3	0	0 (3.0)	0 (2.1)

Notes:

Results are presented as the number of instances where monitored concentrations are greater than the objective concentration.

Exceedances of the SO₂ objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year).

If the period of valid data is less than 85%, the relevant percentiles are provided in brackets.

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

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

Table A.10 – Annual Mean O₃ 2021 Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
AR2	553855	101740	Rural	-	-	50.1	53.2	45.2	52.1	-
LL1	544890	117380	Rural	89.8	89.8	55.4	61.1	61.4	65.4	58.3

Notes:

- (1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
- (3) Isfield automatic monitoring site (AR2) was decommissioned at the end of 2020.

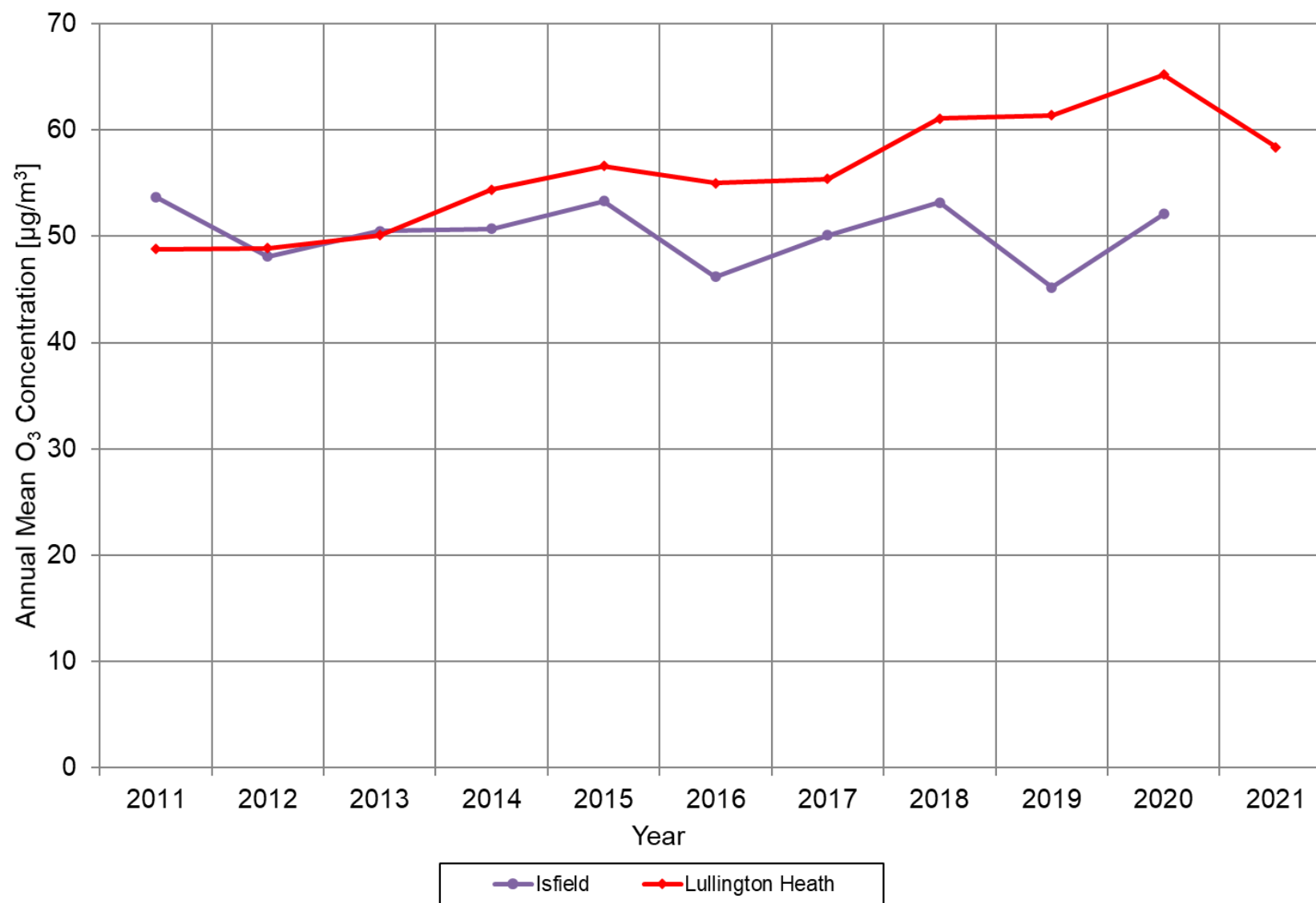
Figure A.6 – Trends in Annual Mean O₃ Concentrations

Table A.11 – Running 8-Hour Mean O₃ 2021 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
AR2	553855	101740	Rural	-	-	27	19	7	21	-
LL1	544890	117380	Rural	89.8	89.8	3	13	10	39	15

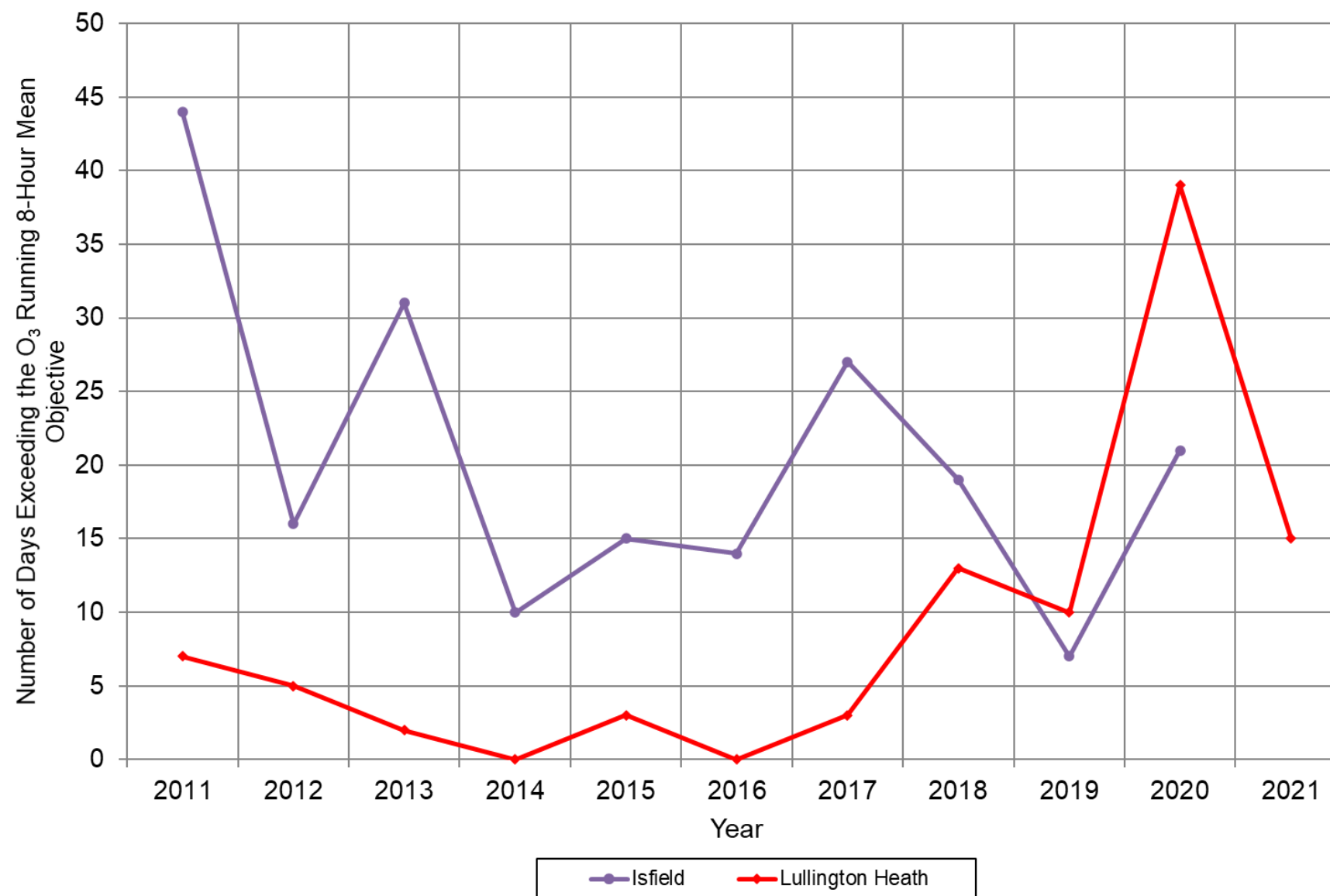
Notes:

Exceedances of the O₃ running 8-hour mean AQS objective (100 µg/m³ not to be exceeded more than 10 days/year) are shown in **bold**.

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

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

(3) Isfield automatic monitoring site (AR2) was decommissioned at the end of 2020.

Figure A.7 – Trends in Number of Days Exceeding the Running 8-Hour Mean O₃ AQS Objective

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO₂ 2021 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
W1	552591	130667	21.1	22.9	19.4	19.1	16.2	18.6	16.6	13.5	19.6	19.8	-	19.0	18.7	15.7	-	
W2	551626	131090	18.6	22.1	12.6	11.5	8.2	9.5	7.8	6.9	9.7	11.8	15.9	12.5	12.3	10.3	-	
W3	547828	121954	18.8	19.3	12.7	11.4	9.5	11.2	8.7	8.4	11.8	13.5	18.9	16.2	13.4	11.2	-	
W4	547250	120977	37.5	30.2	26.5	26.5	27.1	30.8	27.8	25.5	32.0	29.6	33.1	30.5	29.7	25.0	-	
W5	558079	104481	26.0	22.3	28.1	29.8	24.8	29.6	25.5	23.0	29.0	25.2	33.1	24.0	26.7	22.4	-	
W6	558845	109783	23.4	26.0	23.8	23.6	20.7	21.4	21.1	17.4	27.6	23.2	25.6	21.2	22.9	19.2	-	
W7	557503	121318	19.9	20.9	14.8	16.4	12.8	15.2	13.6	9.7	17.4	15.7	20.2	14.2	15.9	13.4	-	
W8	556933	111165	32.4	28.6	29.8	28.0	25.6	30.1	27.4	23.5	31.3	25.6	34.7	29.5	28.9	24.3	-	
W9	542336	135324	12.3	13.3	9.0	8.2	6.7	7.2	5.6	5.4	7.7	8.6	9.9	10.6	8.7	7.3	-	
W10	542464	135279	33.4	24.7	31.4	24.9	28.2	30.0	25.7	22.9	27.7	29.3	37.1	29.6	28.7	24.1	-	
W11	558024	111237	20.0	18.8	14.6	14.4	11.7	13.7	12.4	10.6	13.7	14.6	19.8	17.4	15.2	12.7	-	
W12	558892	109272	30.4	27.2	30.8	25.9	22.2	27.1	21.3	20.6	27.1	25.1	30.5	26.5	26.2	22.0	-	
W13	561558	104356	-	-	-	-	25.5	28.3	25.2	20.2	30.8	27.0	30.7	19.9	26.0	22.9	-	Commenced in May 2021
W14	560501	104629	-	-	-	-	6.7	20.0	20.1	16.7	24.1	22.4	28.5	-	19.8	17.8	-	Commenced in May 2021

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

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

☐ Local bias adjustment factor used.

☒ National bias adjustment factor used.

☒ Where applicable, data has been distance corrected for relevant exposure in the final column.

☒ Wealden District Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes: No distance correction required as all concentrations well below 37.5 µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Wealden District Council During 2021

WDC has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by Wealden District Council During 2021

WDC has not completed any additional works within the reporting year of 2021 year relating to the development of action plan measures or the declaration, amendment or revocation of an AQMA.

QA/QC of Diffusion Tube Monitoring

AIR is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT is a new scheme, started in April 2014, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL Workplace Analysis Scheme for Proficiency (WASP) PT scheme.

Defra and the Devolved Administrations advise that diffusion tubes used for Local Air Quality Management should be obtained from laboratories that have demonstrated satisfactory performance in the AIR PT scheme.

Wealden District Council used Gradko International for the supply and analysis of diffusion tubes, with a 20% triethanolamine (TEA) in water preparation.

The percentage of results submitted by Gradko International Ltd that were subsequently determined to be satisfactory was 25% for AIR-PT Round AR042 (January – March 2021). These scores should be taken into account when interpreting the data.

All monitoring has been completed in adherence with the 2021 Diffusion Tube Monitoring Calendar.

Diffusion Tube Annualisation

In 2021, there were two diffusion tube monitoring locations that required annualisation, as they first began monitoring NO₂ concentrations in May 2021. The two new diffusion tube monitoring locations were Stones Cross B2104 and Stones Cross Dittons Road. W13 had a data capture of 67.3% for 2021, and W14 had 57.7%, therefore annualisation of the monitoring data was required. The sites used and details of calculation are presented in Table C.1.

All the other diffusion tube monitoring locations within WDC recorded data capture of 75%, therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

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

Site ID	Annualisation Factor Eastbourne	Annualisation Factor EB Devonshire Park	Annualisation Factor Brighton Preston Park	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
W13	1.0303	1.0351	1.0777	1.0477	26.0	27.2	Commenced in May 2021
W14	1.0570	1.0417	1.1061	1.0683	19.8	21.1	Commenced in May 2021

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

WDC have applied a national bias adjustment factor of 0.84 to the 2021 monitoring data. A summary of bias adjustment factors used by WDC over the past five years is presented in Table C.2 –.

WDC does not carry out a co-location study with diffusion tubes and an automatic continuous analyser, and so it is necessary to use the national database of bias adjustment factors (version 03/22, 32 studies).

Table C.2 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	03/22	0.84
2020	National	03/21	0.81
2019	National	03/20	0.93
2018	National	03/19	0.93
2017	National	09/18	0.87

Figure C.1 – National Diffusion Tube Bias Adjustment Factor for Wealden District Council (Gradko)

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/22				
Follow the steps below in the correct order to show the results of relevant co-location studies						This spreadsheet will be updated at the end of June 2022				
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods						LAQM Helpdesk Website				
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet						Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.				
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.										
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.										
Step 1:		Step 2:		Step 3:		Step 4:				
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.				
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.		If a year is not shown, we have no data.		If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953				
Analysed By ¹	Method ²	Year ³	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁴	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2021	R	Gateshead Council	10	23	19	23.8%	G	0.81
Gradko	20% TEA in water	2021	R	Gateshead Council	12	25	22	13.7%	G	0.88
Gradko	20% TEA in water	2021	R	Gateshead Council	11	27	25	9.8%	G	0.91
Gradko	20% TEA in water	2021	R	Gateshead Council	12	31	25	26.6%	G	0.79
Gradko	20% TEA in water	2021	R	Gateshead Council	12	32	34	-4.1%	G	1.04
Gradko	20% TEA in water	2021	KS	Marleybone Road Intercomparison	11	53	42	25.0%	G	0.80
Gradko	20% TEA in water	2021	R	Monmouthshire County Council	11	35	29	21.8%	G	0.82
Gradko	20% TEA in water	2021	R	Belfast City Council	12	25	20	24.3%	G	0.80
Gradko	20% TEA in water	2021	UC	Belfast City Council	12	25	20	28.5%	G	0.78
Gradko	20% TEA in water	2021	R	Belfast City Council	12	42	35	19.8%	G	0.84
Gradko	20% TEA in water	2021	R	Belfast City Council	12	38	27	39.4%	G	0.72
Gradko	20% TEA in water	2021	UB	Dudley MBC	12	20	15	36.0%	G	0.74
Gradko	20% TEA in water	2021	R	Dudley MBC	12	30	29	4.2%	G	0.96
Gradko	20% TEA in water	2021	R	Dudley MBC	12	42	40	5.5%	G	0.95
Gradko	20% TEA in water	2021	R	Lambeth	10	91	62	46.6%	G	0.68
Gradko	20% TEA in water	2021	R	Lancaster City Council	13	38	32	18.4%	G	0.84
Gradko	20% TEA in water	2021	R	Lancaster City Council	13	28	27	4.3%	G	0.95
Overall Factor ³ (32 studies)								Use		0.84

NO₂ Fall-off with Distance from the Road

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

No diffusion tube NO₂ monitoring locations within Wealden District Council required distance correction during 2021.

QA/QC of Automatic Monitoring

As previously described in Section 3.1, monitoring stations within East Sussex are part of the SAQMN and, therefore, measurements made at these sites are traceable to national standards and operational procedures defined for the regional network. AURN sites such as Lullington Heath and Holly Place are managed by Defra contractors and data collected at these sites are traceable to the UK AURN national standards.

PM₁₀ and PM_{2.5} Monitoring Adjustment

The PM₁₀ data from the FDMS and FIDAS continuous analysers at Eastbourne Devonshire Park (EB1) and Eastbourne Holly Park (EB3) measure gravimetric-equivalent PM₁₀ concentrations, and therefore no additional adjustment has been necessary.

Automatic Monitoring Annualisation

Annualisation was not required for Lullington Heath NO₂ monitoring due to data capture being less than 25% in 2021.

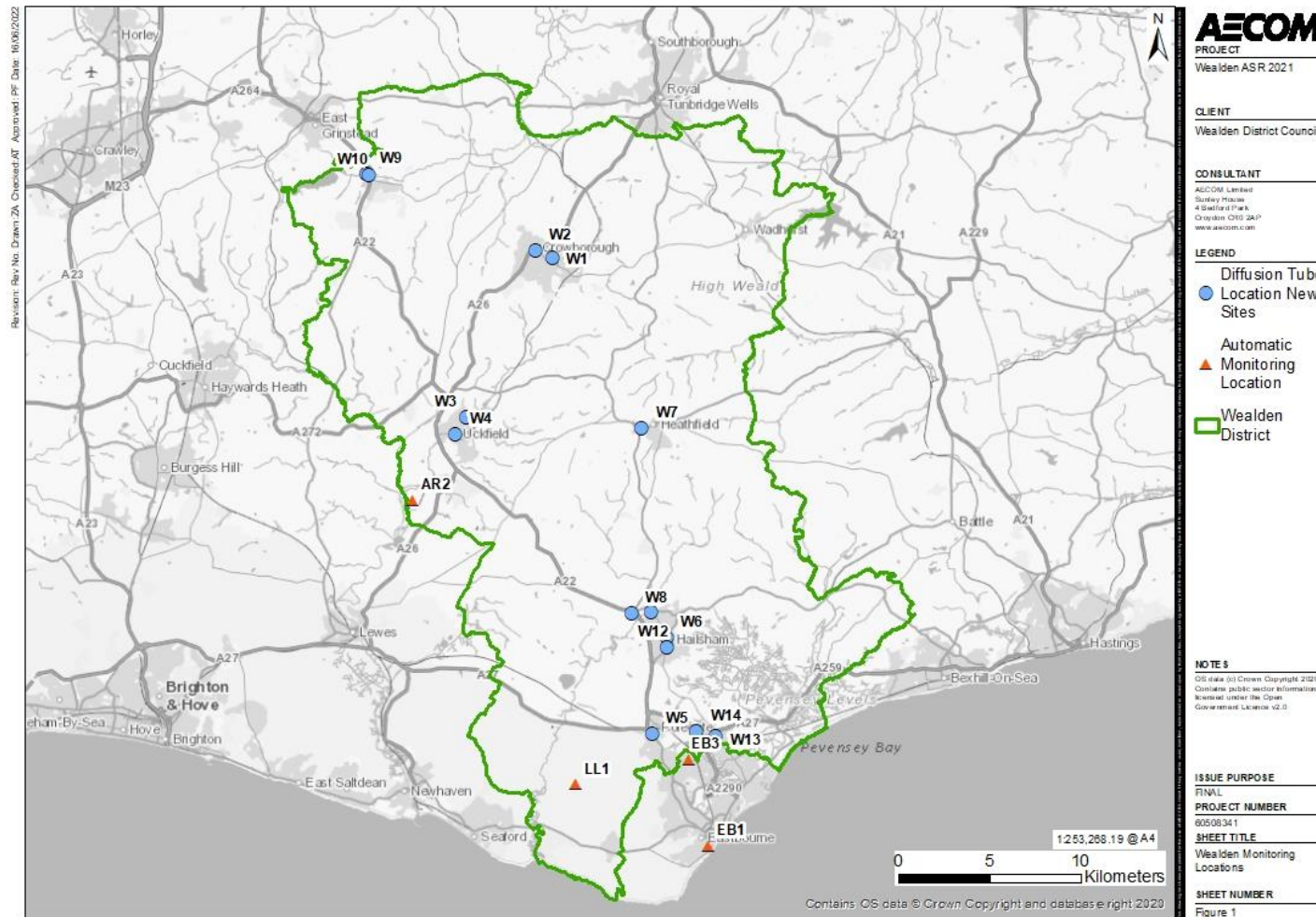
NO₂ Fall-off with Distance from the Road

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

No NO₂ monitoring locations within WDC required distance correction during 2021, as all concentrations were less than 36 µg/m³.

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

Figure D.1 – Map of Monitoring Sites



Appendix E: Summary of Air Quality Strategy Objectives in England

Table E.1 – Air Quality Strategy Objectives in England⁷

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

⁷ The units are in micrograms of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AONB	Area of Outstanding Natural Beauty
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
O ₃	Ozone
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SAC	Special Area of Conservation
SAQMN	Sussex Air Quality Monitoring Network
SO ₂	Sulphur dioxide
SPA	Special Protection Area

References

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- National Diffusion Tube Bias Adjustment Factor Spreadsheet, Spreadsheet Version Number: 03/21. Available at: <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html> Defra, 2022.
- Air Quality Annual Status Report for Wealden District Council, 2021.