

2017 Air Quality Annual Status Report (ASR)

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

October, 2017

Wealden District Council

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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 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 billion³.

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 levels of these pollutants in excess of the UK Air Quality Objectives.

Wealden District Council manages local air quality in close collaboration with East Sussex County Council (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 web-site with recent air quality data, news updates, educational resources, links and other services such as airAlert.

In recent years, local monitoring has identified high levels of NO₂ at two roadside locations (A267 East of Cross in Hand, and West of Boship Roundabout), in areas where members of the public are not affected. NO₂ levels at these locations have been decreasing steadily since 2010. In 2016, concentrations at the nearest sensitive receptors for both locations achieved the UK Air Quality Objective for annual mean NO₂, with concentrations lower than 40 µg/m³. There is evidence that NO₂ concentrations are increasing in the town centres of Crowborough, Polegate and

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

Hailsham, and particularly in Uckfield; however, the levels in these areas remain below the objective.

PM₁₀ and PM_{2.5} are not monitored in Wealden District, but data from neighbouring Eastbourne suggest concentrations are consistently low (well below the UK annual mean objectives), decreasing slightly but with significant year-to-year variations. The number of days with high PM₁₀ concentrations (above the 24-hour objective) has decreased between 2012 and 2016.

As in other suburban and rural areas of East Sussex, ozone (O₃) is of considerable concern. O₃ is monitored in two locations in Wealden: Isfield and Lullington Heath. Annual average O₃ levels at Lullington Heath have increased since 2011 but remain below the objective. Levels at Isfield have been stable and have been above the objective except in 2014. The number of days with high ozone concentrations (above the 8-hour objective) has decreased since 2011, with significant year-to-year variability.

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 UK Air Quality 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 conservations areas. The impact of traffic-related air pollution on some of these areas has been assessed in past years. Current or future traffic flows predicted from development plans are not expected to put the Pevensey Levels Special Area of Conservation (SAC) at risk from excessive nitrogen deposition. The impact of traffic on the Ashdown Forest Special Protection Area (SPA) and SAC is currently being monitored, and the results will be examined in future years.

Actions to Improve Air Quality

Wealden District Council is helping the public to avoid the worst effects of O₃ pollution by monitoring O₃ levels at two locations, and informing the public of pollution events through the airAlert pollution warning service. This service is provided and maintained through the Sussex Air partnership.

Wealden District Council together with Sussex Air supports the Energise Network, an integrated network of electric charging points for vehicles. Charging points are

located in the Wealden District at Selmeston Services (A27), Wealden District Council offices in Hailsham, Herstmonceux Integrated Health Centre, Crowborough Station, and Forest Row Parish Council.

Wealden District Council seeks to mitigate the air quality impacts from development in the district, in particular in the areas of ecological importance. The Council screens development proposals for significant air quality impacts on conservation areas such as the Ashdown Forest, and is working to reduce the current traffic levels around the Forest by identifying Suitable Alternative Natural Green Spaces (SANGS), and by implementing, with partner authorities and organisations, a Strategic Access Management and Monitoring Strategy (SAMMS). There is also a guidance note for developers on reducing traffic-related impacts on the Ashdown Forest.

Wealden District Council also 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.

Conclusions and Priorities

This Annual Status Report confirms that concentrations within Wealden continue to be well within the NO₂ annual mean air quality objective. 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. Wealden District Council will continue to protect public health by providing real-time O₃ measurements on the Sussex Air website and alerting the general public in advance of pollution events through the airAlert service.

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. Two-thirds of the District is designated as the High Weald and Sussex Downs AONB, along with 34 other conservations areas. Wealden District Council will address this challenge by managing a sustainable level

of development, and monitoring pollution impacts on conservation areas such as the Ashdown Forest.

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.

Large and small businesses in the vicinity of the Ashdown Forest and elsewhere can help reduce air pollution by adopting 'smarter choices' for traffic, as detailed in the Council's Guidance Note⁴.

Drivers planning to replace their vehicles are encouraged to consider low and ultra-low emission vehicles, such as electric cars, plug-in hybrids and extended-range electric vehicles. The Energise Network provides members with access to more than 150 electric vehicle charging points across the South East. These include most local authority charge points in Kent, Surrey and Sussex, plus a number of Southern Rail fast chargers. For a map of the charging points and details on how to join, please visit energisenetwork.co.uk.

⁴ Wealden District Council (2013). Guidance note on reducing nitrogen deposition at the Ashdown Forest Special Area of Conservation and Special Protection Area. Available at: <http://www.wealden.gov.uk/nmsruntime/saveasdialog.aspx?IID=12452&slID=3484>

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1 Local Air Quality Management

This report provides an overview of air quality in Wealden during 2016. 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 exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Wealden 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 E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

Wealden District currently does not have any AQMAs. Therefore, no formal Air Quality Action Plan has been set up and implemented for the District. For reference, a map of Wealden's monitoring locations is available in Appendix D.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan (inc. date of publication)
						At Declaration	Now	
Wealden District has no declared AQMAs.								

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

2.2 Progress and Impact of Measures to address Air Quality in Wealden

Defra's appraisal of last year's ASR concluded that:

"As the area is likely to be subject to significant future growth in population and infrastructure with increasing pressure on road traffic generated emissions, the four town centres showing continued increases in traffic pollution should continue to be monitored. The council may wish to review the monitoring in these areas accordingly."

Wealden is committed to continue monitoring and have added another 2 diffusion tubes in Forest Row, where the A22 runs through the centre of the town. This data will be available in the 2018 ASR. All main urban conurbations within the district are now being monitored.

As new major developments are built within the district, ongoing consideration will be given to additional monitoring locations.

It also recommended:

"Table A.1 in Appendix A suggests that all the sites are not representative of relevant exposure. Monitoring data presented for comparison to objective levels should be presented as relevant exposure. On this basis, the results for these sites should be corrected for distance as advised in the latest Technical Guidance Manual TG(16)."

All diffusion tube monitoring results (annual average NO₂ 2012-2016) are now presented as distance corrected for relevant exposure. Automatic monitoring data have not been distance-corrected, because:

- the Lullington Heath and Isfield stations are rural background sites representative of the whole region, not of exposure at specific locations, and;
- the Devonshire Park and Holly Place stations are managed by Eastbourne District Council, and the results reported here are the same as in the Eastbourne reports for consistency.

The map of monitoring sites in Appendix D has been updated with the most recent names and locations.

Wealden District Council is a member of the Sussex Air Quality Partnership (Sussex Air), which produced an air quality strategic plan 2010 to 2015⁵. Wealden District Council contributed to the development of this strategy, which aims to provide a consistent approach to air quality across a number of district councils.

This plan has 5 key objectives:

1. Provide advice and support and improve the expertise and knowledge base
2. Project development and implementation
3. Partnership working
4. Develop cross cutting work on health improvement, climate change, environment and transport
5. Communicate air quality issues and initiatives in Sussex.

Wealden District Council has taken forward a number of direct measures during the current reporting year of 2016 in pursuit of improving local air quality and improving public awareness of air quality issues, in close collaboration with the Sussex Air Quality Partnership. Details of all measures completed, in progress or planned are set out in Table 2.2.

Key completed measures regarding awareness raising and transport related measures are:

1. Website improvements

Wealden District Council supports the Sussex Air Quality website (<http://www.sussex-air.net>), which provides access to air quality statistics and relevant local information and improves public awareness of air quality.

2. Promotion of airAlert service

Wealden District Council supports the airAlert air pollution warning service, offered by the Sussex Air Quality Partnership to vulnerable people, schools, health professionals and the general public in Sussex. The airAlert service provides warnings based on O₃ levels monitored inside the Wealden District both at Isfield and Lullington Heath. In July 2017 the service had 921 registered subscribers, 70 of which were from Wealden District.

⁵ Sussex Air Quality Partnership Air Quality Strategic Plan 2010 http://www.sussex-air.net/Reports/SAQP_Vision_Strategy_2015.pdf

3. Local O₃ monitoring

High O₃ levels can cause difficulty breathing in vulnerable people with existing lung or heart conditions. Wealden District Council monitors O₃ levels at their Isfield rural monitoring station. Data from this station is available on the Sussex-Air website and feeds the airAlert service.

4. Updated Guidance

Wealden District Council contributed to the Air Quality and Emissions Mitigation Guidance for Sussex, first published in 2013 and updated in 2014. The guidance is helping to mitigate potential air quality impacts from developments across Sussex. It is also contributing to public health by promoting active modes of transportation like walking, cycling and using public transport, as well as car clubs and car sharing.

5. Energise Network.

The Sussex Air Partnership manages the Energise Network, an integrated network of electric charging points for vehicles with regional coverage. Electric car charging points are now located in the Wealden District at Selmeston Services (A27), Wealden District Council offices in Hailsham, Herstmonceux Integrated Health Centre, Crowborough Station, and Forest Row Parish Council.

Following the adoption of the Core Strategy Local Plan⁶ in 2013, Wealden District Council has been assessing the air quality impacts of new traffic and development on protected natural habitats in the District, in particular the Pevensey Levels (Special Area of Conservation (SAC) and Ramsar site) and the Ashdown Forest (SAC and Special Protection Area (SPA)).

Key completed measures regarding protected habitats are:

1. Pevensey Levels Assessment

In 2009, Wealden District Council commissioned a study⁷ to assess the predicted air quality impact on the Pevensey Levels due to increases in traffic on the A259 associated with planned population growth up to 2026. The conclusion was that an

⁶ Wealden District (Incorporating Part of the South Downs National Park) (2013). Core Strategy Local Plan. Available at: <http://www.wealden.gov.uk/nmsruntime/saveasdialog.aspx?IID=14756&SID=2829> .

⁷ Rother District Council, Hastings Borough Council, Wealden District Council and Eastbourne Borough Council (2009). Appropriate Assessment and Air Quality Local to the Pevensey Levels Ramsar Site. Available at: <http://www.wealden.gov.uk/nmsruntime/saveasdialog.aspx?IID=14305&SID=5509>

increase in nitrogen deposition and NOx concentrations is likely, but these will still be below the Critical Levels set by the Habitats Directive⁸, therefore there is unlikely to be a significant effect on the SAC and Ramsar site.

2. Ashdown Forest Impact Mitigation

Wealden District Council currently screens all new development proposals for significant effects on levels of nitrogen deposition on Ashdown Forest, focusing on traffic emissions, and where appropriate, requires mitigation measures to be implemented⁹. The main mitigation strategy proposed by Wealden District Council is the identification of Suitable Alternative Natural Green Spaces (SANGS), and the implementation of a Strategic Access Management and Monitoring Strategy (SAMMS). In 2013, Wealden District Council published a guideline document¹⁰ to help identify SANGS sites, and a guidance note¹¹ for small scale developments on reducing traffic impacts on Ashdown Forest.

3. Ashdown Forest monitoring

Wealden District Council is investigating the impact of nitrogen deposition upon the Ashdown Forest SAC, so that the effects of development can be more fully understood and mitigated as appropriate. The Air Quality Report¹² completed for Wealden District Council in 2013 proposed a methodology for air quality and ecological monitoring. On 30th April 2014, Wealden District Council awarded a contract to Ecus Ltd, supported by Air Quality Consultants Ltd, to implement a monitoring, modelling and assessment programme which will run for a number of

⁸ EC Habitats Directive 1992, interpreted into British law by the Conservation (Natural Habitats &c) Regulations 1994 (as amended in 2007).

⁹ Wealden District Council website. Ashdown Forest Special Protection Area, Special Area of Protection and Site of Special Scientific Interest. http://www.wealden.gov.uk/Wealden/Residents/Planning_and_Building_Control/Planning_Development_Management/Agents_and_Parish_Council_Information/Planning_Agents_Ashdown_Forest.aspx . Retrieved July 2016:

¹⁰ Wealden District Council (2013). Guidelines for the creation of Suitable Alternative Natural Green Space (SANGS). Available at: <http://www.wealden.gov.uk/nmsruntime/saveasdialog.aspx?IID=13843&SID=3484>

¹¹ Wealden District Council (2013). Guidance note on reducing nitrogen deposition at the Ashdown Forest Special Area of Conservation and Special Protection Area. Available at: <http://www.wealden.gov.uk/nmsruntime/saveasdialog.aspx?IID=12452&SID=3484>

¹² Wealden District Council (2013). Ashdown Forest SAC. Method for Air Quality Monitoring and Assessment of Nitrogen Deposition .Available at: <http://www.wealden.gov.uk/nmsruntime/saveasdialog.aspx?IID=13088&SID=3484>

years¹³. Monitoring began in the summer of 2014, and the Year 1 interim report has been published in February 2016¹⁴.

Wealden District Council expects the following measures to continue over the course of the next reporting year:

1. Screening planning applications for air quality impacts based on the guidance documents
2. Informing the public of high air pollution events via the Sussex Air website and the airAlert service
3. Monitoring at LAQM sites and in Ashdown Forest
4. Supporting low emission vehicles through the Energise network.

New measures for 2017 include the promotion of cycling on the Cuckoo Trail, a footpath and cycleway across the district along an old railway line. Funding will be sought from East Sussex County Council's 'Active Access for Growth' programme.

Wealden District Council's priorities for the coming year are to continue monitoring in the area and keeping the public informed. Wealden District Council will continue to protect public health by providing real-time O₃ measurements on the Sussex Air website and alerting the general public in advance of pollution events through the airAlert service.

The principal challenge that Wealden District Council anticipates facing is balancing the planned population growth in the District with conservation of the natural habitats that constitute most of the District's territory. Two-thirds of the District is designated as the High Weald and Sussex Downs AONB, along with 34 other conservations areas. Wealden District Council will address this challenge by managing a sustainable level of development, and monitoring pollution impacts on conservation areas such as Ashdown Forest.

¹³ Wealden District Council website, Ashdown Forest Monitoring FAQs: http://www.wealden.gov.uk/Wealden/Residents/Planning_and_Building_Control/Planning_Policy/Evidence_Base/PPolicy_Ashdown_Forest_Monitoring_FAQs.aspx Retrieved July 2016.

¹⁴ Air Quality Consultants (2016). Interim Report Year 1: Ashdown Forest Air Quality Monitoring and Modelling. http://www.wealden.gov.uk/Wealden/Residents/Planning_and_Building_Control/Planning_Policy/CoreStrategy/CoreStrategy_Library/Planning_Evidence_Base_Habitat_Regulations_Assessment.aspx

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion 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	Sussex Air Quality Partnership	N/A	2014	N/A	N/A	Completed - Guidance published	2014	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	Sussex Air Quality Partnership	N/A	2010 - 2015	N/A	N/A	Completed - Plan published and currently implemented	2010	None.
3	Sussex Air website	Public Information	Via the Internet	Sussex Air Quality Partnership	N/A	2012-ongoing	N/A	N/A	The website is online and reporting on monitored pollution levels	2012 - Ongoing	Under review by the partnership
4	airAlert	Public Information	Via other mechanisms	Sussex Air Quality Partnership	N/A	2011 - Ongoing	921 registered subscribers, 70 from Wealden District	N/A	The service is running and the number of subscribers increasing every year	2011 - Ongoing	None.

Wealden District Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
5	Energise Network	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Sussex Air Quality Partnership	N/A	2014 - Ongoing	5 charging points installed in Wealden District	N/A	The service is running and several charging points are available in Wealden District	2014 - Ongoing	None.
6	SANGS guidelines	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Wealden District Council	N/A	2013	N/A	N/A	Guideline document to help identify SANGS sites published.	2013	None.
7	Nitrogen Reduction Guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Wealden District Council	N/A	2013	N/A	N/A	Guidance note published for small scale developments on reducing traffic impacts on Ashdown Forest.	2013	None.
8	Ashdown Forest Monitoring	Other	Other	Wealden District Council	2013	2014 - 2017	N/A	N/A	Monitoring started 2014	2017	None.

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

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.

Further measures will be considered in future years.

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

This section sets out what monitoring has taken place and how it compares with objectives.

Wealden District Council undertook automatic (continuous) monitoring at 2 sites during 2016: Isfield and Lullington Heath, for the pollutants NO₂, 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. Table A.1 in Appendix A shows the details of the sites.

Wealden - 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/>.

Wealden - Isfield and Eastbourne - Devonshire Park are part of the Sussex Air Quality Monitoring Network (SAQMN), managed on behalf of Sussex Air by King's College London Environmental Research Group (KCL-ERG). 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

Wealden District Council undertook non-automatic (passive) monitoring of NO₂ at 8 sites during 2016. Table A.2 in Appendix A shows the details of the sites.

The towns of Crowborough and Uckfield each contain one roadside site (W2 and W4 respectively) and one urban background site (W1 and W3), whilst two roadside sites are operated in Polegate (W5) and Hailsham (W6, installed in 2012). The original diffusion tube network has been operational since 2001. Two further roadside sites

(W7 and W8) – previously operated by East Sussex County Council (ESCC) – are currently maintained by Wealden District Council.

Data capture for 2016 was generally good; however, September and October data were missing for all diffusion tube sites.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

The results indicate that the annual mean NO₂ concentrations at the Wealden - Lullington Heath and Eastbourne - Holly Place automatic monitoring sites were all well within the UK air quality objective (40 µg/m³) in all years between 2012 and 2016. No valid data was available from the Eastbourne - Devonshire Park station for 2015 or 2016; however, annual mean NO₂ concentrations between 2012 and 2014, inclusive, were well below the annual mean objective.

One of the eight diffusion tube sites (W7 - A267 East of Cross in Hand) exceeded the annual mean objective for NO₂ in 2016. The annual mean NO₂ concentration at W7 after bias adjustment was 40.8 µg/m³. However, the site is located on a busy road and not representative of relevant exposure. When corrected for distance from the road, the annual mean NO₂ concentration at the nearest sensitive receptor is estimated to be 20.1 µg/m³, well below the objective.

After correcting for distance to the nearest sensitive receptors, the monitored annual mean NO₂ concentrations in 2016 ranged from 12.6 µg/m³ to 26.2 µg/m³, well within the objective.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

None of the automatic monitoring sites exceeded the 200 µg/m³ standard on any occasion in 2016, or in any year since 2012. The results indicate that the 1-hour NO₂ air quality objective is unlikely to be exceeded at any location in the district.

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 objective may be exceeded. All of the annual mean NO₂ concentrations at diffusion tube monitoring locations between 2012 and 2016, inclusive, were well below 60 µg/m³ and so the 1-hour objective is very unlikely to have been exceeded.

Figure 1 shows the trend in NO₂ concentrations monitored at the Wealden - Lullington Heath and Eastbourne - Devonshire Park automatic monitoring stations. The results indicate there is a gradual downward trend in NO₂ concentrations over the time period shown, with little variation from year to year. Concentrations have also been well below the annual mean Air Quality Objective of 40 µg/m³ in all years.

Figure 1: Trends in Annual Mean NO₂ Concentrations measured at Automatic Monitoring Sites

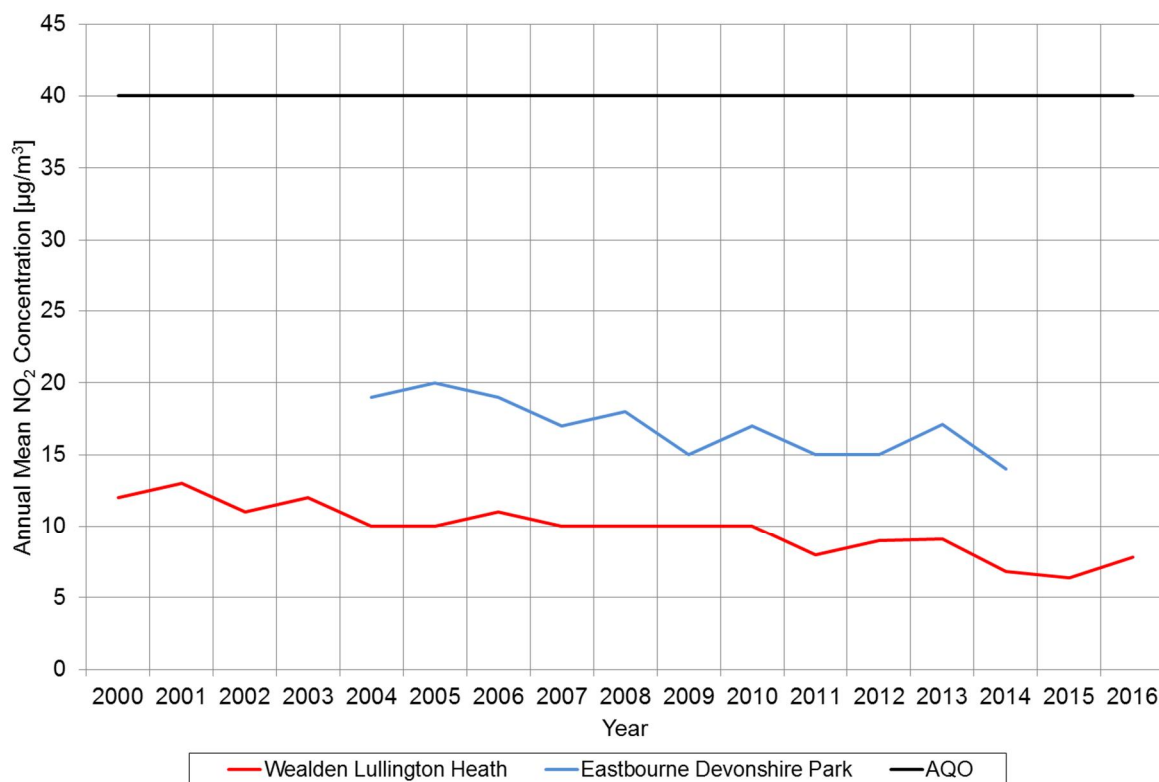
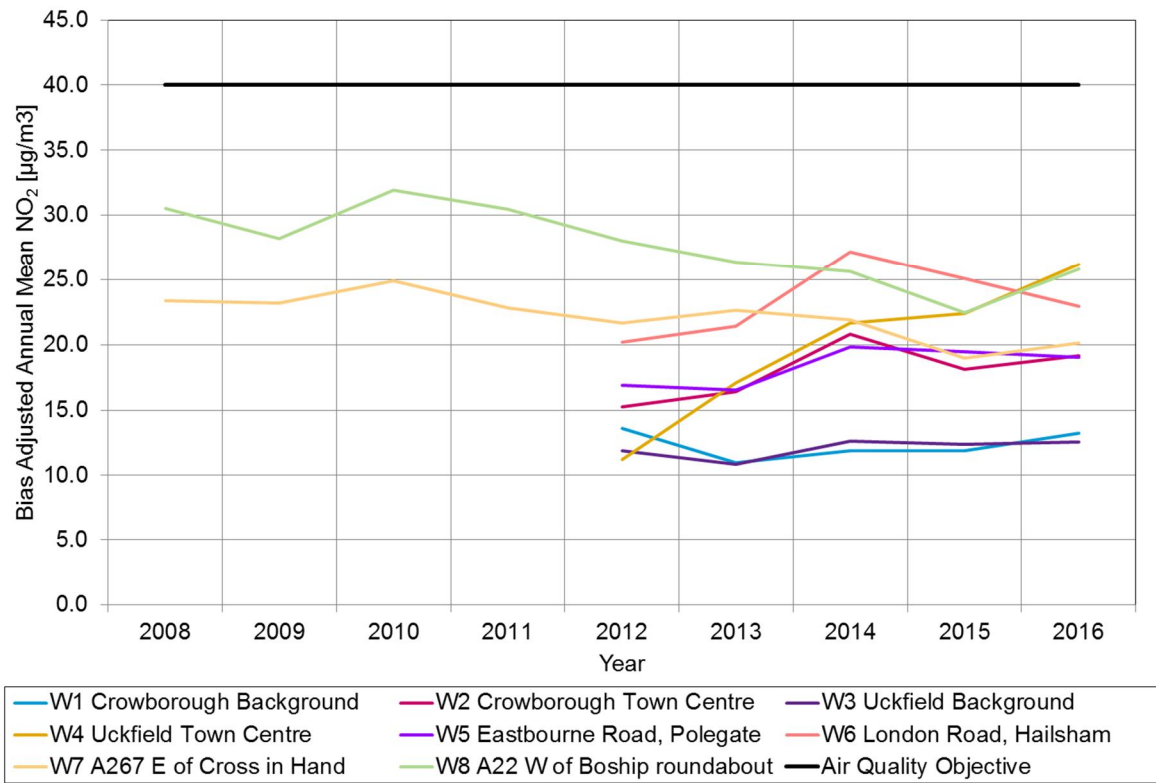


Figure 2 shows trends in annual mean NO₂ concentrations measured at non-automatic (diffusion tube) sites, corrected for distance to the nearest sensitive receptors as explained in Appendix C. The W7 (A267 East of Cross in Hand) and W8 (A22 West of Boship Roundabout) sites are located outside town centres by busy A-roads, and historically recorded the highest values. They have shown a trend for gradually decreasing concentrations until 2015, with values increasing in 2016. The annual mean NO₂ concentration in 2016 at the W8 site was higher than both 2014 and 2015.

By contrast, annual mean NO₂ concentrations appear to be increasing at the other roadside sites (W2, W4, W5 and W6), even though they remain well within the air quality objective. The largest increase is seen at W4 (Uckfield Town Centre), where annual average NO₂ concentrations have more than doubled between 2012 and 2016.

Annual average NO₂ concentrations at background diffusion tube sites (W1 and W3), show very little overall trend compared to the roadside sites.

Figure 2: Trends in Annual Mean NO₂ Concentrations measured at Diffusion Tube Monitoring Sites



3.2.2 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.

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 40 µg/m³.

The results indicate that annual mean PM₁₀ concentrations were well below the UK air quality objective between 2012 and 2016 at both stations.

Figure 3 shows the trend in annual mean PM₁₀ concentrations. A slight decreasing trend is apparent from concentrations recorded at Holly Place in the past seven years, but with considerable year on year variability. However, the longer-term data (2001 to 2014) at Devonshire Park is less conclusive. Concentrations have been consistently well below the annual mean Air Quality Objective.

Figure 3: Trends in Annual Mean Particulate Matter (PM₁₀) Concentrations measured at Automatic Monitoring Sites

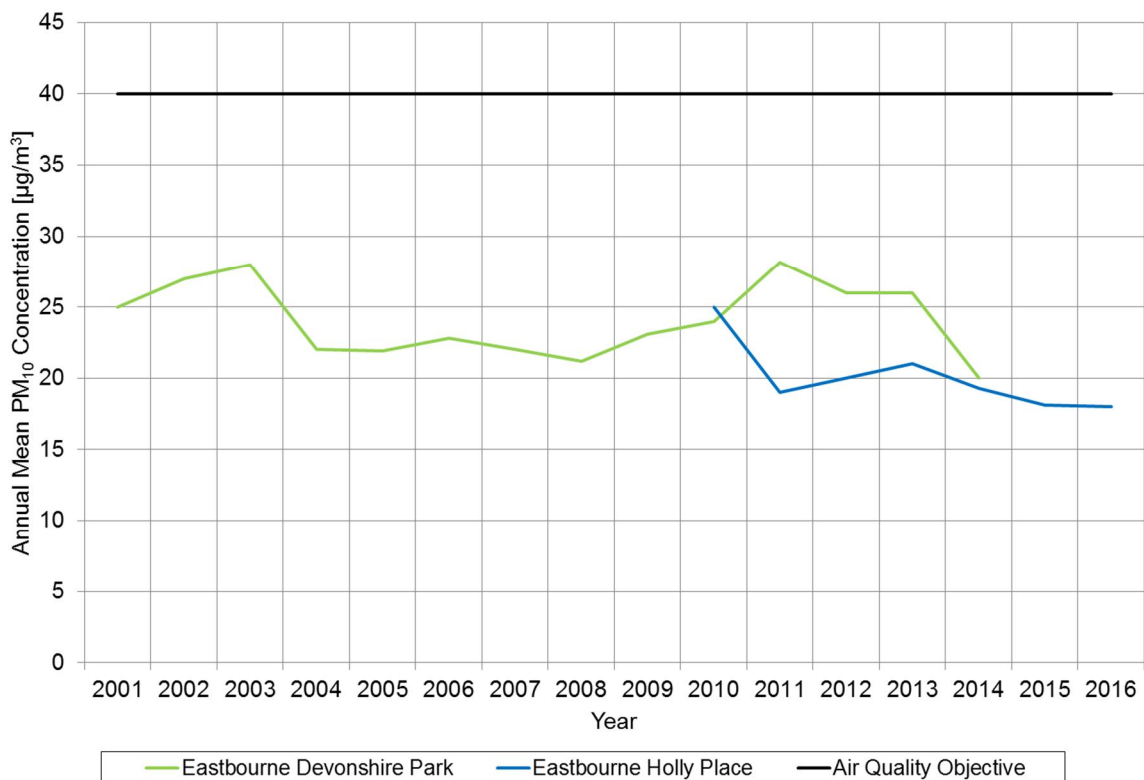
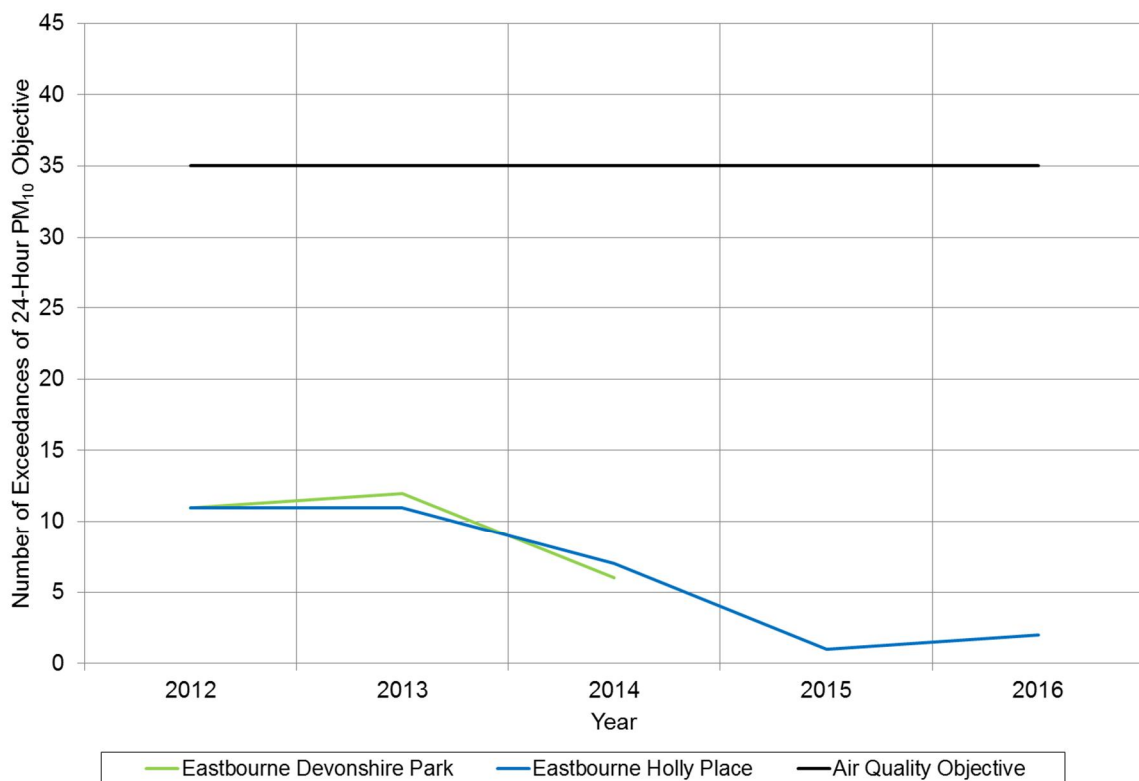


Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the Air Quality Objective of 50 µg/m³,

not to be exceeded more than 35 times per year. These results show that both Eastbourne sites achieved the daily PM₁₀ objective every year from 2012 to 2016.

Figure 4 shows the trend in number of exceedances of the daily mean PM₁₀ objective. The number of days which exceeded the objective has been decreasing at both sites between 2012 and 2016.

Figure 4: Trends in Number of Exceedances of the 24-Hour Mean Particulate Matter (PM₁₀) Objective measured at Automatic Monitoring Sites



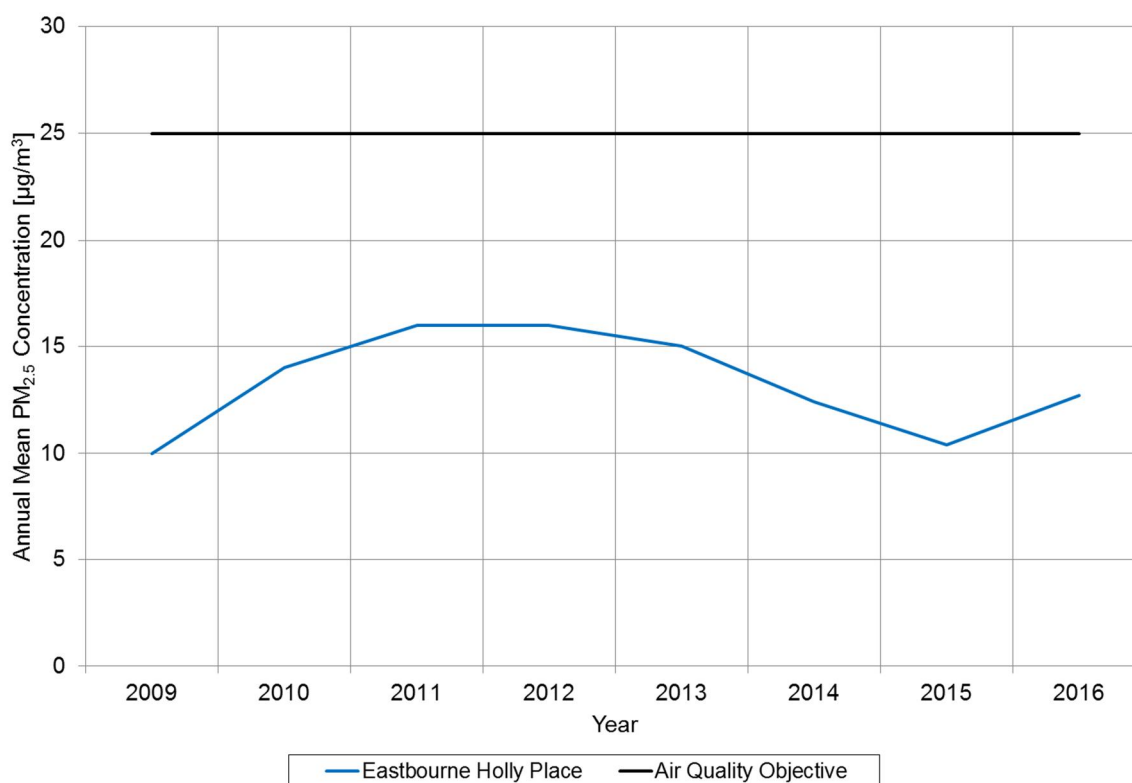
3.2.3 Particulate Matter (PM_{2.5})

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.7 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past 5 years. Between 2012 and 2016, the measured levels have been between 12 µg/m³ and 16 µg/m³ which is below the Air Quality Objective of 25 µg/m³.

Figure 5 shows the trend in annual mean PM_{2.5} concentrations. No clear trend is evident in the results between 2009 and 2016.

Figure 5: Trends in Annual Mean Particulate Matter (PM_{2.5}) Concentrations measured at Automatic Monitoring Sites



3.2.4 Sulphur Dioxide (SO₂)

Table A.8 in Appendix A compares the ratified continuous monitored SO₂ concentrations at the Lullington Heath rural site for 2016 with the Air Quality Objectives for SO₂. There have been no exceedances in 2016 of any of the three UK Air Quality Objectives for SO₂ (15-minute, 1-hour and 24-hour). Further details about the SO₂ objectives are reported in Appendix E.

3.2.1 Ozone (O₃)

Table A.9 in Appendix A presents the ratified continuous monitored annual mean O₃ concentrations for the past 5 years at the Isfield and Lullington Heath rural sites. Between 2012 and 2016, the annual mean concentrations monitored at Isfield have been between 46 µg/m³ and 53 µg/m³, and at Lullington Heath between 49 µg/m³ and 57 µg/m³. There is no annual mean objective or target value for annual mean O₃ concentration.

Figure 6 shows the trend in annual mean O₃ concentrations at the two monitoring stations. No clear trend is evident in the results at Isfield between 2011 and 2016,

while a slight increase has been observed at Lullington Heath until 2015. Both sites have shown a decrease between 2015 and 2016.

Figure 6: Trends in Annual Mean O₃ Concentrations measured at Automatic Monitoring Sites

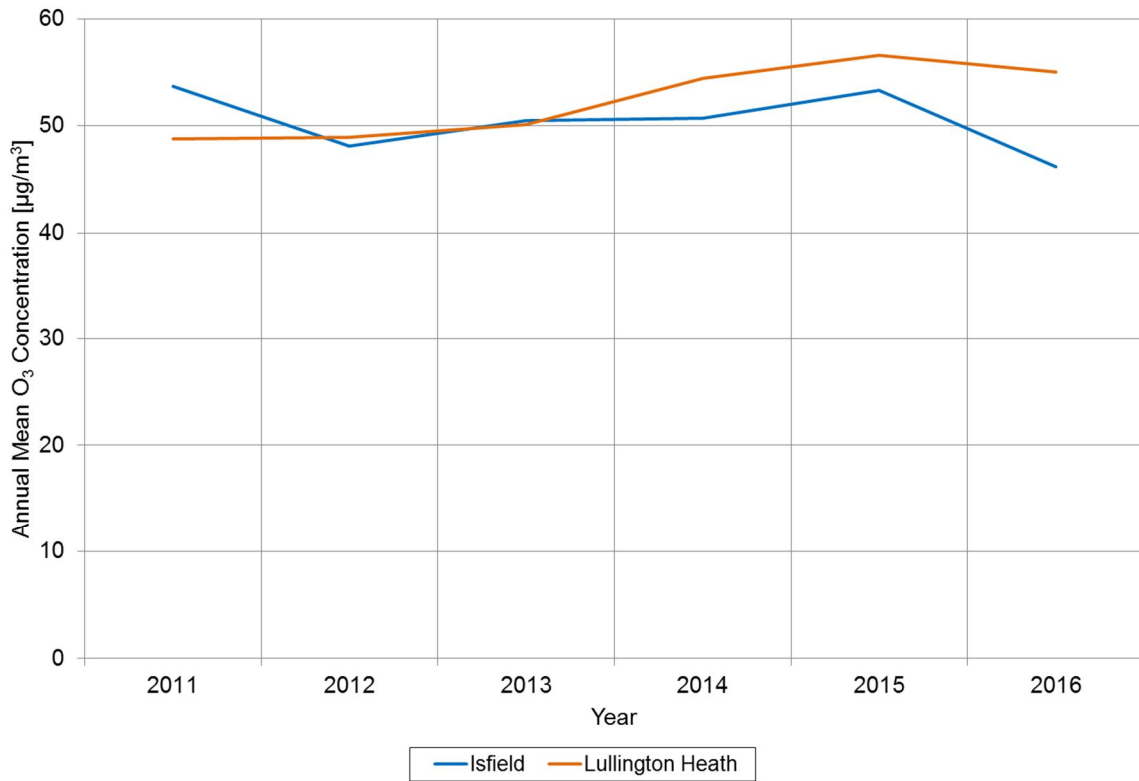
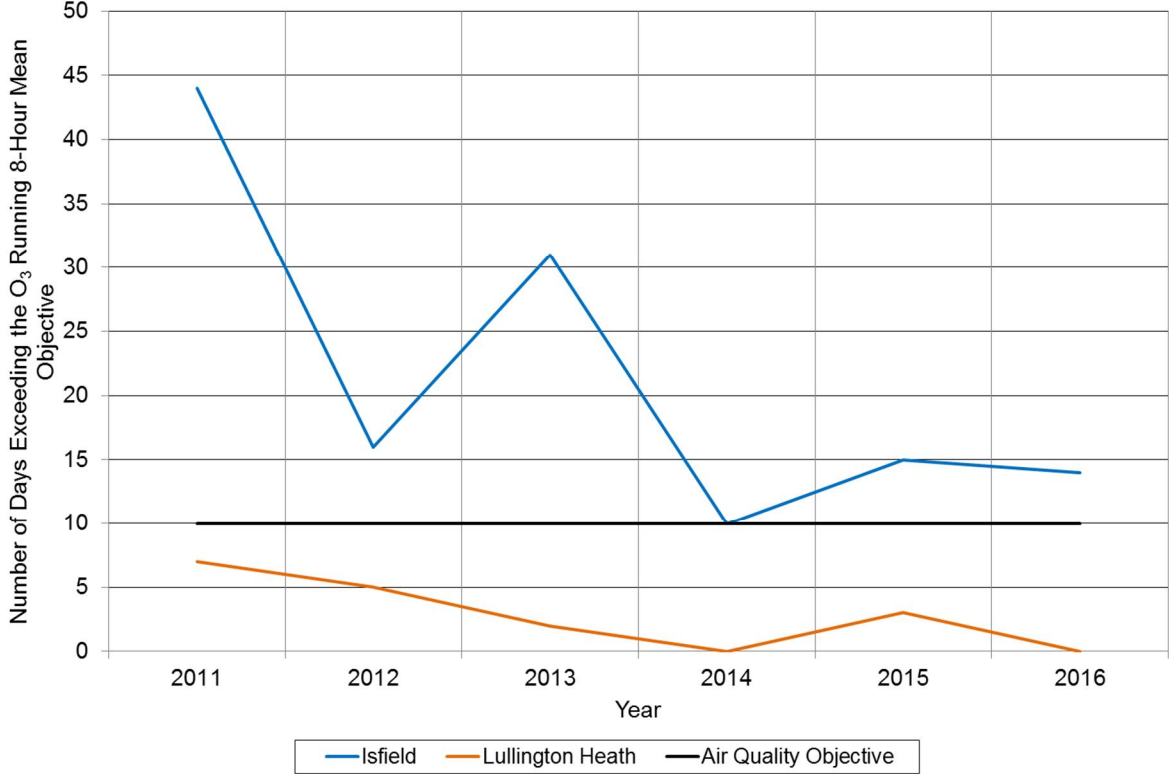


Table A.10 in Appendix A compares the ratified continuous monitored O₃ running 8-hour mean concentrations for the past 5 years with the UK Air Quality Objective of 100 µg/m³, not to be exceeded on more than 10 days per year. The monitoring results show that the Isfield station exceeded the O₃ objective every year from 2012 to 2016, except for 2014. The maximum number of days above the target values was 31 days in 2013 at Isfield. Instead, the Lullington Heath station has measured days exceeding the objective in 2012, 2013 and 2015, but less than the 10 days allowed.

Figure 7 shows the trend in number of days exceeding the O₃ objective. Both stations show a clear reduction in the number of exceedances between 2011 and 2016.

Figure 7: Trends in Number of Days Exceeding the Running 8-Hour Mean Ozone (O₃) Objective



Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In 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	553855	101740	NO ₂ ; SO ₂ ; O ₃	NO	Chemiluminescence; UV Fluorescence; UV Absorption	> 1000	1000	3
AR2	Wealden - Isfield	Rural	544890	117380	O ₃	NO	UV Absorption	60	20	2
EB1	Eastbourne - Devonshire Park	Urban Background	561180	98360	NO ₂ ; PM ₁₀ ; O ₃	NO	Chemiluminescence; FDMS; UV Absorption	40	10	1.5
EB3	Holly Place AURN	Urban Background	560085	103118	NO ₂ ; PM ₁₀ ; PM _{2.5}	NO	Chemiluminescence; TEOM FDMS; TEOM FDMS	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.

(3) EB1 and EB3 details from Eastbourne Borough Council's 2017 Air Quality Annual Status Report.

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
W1	Crowborough Background	Urban Background	552591	130667	NO ₂	NO	5 – 10	2	NO	2.5
W2	Crowborough Town Centre	Roadside	551626	131090	NO ₂	NO	5 – 10	2	NO	2.5
W3	Uckfield Background	Urban Background	547828	121954	NO ₂	NO	10 – 20	1	NO	2.5
W4	Uckfield Town Centre	Roadside	547250	120977	NO ₂	NO	5 – 10	2	NO	2.5
W5	Eastbourne Road, Polegate	Roadside	558079	104481	NO ₂	NO	13	1	NO	2
W6	London Road, Hailsham	Roadside	558845	109783	NO ₂	NO	0.5	1	NO	2.5
W7	A267 E of Cross in Hand	Roadside	556813	121665	NO ₂	NO	19	0.5	NO	1.8
W8	A22 W of Boship roundabout	Roadside	556933	111165	NO ₂	NO	8	2	NO	2

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2012	2013	2014	2015	2016
LL1	Rural	Automatic	96	96	9	9.1	6.8	6.4	7.8
EB1	Urban Background	Automatic	0	0	15.1	17.1	14	-	-
EB3	Urban Background	Automatic	99	99	13.3	12.5	12.1 (11.8)	10.6	12
W1	Urban Background	Diffusion Tube	83	83	13.6	11.0	11.9	11.9	13.3
W2	Roadside	Diffusion Tube	83	83	15.3	16.4	20.8	18.1	19.1
W3	Urban Background	Diffusion Tube	83	83	11.9	10.9	12.6	12.4	12.6
W4	Roadside	Diffusion Tube	83	83	11.2	17.1	21.7	22.4	26.2
W5	Roadside	Diffusion Tube	83	83	16.9	16.5	19.8	19.5	19.0
W6	Roadside	Diffusion Tube	83	83	20.2	21.4	27.2	25.1	22.9
W7	Roadside	Diffusion Tube	83	83	21.7	22.6	21.9	18.9	20.1
W8	Roadside	Diffusion Tube	83	83	28.0	26.4	25.7	22.5	25.8

Diffusion tube data has been bias corrected

Annualisation has been conducted where data capture is <75%

Diffusion tube data has been distance corrected for relevant exposure. EB1 and EB3 data from Eastbourne's 2017 ASR.

Notes:

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

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

(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) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

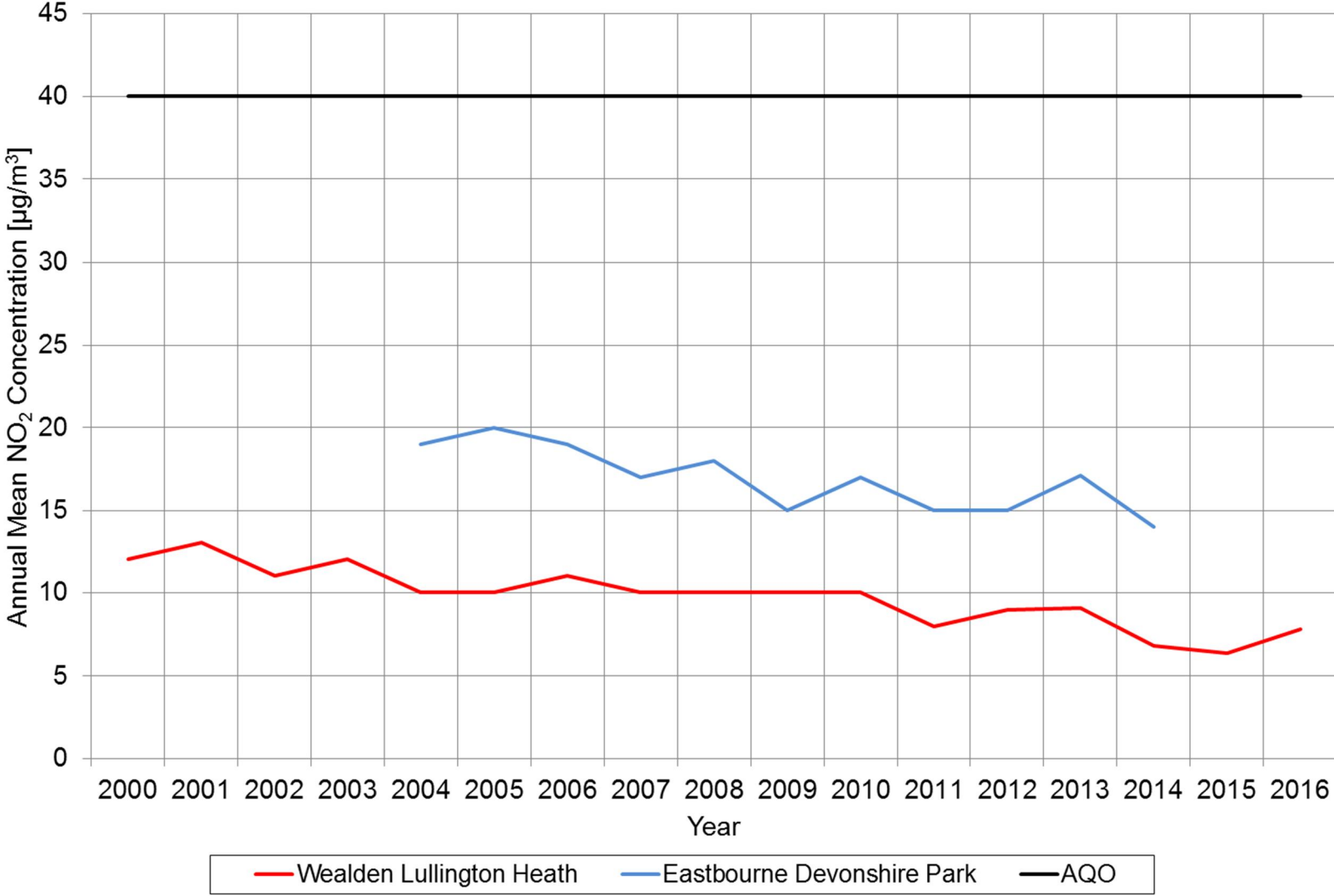


Figure A.2b – Trends in Annual Mean NO₂ Concentrations at Non-Automatic Monitoring Sites

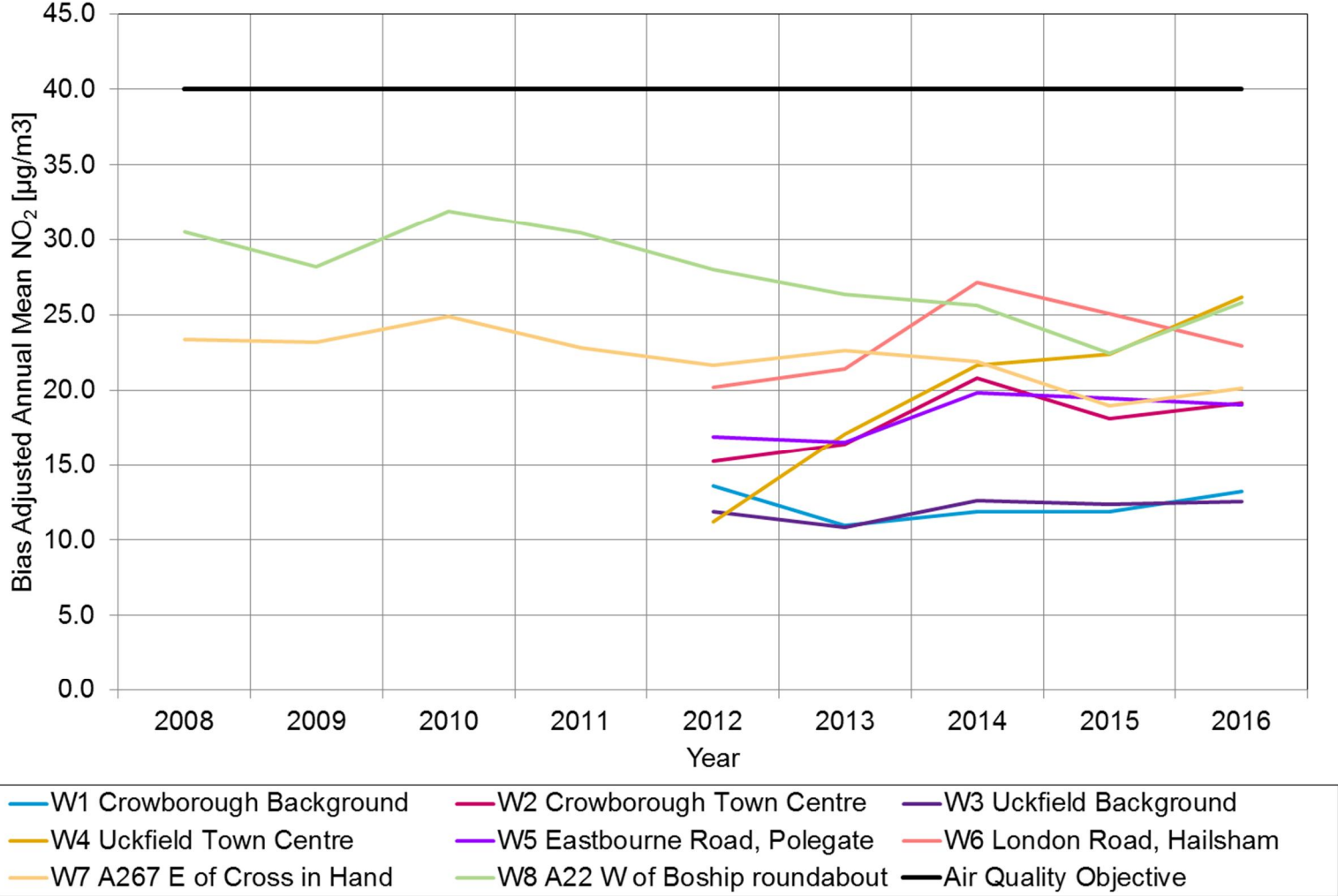


Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200 µg/m ³ ⁽³⁾				
					2012	2013	2014	2015	2016
LL1	Rural	Automatic	96	96	0	0	0 (43)	0 (42.7)	0
EB1	Urban Background	Automatic	0	0	0	0	0	-	-
EB3	Urban Background	Automatic	99	99	0	0	0 (67.8)	0 (62)	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200 µg/m³ not to be exceeded more than 18 times/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) If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(4) EB1 and EB3 data from Eastbourne Borough Council's 2017 Air Quality Annual Status Report.

Table A.5 – Annual Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2012	2013	2014	2015	2016
EB1	Urban Background	0	0	26	26	19.8	-	-
EB3	Urban Background	99	99	20	21	19.3	18.1	18

For details on annualisation, see Eastbourne Borough Council's 2017 Air Quality Annual Status Report.

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ 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%).

Figure A.3 – Trends in Annual Mean PM₁₀ Concentrations

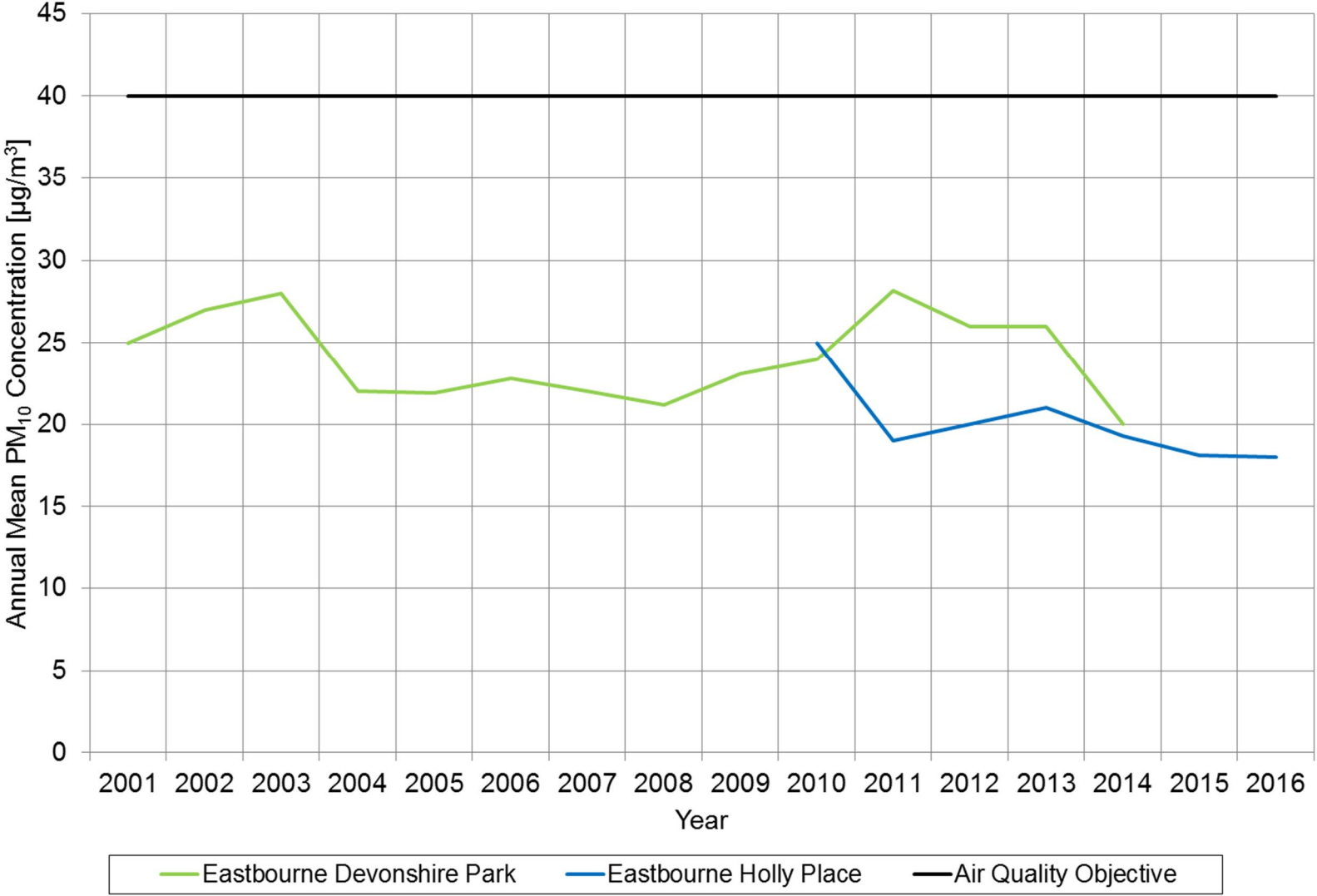


Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	PM ₁₀ 24-Hour Means > 50µg/m ³ ⁽³⁾				
				2012	2013	2014	2015	2016
EB1	Urban Background	0	0	11	12 (42.0)	6 (32.9)	-	-
EB3	Urban Background	99	99	11 (40.0)	11 (41.0)	7 (29.1)	1 (26)	2

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50 µg/m³ not to be exceeded more than 35 times/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) If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(4) EB1 and EB3 data from Eastbourne Borough Council's 2017 Air Quality Annual Status Report.

Figure A.4 – Trends in Number of Exceedances of the 24-Hour Mean PM₁₀ Objective (50µg/m³)

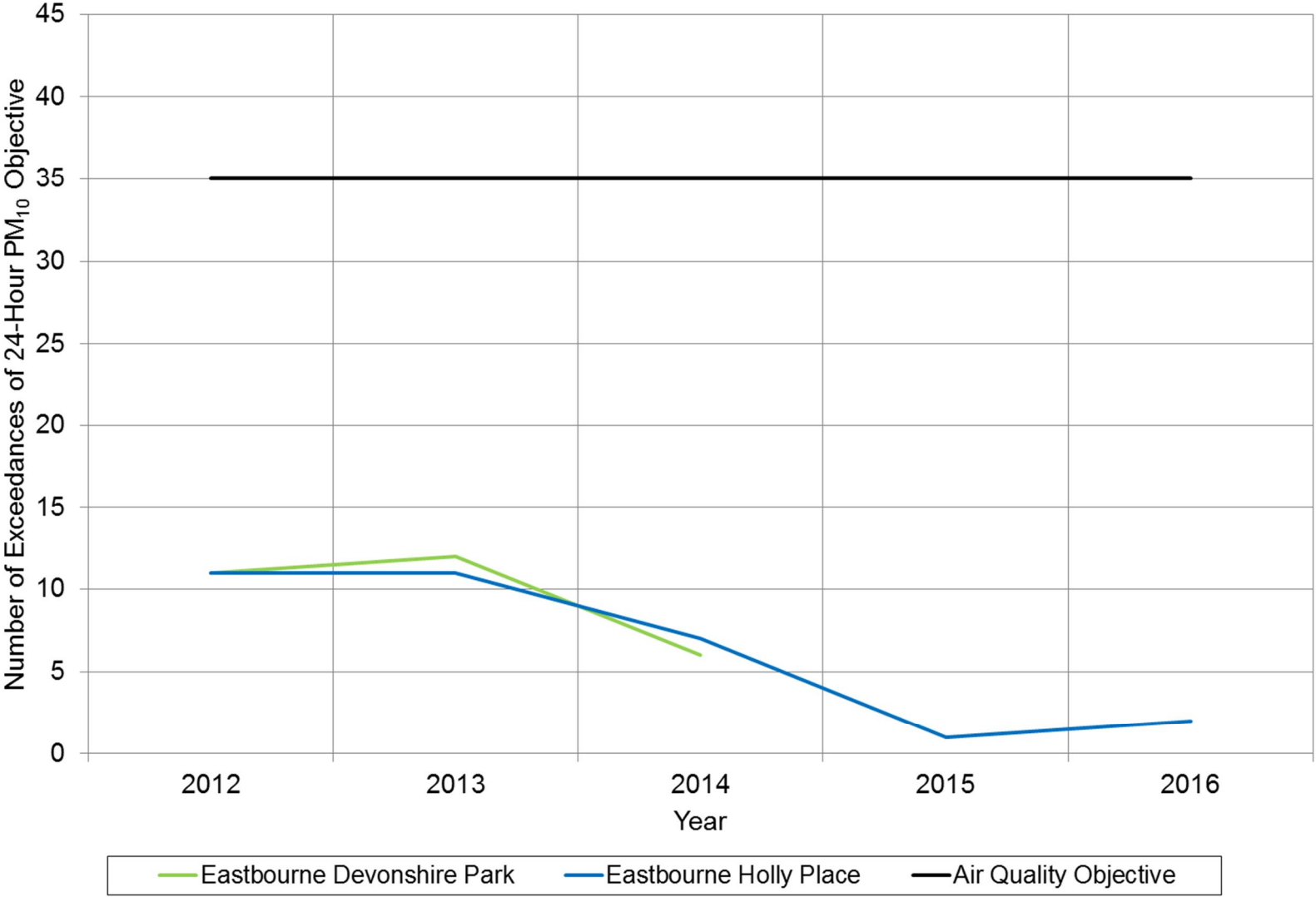


Table A.7 – PM_{2.5} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	PM _{2.5} Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2012	2013	2014	2015	2016
EB3	Urban Background	74	74	16	15	12.4	10.4 (12.3)	12.7 (14.4)

For details on annualisation, see Eastbourne Borough Council's 2017 Air Quality Annual Status Report.

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) EB3 data from Eastbourne Borough Council's 2017 Air Quality Annual Status Report.

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

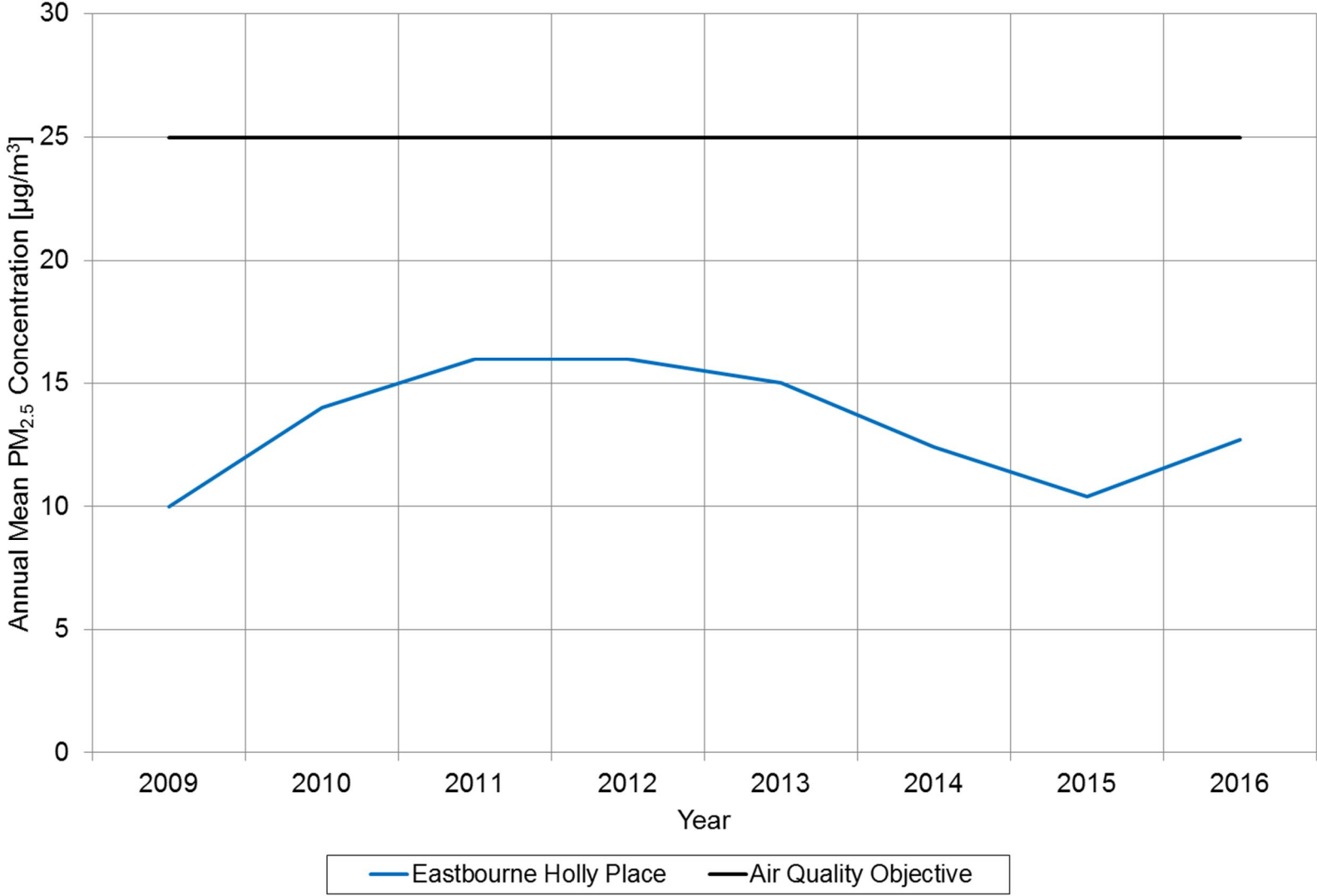


Table A.8 – SO₂ Monitoring Results

Site ID	Site Type	Valid Data Capture for monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	Number of Exceedances 2016 (percentile in bracket) ⁽³⁾		
				15-minute Objective (266 µg/m ³)	1-hour Objective (350 µg/m ³)	24-hour Objective (125 µg/m ³)
LL1	Rural	71	71	0 (6.2)	0 (5.2)	0 (3.0)

Notes:

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)

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

Table A.9 – Annual Mean O₃ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	O ₃ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2012	2013	2014	2015	2016
AR2	Rural	93	93	48.1	50.5	50.7	53.3	46.2
LL1	Rural	97	97	48.9	50.1	54.4	56.6	55.0

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

Figure A.6 – Trends in Annual Mean O₃ Concentrations

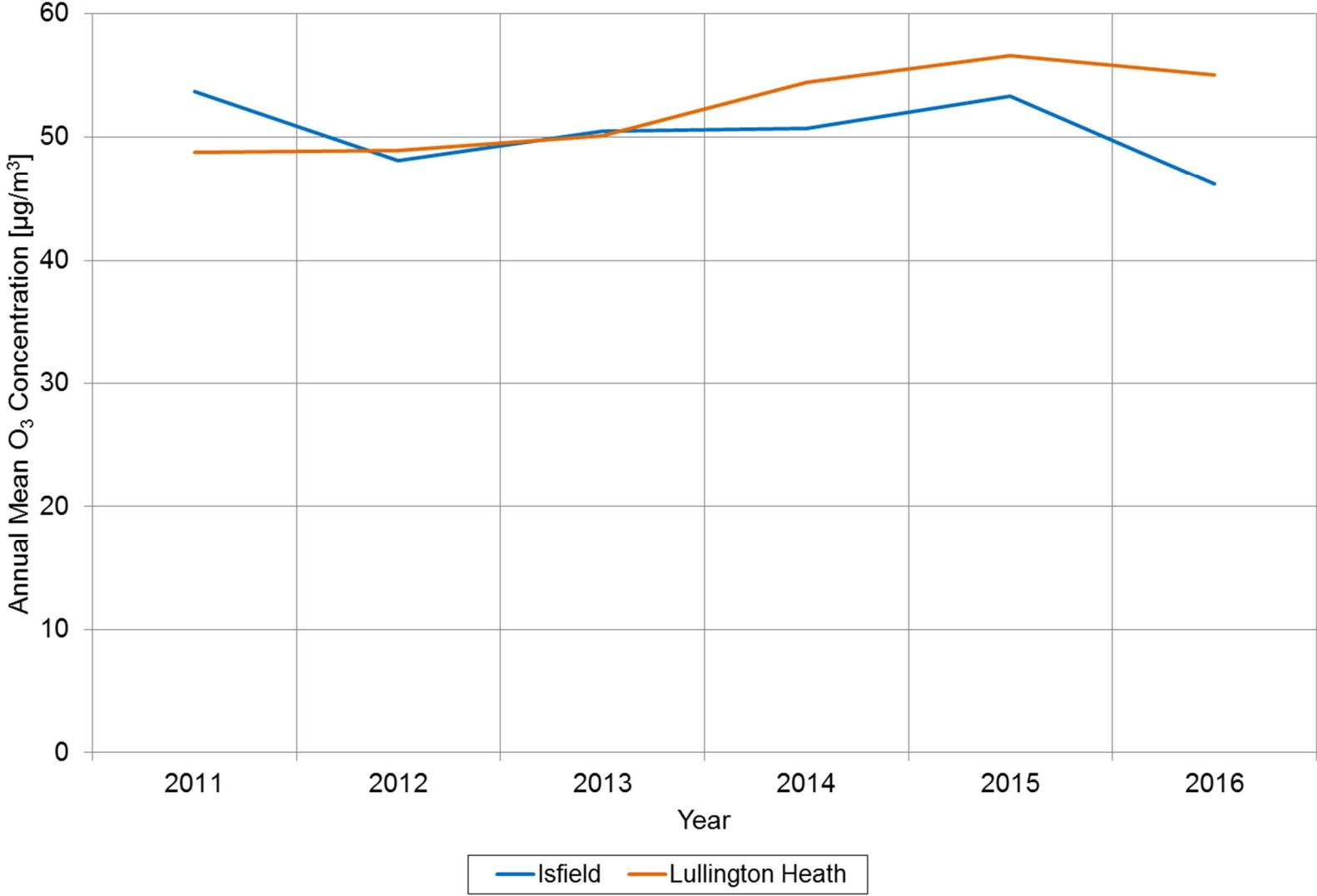


Table A.10 – Running 8-Hour Mean O₃ Monitoring Results

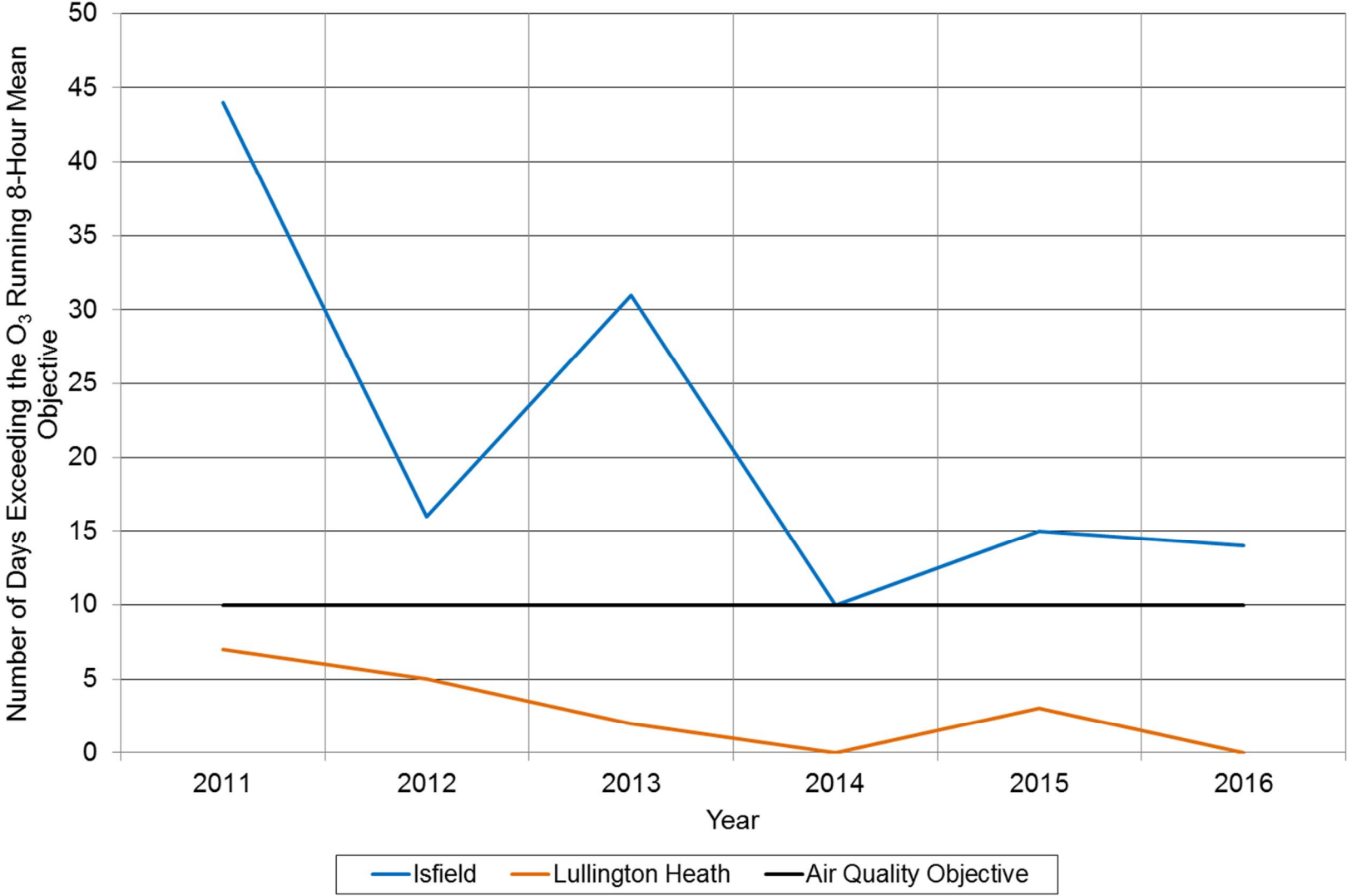
Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	Days With O ₃ Running 8-Hour Means > 120µg/m ³				
				2012	2013	2014	2015	2016
AR2	Rural	93	93	16	31	10	15	14
LL1	Rural	97	97	5	2	0	3	0

Notes: Exceedances of the O₃ running 8-hour mean 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%).

Figure A.7 – Trends in Number of Days Exceeding the Running 8-Hour Mean O₃ Objective (100µg/m³)



Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2016

Site ID	NO ₂ Mean Concentrations (µg/m ³)													Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.92) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾	
W1	18.1	15.7	15.3	12.9	11.3	8.3	9.1	9.0			35.5	23.5	15.9	14.6	13.3	
W2	28.4	26.3	26.9	29.4	24.2	10.8	19.9	21.3			38.8	33.1	25.9	23.8	19.1	
W3	20.0	17.0	17.8	14.7	13.1	6.4	12.5	11.4			22.8	25.5	16.1	14.8	12.6	
W4	38.2	43.6	40.0	39.1	34.1	26.3	40.5	35.1			44.3	39.3	38.0	35.0	26.2	
W5	31.6	30.8	37.8	33.2	34.1	28.1	28.5	31.7			21.9	40.5	31.8	29.3	19.0	
W6	23.3	30.5	26.5	30.8	28.3	11.4	23.1	22.0			30.7	32.6	25.9	23.9	22.9	
W7	45.2	48.8	40.0	50.6	45.1	26.7	50.9	43.6			40.6	52.2	44.4	40.8	20.1	
W8	36.0	36.3	41.1	42.3	41.0	23.0	33.0	39.0			48.1	50.2	39.0	35.9	25.8	

Local bias adjustment factor used National bias adjustment factor used

Annualisation has been conducted where data capture is <75%

Notes:

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

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

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

Significant changes to sources

No significant changes to sources to report.

Detailed modelling or monitoring for changes to AQMAs

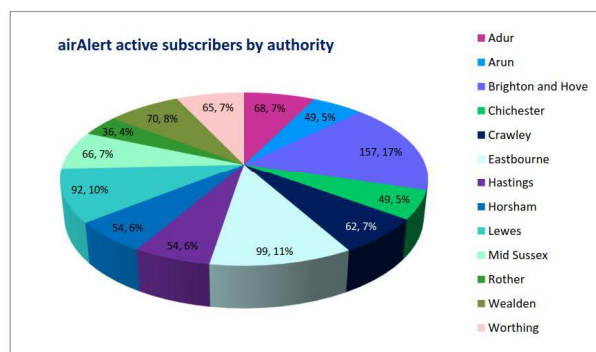
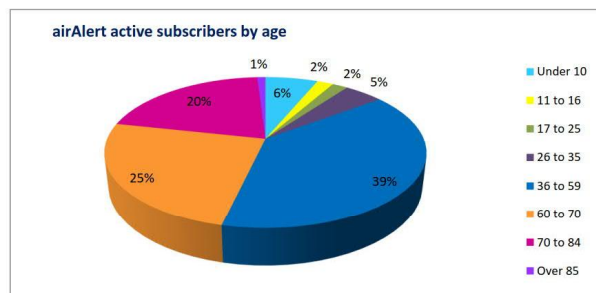
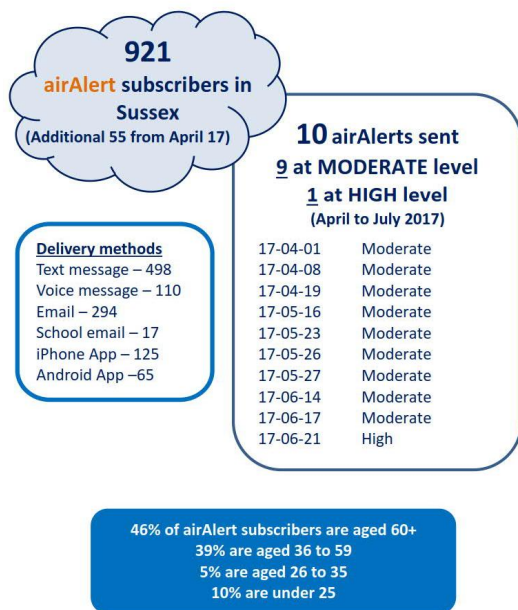
No detailed modelling or monitoring campaign has been conducted to determine whether an AQMA needs to be declared, amended or revoked.

Additional evidence in support of measures for Action Plans

Measure n.4: airAlert. As of July 2017, the total number of subscribers to the airAlert service by the Sussex Air Quality Partnership has increased to 921, and the number of subscribers in Wealden District has increased to 70.

Figure B.1 – Trends in Annual Mean PM_{2.5} Concentrations

airAlert stats July 2017



Diffusion Tube Bias Adjustment Factors

Bias adjustment is effectively a calculated factor which shows whether diffusion tubes are over or under-reading ambient concentrations, thereby allowing a correction to be made.

Wealden District Council 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 06/17) to select the appropriate bias adjustment factor for diffusion tubes prepared by Gradko. Figure C.1 shows the appropriate national bias adjustment factor used in this report.

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

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 06/17			
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 September 2017			
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods							Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet			
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.							LAQM Database Version			
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.							Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.			
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor 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 LAQM-Helpdesk@uk.bureauveritas.com or 0800 0327953							
Analysed By ¹	Method ² To update your selection, choose All from the pop-up list	Year ³ To update your selection, choose All	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (mg/m ³)	Automatic Monitor Mean Conc. (Cm) (ng/m ³)	Bias (B)	Tube Precision ⁵	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2016	R	Gateshead Council	12	29	26	10.5%	G	0.90
Gradko	20% TEA in water	2016	R	Gateshead Council	11	35	37	-6.0%	G	1.06
Gradko	20% TEA in water	2016	R	Gateshead Council	12	37	31	19.0%	G	0.84
Gradko	20% TEA in water	2016	R	Wokingham Borough Council	11	45	41	9.0%	G	0.92
Gradko	20% TEA in water	2016	R	Wokingham Borough Council	11	37	34	9.5%	G	0.91
Gradko	20% TEA in water	2016	R	Cheshire West and Chester	12	37	39	-5.3%	G	1.06
Gradko	20% TEA in water	2016	R	Thurrock Borough Council	12	29	26	11.0%	G	0.90
Gradko	20% TEA in water	2016	R	Borough Council of King's Lynn & West Norfolk	11	30	25	18.2%	G	0.85
Gradko	20% TEA in water	2016	UB	Eastleigh Borough Council	11	29	30	-4.7%	G	1.05
Gradko	20% TEA in water	2016	R	Eastleigh Borough Council	12	44	42	2.9%	G	0.97
Gradko	20% TEA in water	2016	R	Brighton & Hove City Council	12	52	48	8.8%	G	0.92
Gradko	20% TEA in water	2016	R	Eastleigh Borough Council	11	29	37	-22.0%	G	1.28
Gradko	20% TEA in water	2016	KS	Manylebone Road Intercomparison	12	99	79	25.2%	G	0.80
Gradko	20% TEA in water	2016	R	Monmouthshire County Council	11	39	34	16.6%	G	0.86
Gradko	20% TEA in Water	2016	R	Preston City Council	10	30	27	10.0%	G	0.91
Gradko	20% TEA in water	2016	R	Dudley MBC	12	37	34	11.0%	G	0.90
Gradko	20% TEA in water	2016	UB	Dudley MBC	12	26	22	18.6%	G	0.84
Gradko	20% TEA in water	2016	R	Dudley MBC	11	43	38	12.4%	G	0.89
Gradko	20% TEA in water	2016	R	Dudley MBC	12	51	54	-5.6%	G	1.06
Gradko	20% TEA in water	2016	B	LB Waltham Forest	12	31	30	2.3%	G	0.98
Gradko	20% TEA in water	2016	R	NOTTINGHAM CITY COUNCIL	12	37	39	-5.4%	G	1.06
Gradko	20% TEA in water	2016	R	LB Hounslow	9	75	58	28.0%	G	0.78
Gradko	20% TEA in water	2016	UB	LB Hounslow	9	33	33	0.1%	G	1.00
Gradko	20% TEA in water	2016	R	Lisburn & Castlereagh City Council	12	39	26	46.4%	G	0.68
Gradko	20% TEA in water	2016	B	Pembrokeshire Council	11	4	3	27.5%	G	0.78
Gradko	20% TEA in water	2016	R	Cheltenham Borough Council	11	32	32	-0.9%	G	1.01
Gradko	20% TEA in water	2016	R	Lancaster City Council	11	33	32	2.9%	G	0.97
Gradko	20% TEA in water	2016		Overall Factor⁶ (27 studies)					Use	0.92

Discussion of Choice of Factor to Use

Wealden District Council has no means of deriving a local bias adjustment factor as there is no co-location study with diffusion tubes and a continuous analyser.

Therefore, the national bias adjustment factor has been used.

PM Monitoring Adjustment

The PM₁₀ data from the FDMS continuous analysers at Eastbourne Devonshire Park (EB1) and Holly Place (EB3) measure gravimetric-equivalent PM₁₀ concentrations, and therefore no additional adjustment has been necessary. For consistency, the data presented in this report is the same as included in the Eastbourne 2017 ASR.

Short-term to Long-term Data Adjustment

Data capture in 2016 was higher than 75% for all monitoring sites in Wealden District (non-automatic sites and the automatic monitors at AR2 – Isfield and LL1 – Lullington Heath). Details of short-term to long-term data adjustment for the automatic monitors in Eastbourne Borough are given in the Eastbourne 2017 ASR.

QA/QC of Automatic Monitoring

As previously described in Section 2.1, 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.

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 diffusion tubes, with a 20% triethanolamine (TEA) in water preparation. In the 8 most recent AIR PT testing rounds (April 2015 to February 2017), Gradko achieved 100% satisfactory results, and so there is high confidence in the accuracy of the diffusion tube results.

Distance Correction Using the NO₂ Fall-off with Distance Calculator

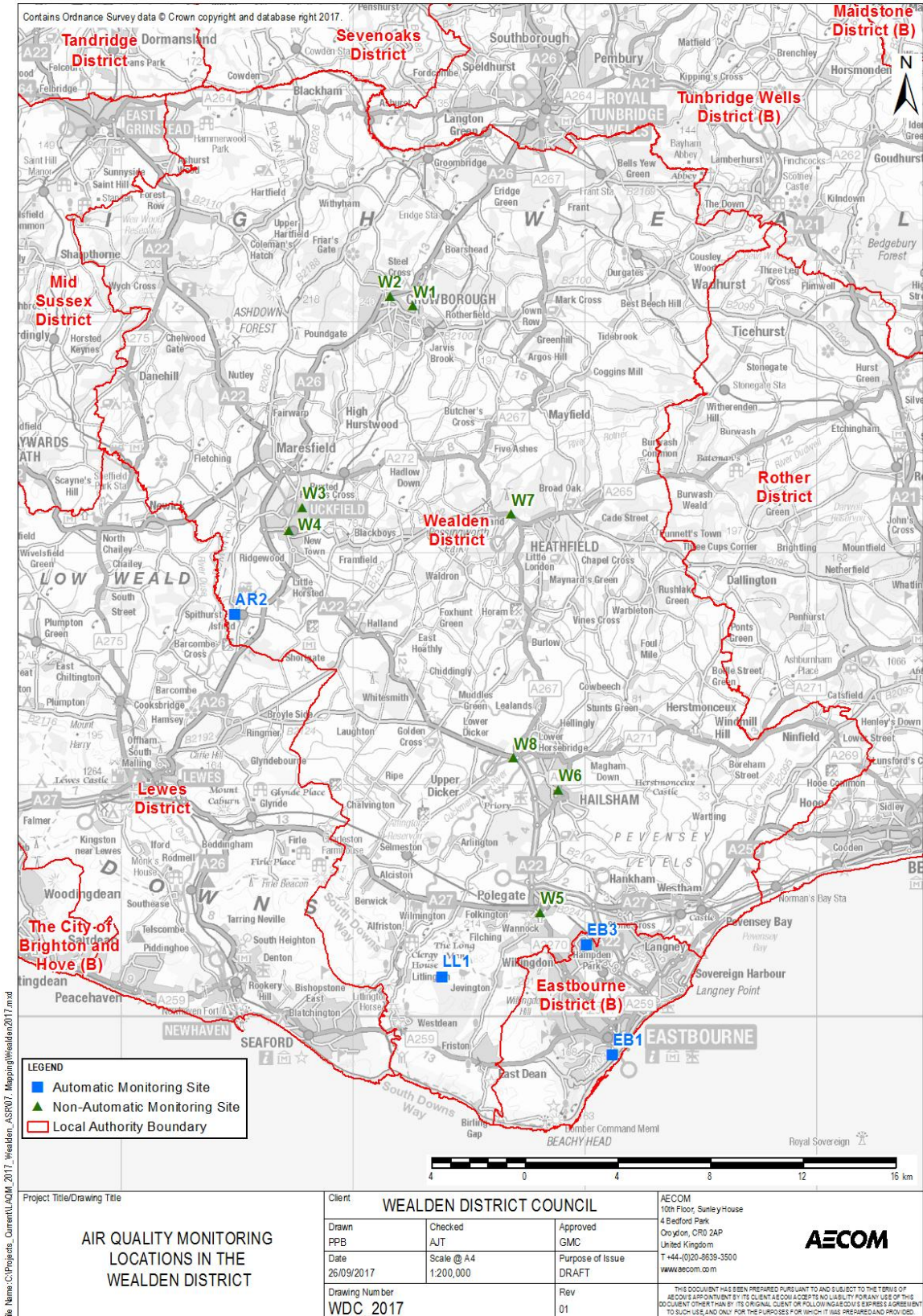
Annual average NO₂ data from non-automatic monitoring sites W1, W2, W3, W4, W5, W6, W7, W8 in 2016 have been corrected for distance using the NO₂ Fall-Off with Distance Calculator (Version 4.1) and total NO₂ concentrations from the DEFRA Background Maps for 2016. Detailed results for the calculations are included in Table C.1.

A distance factor has been calculated as the ratio between the distance-corrected and the bias-adjusted annual average NO₂ concentration at each site in 2016. These factors have been applied to all monitored annual average NO₂ concentrations from 2008 to 2016 included in Table A.3 and Figure A.1b.

Table C.1 – Distance Correction Calculations - 2016

Site ID	Distance (m)			Annual Mean NO ₂ Concentrations (µg/m ³)			Distance Factor
	Tube - Kerb	Tube - Receptor	Receptor- Kerb	DEFRA Mapped Background	Bias Adjusted (0.92) and Annualised	Distance Corrected to Nearest Exposure	
W1	2.0	7.5	9.5	10.9	14.6	13.3	0.91
W2	2.0	7.5	9.5	11.0	23.8	19.1	0.80
W3	1.0	15.0	16.0	10.8	14.8	12.6	0.85
W4	2.0	7.5	9.5	10.9	35.0	26.2	0.75
W5	1.0	13.0	14.0	10.0	29.3	19.0	0.65
W6	1.0	0.5	1.5	12.4	23.9	22.9	0.96
W7	0.5	19.0	19.5	8.9	40.8	20.1	0.49
W8	2.0	8.0	10.0	9.1	35.9	25.8	0.72

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



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

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

Table E.2 – Additional objectives from the UK Air Quality Strategy

Pollutant	Air Quality Objective ¹⁵	
	Concentration	Measured as
Ozone (O ₃)	100 µg/m ³ , not to be exceeded more than 10 days a year	Running 8-hour mean
Particulate Matter (PM _{2.5})	25 µg/m ³	Annual Mean

¹⁵ The units are in microgrammes 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	Air quality Annual Status Report
AURN	Automatic and Urban 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 (micrometres or microns) 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
SAMMS	Strategic Access Management and Monitoring Strategy

Abbreviation	Description
SANGS	Suitable Alternative Natural Green Spaces
SAQMN	Sussex Air Quality Monitoring Network
SO ₂	Sulphur Dioxide
SPA	Special Protection Area

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