2020 Air Quality Annual Status Report (ASR)

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

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Executive Summary: Air Quality in Our Area

Air Quality in Rother

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

The District of Rother is the second-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 A21, the A28, the A265, the A258, the A27 and the A268. The main pollutants of concern with respect to road traffic are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). Currently, there are no areas in Rother where members of the public are exposed to levels of these pollutants in excess of the UK Air Quality Objectives.

Rother District Council manages local air quality in close collaboration with East Sussex County Council, which provided part of the 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.

In 2015, all monitoring locations in the District achieved the NO_2 objective, with concentrations lower than 40 µg/m^3. In 2016 however, concentrations exceeded the objective at A2100 Beauport Park and High Street Flimwell diffusion tube sites, although concentrations in 2017, 2018 and 2019 returned to levels below the objective at these locations and all others.

[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

PM_{10} is monitored in Rother at De La Warr Road, Bexhill, and in recent years concentrations have been generally low (well below the UK annual mean objective of 40 µg/m^3), with no significant increasing or decreasing tendency, although there is some year-on-year variability. $PM_{2.5}$ was derived from the PM_{10} concentrations, and in recent years has not exceeded the UK annual mean objectives of 25 µg/m^3.

As in other suburban and rural areas of East Sussex, ozone (O_3) is of considerable concern. Ozone is monitored at Rye Harbour, where high levels have been monitored since 2011.

A large area of the countryside in the District is within the High Weald Area of Outstanding Natural Beauty (AONB). The impact of traffic-related air pollution on some of these areas has been assessed in past years. Current and future traffic flows are not expected to put the Pevensey Levels Special Area of Conservation (SAC) at risk from excessive nitrogen deposition.

Actions to Improve Air Quality

Rother District Council is helping the public to avoid the worst effects of ozone pollution by monitoring ozone levels at Rye Harbour and informing the public of pollution events through the airAlert pollution warning service. This service is provided and maintained through the Sussex Air partnership.

Rother District Council, together with Sussex Air and other local authorities across Sussex and Kent, supports the Energise Network, an integrated network of electric charging points for vehicles. Charging points are now located across East and West Sussex, Kent, Surrey, Greater London and neighbouring counties.

Rother District Council 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, encourage emissions reductions and improve the environment and health of the population. Other actions being implemented to improve public health include promoting active modes of transportation like walking, cycling and using public transport, as well as car clubs and car sharing.

Conclusions and Priorities

Annual mean NO_2 concentrations recorded at continuous monitors and diffusion tubes in Rother District are within the air quality annual mean objective of 40 µg/m^3, and there were no exceedances of the short term hourly objective.

There were also no exceedances of either the annual mean or daily mean PM_{10} objectives in 2019, or for the previous years from 2015.

Rother District is committed to taking action to improve air quality, in particular through involvement with the Sussex Air Quality Partnership. The two main achievements in 2019 were: constructive discussions with Planning Policy to ensure that air quality mitigation requirements become integrated as policy into the future Local Plan and, an increased-use of Air Quality Guidance produced by Sussex Air to apply conditions to major planning applications. These measures have ensured that air quality mitigation cost calculations have been undertaken and measures to improve air quality are starting to get integrated into major developments. Other priority measures and actions for the District include the roll-out and expansion of electric charging points via the Energise Network, collaboration between departments on health improvement, climate change, environment and transport, and maintaining and updating the website, airAlert scheme and monitoring network.

The main challenge in maintaining the generally good levels of air quality across the District is likely to be the careful management of planning applications and developments. Detailed and rigorous air quality assessments and mitigation cost calculations will continue to be needed, especially where multiple developments may occur close together.

There is also a risk that post Covid-19 and Brexit, there will be a lack of funds for LAs and other public bodies occurring at the same time as there is a need to grow and recover the economy. Under such a scenario there may be temptations to increase the use of fossil fuels and in the short term, reduce the importance of improving air quality by Council Members.

However, this is by no means certain because equally, there's now an ideal opportunity, due to the restrictions caused by Covid-19, to ensure that some of the new ways of working that the Council and other organisations have embraced and which also help to improve local air quality, continue. The current situation provides

an opportunity to integrate and enact policies to help improve the local air quality, health and wellbeing for all of the residents of Rother District Council. Such policies would also dovetail with the Council's draft Environment Strategy.

There are three main priorities for addressing air quality in 2020 and beyond. These are to ensure that air quality mitigation requirements become policy in the new Local Plan, to continue work with Sussex Air and other Local Authorities and consult on the Draft Environment Strategy and Action Plan 2020-2030 to ensure air quality mitigation is adequately addressed.

Local Engagement and How to get Involved

Everyone concerned about air quality in Rother and the rest of Sussex can find real-time information on pollution levels on the Sussex Air website sussex-air.net. People are encouraged to 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.

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 more details, please visit https://www.zap-map.com/charge-points/public-charging-point-networks/energise-network/. The reduction in using cars to travel to work, continued home working and increasing walking and cycling post Covid-19 are encouraged.

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1 Local Air Quality Management

This report provides an overview of air quality in Rother District during 2019. 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 Rother 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.

Rother District currently does not have any AQMAs, because previous monitoring and modelling studies have not indicated any likelihood of the UK air quality objectives being exceeded.

Since Rother District has no AQMAs, no formal Air Quality Action Plan has been implemented for the District.

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

Defra's appraisal of last year's ASR[4] concluded that the report was well structured and provided the required information as specified in the guidance, with acceptable conclusions reached with the following comments;

1. *All monitoring completed within 2018 has been presented within the ASR, this also includes an estimation of $PM_{2.5}$ concentrations at the RY2 monitoring location following TG(16) guidance. It is recommended that Table A.7 and Figure A.4 are presented as estimated concentrations of $PM_{2.5}$ to avoid any confusion for the reader.*
2. *Distance correction has been completed at every diffusion tube location, including those where relevant exposure is 20m further from the kerb than the monitoring location. Distance correction should only be completed at monitoring sites that have an annual mean NO_2 concentration greater than 36ug/m^3 and the relevant exposure is within 20m of the monitoring location.*
3. *The same measures specific to $PM_{2.5}$ have been included with the 2019 ASR as were within the 2018 ASR. It is stated that further measures will be considered in future years, therefore it is expected that details of these measures and a more detailed discussion of $PM_{2.5}$ issues, alongside drawing links to the Public Health Outcomes Framework, will be included within the 2020 ASR.*

[4] 2018 Rother District Annual Status Report (ASR), available at: http://www.rother.gov.uk/article/193/Air-Quality

4. *The maps provided within the ASR are clear, with all monitoring sites labelled as referenced in the results tables.*
5. *There are a number of kerbside diffusion tube monitoring sites that have recorded continually low concentrations. These sites could potentially be relocated to identify new hotspots or evaluate the impact from major developments.*
6. *Generally the report is very good, provides a great deal of information and acts as a good first point of reference for members of the Public. The Council should continue their hard work in developing partnerships and improving local air quality.*

There were no exceedances of either the annual mean NO_2 objectives in 2018. Therefore, there are no new identified diffusion tube locations in 2019.

Rother District Council has taken forward a number of direct measures during the current reporting year of 2019 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1.

Rother District Council is a member of the Sussex Air Quality Partnership (Sussex Air), which produced an air quality strategic plan 2010 to 2015[5]. Rother 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.

Key completed measures are:

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

1. Website

   Rother 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. airAlert

   Rother District Council supports the airAlert air pollution warning service, offered by the Sussex Air Quality Partnership to vulnerable people, schools, health professionals and general public in Sussex. The airAlert service provides warnings based on ozone levels monitored within the Rother District at Rye Harbour.

3. Local ozone monitoring

   High ozone levels can cause difficulty in breathing for vulnerable people with existing breathing or heart conditions. Rother District Council works with Sussex Air to monitor ozone levels at the Rye Harbour rural monitoring station. Data from this station is available on the Sussex-Air website and feeds into the airAlert service.

4. Guidance

   Rother District Council contributed to the Air Quality and Emissions Mitigation Guidance for Sussex, first published in 2013 and updated in 2014 and 2019. The guidance is helping to mitigate potential air quality impacts from developments across Sussex. It is also contributing to improving 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.

   Energise was established as a public/private sector partnership by local authorities across Sussex, Surrey and Kent and was led by the Sussex Air Partnership, to help support the promotion of electric vehicle uptake in the region, by making access simpler. Electric car charging points are now located across East and West Sussex, Kent, Surrey, Greater London and neighbouring counties.

6. Garden Bonfires

Rother District Council, in partnership with Wealden District Council, published in 2013 public-facing material discouraging the practice of burning garden waste, and encouraging sustainable alternatives such as composting and recycling.

Together with neighbouring local authorities, Rother District Council has been assessing the air quality impacts of new traffic and development on protected natural habitats and designated sites in the District, in particular the Pevensey Levels (Special Area of Conservation (SAC) and Ramsar site), the Dungeness SAC and the Dungeness to Pett Level Special Protection Area (SPA).

Key completed measures regarding protected habitats are:

1. Pevensey Levels Assessment

Rother District Council commissioned in 2009 a study[6] to assess the potential air quality impact on the Pevensey Levels of increases in traffic on the A259 associated with planned population growth up to 2026. The conclusion was that an increase in nitrogen deposition and NOx concentrations is likely, but these will still be below the Critical Levels set by the Habitats Directive[7], therefore there is unlikely to be a significant effect on the Ramsar site.

2. Dungeness Sites Protection

Rother District Council currently screens all business development applications in the Port of Rye for their potential to have adverse effects on the integrity of the Dungeness internationally-designated sites. The main focus is on traffic and shipping emissions, and where necessary, makes recommendations for mitigation measures to be implemented[8].

Rother District Council is a programme partner for East Sussex County Council's 'Active Access for Growth' programme to deliver cycling and walking initiatives in key areas which includes South Wealden and Bexhill/Hastings.

[6] 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?lID=14305&sID=5509

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

[8] Rother District Council (2014). Local Plan – Core Strategy. Adopted 29th September 2014.

One of the 3 key objectives of the programme is ‘to demonstrate an alignment to health, air quality, and reduce vehicle emissions’ via the following initiatives in 2019:

- Pedal Power - Cycle/Electric Cycle Loan Scheme (including associated research by Brighton University on type and duration of journeys/energy expenditure)
- Living Streets ‘Walk Doctors’ – Journey planning
- Living Streets – Active Travel Maps
- Walking & Cycling – Challenges & Pledges
- East Sussex Wheels 2 Work – Moped/Motorcycle Loan
- Independent Travel Training – Integrated Travel
- Discounted public transport travel
- Walking & Cycling Leader Training
- East Sussex Cycle Hubs – Bikeability Plus Services
- Transition travel activities - secondary
- Use of sustainable travel apps & other technology
- Student led Walking & Cycling Campaigns
- Walking & cycling challenges – ‘Free your Feet’
- Sustrans - Active steps scheme
- Living Streets - Community Audit Scheme: to identify safer walking & cycling routes
- East Sussex County Council - Community Grant Scheme – Active Access – supporting local walking and cycling initiatives (such as cycle refurbishment)
- Community walking & cycling challenges
- South Downs National Park - Led Walks/Rides

Rother District Council expects the following updates over the course of the next reporting year:

- Regulation 123 of the Community Infrastructure Levy (CIL) Regulations (as amended) requires charging authorities to set out a list of those projects or types of infrastructure that it intends to fund either wholly or partially through the CIL levy. Rother's preferred CIL spending relevant to Air Quality is as follows[9]:

  Rail:

  - Access improvements to stations which may include additional car parking, cycle and
  - pedestrian access and facilities based on findings of East Sussex County Council (ESCC) Station Audit and plans of train
  - Operating companies
  - Bus, Cycling and Walking Infrastructure
  - Bus stop accessibility
  - Bus shelters
  - Passenger information and electronic ticketing
  - Speed management measures
  - Passenger and public security and safety

  Bus, Cycling and Walking Infrastructure:

  - Bus stop accessibility
  - Bus shelters
  - Passenger information and electronic ticketing
  - Speed management measures
  - Passenger and public security and safety
  - Bus reliability measures
  - Passenger access and information
  - Improvements to railway stations
  - Cycle network improvements

[9] http://www.rother.gov.uk/CHttpHandler.ashx?id=25125&p=0

    - Public realm improvements
    - Safety infrastructure outside schools
    - Rights of way improvements
- Improvements to walking and cycling infrastructure to ensure connectivity and accessibility of new development into existing networks, communities, town and secondary centres, employment & social infrastructure in accordance with Rother's Cycling and Walking Strategy.
- Management of cross town traffic congestion in Battle. Improved traffic management. Implement measures to increase use of sustainable transport in accord with LTP3.
- Introduce measures to tackle heavy congestion in Rye town centre during the summer. Increase sustainable transport provision in the town in accord with LTP3.

Rother Local Plan Policy relevant to Air Quality is as follows:

All development in Rother is expected to contribute towards promoting sustainable transport. Criteria applicable to all development, set out at Policy GD1, include making proper provision for walking, cycling and public transport. Policy TR3 establishes the framework for car parking provision. Policy DS1 supports more sustainable travel patterns by focusing new development in accessible locations. Policies for individual sites (e.g. BX3) contain site specific requirements. Policy HG4 deals with accessibility within residential developments. Freight is dealt with in the Structure Plan where Policy TR29 contains a general provision encouraging the use of rail, sea and pipelines as an alternative to road transport, safeguarding rail sites and facilities and resisting proposals generating significant road freight where this would give rise to problems or where there is scope for non-road based alternatives.

Policy TR2: All development shall, wherever reasonably practicable, be carried out in a location and manner which will promote more sustainable travel choice. Applications for planning permission may be required to demonstrate how the proposed development will promote sustainable travel choice. Improvements in the availability, quality and efficiency of sustainable transport opportunities including quality bus

routes, cycle networks, priority for pedestrians and related facilities will be sought, including through supplementary guidance and in the determination of planning applications. In particular, development proposals will only be permitted where they provide, or contribute to, the new or improved transport facilities and services (including improved links to bus, cycle and footpath networks that connect to local services such as shopping centres and schools) that are necessary to make the development acceptable in sustainable transport terms, and do not result in the loss of sustainable transport facilities. Where the provision of infrastructure, facilities or improved services are required, the provision will be secured by planning condition or legal agreement in respect of funding contributions, off-site works or phasing.

Table 2.1 – 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		2014	N/A	N/A		Completed	
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		2010 - 2015	N/A	N/A		Ongoing	
3	Sussex Air website	Public Information	Via the Internet	Sussex Air Quality Partnership			N/A	N/A		Ongoing	
4	airAlert	Public Information	Via other mechanisms	Sussex Air Quality Partnership			989 registered subscribers, 39 from Rother District	N/A		Ongoing	

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	N/A		Ongoing	
6	Garden Bonfires	Public Information	Via leaflets	Rother District Council		2013	N/A	N/A		Completed	
7	Council Policy for Homeworking	Promoting Travel Alternatives	Encourage / Facilitate home-working	Rother District Council			N/A	N/A		Ongoing	
8	Active Rother	Promoting Travel Alternatives	Promotion of Cycling	Rother District Council		2016	N/A	N/A		Ongoing	
9	CIL Spending	Transport Planning and Infrastructure	Bus Route Improvements	Rother District Council			N/A	N/A		Ongoing	
10	Hastings and Bexhill 5km coastal cycle route	Transport Planning and Infrastructure	Cycle Network	Rother District Council		2018	N/A	N/A		Ongoing	
11	CIL Spending	Transport Planning and Infrastructure	Public Transport Improvements - Interchanges, stations and services	Rother District Council			N/A	N/A		Ongoing	

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
12	Rothers Cycling and Walking Strategy	Promoting Travel Alternatives	Promotion of Walking	Rother District Council			N/A	N/A		Ongoing	
13	Ensuring air quality mitigation is policy in the new local plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Rother District Council			N/A	N/A		Ongoing	
14	Use of Sussex Air Guidance and incorporation of planning conditions on major plans	Policy Guidance and Development Control	Other policy	Rother District Council			N/A	N/A		Ongoing	
15	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	Rother District Council			N/A	N/A		Ongoing	

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.

The new $PM_{2.5}$ role has been states from the LAQM.TG(16):

"*Local authorities in England have a new flexible role in working towards reducing emissions and concentrations of $PM_{2.5}$, which is a very important area of focus due to the well-documented health impacts. The $PM_{2.5}$ role has not been defined in detail so as to allow each local authority the flexibility to set its own approach in contributing towards $PM_{2.5}$ reductions. Local authorities should define in the ASR how they are working towards reducing levels of $PM_{2.5}$, with a clear explanation as to the reasoning.*";

In the LAQM.PG(16), it states:

"There is no regulatory standard applied to the $PM_{2.5}$ role (for local authorities in England) with respect to action to reduce emissions or concentrations of fine particulate air pollution, although action to tackle PM_{10}/NO_x would usually contribute to this. The EU Ambient Air Quality Directive does however set out air quality standards for $PM_{2.5}$ including an exposure reduction obligation, a target value and a limit value, which may act as a guide in how you choose to interpret your role. Examples include but are not limited to:

- *Identifying measures already in place that can help with reducing levels of $PM_{2.5}$ (examples of these type of measures are included in Table 2.1 of LAQM.TG16);*
- *Identifying new priority measures to tackle $PM_{2.5}$ (these should be discussed with the Director of Public Health and other relevant partners in the steering group);*
- *Seeking to move towards a specific objective in line with the annual average EU limit value for $PM_{2.5}$: 25 µg/m3 to be met by 2020 (most authorities already*

meet this target hence the authority may wish to set a lower target concentration to benefit public health); and

- *Seeking to move towards applying a specific objective in line with the EU target value of 15% reduction at background urban locations between 2010 and 2020 (authorities may choose a different % reduction if evidence shows it to be more practical and cost-effective).”*

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

- Continuing to support 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 to inform emission mitigation strategies and dust management plans during the development phase.
- Publishing information discouraging the burning of garden waste and encouraging sustainable alternatives such as composting and recycling.

Although there are no new specific measures targeting $PM_{2.5}$, 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 $PM_{2.5}$ reduction and further measures will be reported on in future annual status reports. In addition, actions within the new draft Environment Strategy and Action Plan that will target $PM_{2.5,}$ including working towards car free areas, encouraging walking and cycling friendly developments within the Planning Policy and increasing the use of electric vehicles in the district (e.g. by requiring charging points in all new developments and incentivising or requiring take-up by contractors and taxi drivers).

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

3.1 Summary of Monitoring Undertaken

This section sets out what monitoring has taken place and how it compares with objectives. For reference, maps of Rother District's monitoring locations are provided in Appendix D.

3.1.1 Automatic Monitoring Sites

Rother District undertook automatic (continuous) monitoring at 2 sites during 2019: De La Warr Road, Bexhill (RY2, monitoring NO_2 and PM_{10}) and Rye Harbour (RY1, monitoring ozone (O_3)). Fine particulate matter ($PM_{2.5}$) is currently not monitored in the District. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

Both stations 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.

Data capture for 2019 was good, as outlined below:

- De La Warr Road, Bexhill: 97.9% for NO_2, 97.4% for PM_{10}; and
- Rye Harbour: 95.6% for O_3.

Further details on how the monitors are calibrated and how the data has been adjusted or annualised are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Rother District Council undertook non-automatic (passive) monitoring of NO_2 at 20 sites during 2019. Triplicate diffusion tubes are co-located with the De La Warr Road automatic monitoring station for the derivation of a local bias adjustment factor.

Due to repeated tube theft at Rye Cinque Ports Street (DT19), monitoring was ceased at this site at the end of 2016. This site was later reinstated in a slightly different location along Cinque Ports Street in May 2017, where data capture has significantly improved to 92% in 2018. The diffusion tube at Rye South Undercliff (DT21) was relocated in September 2016 to another location (A259 Bowling Green, Rye; DT30) due to a temporary issue with accessing the site. The Rye South

Undercliff (DT21) diffusion tube site was reinstated at the original location in March 2017 after issues with access to the site had been resolved, and monitoring continued at the new DT30 site. Diffusion tube site (DT31) was commissioned in March 2017 at 128 Barnhorn Road, Bexhill. There have been no changes to the network since then.

Table A.2 in Appendix A shows the details of the 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 (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B.

The results indicate that the annual mean NO_2 concentrations at the De La Warr Road, Bexhill automatic monitoring site were well within the UK air quality objective (40 µg/m^3) in all years between 2015 and 2019.

All diffusion tube sites achieved the air quality objective in 2019, with the highest concentration of 34.0 µg/m^3 monitored at D12 (High St Flimwell). There were exceedances of the objective in 2016 at DT3 (Beauport Park) and DT12 (High St Flimwell), however it should be noted that these exceedances are based on the monitored concentrations at the diffusion tube site; when distance-corrected for relevant exposure, annual mean NO_2 concentrations in all years from 2015 to 2019 are well within the objective. Data capture for all tubes were equal or greater than 75% therefore no annualisation was needed in 2019. Appendix B provides details of distance-corrected annual mean NO_2 concentrations in 2019.

Table A.4 in Appendix A compares the continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The De La Warr Road, Bexhill automatic monitoring site did not exceed the 200 µg/m^3 standard in any year in the 2015 to 2019 period.

Diffusion tubes cannot provide hourly measurements of NO_2; however, the Defra Technical Guidance states that where annual mean NO_2 concentrations measured by diffusion tubes exceed 60 µg/m^3 there is a likelihood that the 1-hour objective may be exceeded. All of the annual mean NO_2 concentrations at diffusion tube monitoring locations between 2015 and 2019 inclusive, were well below 60 µg/m^3 and so the 1-hour objective is very unlikely to have been exceeded. The results indicate that the 1-hour NO_2 air quality objective is unlikely to be exceeded at any location in the district.

3.2.2 Particulate Matter (PM_{10})

PM_{10} concentrations are monitored at the De La Warr Road, Bexhill. Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3. The results indicate that annual mean PM_{10} concentrations were well below the UK air quality objective between 2015 and 2019.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year. These results show that the De La Warr Road site achieved the daily PM_{10} objective every year from 2015 and 2019.

3.2.3 Particulate Matter ($PM_{2.5}$)

There is no $PM_{2.5}$ monitoring undertaken within Rother District. The annual mean PM_{10} concentrations measured at the De La Warr Road site have been used to estimate $PM_{2.5}$ annual average concentrations by using the nationally derived correction ratio of 0.7 suggested in Defra's Technical Guidance. Based on this assumption, the estimated annual mean $PM_{2.5}$ concentrations during the 2015 and 2019 period were in the range of 13µg/m^3 to 17µg/m^3 (see Table A.7 in Appendix A).

3.2.4 Sulphur Dioxide (SO_2)

Monitoring of sulphur dioxide is not carried out at any location within the district. Therefore, no results are presented in this section.

3.2.5 Ozone (O_3)

Table A.8 in Appendix A presents the ratified continuous monitored O_3 concentrations for the past 5 years at the Rye Harbour rural site. Due to low data capture during 2015 there are no results presented for that year. Between 2016 and 2019, the annual mean O_3 concentrations ranged from 54 µg/m^3 to 57 µg/m^3. There is no annual mean objective or target value for O_3.

Table A.9 in Appendix A compares the ratified continuous monitored running 8-hour mean O_3 concentrations for the past 5 years with the UK Air Quality Objective of 100 µg/m^3, not to be exceeded on more than 10 days per year. The monitoring results show that the Rye Harbour monitoring site exceeded the O_3 running 8-hour mean objective in 2016, 2017, 2018 and 2019. The highest number of days above the standard was in 2019, with 28 days.

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)
RY1	Rye Harbour	Rural	594440	119150	O3	N	UV Absorption	N/A	N/A	3.5
RY2	De La Warr Road	Kerbside	575595	108054	NO2, PM10	N	Chemi-luminiscence, TEOM	N (2m)	1m	2.02

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

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)
DT2	North of Northam	Kerbside	583515	126517	NO_2	N	10	1	NO	1.87
DT3	A2100 Beauport Park	Kerbside	578727	113439	NO_2	N	>150	1	NO	1.83
DT4	A269 Battle Hospital	Kerbside	573071	115896	NO_2	N	40	1	NO	2.10
DT5	B2089 West of Rye	Kerbside	591196	120213	NO_2	N	50	1	NO	2.20
DT7	Holliers Hill, Bexhill	Kerbside	574296	108917	NO_2	N	10	1	NO	2.38
DT8	A259 New Winchelsea Road, Rye	Kerbside	591652	119148	NO_2	N	10	1	NO	1.80
DT9	A21 Robertsbridge	Kerbside	574057	124328	NO_2	N	40	1	NO	1.77
DT10	Catsfield Church	Kerbside	572742	113521	NO_2	N	15	1	NO	2.06
DT12	High St Flimwell	Kerbside	571431	131224	NO_2	N	5	1	NO	1.97
DT13	Battle Wellington Gardens	Urban Background	574357	116222	NO_2	N	30	N/A	NO	2.12
DT14	Battle A2100	Kerbside	574509	116846	NO_2	N	10	1	NO	2.17
DT16	Battle High Street	Kerbside	574775	115925	NO_2	N	0	1	NO	2.37
DT17	Rye North Salts	Urban Background	592339	120975	NO_2	N	15	1	NO	2.14

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)
DT19	Rye Cinque Ports Street	Urban Background	592121	120543	NO_2	N	8	N/A	NO	2.10
DT21	Rye South Undercliff	Kerbside	592011	120148	NO_2	N	2	1	NO	2.27
DT22	Bexhill-on-Sea Sackville Road	Kerbside	573985	107409	NO_2	N	2	1	NO	2.06
DT25	A259 Bexhill-on-Sea	Kerbside	573871	108033	NO_2	N	20	1	NO	2.06
DT27	Bexhill Triplicate 1	Kerbside	575595	108060	NO_2	N	15	1	YES	2.04
DT28	Bexhill Triplicate 2	Kerbside	575595	108060	NO_2	N	15	1	YES	2.04
DT29	Bexhill Triplicate 3	Kerbside	575595	108060	NO_2	N	15	1	YES	2.04
DT30	A259 Bowling Green, Rye	Kerbside	592248	120525	NO_2	N	0	1	NO	2.00
DT31	128 Barnhorn Road, Bexhill	Kerbside	570366	107817	NO_2	N	10	1	NO	2.00

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 NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration (µg/m³) (3)				
							2015	2016	2017	2018	2019
RY2	575595	108054	Kerbside	Automatic	98	98	19.8	25.2	21.8	20.1	20.5
DT2	583515	126517	Kerbside	Diffusion Tube	100	100	18.4	23.5	19.5	18.7	15.9
DT3	578727	113439	Kerbside	Diffusion Tube	100	100	35.5	**51.4**	39.1	34.5	32.0
DT4	573071	115896	Kerbside	Diffusion Tube	100	100	24.8	26.9	21.4	19.2	18.1
DT5	591196	120213	Kerbside	Diffusion Tube	75	82	19.7	27.1	26.7	28.7	19.1
DT7	574296	108917	Kerbside	Diffusion Tube	92	91	16.3	24.6	21.2	21.6	18.8
DT8	591652	119148	Kerbside	Diffusion Tube	83	91	-	25.9	20.8	21.4	18.8
DT9	574057	124328	Kerbside	Diffusion Tube	100	100	22.1	30.6	25.8	27.9	25.6
DT10	572742	113521	Kerbside	Diffusion Tube	100	100	12.7	16.0	13.9	13.2	12.5
DT12	571431	131224	Kerbside	Diffusion Tube	100	100	29.0	**43.1**	32.3	36.6	34.0
DT13	574357	116222	Urban Background	Diffusion Tube	100	100	13.1	14.5	12.9	12.1	11.3
DT14	574509	116846	Kerbside	Diffusion Tube	100	100	29.6	37.0	29.6	28.6	27.4
DT16	574775	115925	Kerbside	Diffusion Tube	100	100	17.0	20.2	16.9	15.6	14.8
DT17	592339	120975	Urban Background	Diffusion Tube	92	91	13.0	17.9	15.0	13.9	13.0
DT19	592121	120543	Urban Background	Diffusion Tube	100	100	-	-	26.7	23.7	21.1

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
							2015	2016	2017	2018	2019
DT21	592011	120148	Kerbside	Diffusion Tube	100	100	34.3	34.6	34.9	36.8	29.9
DT22	573985	107409	Kerbside	Diffusion Tube	100	100	27.4	37.6	29.0	28.8	21.5
DT25	573871	108033	Kerbside	Diffusion Tube	92	91	-	38.0	29.7	29.8	22.0
DT27	575595	108060	Kerbside	Diffusion Tube	100	100	24.5	26.6	22.3	20.2	18.8
DT28	575595	108060	Kerbside	Diffusion Tube	75	82	23.8	25.6	20.7	21.0	17.4
DT29	575595	108060	Kerbside	Diffusion Tube	100	100	23.2	26.1	22.2	21.0	17.0
DT30	592248	120525	Kerbside	Diffusion Tube	92	91	-	-	24.5	22.6	19.2
DT31	570366	107817	Kerbside	Diffusion Tube	100	100	-	-	25.4	24.6	22.2

☒ **Diffusion tube data has been bias corrected**

☐ **Annualisation has been conducted where data capture is <75%**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 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.1– Trends in Annual Mean NO_2 Concentrations (RY2 De La Warr Road Continuous Monitoring Site)

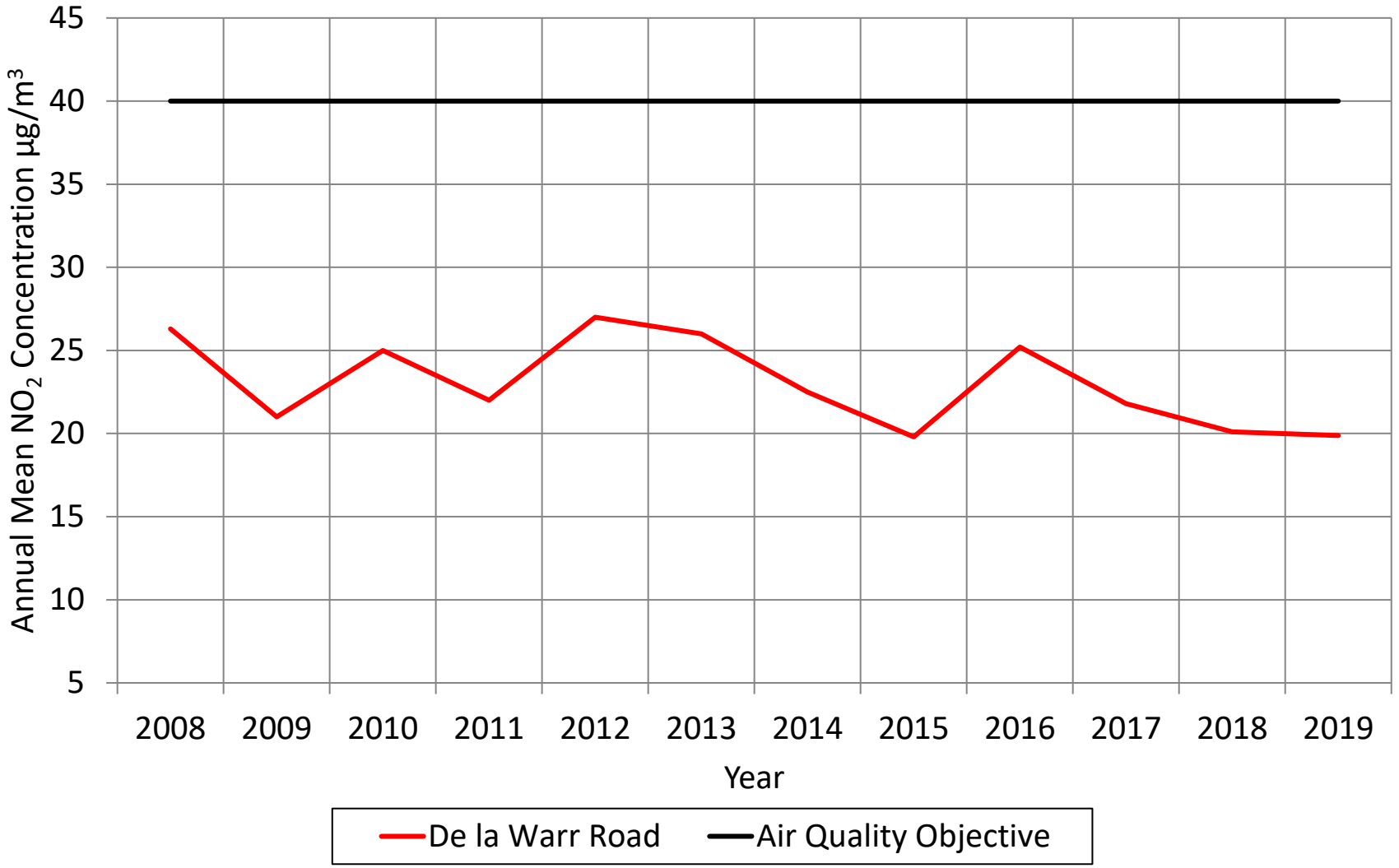


Figure A.2 – Trends in Annual Mean NO_2 Concentrations (Diffusion Tube Sites)

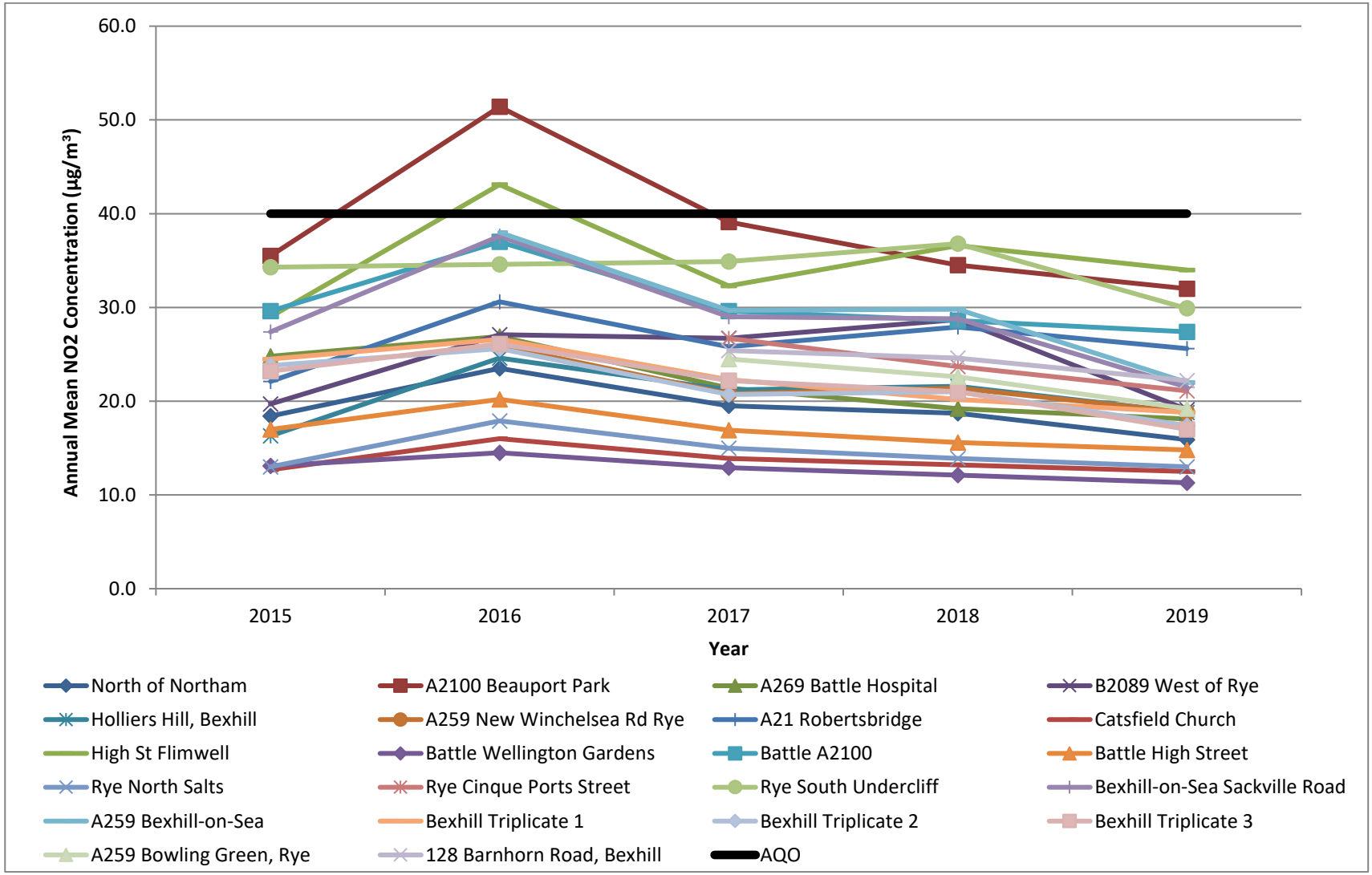


Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
							2015	2016	2017	2018	2019
RY2	575595	108054	Kerbside	Automatic	97.9	97.9	0 (100) (3)	0	0	0	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 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.

Table A.5 – Annual Mean PM_{10} 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 2019 (%) (2)	PM_{10} Annual Mean Concentration (µg/m³) (3)				
						2015	2016	2017	2018	2019
RY2	575595	108054	Kerbside	97.4	97.3	24.3 (3)	18.1 (3)	21.4 (3)	21.4 (3)	20.5 (3)

☐ **Annualisation has been conducted where data capture is <75%**

Notes:

Exceedances of the PM_{10} 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%).

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.3 – Trends in Annual Mean PM_{10} Concentrations

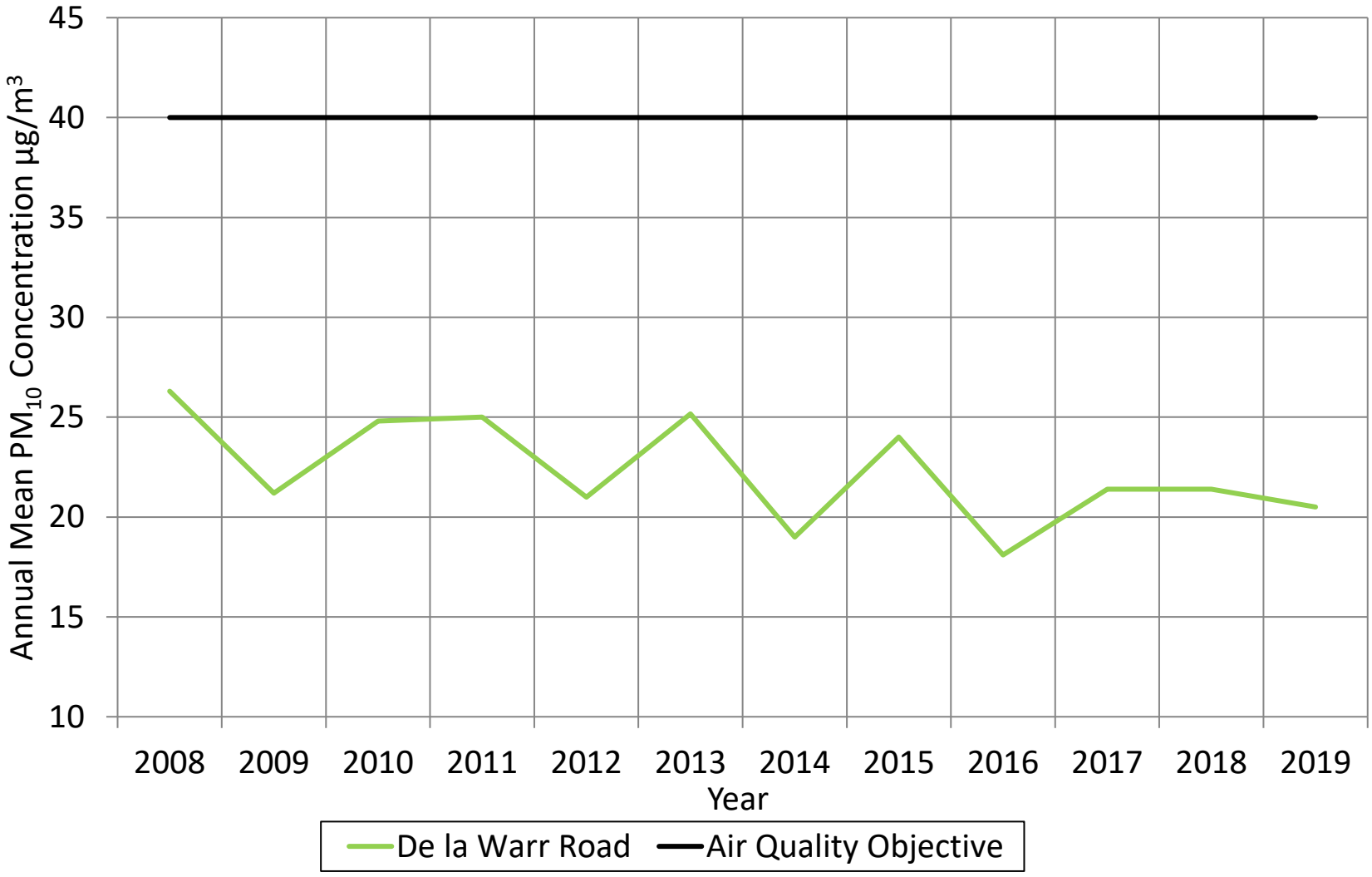


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
						2015	2016	2017	2018	2019
RY2	575595	108054	Kerbside	97.4	97.3	2 (33) (3)	0 (27) (3)	4	6	7

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 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.

Table A.7 – $PM_{2.5}$ 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 2019 (%) (2)	$PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$) (3)				
						2015	2016	2017	2018	2019
RY2	575595	108054	Kerbside	97.4	97.3	17.0	12.7	15.0	15.0	14.4

☐ **Annualisation has been conducted where data capture is <75%**

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 Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.4 – Trends in Annual Mean $PM_{2.5}$ Concentrations

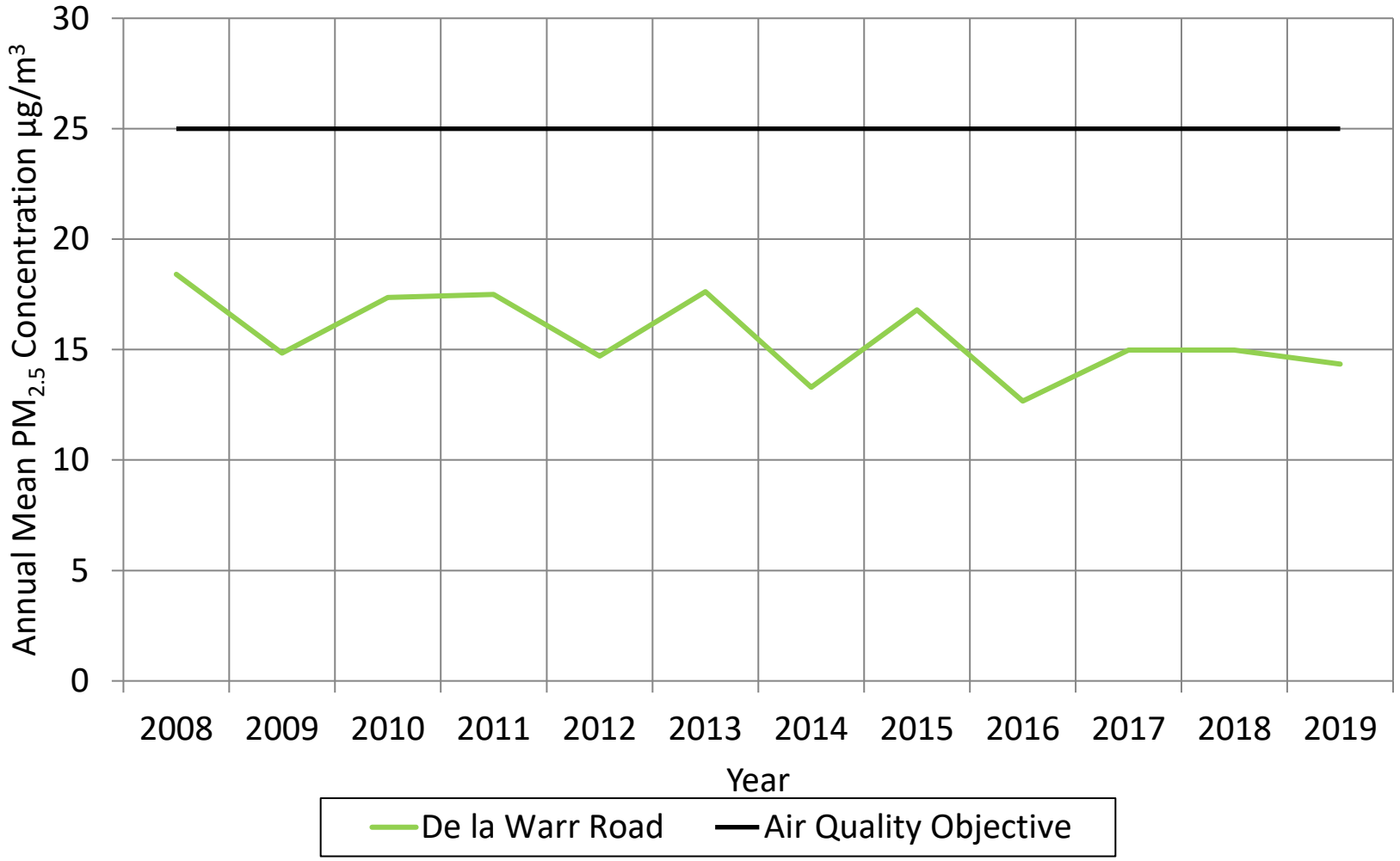


Table A.8 – Annual Mean O_3 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2019 (%) [2]	O_3 Annual Mean Concentration (µg/m^3) [3]				
						2015	2016	2017	2018	2019
RY1	594440	119150	Rural	95.6	95.6	-	55 [3]	54	57	55

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.

Table A.9 – Running 8-Hour Mean O_3 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 2019 (%) [2]	Days With O_3 Running 8-Hour Means > 100 µg/m^3				
						2015	2016	2017	2018	2019
RY1	594440	119150	Rural	93.8	93.9	-	17	24	**27**	**28**

Notes: Exceedances of the O_3 running 8-hour mean objective (100 µg/m^3 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%).

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2019

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.93) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DT2	25.0	25.7	24.9	21.0	19.4	18.5	16.1	16.0	16.8	17.8	22.1	20.3	20.2	18.8	-
DT3	28.8	24.2	22.0	24.3	0.0	18.2	17.0	16.6	17.7	18.4	22.9	20.7	18.7	17.4	-
DT4	27.9	24.5	21.4	23.7	0.0	18.5	16.3	16.1	15.6	18.0	23.8	20.0	18.3	17.0	-
DT5	36.2	35.7	30.9	36.0	27.9	28.5	22.6	25.7	missing	missing	missing	29.5	23.1	21.5	-
DT7	29.6	25.0	missing	25.8	27.3	18.5	16.6	17.0	17.6	18.6	22.6	21.9	20.2	18.8	-
DT8	34.3	36.2	35.1	30.2	missing	26.5	24.0	30.8	20.6	26.0	32.2	missing	23.6	22.0	-
DT9	27.0	28.8	23.9	25.0	21.7	23.3	19.1	19.3	27.0	17.6	27.4	28.8	23.9	22.2	-
DT10	19.0	18.0	13.0	12.3	18.0	11.3	10.7	10.5	10.4	10.0	14.7	13.2	13.5	12.5	-
DT12	24.7	28.8	20.5	17.1	16.0	18.3	19.8	18.3	16.5	17.2	20.6	17.1	19.5	18.1	-
DT13	18.9	20.5	13.1	11.6	10.1	8.9	9.2	6.0	9.0	11.3	14.9	13.9	12.2	11.3	-
DT14	22.1	22.4	16.6	13.2	14.7	12.3	13.8	14.1	12.6	14.8	15.8	18.8	16.0	14.8	-
DT16	37.8	35.8	30.5	26.8	29.7	25.2	28.7	27.9	28.3	22.0	30.5	30.6	29.5	27.4	-
DT17	31.7	29.2	27.9	missing	34.6	35.1	30.7	29.7	28.5	27.2	31.6	21.2	27.5	25.6	-
DT19	42.1	42.8	39.8	43.7	42.7	36.4	29.2	33.5	31.5	32.5	38.0	28.5	36.5	34.0	-
DT21	25.0	21.1	21.8	18.9	15.9	14.0	14.6	15.2	15.4	16.0	12.4	16.5	17.1	15.9	-

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.93) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
DT22	20.2	18.1	14.4	15.7	11.7	11.1	12.1	11.4	9.6	11.7	15.8	16.1	13.9	13.0	-
DT25	38.9	40.3	36.7	44.8	missing	33.8	35.8	32.3	33.6	31.4	40.9	29.0	32.2	29.9	-
DT27	28.9	30.5	24.9	24.0	20.9	19.3	21.0	16.1	19.6	22.7	23.2	22.6	22.7	21.1	-
DT28	29.4	35.6	27.8	28.8	22.6	25.5	22.8	missing	missing	26.7	missing	25.1	20.5	19.1	-
DT29	24.2	23.8	16.0	25.1	20.6	18.7	18.8	17.7	16.6	22.6	22.4	17.3	20.3	18.8	-
DT30	29.8	29.1	25.0	missing	18.5	18.2	16.6	20.3	19.5	20.0	24.7	25.5	20.7	19.2	-
DT31	41.7	45.5	41.8	33.2	34.1	36.0	38.7	13.4	12.1	36.2	39.1	40.0	34.4	32.0	-

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

☐ **Where applicable, data has been distance corrected for relevant exposure**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 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

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.

Rother District Council has a co-location of triplicate diffusion tubes alongside the automatic continuous analyser at De La Warr Road, Bexhill. In 2019, data capture at the continuous monitoring site was almost 100% and therefore sufficient to allow a valid local bias adjustment factor[10] to be derived. The local bias adjustment factor was calculated to be 0.51. Figure C 1 shows the calculation for the local bias adjustment factor.

Figure C 1 - Local Diffusion Tube Bias Adjustment Factor for Rother District Council in 2019

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	10/01/2019	07/02/2019	25.0	28.9	28.0	27	2.0	7	4.9
2	07/02/2019	08/03/2019	25.7	24.2	24.5	25	0.8	3	1.9
3	08/03/2019	04/04/2019	24.9	22.0	21.4	23	1.9	8	4.7
4	04/04/2019	01/05/2019	21.0	24.3	23.7	23	1.7	8	4.3
5	01/05/2019	07/06/2019			19.5				
6	07/06/2019	05/07/2019	18.5	18.2	18.5	18	0.2	1	0.5
7	05/07/2019	07/08/2019	16.1	17.0	16.3	16	0.5	3	1.3
8	07/08/2019	10/09/2019	16.0	16.6	16.1	16	0.4	2	0.9
9	10/09/2019	04/10/2019	16.8	17.7	15.6	17	1.1	6	2.6
10	04/10/2019	04/11/2019	18.4	18.0	18.6	18	0.3	2	0.8
11	04/11/2019	02/12/2019	22.1	23.0	23.8	23	0.9	4	2.1
12	02/12/2019	07/01/2020	20.3	20.7	20.0	20	0.3	2	0.8
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
13.89	99.71	Good	Good
16.14	99.44	Good	Good
12.76	99.85	Good	Good
14.36	100.00	Good	Good
10.09	99.67		Good
7.93	99.71	Good	Good
6.80	99.63	Good	Good
7.55	100.00	Good	Good
7.52	99.83	Good	Good
8.85	98.96	Good	Good
10.45	99.71	Good	Good
9.14	99.89	Good	Good
Overall survey -->		Good precision	Good Overall DC

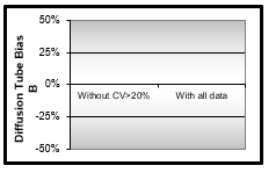
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:

Precision: 11 out of 11 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A: 0.51 (0.46 - 0.56)
Bias B: 97% (77% - 116%)
Diffusion Tubes Mean: 21 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 10 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 11 (10 - 12) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 11 periods of data
Bias factor A: 0.51 (0.46 - 0.56)
Bias B: 97% (77% - 116%)
Diffusion Tubes Mean: 21 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 10 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 11 (10 - 12) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

[10] Defra (2018), Local bias adjustment calculator, available at: https://laqm.defra.gov.uk/bias-adjustment-factors/local-bias.html

A national bias adjustment factor was also considered for use, obtained from the national database of bias adjustment factors (version 04/20)[11]. Figure C 2 shows the national bias adjustment factor for the same laboratory (Gradko) and tube preparation method (20% TEA in water) used by Rother District Council. The national bias adjustment factor is 0.93.

Figure C 2 - National Diffusion Tube Bias Adjustment Factor for Rother District Council in 2019

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/20

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
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 spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2020

LAQM Helpdesk Website

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: Select the Laboratory that Analyses Your Tubes from the Drop-Down List. If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List. If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List. If a year is not shown, we have no data[2]

Step 4: 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 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@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[5]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2019	R	Dudley MBC	12	33	32	4.5%	G	**0.96**
Gradko	20% TEA in water	2019	R	Dudley MBC	12	44	42	3.9%	G	**0.96**
Gradko	20% TEA in water	2019	UB	Dudley MBC	12	23	19	19.8%	G	**0.83**
Gradko	20% TEA in water	2019	UB	Eastleigh Borough Council	12	24	26	-7.1%	G	**1.08**
Gradko	20% TEA in water	2019	R	Gateshead Council	12	34	27	23.7%	P	**0.81**
Gradko	20% TEA in water	2019	R	Gateshead Council	11	40	44	-10.5%	G	**1.12**
Gradko	20% TEA in water	2019	R	Gateshead Council	10	32	34	-7.2%	G	**1.08**
Gradko	20% TEA in water	2019	R	Gateshead Council	12	30	25	18.1%	G	**0.85**
Gradko	50% TEA in acetone	2019	R	London Borough of Richmond upon Thames	12	46	35	30.4%	G	**0.77**
Gradko	50% TEA in acetone	2019	R	London Borough of Richmond upon Thames	12	29	27	7.1%	G	**0.93**
Gradko	50% TEA in acetone	2019	B	London Borough of Richmond upon Thames	11	21	21	1.0%	G	**0.99**
Gradko	20% TEA in water	2019	R	Thurrock Borough Council	12	29	24	21.6%	G	**0.82**
Gradko	20% TEA in water	2019	R	Brighton & Hove City Council	11	45	50	-9.3%	G	**1.10**
Gradko	50% TEA in acetone	2019	UB	Falkirk Council	9	18	15	18.1%	G	**0.85**
Gradko	50% TEA in acetone	2019	R	LB Newham	12	35	30	16.2%	G	**0.86**
Gradko	20% TEA in water	2019		**Overall Factor[3] (27 studies)**				Use		**0.93**
Gradko	50% TEA in acetone	2019		**Overall Factor[3] (8 studies)**				Use		**0.87**

Discussion of Choice of Factor to Use

In 2019, it was possible to derive a local bias adjustment factor as well as the national bias adjustment factor obtained from the national database. However, as the locally-derived was less than the national bias adjustment factors in 2019, the higher factor of 0.93 was used to adjust the raw diffusion tube concentrations as this is provides a worst-case situation and is likely to be more appropriate for the entire network of monitoring sites.

[11] Defra (2018), National bias adjustment factor database, available at: https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

PM_{10} Monitoring Adjustment

The PM_{10} data from the TEOM continuous analyser at De La Warr Road (RY2) has been corrected using the volatile correction model[12] (VCM) to ensure gravimetric equivalence.

Short-term to Long-term Data Adjustment

Data capture for all diffusion tubes and automatic monitoring was equal or greater to 75% in 2019, therefore no annualisation was necessary.

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. For De La Warr Rd NO2/TEOM monitor, Envirotechnology Services (Kingfisher Business Park, London Rd, Stroud, Glos GL5 2BY) undertakes the equipment's maintenance and calibration.

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.

Rother District Council used Gradko International for the supply and analysis of diffusion tubes, with a 20% triethanolamine (TEA) in water preparation. In 7 out of the 8 of last year's AIR PT testing rounds running from April 2017 until February

[12] King's College London Volatile Correction Model. Information available at: http://www.volatile-correction-model.info/

2019, Gradko achieved 100% satisfactory results (the most recent round returned 75% satisfactory results), so there is high confidence in the accuracy of the diffusion tube results.

Distance Correction Using the NO_2 Fall-off with Distance Calculator

Annual average NO_2 data from non-automatic monitoring sites DT2 – DT31 in 2019 have not given in Table B.1 as per the comments from Defra, distance correction should only be completed at monitoring sites that have an annual mean NO_2 concentration greater than 36ug/m^3 and the relevant exposure is within 20m of the monitoring location. However for completeness, the detailed distance correction calculations are included in Table C.1 using the NO_2 Fall-Off with Distance Calculator (Version 4.2).

Table C.1 – Distance Correction Calculations - 2019

Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration (µg/m^3)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
Bexhill Triplicate 1	1.0	15.0	10.8	18.8	14.4	
Bexhill Triplicate 2	1.0	15.0	10.8	17.4	13.8	
Bexhill Triplicate 3	1.0	15.0	10.8	17.0	13.6	
Bexhill-on-Sea Sackville Ro	1.0	2.0	10.0	21.5	19.9	
A259 Bexhill-on-Sea	1.0	20.0	10.2	22.0	14.9	
Holliers Hill, Bexhill	1.0	10.0	11.0	18.8	15.2	
Catsfield Church	1.0	15.0	7.6	12.5	9.8	
A269 Battle Hospital	1.0	40.0	7.3	18.1	10.1	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
Battle Wellington Gardens	1.0	30.0	8.2	11.3	9.2	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.

Battle High Street	1.0	0.1	7.6	14.8	18.1	
Battle A2100	1.0	10.0	8.2	27.4	18.5	
A21 Robertsbridge	1.0	40.0	7.4	25.6	12.1	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
High St Flimwell	1.0	5.0	8.6	34.0	25.8	
North of Northam	1.0	10.0	7.4	15.9	12.0	
Rye North Salts	1.0	15.0	9.1	13.0	10.9	
A259 Bowling Green, Rye	1.0	0.1	9.1	19.2	23.9	
B2089 West of Rye	1.0	50.0	7.3	19.1	9.8	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
A259 New Winchelsea Rd R	1.0	10.0	9.1	18.8	14.3	
A2100 Beauport Park	1.0	50.0	7.7	32.0	12.8	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
128 Barnhorn Road, Bexh	1.0	10.0	7.6	22.2	15.4	
Rye South Undercliff	1.0	2.0	8.6	29.9	26.9	
Rye Cinque Ports Street	1.0	8.0	9.1	21.1	16.1	

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

Figure D.1 – Monitoring Locations in Rother District – Overview

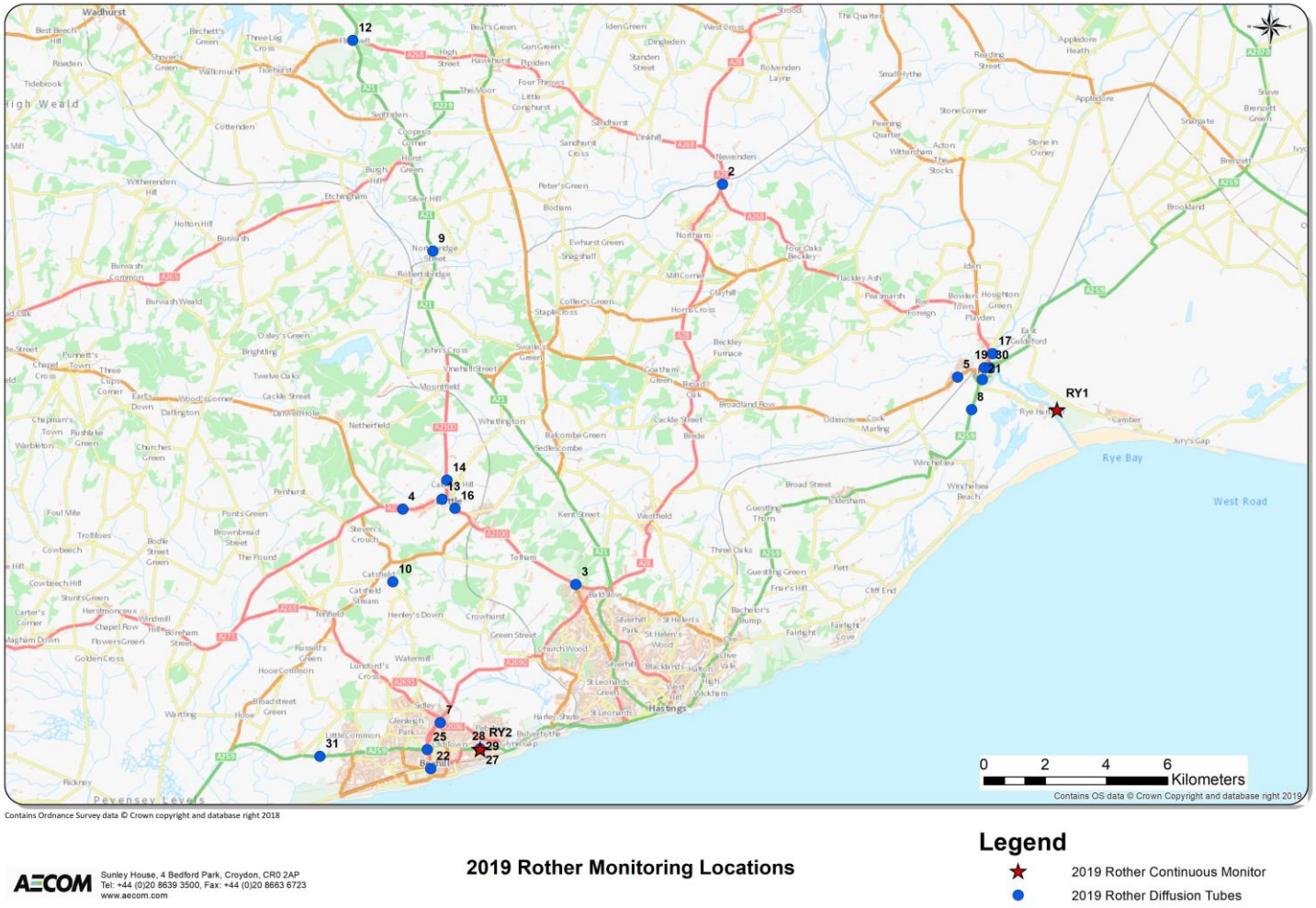
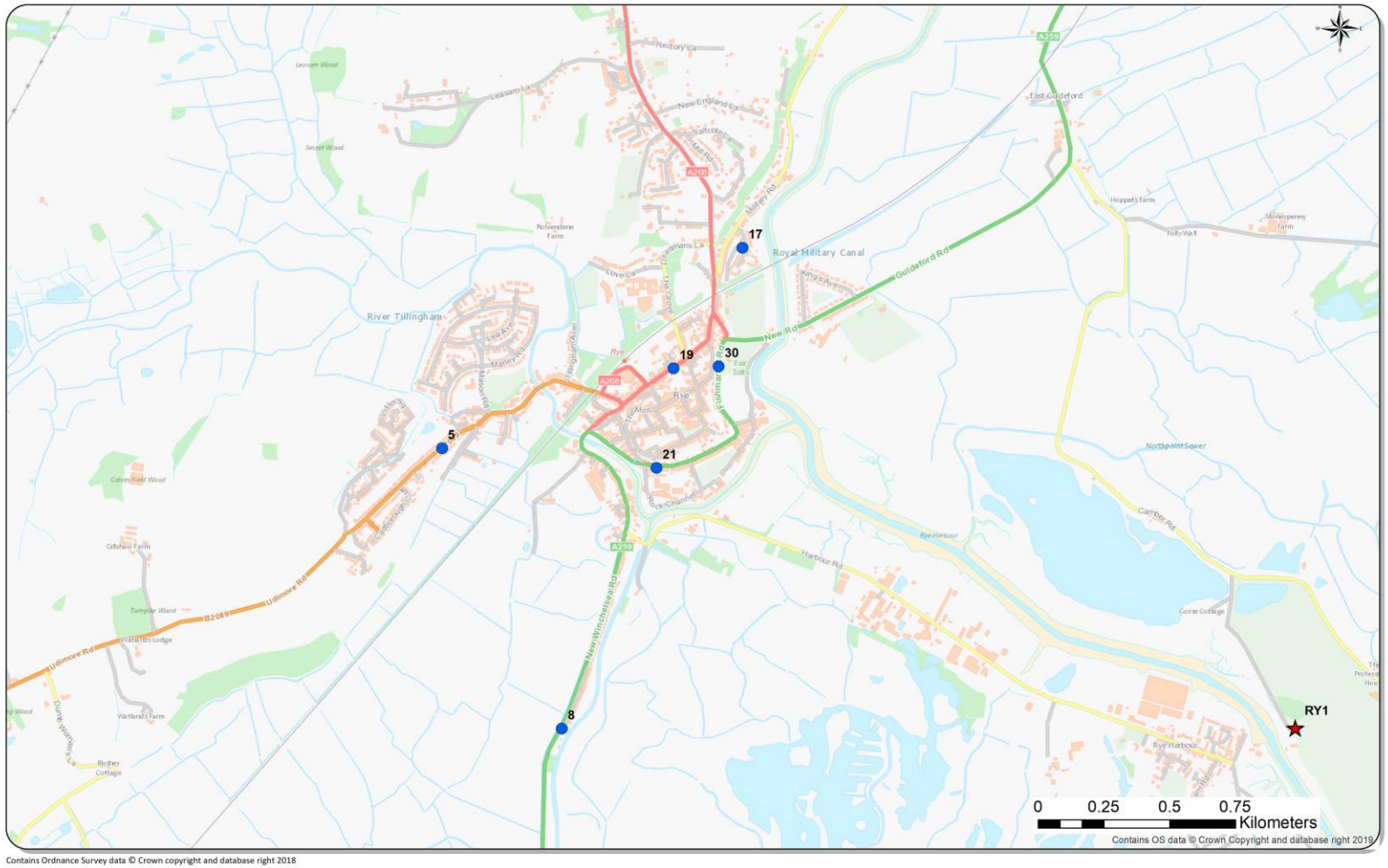


Figure D.2 – Monitoring Locations in Rother District – Rye



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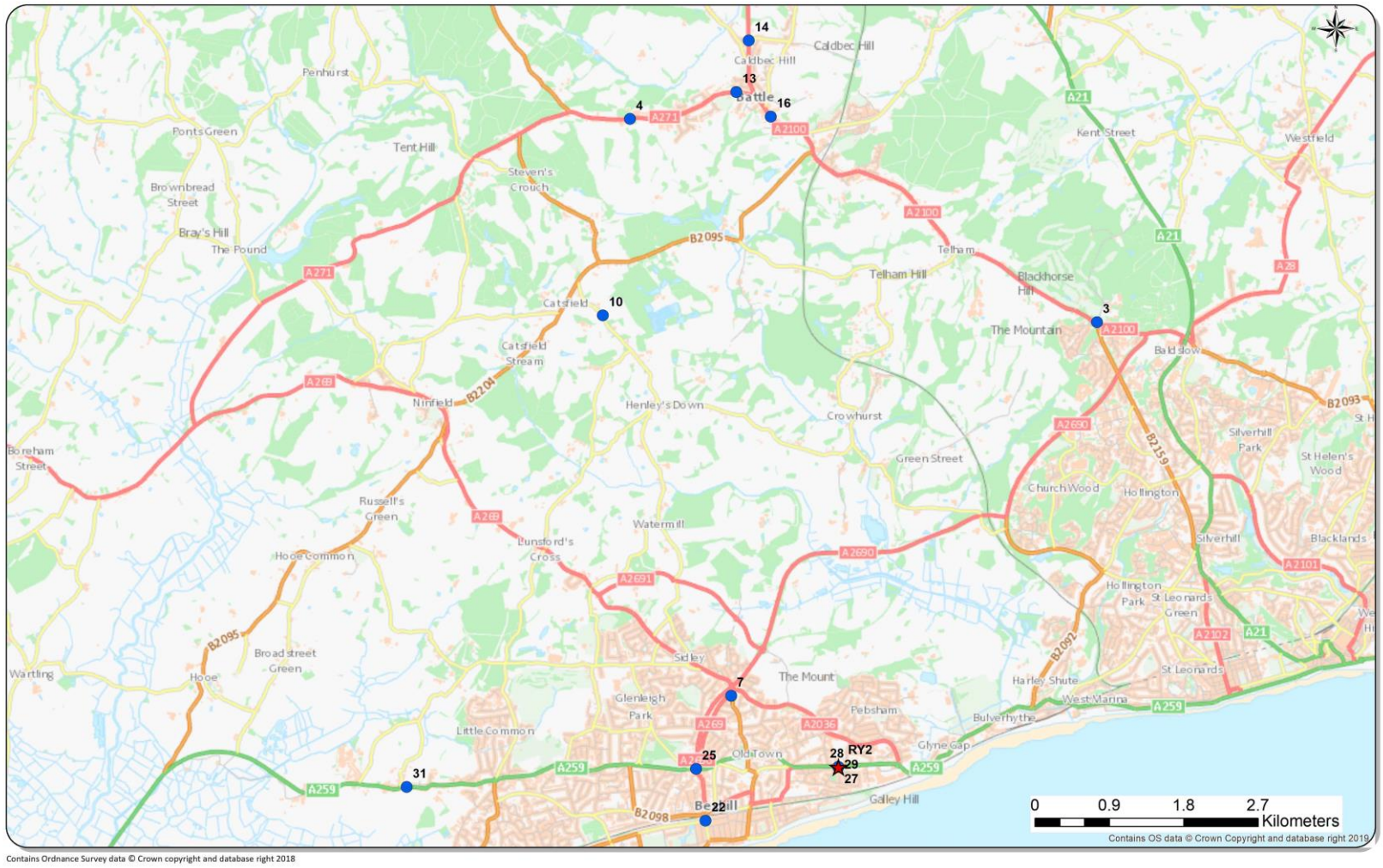
AECOM Sunley House, 4 Bedford Park, Croydon, CR0 2AP
Tel: +44 (0)20 8639 3500, Fax: +44 (0)20 8663 6723
www.aecom.com

2019 Rother Monitoring Locations

Legend

- 2019 Rother Continuous Monitor
- 2019 Rother Diffusion Tubes

Figure D.3 – Monitoring Locations in Rother District – Battle and Bexhill



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Tel: +44 (0)20 8639 3500, Fax: +44 (0)20 8663 6723
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2019 Rother Monitoring Locations

Legend

- 2019 Rother Continuous Monitor
- 2019 Rother Diffusion Tubes

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[13]	
	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

[13] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

Glossary of Terms

Abbreviation	Description
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
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
CIL	Community Infrastructure Levy
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
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
SAQMN	Sussex Air Quality Monitoring Network
SO_2	Sulphur Dioxide
TEOM	Tapered Element Oscillating Microbalance

References

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
4. 2018 Rother District Annual Status Report (ASR), available at: http://www.rother.gov.uk/article/193/Air-Quality
5. Sussex Air Quality Partnership Air Quality Strategic Plan 2010 http://www.sussex-air.net/Reports/SAQP_Vision_Strategy_2015.pdf
6. 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?lID=14305&sID=5509
7. EC Habitats Directive 1992, interpreted into British law by the Conservation (Natural Habitats &c) Regulations 1994 (as amended in 2007).
8. Rother District Council (2014). Local Plan – Core Strategy. Adopted 29th September 2014.
9. Defra (2018), Local bias adjustment calculator, available at: https://laqm.defra.gov.uk/bias-adjustment-factors/local-bias.html
10. Defra (2018), National bias adjustment factor database, available at: https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html
11. King's College London Volatile Correction Model. Information available at: http://www.volatile-correction-model.info/