2021 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June 2021

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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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

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

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 Strategy (AQS) 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.

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

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

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

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

NO_2 concentrations have previously exceeded the annual mean AQS objective in the District (the latest occasion being at A2100 Beauport Park and High Street Flimwell diffusion tube sites in 2016). However, in recent years (2017-2020) concentrations at these locations and all others were below the AQS objective.

PM_{10} is monitored in Rother at De La Warr Road, Bexhill, and in recent years concentrations have been generally low (well below the annual mean AQS 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 annual mean AQS objective 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

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

The 2019 Clean Air Strategy[5] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

[5] Defra. Clean Air Strategy, 2019

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

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 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 the District of Rother are within the annual mean AQS objective of 40 µg/m^3, and there were no exceedances of the short term hourly AQS objective.

There were also no exceedances of either the annual mean or daily mean PM_{10} AQS objectives in 2020, or for the previous years from 2015.

Rother District Council is committed to taking action to improve air quality, in particular through involvement with the Sussex Air Quality Partnership. In 2020 the Council maintained contact with Sussex Air and other Local Authority Officers working in air quality. The Council has begun work on a new Local Plan that will cover the period 2019-2039.

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, 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. Such policies would also dovetail with the Council's draft Environment Strategy.

There are three main priorities for addressing air quality in 2021 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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Tables

1 Local Air Quality Management

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

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the UK Air Quality Strategy (AQS) objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the 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 AQS objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

Air Quality Management Areas

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

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

Since Rother District has no AQMAs, no formal AQAP has been implemented for the District.

Table 2.1 – Declared Air Quality Management Areas

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

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

☒ **Rother confirm that all current AQAPs have been submitted to Defra.**

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

Defra's appraisal of last year's ASR concluded that the report well structured, detailed, and provided the information specified in the Guidance, with the following comments;

1. *All monitoring completed within 2019 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. As per the appraisal comments for the 2019 ASR 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. *Context should be provided for the reader in terms of the exceedance of the running 8-hour mean objective for O_3.*
3. *Distance correction has correctly not been applied to any monitoring location.*
4. *Links to the Public Health Outcomes Framework, in reference to $PM_{2.5}$ concentrations should be included within the 2021 ASR.*
5. *Although beneficial in identifying trends over an extended period of time 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 any potential local developments.*

Rother District Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Seven measures are included within Table 2.2, with the type of measure and the progress Rother District Council have made during the reporting year of 2020 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

Rother District Council is a member of the Sussex Air Quality Partnership (Sussex Air), which produced an air quality strategic plan 2010 to 2015[7]. 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.

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

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.*

Rother District Council is embarking on a ground-breaking one-year collaborative project as part of its Environment Strategy to develop its tree planting strategy (https://www.rother.gov.uk/news/bexhill-i-tree-study-and-a-tree-planting-strategy/). Trees and woodlands represent critical green infrastructure and the project offers opportunities for links to air quality initiatives and community engagement.

Rother District Council's priorities for the coming year are:

- To work closely with the Sustainability Officer for Rother District Council to identify areas where joint working will help improve air quality across Rother District Council as well as offset/ reduce CO_2 emissions for the Council
- To re-engage with the planning department for drafting the new local plan to ensure air quality mitigation is included.
- Engage with Transport for the South East, which aims to decarbonise the transport sector in the South East. Improvements in this regard, should also help improve air quality.
- Greater contact with Active Rother to see if joint work can increase levels of cycling and walking.

The principal challenges and barriers to implementation that Rother District Council anticipates facing are;

- Impacts of COVID-19 pandemic and the economic recovery; and
- Reductions in staff numbers at Rother District Council and how this loss of resource will translate into time available to develop and support air quality measures.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Air Quality and Emissions Mitigation Guidance for Sussex	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2014	2019	Sussex Air Quality Partnership	-	-	-	-	Completed	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	2010	2015	Sussex Air Quality Partnership	-	-	-	-	Implementation	N/A	N/A	Ongoing	-
3	Sussex Air website / Air Alert	Public Information	Via the Internet	2014	Ongoing	Sussex Air Quality Partnership	-	-	-	-	Implementation	N/A	Number of subscribers to AirAlert	Ongoing	-
4	Council Policy for Homeworking	Promoting Travel Alternatives	Encourage / Facilitate home-working	2014	Ongoing	Rother District Council	-	-	-	-	Implementation	N/A	N/A	Ongoing	-
5	Active Rother	Promoting Travel Alternatives	Promotion of Cycling	2016	Ongoing	Rother District Council	-	-	-	-	Implementation	N/A	N/A	Ongoing	-
6	Rothers Cycling and Walking Strategy	Promoting Travel Alternatives	Promotion of Walking	2016	Ongoing	Rother District Council	-	-	-	-	Implementation	N/A	N/A	Ongoing	-
7	Transport for the South East	Traffic Management	Other	2020	Ongoing	Transport for the South East	-	-	-	-	Planning	N/A	N/A	Initial Engagement	-

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

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

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

- Engagement with Transport for the South East, which aims to decarbonise the transport sector;
- 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. Any links measures have to the Public Health Outcomes Framework (available at https://fingertips.phe.org.uk/profile/public-health-outcomes-framework) will be considered.

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

This section sets out the monitoring undertaken within 2020 by Rother District Council and how it compares with the relevant AQS objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Rother District Council undertook automatic (continuous) monitoring at two sites during 2020: De La Warr Road, Bexhill (RY2, monitoring nitrogen dioxide (NO_2) and particulate matter with an aerodynamic diameter of 10µm or less (PM_{10})) and Rye Harbour (RY1, monitoring ozone (O_3)). $PM_{2.5}$ 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). Regional monitoring results are available at www.sussex-air.net.

Data capture for 2020 was good, as outlined below:

- De La Warr Road, Bexhill: 99.2% for NO_2, 98.4% for PM_{10}; and
- Rye Harbour: 97.2% for O_3.

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

Rother District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 20 sites during 2020. Triplicate diffusion tubes are co-located with the De La Warr Road automatic monitoring station for the derivation of a local bias adjustment factor. Table A.2 in Appendix A presents the details of the non-automatic sites.

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. 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.

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

Individual Pollutants

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

3.1.3 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the AQS objective of 40 µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 does not include distance corrected values, as all bias-adjusted concentrations were below 36 µg/m^3 in 2020.

The results indicate that the annual mean NO_2 concentrations at the De La Warr Road, Bexhill automatic monitoring site were well within the AQS objective (40 µg/m^3) in all years

between 2016 and 2020. Figure A.1 shows that the trend in annual mean NO_2 concentrations at De La Warr Road is relatively static with some variability year to year, although there was a notable decrease in concentration in 2020, which is likely to have been influenced by reduced traffic flows and emissions due to the COVID-19 pandemic.

All diffusion tube sites achieved the AQS objective in 2020, with the highest concentration of 27.3 µg/m^3 monitored at DT3 (A2100 Beauport Park). Data capture for all tubes in 2020 was equal or greater than 75% except for site DT3 (A2100 Beauport Park), where annualization was required (data capture was 67.3%). Similarly to Figure A.1, Figure A.2 shows a slight downward trend in NO_2 concentrations at most diffusion tube locations, especially from 2019 to 2020, probably at least in part due to the effects of the COVID-19 pandemic.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the AQS objective of 200 µg/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 AQS objective in any year in the 2016 to 2020 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 AQS objective may be exceeded. All of the annual mean NO_2 concentrations at diffusion tube monitoring locations between 2016 and 2020 inclusive, were well below 60 µg/m^3 and so the 1-hour AQS objective is very unlikely to have been exceeded. The results indicate that the 1-hour NO_2 AQS objective is unlikely to be exceeded at any location in the District.

3.1.4 Particulate Matter (PM_{10})

PM_{10} concentrations are monitored in the District at the monitoring site De La Warr Road, Bexhill. Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the AQS objective of 40 µg/m^3. The results indicate that annual mean PM_{10} concentrations were well below the AQS objective between 2016 and 2020. Figure A.3 shows some evidence of a slight downward trend in PM_{10} concentrations at De La Warr Road, although with considerable year to year variability.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the AQS objective of 50 µg/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 2016 and 2020.

3.1.5 Particulate Matter ($PM_{2.5}$)

There is no $PM_{2.5}$ monitoring undertaken within the District of Rother. 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 TG.16. Based on this assumption, the estimated annual mean $PM_{2.5}$ concentrations during the 2016 and 2020 period were in the range of 12.7 µg/m^3 to 15 µg/m^3. As for PM_{10}, Figure A.4 shows a very slight downward trend in estimated $PM_{2.5}$ concentrations but with marked year on year variability.

Table A.8 in Appendix A presents the estimated monitored $PM_{2.5}$ annual mean concentrations for the past five years.

3.1.6 Sulphur Dioxide (SO_2)

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

3.1.7 Ozone (O_3)

Table A.9 in Appendix A presents the ratified continuous monitored O_3 concentrations for the past 5 years at the Rye Harbour rural site. Between 2016 and 2020, the annual mean O_3 concentrations ranged from 53.5 µg/m^3 to 57.4 µg/m^3. There is no annual mean AQS objective or target value for O_3.

Table A.10 in Appendix A compares the continuous monitored running 8-hour mean O_3 concentrations for the past 5 years with the AQS 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 all years 2016 - 2020. The highest number of days above the 100 µg/m^3 level was in 2019, with the level being exceeded on 28 days, while in 2020 it was exceeded on 20 days.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
RY1	Rye Harbour	Rural	594440	119150	O3	N	UV Absorption	N/A	N/A	3.5
RY2	De La Warr Road	Kerbside	575595	108054	NO_2, PM_{10}	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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT2	North of Northam	Kerbside	583515	126517	NO_2	No	10.0	1.0	No	1.9
DT3	A2100 Beauport Park	Kerbside	578727	113439	NO_2	No	>150	1.0	No	1.8
DT4	A269 Battle Hospital	Kerbside	573071	115896	NO_2	No	40.0	1.0	No	2.1
DT5	B2089 West of Rye	Kerbside	591196	120213	NO_2	No	50.0	1.0	No	2.2
DT7	Holliers Hill, Bexhill	Kerbside	574296	108917	NO_2	No	10.0	1.0	No	2.4
DT8	A259 New Winchelsea Road, Rye	Kerbside	591652	119148	NO_2	No	10.0	1.0	No	1.8
DT9	A21 Robertsbridge	Kerbside	574057	124328	NO_2	No	40.0	1.0	No	1.8
DT10	Catsfield Church	Kerbside	572742	113521	NO_2	No	15.0	1.0	No	2.1
DT12	High St Flimwell	Kerbside	571431	131224	NO_2	No	5.0	1.0	No	2.0
DT13	Battle Wellington Gardens	Urban Background	574357	116222	NO_2	No	30.0	N/A	No	2.1
DT14	Battle A2100	Kerbside	574509	116846	NO_2	No	10.0	1.0	No	2.2

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT16	Battle High Street	Kerbside	574775	115925	NO_2	No	0.0	1.0	No	2.4
DT17	Rye North Salts	Urban Background	592339	120975	NO_2	No	15.0	1.0	No	2.1
DT19	Rye Cinque Ports Street	Urban Background	592121	120543	NO_2	No	8.0	N/A	No	2.1
DT21	Rye South Undercliff	Kerbside	592011	120148	NO_2	No	2.0	1.0	No	2.3
DT22	Bexhill-on-Sea Sackville Road	Kerbside	573985	107409	NO_2	No	2.0	1.0	No	2.1
DT25	A259 Bexhill-on-Sea	Kerbside	573871	108033	NO_2	No	20.0	1.0	No	2.1
DT27, DT28, DT29	Bexhill Triplicate 3	Kerbside	575595	108060	NO_2	No	15.0	1.0	Yes	2.0
DT30	A259 Bowling Green, Rye	Kerbside	592248	120525	NO_2	No	0.0	1.0	No	2
DT31	128 Barnhorn Road, Bexhill	Kerbside	570366	107817	NO_2	No	10.0	1.0	No	2

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
RY2	575595	108054	Kerbside	99	99	25.2	21.8	20.1	20.2	14.9

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

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

Notes:

The annual mean concentrations are presented as µg/m^3.

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

No annualization was necessary as valid data capture for the full calendar year is greater than 75%.

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

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

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

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
DT2	583515	126517	Kerbside	100	100.0	23.5	19.5	18.7	16.7	13.7
DT3	578727	113439	Kerbside	67.3	67.3	**51.4**	39.1	34.5	33.3	27.3
DT4	573071	115896	Kerbside	100	100.0	26.9	21.4	19.2	19.0	14.4
DT5	591196	120213	Kerbside	92.3	92.3	27.1	26.7	28.7	26.4	20.7
DT7	574296	108917	Kerbside	100	100.0	24.6	21.2	21.6	21.1	15.7
DT8	591652	119148	Kerbside	92.3	92.3	25.9	20.8	21.4	19.7	16.4
DT9	574057	124328	Kerbside	92.3	92.3	30.6	25.8	27.9	28.9	17.5
DT10	572742	113521	Kerbside	92.3	92.3	16.0	13.9	13.2	13.0	9.0
DT12	571431	131224	Kerbside	82.7	82.7	**43.1**	32.3	36.6	35.6	23.0
DT13	574357	116222	Urban Background	100	100.0	14.5	12.9	12.1	11.9	8.9
DT14	574509	116846	Kerbside	100	100.0	37.0	29.6	28.6	28.6	20.0
DT16	574775	115925	Kerbside	100	100.0	20.2	16.9	15.6	15.4	11.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
DT17	592339	120975	Urban Background	100	100.0	17.9	15.0	13.9	13.6	11.0
DT19	592121	120543	Urban Background	90.4	90.4	-	26.7	23.7	22.1	17.5
DT21	592011	120148	Kerbside	100.0	100.0	34.6	34.9	36.8	35.0	26.0
DT22	573985	107409	Kerbside	100.0	100.0	37.6	29.0	28.8	29.4	21.2
DT25	573871	108033	Kerbside	100.0	100.0	38.0	29.7	29.8	28.7	22.7
DT27, DT28, DT29	575595	108060	Kerbside	92.3	92.3	26.1	22.2	21.0	19.9	15.3
DT30	592248	120525	Kerbside	92.3	92.3	-	24.5	22.6	21.8	16.9
DT31	570366	107817	Kerbside	100.0	100.0	-	25.4	24.6	23.4	17.6

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

☒ **Diffusion tube data has been bias adjusted.**

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

Notes:

The annual mean concentrations are presented as µg/m^3.

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

NO_2 annual means exceeding 60 µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean AQS objective are shown in **bold and underlined**.

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

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

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

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations (Automatic Sites)

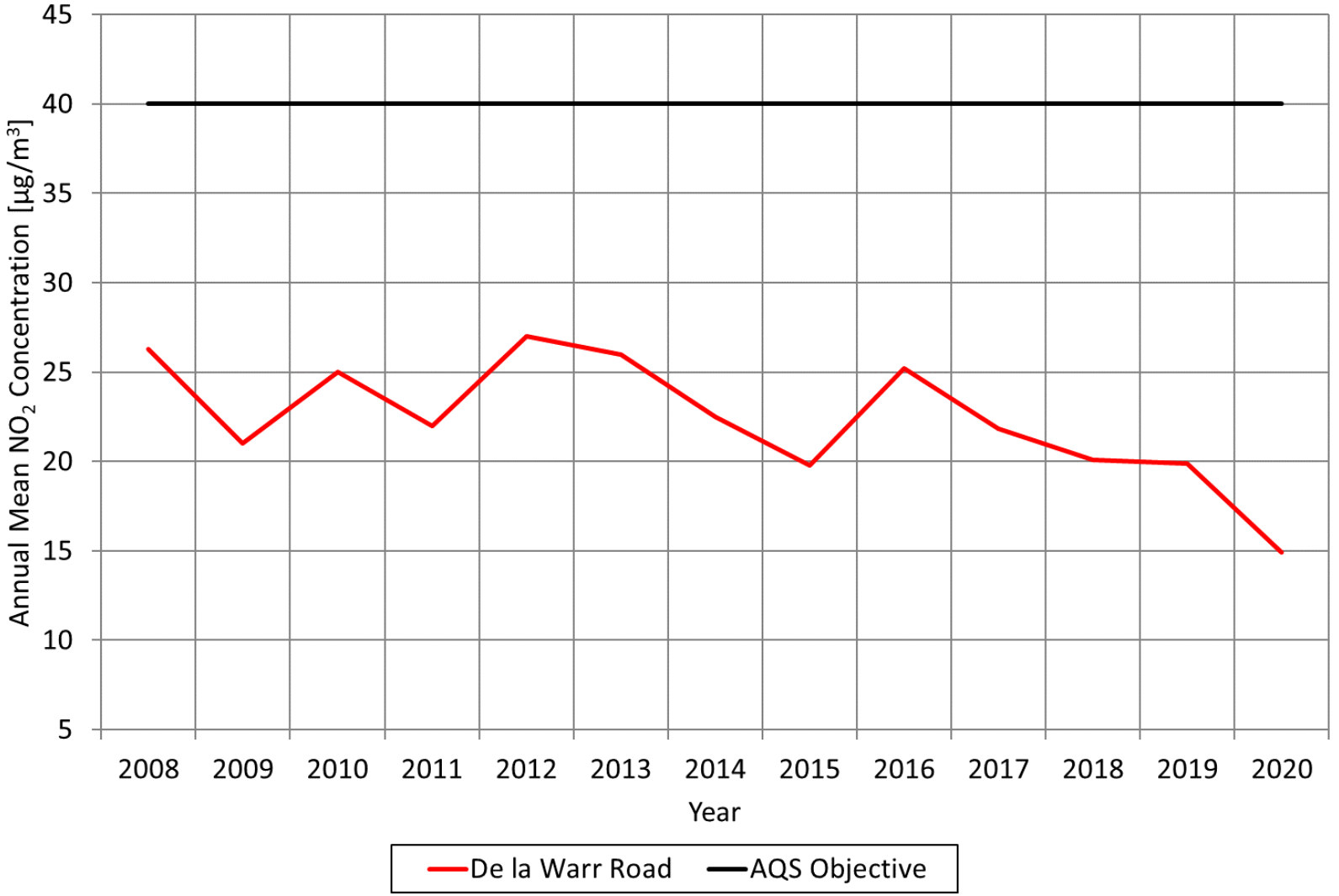


Figure A.2 – Trends in Annual Mean NO_2 Concentrations (Diffusion Tube Sites)

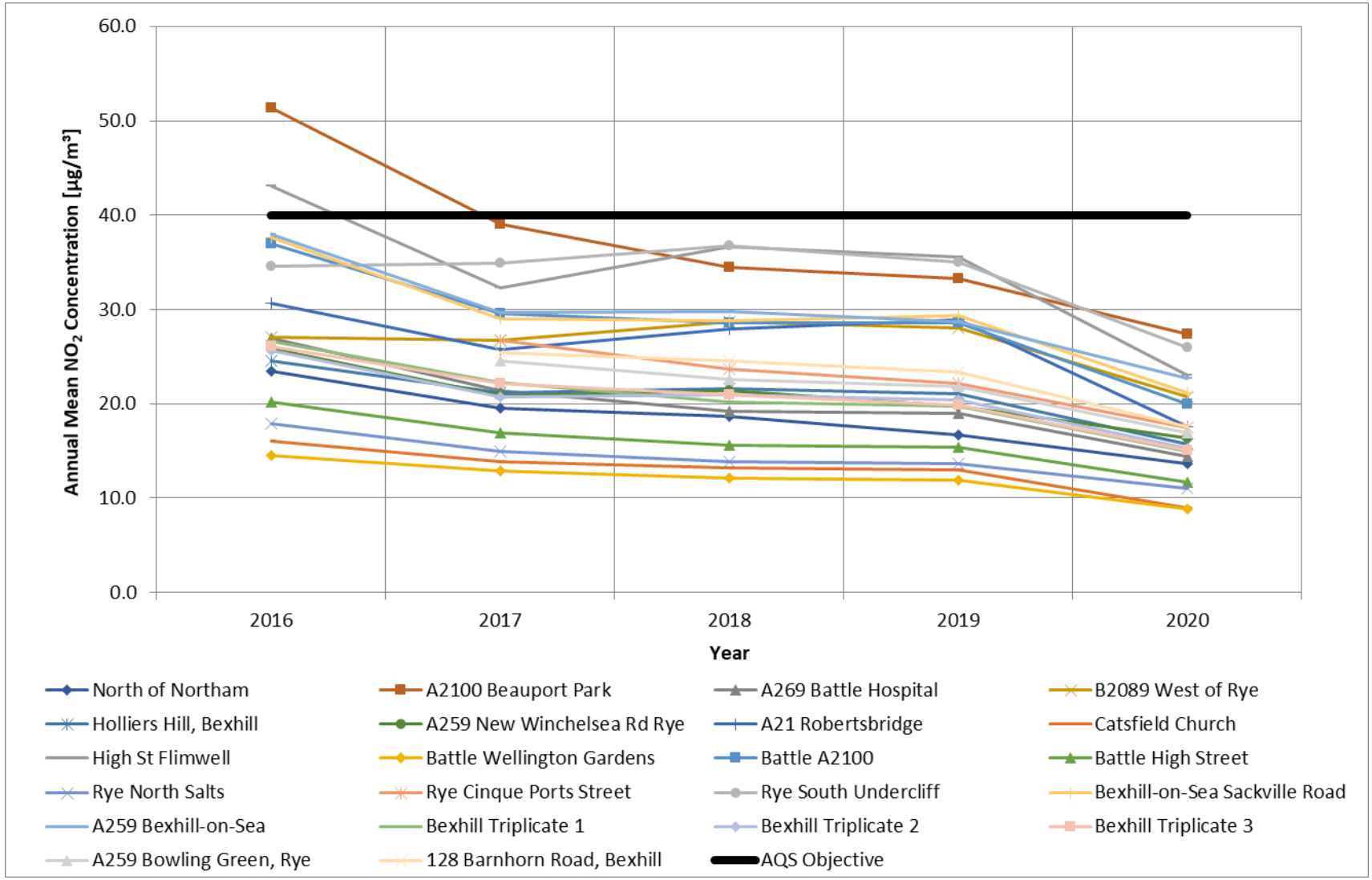


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200 µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
RY2	575595	108054	Kerbside	Automatic	99.2	0	0	0	0	0

Notes:

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

Exceedances of the NO_2 1-hour mean AQS objective (200 µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Table A.6 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
RY2	575595	108054	Kerbside	98.4	98.4	18.1 (3)	21.4 (3)	21.4 (3)	20.5	20.1

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

Notes:

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

Exceedances of the PM_{10} annual mean AQS objective of 40 $\mu g/m^3$ 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%.

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

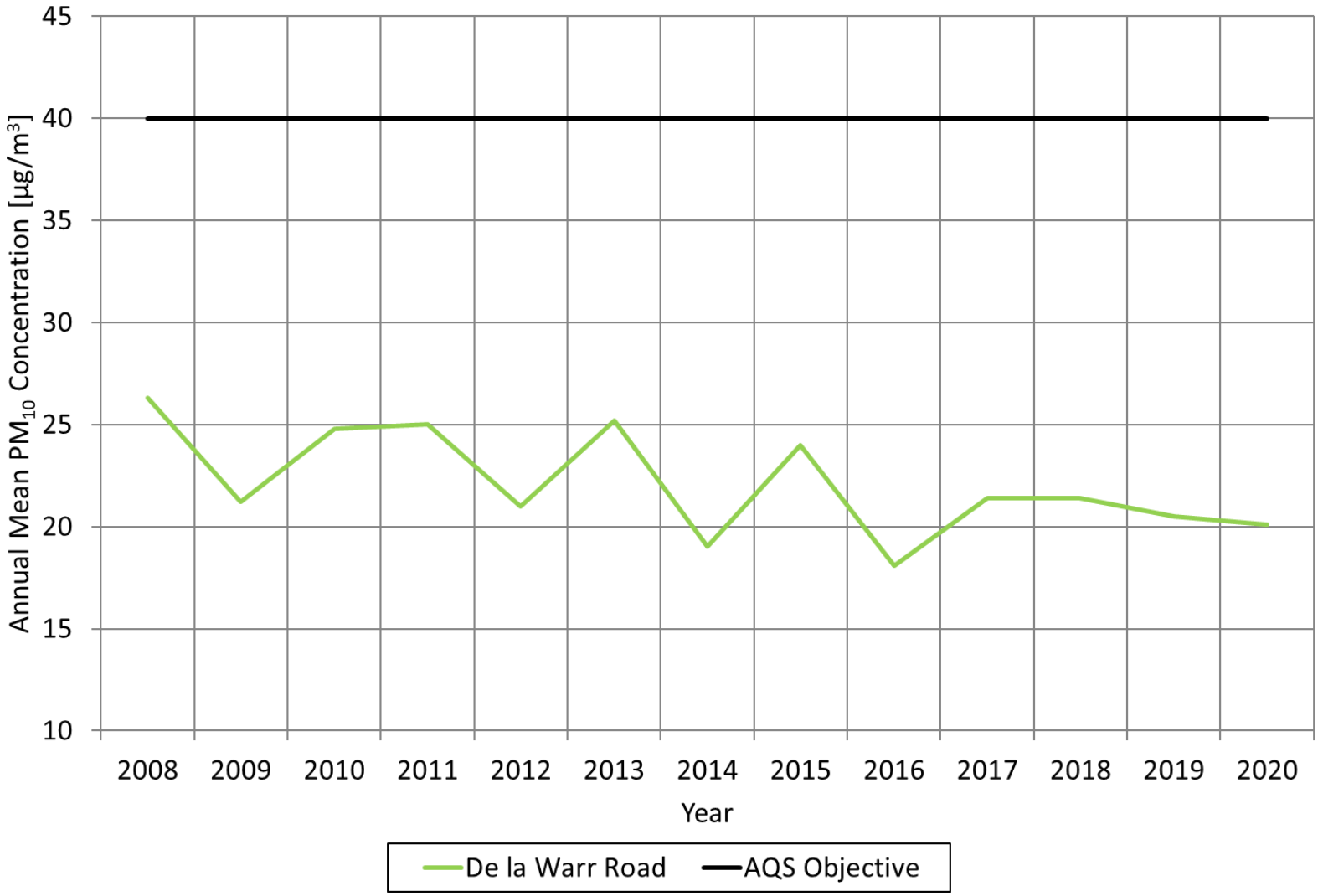


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50 µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
RY2	575595	108054	Kerbside	98.4	98.4	0 (27)	4	6	7	2

Notes:

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

Exceedances of the PM_{10} 24-hour mean AQS objective (50 µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Table A.8 – Annual Mean Estimated $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
RY2	575595	108054	Kerbside	98.4	98.4	12.7	15	15	14.4	14.1

Notes:

The annual mean concentrations are estimated based on the relationship between PM_{10} and $PM_{2.5}$ as per Defra Technical Guidance TG.16.

The annual mean concentrations are presented as µg/m^3.

(1) Data capture for the monitoring period for PM_{10}, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year for PM_{10} (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

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

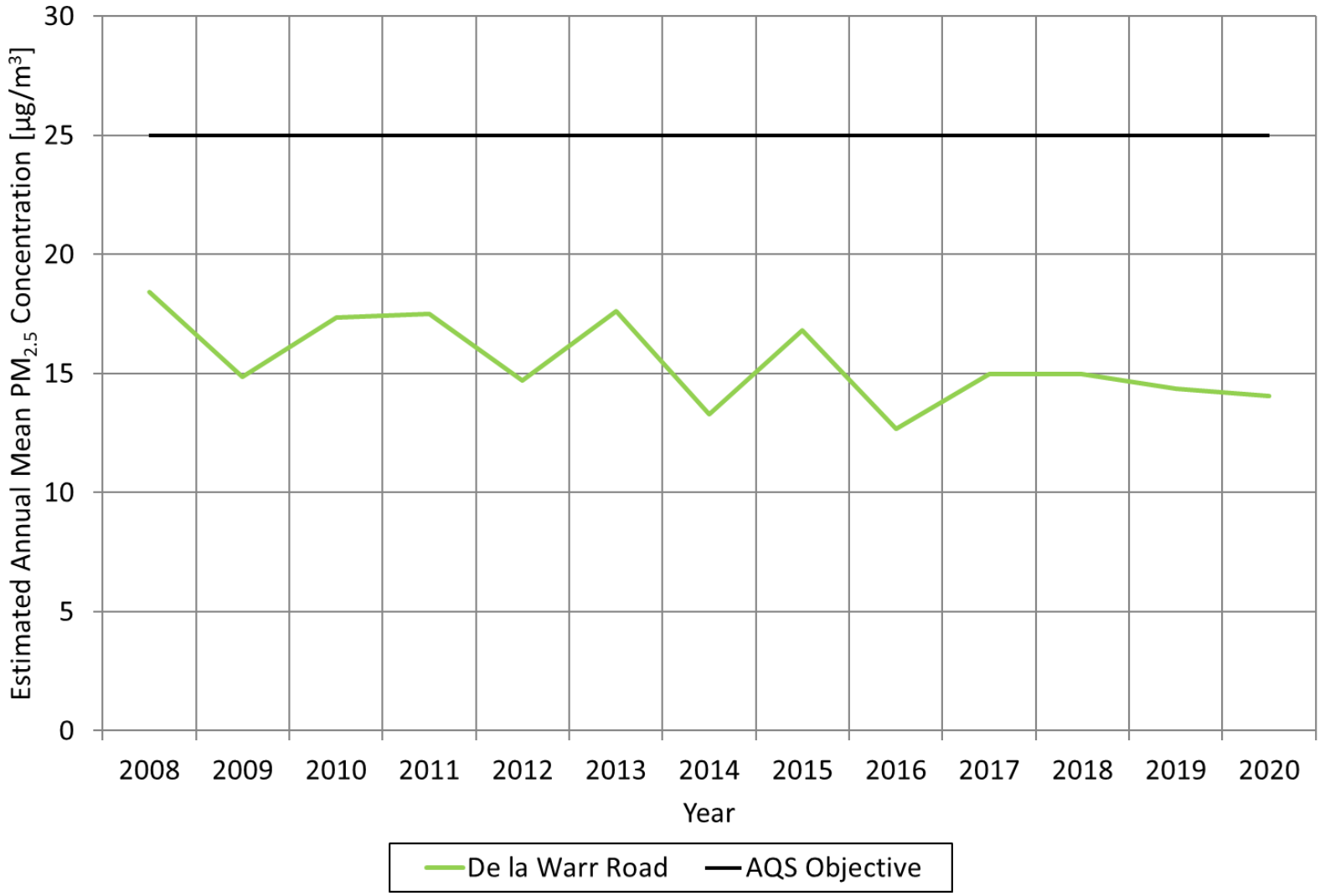


Table A.9 – Annual Mean O_3 2020 Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020 (%) (2)	2016	2017	2018	2019	2020
RY1	594440	119150	Rural	97.2	97.2	54.5	53.5	56.7	55	57.4

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%.

Table A.10 – Running 8-Hour Mean O_3 2020 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 2020 (%) (2)	Days With O_3 Running 8-Hour Means > 100 µg/m^3				
						2016	2017	2018	2019	2020
RY1	594440	119150	Rural	97.2	97.2	**17**	**24**	**27**	**28**	**20**

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 2020

Table B.1 – NO_2 2020 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.88)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT2	583515	126517	19.4	14.1	15.4	13.5	11.1	15.2	13.8	18.8	17.1	13.4	19.9	15.2	15.6	13.7		
DT3	578727	113439		36.4		21.2	20.7	26.8	19.5	32.8	31.8	26.6			27.0	27.3		
DT4	573071	115896	21.5	17.9	16.0	12.3	10.2	14.6	15.2	18.1	17.5	16.6	20.1	16.5	16.4	14.4		
DT5	591196	120213	25.6	20.7	22.5		17.6	22.7	28.8	28.2	23.4	19.9	28.3	20.9	23.5	20.7		
DT7	574296	108917	24.6	17.4	17.1	19.5	13.1	14.2	13.8	19.6	21.8	18.3	14.1	21.2	17.9	15.7		
DT8	591652	119148	20.9	13.6		20.5	17.0	18.8	16.8	22.4	20.7	16.2	22.4	16.2	18.7	16.4		
DT9	574057	124328	22.3	14.3	16.5	20.1	20.0	21.4	16.2	28.3	24.1	17.6		18.7	19.9	17.5		
DT10	572742	113521	14.1		7.3	10.1	7.3	8.3	8.5	10.3	10.7	9.8	14.0	11.9	10.2	9.0		
DT12	571431	131224	32.5	19.3	24.0	23.6	22.2	25.4			31.6	23.8	32.4	26.5	26.1	23.0		
DT13	574357	116222	15.2	9.3	10.2	11.0	7.1	7.9	6.5	9.1	9.5	9.6	14.9	10.9	10.1	8.9		
DT14	574509	116846	32.7	23.7	22.3	15.8	14.7	22.0	15.0	24.5	27.1	21.4	29.1	24.3	22.7	20.0		
DT16	574775	115925	19.1	14.1	12.5	11.4	8.6	10.6	10.8	13.3	13.9	13.6	16.5	15.1	13.3	11.7		
DT17	592339	120975	17.3	12.0	11.5	15.4	9.8	10.5	8.8	11.4	11.0	11.5	17.4	13.6	12.5	11.0		
DT19	592121	120543	25.7	20.2	21.2	20.7		16.5	15.5	21.0	19.2	18.3	21.1	19.3	19.9	17.5		
DT21	592011	120148	33.8	27.6	29.9	26.0	24.0	27.2	25.5	39.4	31.4	25.6	34.6	29.4	29.5	26.0		
DT22	573985	107409	31.9	18.1	25.1	29.7	14.8	22.5	18.9	26.7	26.3	19.6	28.9	26.6	24.1	21.2		
DT25	573871	108033	31.8	28.5	25.1	24.1	19.1	21.6	21.5	25.4	27.9	26.0	32.8	26.1	25.8	22.7		
DT27	575595	108060	20.5	14.5	15.9	20.2	14.9		12.5	17.7	16.8	16.8	22.1	16.3	-	-		Triplicate Site with DT27, DT28 and DT29 - Annual data provided for DT29 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.88)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT28	575595	108060	21.1	15.5	14.9	20.6	14.61		11.9	17.6	16.5	14.9	22.7	18.2	-	-		Triplicate Site with DT27, DT28 and DT29 - Annual data provided for DT29 only
DT29	575595	108060	20.9	17.4	16.7	18.3	23.01		11.8	17.0	18.7	13.8	22.0	16.5	17.4	15.3		Triplicate Site with DT27, DT28 and DT29 - Annual data provided for DT29 only
DT30	592248	120525		20.9	19.3	18.3	14.0	15.9	15.5	19.3	21.0	19.8	25.6	22.1	19.2	16.9		
DT31	570366	107817	22.4	20.6	19.2	18.8	15.2	18.6	16.1	19.8	21.7	20.0	26.0	21.5	20.0	17.6		

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

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

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

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

☒ **Rother District Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

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

NO_2 annual means exceeding 60 µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean AQS objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

No distance corrections have been applied as all concentrations are below 36 µg/m^3.

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

New or Changed Sources Identified Within the District of Rother During 2020

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

Additional Air Quality Works Undertaken by Rother District Council During 2020

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

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.

The percentage of results submitted by Gradko International Ltd that were subsequently determined to be satisfactory was 75% in AIR-PT Round AR036 (January 2020-February 2020) and 75% for AIR-PT Round AR040 (September – October 2020). No results were reported for AIR-PT Rounds AR037 (May 2020 – June 2020) and AR039 (July 2020 – August 2020).

All monitoring has been completed in adherence with the 2020 Diffusion Tube Monitoring Calendar.

Diffusion Tube Annualisation

One diffusion tube location required annualisation in 2020. This was DT3 (A2100 Beauport Park), where annualisation was required as data capture was 67.3%). Annualisation was carried out in accordance with Defra Technical Guidance LAQM.TG.16. The sites used and details of the calculation method undertaken provided in Table C.2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Rother District Council have applied a local bias adjustment factor of 0.88 to the 2020 monitoring data. A summary of bias adjustment factors used by Rother District Council over the past five years is presented in Table C.1.

Rother District Council has a co-location of triplicate diffusion tubes alongside the automatic continuous analyser at De La Warr Road, Bexhill. The local bias adjustment factor using these locations was calculated to be 0.88 as detailed in Table C.2.

In 2020, it was possible to derive a local bias adjustment factor as well as the national bias adjustment factor obtained from the national database (0.81, 18 studies, version 03/21). A local bias adjustment factor is generally preferred as recommended by LAQM.TG16. Additionally, the locally derived factor was higher than the national bias adjustment factor in 2019. This provides a worst-case situation and is likely to be more appropriate for the entire network of monitoring sites.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	Local	-	0.88
2019	Local	-	0.97
2018	Local	-	0.93
2017	Local	-	0.90
2016	Local	-	1.15

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring locations within the District of Rother required distance correction during 2020, as all sites had concentrations below 36 µg/m^3.

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. WeCare4Air undertakes the equipment's maintenance and calibration.

PM_{10} and $PM_{2.5}$ 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[8] (VCM) to ensure gravimetric equivalence.

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

PM_{10} annual average concentrations have used to estimate $PM_{2.5}$ concentrations by using the nationally derived correction ratio of 0.7 suggested in Defra's Technical Guidance LAQM.TG.16.

Automatic Monitoring Annualisation

All automatic monitoring locations within the District of Rother recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data.

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No automatic NO_2 monitoring locations within the District of Rother required distance correction during 2020, as concentrations were below 36 µg/m^3.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Brighton Preston Park	Annualisation Factor Canterbury	Annualisation Factor Reigate and Banstead - Poles	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT3	1.15	1.08	1.22	-	1.15	27.0	31.1	

Table C.3 – Local Bias Adjustment Calculation

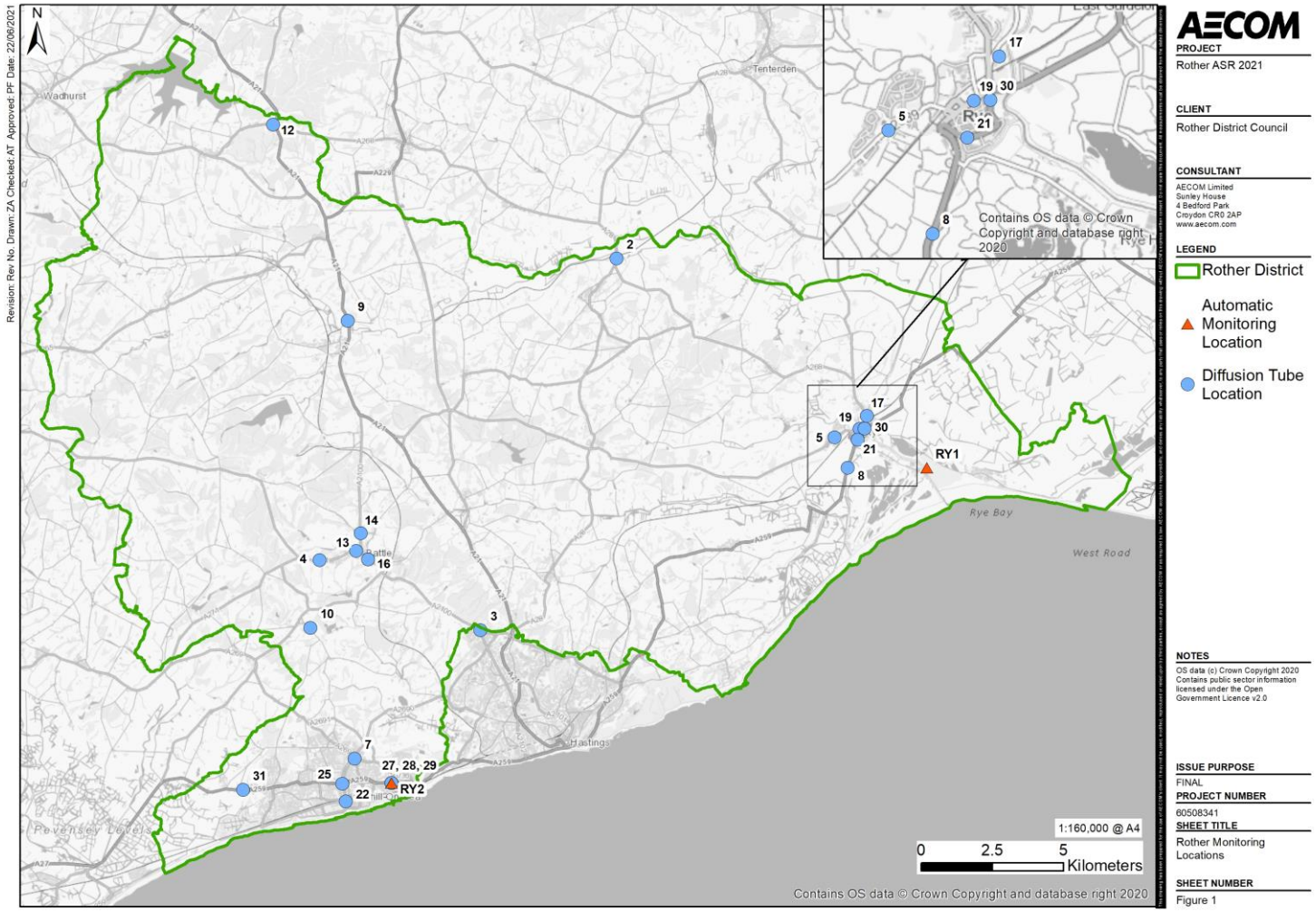
	Local Bias Adjustment Input 1
Periods used to calculate bias	10
Bias Factor A	0.88 (0.83 - 0.94)
Bias Factor B	14% (8% - 21%)
Diffusion Tube Mean (µg/m^3)	17.3
Mean CV (Precision)	5.2%
Automatic Mean (µg/m^3)	15.2
Data Capture	99%
Adjusted Tube Mean (µg/m^3)	15 (14 - 16)

Notes:

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

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

Figure D.1 – Map of Monitoring Sites



Appendix E: Summary of Air Quality Strategy Objectives in England

Table E.1 – Air Quality Strategy Objectives in England[9]

Pollutant	Air Quality Strategy Objective: Concentration	Air Quality Strategy Objective: Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	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
Particulate Matter (PM_{10})	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
Sulphur Dioxide (SO_2)	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Appendix F: Impact of COVID-19 upon LAQM

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

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

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO_2) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[10] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)[11] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

[10] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

[11] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20 µg/m^3 if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked than those of NO_2. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5 µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

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

Impacts of COVID-19 on Air Quality within the District of Rother

Traffic in the District of Rother noticeably dropped throughout 2020, although limited resources have prevented the analysis of the relationship between traffic trends and air quality. As shown in this ASR, NO_2 concentrations have decreased across all sites in 2020 in comparison to recent years.

Opportunities Presented by COVID-19 upon LAQM within the District of Rother

Home working initiated in 2020 continues for many, including RDC, as a result of the COVID-19 pandemic. This provides opportunities to study the relationships between traffic levels, travel preferences and the use of public transport post COVID-19.

There has been engagement with a number of groups and individuals to support increased levels of cycling and walking. Positive actions that have been taken within Rother include:

- Promoting clubs and facilities for cycling and walking. Initiatives to encourage cycling including the Sidley BMX track and links to the national cycle network. Active Rother has funded children activity sessions for starting riding. For walking, social media was used to promote walking routes, such as the 1-2-3 walks initiative.
- Local Cycling & Walking Plan. New Active Travel initiatives are to commence in 2021, following on from the funded Active Access for Growth Programme run by East Sussex County Council (ESCC) in 2020. Opportunities for cycle schemes, widening roads/pavements for walking and cycling and school engagement.

- The Battle Health Pathway community-led project (https://battlehealthpathway.co.uk/). During 2020 several components for the project were set up including the pathway and cycle-skills area. The goal of the project is to build an all-weather pathway around the recreation ground in North Trade Road which would be a traffic free route for everyone to engage in exercise and leisure.

There are plans to work more closely with the sustainability officer for Rother District Council to identify areas where joint working will help improve air quality across Rother District Council as well as offset / reduce CO_2 emissions for the Council. There has also been the opportunity to engage with Transport for the South East, which aims to decarbonise the transport sector in the South East.

Challenges and Constraints Imposed by COVID-19 upon LAQM within the District of Rother

A number of challenges have been experienced in relation to LAQM within 2020 that can be attributed to the pandemic. Any impacts presented below are aligned with the criteria as defined in Table F 1, with professional judgement considered as part of their application.

- The Defra diffusion tube exposure calendar was adhered to and diffusion tube changeovers were carried out as planned. Data capture was high across most monitoring sites and a local bias adjustment factor could be utilised. **No Impact**
- Due to restraints on Council resources the implementation and development of measures was limited. Complaint work increased significantly in 2020 and consequently the Council was unable to engage in more proactive work that would help improve air quality. **Medium Impact**

Table F 1 – Impact Matrix

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

Glossary of Terms

Abbreviation	Description
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 strategy objectives. AQMAs are declared for specific pollutants and objectives
ASR	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
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 or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

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