Brighton & Hove City Council

2021 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Cover: Hollingdean Road Developments Progressed since 2019

Click on charts for an explanation

June, Revised November 2021

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Executive Summary: Air Quality in Our Area

Brighton & Hove is committed to working with partners to ensure that the City will be a place where improved health and wellbeing is experienced by all. Poor air quality and inhalation of pollutants has negative impacts on everyone's health, with potentially serious consequences for individuals, families and at a population level. Identifying problem areas and ensuring that actions are taken to improve air quality forms an important element in protecting the health and wellbeing of Brighton & Hove and residents. Improving air quality is often a complex issue, presenting a multi-agency challenge – so it is essential that various departments including: Transport, Public Health, Safer Communities, Housing and Education work together effectively to deliver improvements where they are needed. The transport, heating and waste disposal choices residents and visitors make influence emissions across the city. Vehicle fleet operators have a key role to play in transitioning fleets to ultralow and zero emissions. Similarly housing stock will need to graduate to solutions without emissions to air.

Most recent monitoring before and since Covid suggests airborne particles meet 2005 World Health Organisation (WHO) Guidelines for both annual and daily averages. Following the Environment Act the government has set out plans to reduce Particulate Matter in ambient air and to tackle local emissions sources. Local monitoring suggest fine particles are associated with transboundary and international emissions (from traffic, agriculture, and industry). Higher daily levels recorded in Brighton & Hove on 1st of January and the 5th November are likely associated with New Year and Guy Fawkes firework events. Bonfires, fireplaces, and diesel generators contribute to short-term smoke across neighbourhoods. Tyre and brake wear are constant sources of airborne particles where traffic slows and accelerates. Further reductions in smoke, particles and dust will benefit health at a population level.

2020 monitoring suggests Nitrogen Dioxide (NO_2) continues to exceed national air quality standards adjacent to localised sections of London Road and Grand Parade (A23, Air Quality Management Area AQMA1), Lewes Road-Elm Grove and south of Vogue Gyratory (A270 AQMA1), and the slope of North Street (B2066 AQMA1). NO_2 levels are also close to air quality standards next to Viaduct Terrace (A23, AQMA1) and New England Road (A270, AQMA1), Hollingdean Road (C-Link, AQMA1), the haulage route South Portslade (A259-A293 AQAM3) and the hill climb on South Street (AQMA5). Following the 2020

review of AQMAs a new Air Quality Action Plan (AQAP) is scheduled to follow this annual report.

Without the efforts of the air quality officer to change outdoor monitoring samples during Covid there would not be 2020 results to report here. Eleven periods of diffusion tubes were captured during the calendar year. This included a longer time span during the strictest travel restrictions from April 2020. Acknowledgement of the Transport Research Laboratory (TRL) for providing calibrated data from Brighton & Hove's automatic monitoring stations.

AQMA1 New England Chatham Place with *Cut Engine Cut Pollution Sign*

Air Quality in Brighton & Hove

Air pollution is associated with a variety 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]. Poor quality housing resides next to roads and junctions where pollution is relatively high. Brighton & Hove's urban area has one of the highest population densities in England. Cleaner air will benefit the health of a cosmopolitan city including athletes and those recovering from illness. Better air quality is an inclusive cause that can bind diverse communities.

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 combined influence of particulate (Public Outcomes Framework) and gas pollutants has a strong influence on 175 early death per year across Brighton & Hove.

Air Quality Management Areas[5] are declared for NO_2 because this is the only pollutant that exceeds UK air quality standards. Action to improve air quality will need to surpass UK standards for NO_2. Whilst particles do not exceed UK standards reaching out to World Health Organisation (WHO) guidelines will be a health benefit. The mixture of pollution human's inhale is a burden on health, and we should not see pollution in the gas or particle phases as separate concerns. Some pollutants such as ground levels ozone (O_3) result from chemical reactions between gases in the atmosphere in the presence of sunlight. As ozone episodes are regional reporting by the Local Authority is beyond the scope of this report on local air quality.

Tiny airborne Particulate Matter ($PM_{2.5}$ less than 2.5 micrometers) travel long distances between regions for example chimney stack industries can release emissions high into the atmosphere. Ammonia is released from agricultural activities at the beginning of the growing season. In can cause spring particulate episodes regionally. Wildfires and domestic fires contribute to airborne smoke and particles. Due to its transboundary nature $PM_{2.5}$ is not a statutory requirement for Local Air Quality Management. This annual report aligns with the

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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

[5] National List and Despription of Air Quality Management Areas https://uk-air.defra.gov.uk/aqma/list

This 2021 reporting template has been developed to comply with the Accessibility Regulations (2018).

Joint Strategic Needs Assessment [vii] and the Public Outcomes Framework [viii], that include health sections on airborne $PM_{2.5}$. Across Europe **gas** emissions from combustion (traffic and industry) contribute to **nitrate particles** in the air.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to improve air quality further. Partly due to travel restriction 2020 was proven to be the best year for air quality in a monitoring sequence since the 1995 Environment Act. That said in many places the better annual average was due to a cleaner second quarter (April-June 2020). During the second half of the year traffic emissions increased as the travel restrictions eased. For the second six months NO_2 levels were not very different to the second half of 2019 (also better than 2017/18). A drop in NO_2 was recorded November during lockdown. There were fewer days with moderate of high particulate concentrations during 2020 compared to previous years. An ozone episode was documented in spring 2020 as winter pollutants in the atmosphere (emitted prior to travel restrictions) reacted with many sunny hours. The lower levels of oxides of nitrogen dioxide around April 2020 were a factor with this spring ozone episode[i].

The 2019 Clean Air Strategy[6] sets out the case for action, with goals more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[7] sets out the approach to reduce exhaust emissions from road transport through multiple mechanisms; this is extremely important given that the high proportion of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The switch of traffic from the east to the west side of Valley Gardens (A23) in September 2019 has helped deliver substantial improvements in localised air quality around Marlborough Place, Gloucester Place and York Place. Widening of concourses and planting has created more space for pedestrians, cafés and outdoor seating in this area. Brighton & Hove buses inclusion of fifty-four georeferenced capable euro-VI emissions buses has helped reduce roadside NO_2 around the Ultralow Emission Zone (ULEZ) and

[6] Defra. Clean Air Strategy, 2019

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

AQMAs. So far, this privately funded action has been phased with two procurement steps rolled out September 2019 and October 2020. Defra funds in combination with Sustainability and Carbon Reduction Investment Fund (SCRIF) and operator contributions are enabling older bus exhausts to be retrofitted for lower emissions. This will help reduce NOx emissions in several AQMAs across more than one Local Authority with wider benefits across Brighton & Hove, Sussex, Kent and Surrey.

Progress has been made with cycling infrastructure and cycling as a mode of transport. The Local Cycling and Walking Infrastructure Plan (LCWIP) is available for public consultation prior to the AQAP schedule later this year. The use of private bicycles and bike share is on the increase. Since last year there are more opportunities to use e-bikes. The rise of inclusive cycling (adults and children) and as a viable transport mode for many shorter journeys can free up road space for trades and distribution.

A Defra funded project across Sussex has enabled Sustrans to share educational messages with schools especially themes associated with active and zero emission travel. The avoidance of cold exhausts associated with short urban vehicle journeys can help avoid emissions. Since 2019 there has been high increase of working from home which has saved commuter trips and freed up road space for deliveries and leisure.

The City Council chairs and participates in the Sussex Air Quality Partnership, liaises with Highways England, the South Downs National Park Authority the Environment Agency and Public Health England as required. The 2020 Sussex Air Pollution Monitoring Report sets out the regional picture and complements this report on local air quality.

Conclusions and Priorities

The AQMAs were reviewed and approved by committee with new declarations delivered November 2020. The AQMAs are up to date. A revised detailed air quality assessment and a and new AQAP are scheduled to follow this report. Responses to the Transport Plan (LTP) and LCWIP public consultation are being considered.

The remaining air quality standard, exceedances are all within declared AQMAs. AQMA4 and AQMA6 have showed signs of compliance 2019. After a stop monitoring continues in these locations from January 2021. In all AQMAs it will be important that new planning permission do not further enclose or flank roads. It is advisable that opportunities are sort to open streets and widen footways where possible.

The council has intention to expand the Ultralow Emission Zone in combination with a liveable city centre and Low Traffic Neighbourhoods (LTNs). There is interest in having improved smoke control. There will be cost and time challenges in delivering all these ambitions around the same time. Diesel vehicles will need to move on from the euro-5 (light vehicles) and euro-V (heavy vehicles) emission standards as a matter of urgency.

Since last year's annual report on air quality the city has convened senior and junior public Climate Assemblies setting out measures to work toward climate neutrality by 2030. It includes accelerating the road to zero emissions for transport and buildings.

The areas of NO_2 exceedance are more localised than before. This provides an opportunity for targeted monitoring, intervention, and mitigation supported by planning policy. Different solutions are required for various transport corridors that have varying proportions of cars, vans, motorbikes, lorries, and buses. Arterial routes that meet around the City Centre and are joined together in AQMA1. Smaller outlying AQMAs are due to road traffic emissions in a confined space or motorised emissions on a hill climb. There is a risk of gas emissions from the energy centre at the hospital contributing to upper levels and AQMA6.

Health damage costs of development(s) is most likely to be significant where additional road traffic emissions are added to the AQMAs.

Local Engagement and How to get Involved

Everyone can do a little bit to help improve local air quality for example the travel and heating choices they make:

Healthy Travel Choice Hierarchy

1. Active Travel – walking, cycling and roller booting
2. Battery assisted bicycles
3. Public Transport
4. Electric car or van
5. Battery vehicle with a range extender
6. Petrol-electric hybrid
7. Small Petrol engine
8. Diesel Hybrid
9. Diesel with effective exhaust mitigation
10. Diesel without exhaust mitigation

Healthy Heating and Cooling Hierarchy

1. Renewably generated electricity without combustion with passive house and energy storage
2. Electric grid or microgeneration without emissions
3. Biogas Fired Boilers (Ultralow NOx)
4. Natural Gas Fired Boilers (Ultralow NOx)
5. Combined Heat and Power (NOx)
6. Pellet Stoves (low PM & NOx)
7. Log Burning
8. Diesel Generators
9. Heavy fuel oil
10. Coal

References to cleaner air community

Brighton Bike Share[ii]
"Bricycles" Brighton and Hove Cycling Campaign[iii]
Breathe in Brighton[iv]
British Lung Foundation Air Pollution[v]
British Heart Foundation Air Pollution[vi]
See end notes for reference list.

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1 Local Air Quality Management

This report provides an overview of air quality in Brighton and Hove City up to and including 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 if the air quality standards (formerly 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 compliance with national standards for air quality. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Brighton and Hove City to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

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 standard. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the standards.

A summary of AQMAs declared by Brighton & Hove can be found in Table 2.1. The table presents a description of the six designated AQMAs (2020) that are currently designated for nitrogen dioxide within Brighton & Hove. Appendix D: Map(s) of Monitoring Locations and AQMAs. The air quality standards pertinent to the current AQMA designation(s) are as follows:

- NO_2 annual mean all AQMAs
- AQMA1 + AQMA6 NO_2 annual mean and hourly means

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 AQMA Review 2013	Level of Exceedance: Current Year 2020	Name and Date of AQAP Publication	Web Link to AQAP
Brighton & Hove AQMA1	2013 Amended November 2020	NO_2 Annual Mean	Includes four main arterial routes connecting Brighton & Hove City Centre, that is: B2066-ULEZ and part of the A23, A270, A2010 and adjacent land use.	YES M23-A23 & A27 feed traffic to the AQMA	84.6 (C11-2007) Highest roadside in AQMA1	46.5 (E07-2019) Highest roadside in AQMA1	Scheduled After the 2021 ASR	To follow this report AQAP public consultation and committee.
Brighton & Hove AQMA1	2013 Amended November 2020	NO_2 1 Hour Mean	Includes four main arterial routes connecting Brighton & Hove City Centre, that is: B2066 ULEZ and part of the A23, A270, A2010 and adjacent land use.	YES	114.8 (C11-2012 kerbside)	51.2 (C11-2012 kerbside)		
Brighton & Hove AQMA2	2013 Amended November 2020	NO_2 Annual Mean	Rottingdean High Street (B2123) from the A259 junction to the T-junction with Vicarage Lane.	YES	47 (E23-2010)	31.7 (E23-2010)		
Brighton & Hove AQMA3	Nov-20	NO_2 Annual Mean	South West Portslade including housing surrounding the A259 and A293 haulage route from Shoreham Port Inland. NOx contributions from general traffic, buses,	YES	51.1 (W19-2009)	35.4 (W17-2009)		

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 AQMA Review 2013	Level of Exceedance: Current Year 2020	Name and Date of AQAP Publication	Web Link to AQAP
			HGV and wharf side industry.					
Brighton & Hove AQMA4	Nov-20	NO_2 Annual Mean	Premises adjacent with the Old Shoreham Road (A270) and Sackville Road (A2033) Junction.	YES	47.7	34.6	Scheduled After the 2021 ASR	
Brighton & Hove AQMA5	Nov-20	NO_2 Annual Mean	South Road and Preston Road part of the A23 and adjoining properties.	YES	50.7 (E02-2012)	35.7 (E02-2012)		
Brighton & Hove AQMA6	Nov-20	NO_2 Annual Mean NO_2 1 Hour Mean	Eastern Road outside of the Royal Sussex County Hospital. Mixed road traffic, gas combustion and long-term construction.	YES	42.2	28.8		

☒ **Brighton & Hove City Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Brighton & Hove City Council confirm that all current AQAPs have been submitted to Defra.**

For parts of the A23 and A270 transport corridors the first AQMA in Brighton & Hove was declared in 2004. The concentration (level) of NO_2 at declaration (hourly or annual exposure setting) refers to 2013 the previous time the AQMAs were reviewed across the city. The current year refers to 2020 that is the last full calendar year which of course had periods of travel restrictions. From later March to June motorised traffic emissions were a fraction of normal levels. Results for AQMA4 & AQMA6 are based on 2019 monitoring prior to the AQMA declarations. Monitoring stopped at these locations during 2020 and resumed 2021.

2.2 Progress and Impact of Measures to address Air Quality in Brighton & Hove

The Annual Status Report is independently appraised by the Department for Environment (DEFRA) and includes:

- Acknowledgment of six AQAM declared November 2020
- A downward trend in NO_2 across the city
- 54 NO_2 diffusion tube monitors with recorded exceedances down from 32 in 2018 to 17 in 2019 to 5 in 2020
- There were no air quality standard exceedances outside of NO_2 AQMAs
- Quality Assurance and Quality Control QA/QC procedures to air quality monitoring have been applied and are included again in this report
- The report contained discussion of the Public Outcomes Framework indicator and measure to reduce $PM_{2.5}$ emissions
- The Council has provided a very good discussion on pollutant trends with distinction on locations and this approach is encouraged for future reports
- An extensive list of measures to actively engage with air quality improvement
- It is extremely helpful that the report highlights which AQMAs diffusion tubes are located
- A reference of where the concentrations in table 2.1 are recorded is included in the report
- The impacts, opportunities and challenges brought by Covid-19 have been identified and detailed
- On the bases of the evidence provided by the Local Authority the conclusions reached are accepted by DEFRA.

The Council plans to update its Air Quality Action focusing on six AQMAs and progress to public consultation 2021/22. Following consultation the most likely schedule for an AQAP report to Environment, Transport and Sustainability (ETS) Committee is mid-2022.

Brighton & Hove has taken forward several 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. Measures are included within Table 2.2, with the type of measure and the progress Brighton & Hove 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.

More detail on these and new measures will be set out in a new Air Quality Action Plan scheduled straight after this report. Feedback from the Local Transport Plan (LTP5) and Local Cycling and Walking Infrastructure Plan (LCWIP) is currently being processed. Key completed measures are:

- Roll out of cleaner buses
- Promotion of active travel
- Introduction of cargo bikes and e-bikes
- Rapid and fast electromotive charging facilities on street, in communal car parks and for taxis
- A low interest loan to take forward a zero-emission council fleet
- Plans for marine and air source heat pumps avoiding local combustion and emission to air
- Increased roof coverage with solar panels

Brighton & Hove expects the following measures to be completed over the course of the next reporting year:

- Retrofit of intermediate age euro-V buses
- Retirement of older buses
- Further exploration of hydrogen fuel for heavy vehicles
- Seek opportunities to offset buildings and open streets in the AQMAs to improve ventilation of the outdoor and indoor interface

Brighton & Hove's priorities for the coming year are active travel and further development of ultralow emission zone in combination with low traffic neighbourhoods.

The principal challenges and barriers to implementation that Brighton & Hove anticipates facing are officer time and availability of funds to deliver the measures identified.

Progress on the following measures has been slower than expected due to access to Council computer networks and hardware and Covid travel restrictions.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Brighton & Hove anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of AQMAs 1 to 6. Updates will be provided in the new AQAP.

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	Ultralow and Zero Emission Zone	Promoting Low Emission Transport	Low Emission Zone (LEZ)	2019	2023	Local Authority Environmental Health, Local Authority Transport Dept.	tbc	NO	Partially Funded	£1 million - £10 million	Planning	5-15 µg/m3 NO2 Estimations	Fleet Change	Advance beyond 2015 LEZ and 2019 ULEZ. High Level Report to Committee	Officer Time
2	Zero Tailpipe Fleet	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2019	2022	Local Authority Transport Dept.	Low Interest Loan	NO	Funded	£1 million - £10 million	Implementation	1 to 2 µg/m3 NO2	Zero Emission Council Fleet	Agreed in Principle	Availability of Vehicles
3	Bus Retrofit	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2013	2021	Local Bus Operators	Defra, SCRIF, Local Bus Operators	YES	Partially Funded	£500k - £1 million	Implementation	1-10 µg/m3 NO2	Lower NO_2 at roadside	Implementation on-going	Second phase successful, Third phase on-going
4	Better Aligned Tracking	Promoting Low Emission Transport	Other	2021	2023	Brighton & Hove and University of London	University	NO	Partially Funded	£500k - £1 million	Planning	1 to 3 µg/m3 PM2.5	Outcome of Discussions	Meetings	Monitoring benefits
5	Construction Environment Management Plans	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	2021	2023	Planning and Developers	Developers	NO	Funded	£50k - £100k	Implementation	1 to 3 µg/m3 PM2.5	Reduction of HGV in the AQMA	Implemented on a number of Majors	Limited number of routes
6	Promoting e-cargo bikes	Freight and Delivery Management	Other	2020	2022	All Departments and Companies	DfT	NO	Partially Funded	£100k - £500k	Implementation	1 to 2 µg/m3 NO2	Increased bike use modal shift	Bike share a success. E-bikes and western expansion coming soon.	Officer Time
7	Zero Emission Active Travel	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2018	2021	Local Authority Transport Dept.	DfT	NO	Funded	£1 million - £10 million	Implementation	1 to 3 µg/m3 NO2	Increased bike use modal shift	Sea Front Bike Lane. Reallocation of Space. Temporary Cycle Lanes	Consensus
8	Reducing the need to travel	Promoting Travel Alternatives	Encourage / Facilitate home-working	2019	2021	All Departments and Companies	Various	NO	Funded	< £10k	Implementation	1 to 5 µg/m3 NO2	Less traffic due to commuting	Success Since Lockdown	Commuting vehicle trips may revive after travel restrictions
9	Car Share	Alternatives to private vehicle use	Car Clubs	2017	2020	All Departments and Companies	Private	NO	Funded	£100k - £500k	Completed	1 µg/m3 NO2	Viable Car Clubs	Good Uptake Companies and Households	Established
10	Bus Access	Transport Planning and Infrastructure	Bus route improvements	2015	2022	Local Authority Transport Dept and Bus Company	Local Authority Transport Dept and Bus Company	NO	Partially Funded	£1 million - £10 million	Planning		Bus Priority	Gradual	Limited Space

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
11	Cycle Access	Transport Planning and Infrastructure	Cycle network	2018	2021	Local Authority Transport Dept.	DfT	NO	Partially Funded	£1 million - £10 million	Implementation		Increased bike use	Accelerated Progress	Ongoing
12	Bike Share and e-bikes	Transport Planning and Infrastructure	Public cycle hire scheme	2018	2021	Local Authority Transport Dept.	Private	NO	Funded	£1 million - £10 million	Implementation		Increased bike use	Good Uptake	Time to Implement
13	Transport Mode Interchange	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2018	2020	Local Authority Transport Dept.	DfT	NO	Funded	£1 million - £10 million	Completed			Good Progress	Declined Rail use 2020
14	Planning Policy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2016	2022	Planning and Transport	Planning	NO	Funded	£50k - £100k	Completed			Supporting Policies	Established
15	Emission Geo-reference	Vehicle Fleet Efficiency	Testing Vehicle Emissions	2018	2020	Local Bus Operators	Bus Operators	NO	Funded	£1 million - £10 million	Completed	1 to 5 µg/m3 NO2	NO2 Reduction	Second Phase	Relevant to 54/350 regular buses
16	Shoreham Power Station Permit	Environmental Permits	Large Combustion Plant Permits and National Plans going beyond BAT	2010	2015	Environment Agency	Power Company	NO	Funded	£100k - £500k	Completed		Low Emission Contribution from Chimney	Established	Permit condition for low NOx
17	Smoke Control	Public Information	Via the Internet	2020	2022	Communication and Air Quality	BHCC	NO	Not Funded	< £10k	Implementation	1 µg/m3 PM2.5	Alternatives to solid fuel burning	Second Phase	Reasonably frequent updates required
18	Air Quality Monitoring	Public Information	Via the Internet	2020	2022	Local Authority Transport Dept.	tbc	NO	Not Funded	£100k - £500k	Planning		Information	Ongoing	Requires Funding and Quality Assurance
19	Construction Plans	Freight and Delivery Management	Freight Partnerships for city centre deliveries	2015	2023	Developers	Developers	NO	Partially Funded	£50k - £100k	Implementation	1 µg/m3 NO2	Less HGV in the AQMA	Progress with Long Term Construction	Improvements in Non-Mobile Machinery
20	Rapid Electromotive Chargers	Promoting Low Emission Transport	Taxi emission incentives	2019	2021	Local Authority Transport Dept.	Office of Low Emission Vehicles	NO	Partially Funded	£500k - £1 million	Implementation	1 to 3 µg/m3 NO2	On Street Facilities	Good Progress	Further Charging Facilities to come
21	Ultralow NOx and Zero	Promoting Ultralow Low Emission Plant or Alternatives	Emission control equipment for small and medium sized stationary combustion sources / replacement of combustion sources	2018	2021	Planning and Air Quality	Developers	NO	Partially Funded	£50k - £100k	Implementation	1 to 2 µg/m3 NO2	Ultralow Emission Boilers and Alternatives	Good Progress	Ambition to phase out gas combustion around the AQMA
22	Working with Schools	Public Information	Other	2019	2021	Local Authority Transport Dept and Sussex Air Quality Partnership	DEFRA Air Quality Grant	YES	Funded	£100k - £500k	Implementation		Improved Awareness active & zero emission travel	Interactive Across Sussex	Long term air quality is clean around Brighton & Hove schools

A variety of complementary measures are required to improve air quality. The above order does not relate to priority. A comprehensive table of measures delivered to date or ongoing can be found in the 2020 ASR. This will be developed and refreshed as part of the 2021 AQAP, to follow this report. Categories above are consistent with EU and UK guidance for Air Quality Action Plans. .

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.

Whilst the tiny airborne particles are not defined by composition or toxicology, when inhaled they can be drawn deep into the respiratory tract, crossing over into the blood stream. $PM_{2.5}$ is reffered to in section 6.49 of the Joint Strategic Needs Assessment (JSNA)[vii] and is linked with the Public Health Outcomes Framework (PHOF)[viii]. PHOF sets out a vison for public health "to protect the nations health and improve the health of the poorest fastest".

Brighton & Hove is taking the following measures to address $PM_{2.5}$:

- The phasing out of pre-euro-V emission buses reduces particulate emissions from the frequent bus fleet. Council, taxi and haulage fleets have also made progress in phasing our pre-euro 5 vehicles.
- The phasing out of pre-euro-VI emission standards will further reduce nitrates that are precursors to the formation of particles in the atmosphere
- The Council is in talks with University of London regarding improving true wheel alignment to reduce tyre wear and particulate release to air
- Construction Environment Management Plans have progressively more stringent emissions standards for Non-Road Mobile Machinery that includes bulldozers, dumpers, and cranes
- Static diesel generators are discouraged for works and events, especially those that are likely to last more than a few days
- Members have requested that officers consider declaration of a citywide Smoke Control Area (SCA). The new Environment Act sets out stronger powers for Local Authorities

- In the interests of communal health, the council issued a series of public statements discouraging indoor and outdoor domestic burning during the Covid-19 pandemic[ix].
- To complement Defra's automatic urban rural monitoring network (site at Preston Park) the City Council monitors for $PM_{2.5}$ adjacent to Lewes Road and North Street. During the 2020 the data capture of council monitors surpassed Defra's monitorng station in Preston Park.
- Brighton & Hove is exploring options for further $PM_{2.5}$ monitorng in the city with a view to delivering a quality assured, consitent and reliable network tied with monitorng across Sussex

Further guidance is available under the $PM_{2.5}$ and Action Planning section of Technical Guidance LAQM.TG16 (Chapter 2).

There were no 24-hour periods during 2020 with moderate levels of $PM_{2.5}$ or concentrations more than the 2005 WHO daily recommended level. Further details are given in Table A8. The September 2021 WHO recommendations have been published since the writing of this report and will be discussed further in the following AQAP.

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

This section sets out the monitoring undertaken within 2020 by Brighton & Hove and how it compares with previous years and relevant air quality standards. In addition, monitoring results are presented for a five-year period (tabular summaries) between 2016 and 2020 to allow monitoring trends to be identified and discussed. Where available longer term tends are included. As the AQMAs were recently updated there are no plans to make alternations in the next few years. Long term results are also important for short term objectives because these are the tally of polluted days or hours throughout the calendar year.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Brighton & Hove undertook automatic monitoring at two sites during 2020. This complements one Defra and one University of Brighton automatic monitoring location. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

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

Brighton & Hove undertook non-automatic (i.e. passive) monitoring of NO_2 with 56 samples at 54 separate locations over eleven periods during 2020. In most cases this enabled sampling to be constant from 2019 through to 2021. Table A.2 in Appendix A presents the details of the non-automatic 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 annualisation, 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 (where the annual mean data capture is below 75% and greater than 25%). Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 and **Error! Reference source not found.** in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality standard of 40µg/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. All exceedances and near misses occur within the AQMAs amended during 2020.

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.4 includes distance corrected values, only where relevant.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 hours per year. There were no recorded exceedances of the hourly standard during 2020. For the first time there were no NO_2 annual means greater than 60µg/m^3. As before the kerbside monitorng adjacent to the North Street hill climb is closest to exceeding this level, but has reduced by more than 50% since its peak in 2013.

There are no plans to alter the AQMAs in the next few years. The monitoring network is adapting to monitor transport changes such as diffusion tube C01-2020 on the Old Stene and a new project to determine before during and after the western extension of the Old Shoreham Road cycle Lane, some of these new monitors (2021) are at kerbside.

3.2.2 Particulate Matter (PM_{10})

Since 2015 Brighton & Hove has monitored $PM_{2.5}$ instead of PM_{10} and the relatively course fraction of airborne particulate complies with national standards. If funding is available the council will consider resuming monitoring both PM_{10} and $PM_{2.5}$.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.5 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years. 2020 $PM_{2.5}$ monitoring in a variety of setting suggest levels meet the WHO guidelines for the annual and daily means.

3.2.4 Sulphur Dioxide (SO_2)

Sulphur Dioxide levels have been found to comply with national standards across the Greater Brighton area. The University of Brighton monitors SO_2^x.

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)
BH6	Lewes Road South of Vogue Gyratory	Roadside	532082	105694	NO_2, $PM_{2.5}$	AQMA1 Lewes Road	API Chemiluminescent, TEOM	1	1.5	3
BH10	North Street near Ship Street	Roadside	530995	104271	NO_2, $PM_{2.5}$	AQMA1 ULEZ	API Chemiluminescent TEOM	0	6	3.5
BH0	Preston Park AURN	Urban Background	530526	106218	NO_2	No Background	API Chemiluminescent BAM	In Park	>150	5

Notes:

(1) BH6 is located on the footway of Lewes Road south of the Vogue Gyratory near Hartington Road.
(2) BH10 close to the façade of a building line on North Street near Ship Street with mixed building use including some flats above retail
(3) Preston Park is part of the national Automatic Urban Rural Network (AURN) managed by DEFRA. During 2020 the site has excellent data capture for NO_2 and is limited for particles that has been changed method from daily partisol plates to an hourly BAM.

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)
C01-2020	Old Steine St James Street Corner	Roadside	531361	104040	NO2	Revoked 2020	0.0	8.0	No	4.2
C02-2009	Old Steine East Side	Roadside	531361	104006	NO2	Revoked 2020	0.0	5.2	No	2.7
C03-1996	St James Street	Roadside	531439	104045	NO2	Revoked 2020	0.0	3.8	No	2.7
C04-2010	Castle Square	Roadside	531228	104088	NO2	AQMA1 ULEZ	0.0	5.7	No	2.7
C05-2012	Pavilion Park	Urban Background	531230	104260	NO2	No	100.0	102.0	No	2.8
C10-2012	North Street near Ship Street	Roadside	530995	104271	NO2	AQMA1 ULEZ	0.0	6.1	Yes	2.5
C11-2007	North Street Central	Roadside	530947	104284	NO2	AQMA1 ULEZ	0.0	6.5	No	2.5
C11-2012	North Street East of Clock Tower	Kerbside	530890	104302	NO2	AQMA1 ULEZ	0.0	2.7	No	3.0
C12-2010	Queens Road South of Church Street	Roadside	530900	104451	NO2	AQMA1 Main Station Approach	0.0	4.2	No	2.5
C12-2013	Main Station Previous Taxi Drop Off	Roadside	531014	104874	NO2	AQMA1 Main Station Approach	0.0	2.8	No	2.8
W01-2005	Queens Road North	Roadside	530969	104785	NO2	AQMA1 Main Station Approach	0.0	4.2	No	3.1
C13-2014	Lower Dyke Road	Roadside	530770	104363	NO2	AQMA1 ULEZ	0.0	4.5	No	3.2

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)
C09-2005	Marlborough Place	Roadside	531302	104392	NO_2	AQMA1 A23	0.0	4.3	No	2.7
C15-2005	Gloucester Place	Roadside	531401	104669	NO_2	AQMA1 A23	0.0	8.4	No	3.0
C16-2005	York Place	Roadside	531400	104844	NO_2	AQMA1 A23	0.0	4.9	No	2.8
C17-2012	Cheapside	Roadside	531364	104982	NO_2	AQMA1 A23	0.0	3.4	No	2.4
C18-2019	London Road Brunswick Row	Kerbside	531369	105042	NO_2	AQMA1 A23	0.0	3.0	No	2.5
C18-2010	Oxford Street London Road	Roadside	531373	105136	NO_2	AQMA1 A23	0.0	3.0	No	2.8
C19-2009	Oxford Street Ditchling Road	Roadside	531472	105161	NO_2	AQMA1 A23	0.0	3.3	No	2.6
C20-2005	Ditchling Road Viaduct Terrace	Roadside	531496	105315	NO_2	AQMA1 A23	0.0	4.7	No	2.2
C21-2005	Viaduct Terrace	Roadside	531451	105356	NO_2	AQMA1 A23	0.0	3.6	No	3.1
C23-2005	London Road Rose Hill Terrace	Roadside	531189	105375	NO_2	AQMA1 A23	0.0	5.4	No	3.0
C24-2005	New England Road Elder Place	Roadside	531101	105443	NO_2	AQMA1 A270	0.0	3.6	No	2.7
C25-2010	New England West of Argyle Road	Roadside	530985	105419	NO_2	AQMA1 A270	0.0	3.5	No	2.7
C26-2020	Fleet Street Sinclair Walk	Roadside	531147	105129	NO_2	No	0.0	3.2	No	2.4

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)
C28-2010	Frederick Place	Roadside	531032	104843	NO_2	AQMA1 North Laine	0.0	2.8	No	2.5
E01-2016	Preston Road near Preston Circus	Roadside	531101	105498	NO_2	AQMA1 A23	0.0	2.5	No	2.8
E02-2009	Preston Road near Preston Drove	Roadside	530233	106515	NO_2	AQMA5	0.0	4.0	No	2.7
E02-2012	South Street near the Drove	Roadside	530063	106368	NO_2	AQMA5	0.0	2.6	No	2.5
E06-2020	Beaconsfield Road	Roadside	531107	105595	NO_2	AQMA1 A23	0.0	3.8	No	2.6
E07-2019	Lewes Road north of Elm Grove	Roadside	531838	105349	NO_2	AQMA1 A270	0.0	2.9	No	2.5
E08-1996	Lewes Road near Inverness Road	Roadside	532090	105752	NO_2	AQMA1 A270	0.0	4.4	No	2.6
E10-2015	Vogue Gyratory Island	Roadside	532126	105838	NO_2	AQMA1 A270	0.0	3.0	No	2.7
E12-2002	Hollingdean Road	Roadside	532021	105946	NO_2	AQMA1 A270	0.0	4.9	No	2.7
E14-2019	Lewes Road on Pelham Terrace	Roadside	532377	106314	NO_2	AQMA1 A270	0.0	3.4	No	2.9
E15-2012	Lewes Road on Coombe Terrace	Roadside	532300	106159	NO_2	AQMA1 A270	0.0	3.7	No	2.6
E16-1996	Grand Parade North	Roadside	531465	104629	NO_2	AQMA1 A23	0.0	4.4	No	2.6
E16-2015	Grand Parade Middle	Roadside	531426	104514	NO_2	AQMA1 A23	0.0	3.6	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
E17-2003	Grand Parade South	Roadside	531394	104338	NO_2	AQMA1 A23	0.0	5.0	No	2.8
E17-2018	Eastern Road near Pavilion Parade	Roadside	531408	104233	NO_2	AQMA1 A23	0.0	1.6	No	2.5
E22-2009	Rottingdean High Street East	Roadside	536970	102280	NO_2	AQMA2 B2123	0.0	0.2	No	2.6
E23-2010	Rottingdean High Street West	Kerbside	536966	102273	NO_2	AQMA2 B2123	0.0	0.2	No	2.6
E25-2018	Rottingdean Marine Drive	Roadside	537014	102238	NO_2	Outside AQMA2 A259	0.0	2.7	No	2.8
E30-2020	Rottingdean High Street Mid	Roadside	536947	102341	NO_2	AQMA2 B2123	0.0	1.8	No	2.4
E31-2020	Rottingdean Vicarage Lane	Roadside	536932	102454	NO_2	AQMA2 B2123	0.0	1.5	No	2.5
E32-2020	Rottingdean Sea Front	Rural	537011	102099	NO_2	No	27.0	112.0	No	2.5
W02-2012	Surrey Street	Roadside	530961	104832	NO_2	AQMA1 Main Station Approach	0.0	4.2	No	2.5
W03-2006	Terminus Road Terrace and Hill	Roadside	5309963	104994	NO_2	AQMA1 Main Station Approach	0.0	3.5	No	2.6
W04-2006	Chatham Place	Roadside	530808	105340	NO_2	AQMA1 A270 Approach	0.0	3.4	No	2.7
W05-2006	Old Shoreham Road Terrace and Hill	Roadside	530778	105362	NO_2	AQMA1 A270	0.0	3.6	No	2.7

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)
W10-2006	Western Road near Sillwood Road	Roadside	530302	104415	NO_2	AQMA1 ULEZ	0.0	4.5	No	2.9
W11-2020	Western Road	Roadside	530154	104444	NO_2	AQMA1 ULEZ	0.0	4.0	No	2.6
W16-2020	Wellington Road East	Roadside	526233	104860	NO_2	AQMA3 A259	0.0	3.0	No	2.7
W17-2009	Wellington Road Church Road	Roadside	525931	104961	NO_2	AQMA3 A259	0.0	3.0	No	2.7
W18-2010	Vale Park	Urban Background	525970	105230	NO_2	No	50.0	97.0	No	2.8
W19-2009	Trafalgar Road Portslade	Roadside	525658	105695	NO_2	AQMA3 A293	0.0	3.9	No	2.8

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
BH6	532082	105694	Roadside	85.8	85.8	**46.2**	**51.1**	37.8	26.9	18.9
BH10	530995	104271	Roadside	92	92	**47.1**	**50.3**	**49.5**	**45.7**	32.6
BH0	530526	106218	Urban Background	99.2	99.2	16.5	16.9	16.3	15.2	10.9

☒ **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.**

Notes:

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

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

All means have been "annualised" as per LAQM.TG16. In this case data capture exceeds 85%.

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 – In and Around AQMA1 Transport Corridor A23

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
C01-2020	531361	104040	Roadside	100.0	100.0					25.1
C02-2009	531361	104006	Roadside	90.9	90.9			30.8	29.0	23.4
C03-1996	531439	104045	Roadside	90.9	90.9	35.3	34.1	35.5	29.3	25.8
C05-2012	531230	104260	Urban Background	100.0	100.0	26.1	23.6	22.0	21.0	16.9
C09-2005	531302	104392	Roadside	82.6	82.6	**48.4**	**47.4**	**47.2**	**41.1**	27.5
C15-2005	531401	104669	Roadside	100.0	100.0	**44.3**	35.2	37.1	38.0	29.4
C16-2005	531400	104844	Roadside	100.0	100.0	**45.1**	**44.6**	38.9	37.7	26.6
C17-2012	531364	104982	Roadside	100.0	100.0	**55.4**	**44.5**	**53.9**	**49.0**	37.5
C18-2019	531369	105042	Kerbside	100.0	100.0				**61.8**	**44.8**
C18-2010	531373	105136	Roadside	100.0	100.0	**64.3**	**58.1**	**54.7**	**52.6**	39.7
C19-2009	531472	105161	Roadside	26.5	26.5	**43.8**	**44.9**	39.2	36.5	29.0
C20-2005	531496	105315	Roadside	100.0	100.0	**41.3**	**40.5**	**40.7**	36.8	31.0
C21-2005	531451	105356	Roadside	100.0	100.0	**52.2**	**49.7**	**45.8**	**44.6**	36.5

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
C23-2005	531189	105375	Roadside	91.7	91.7	**46.0**	**47.0**	**43.1**	39.5	30.6
E01-2016	531101	105498	Roadside	100.0	100.0	37.8	39.9	**41.9**	34.3	30.2
E06-2020	531107	105595	Roadside	100.0	100.0					27.5
E16-1996	531465	104629	Roadside	100.0	100.0	**42.4**	39.4	**41.4**	**42.3**	37.4
E16-2015	531426	104514	Roadside	53.6	53.6	**49.3**	**51.1**	**44.8**	**42.3**	**41.4**
E17-2003	531394	104338	Roadside	100.0	100.0	**46.1**	**44.2**	**46.8**	**43.8**	34.0
E17-2018	531408	104233	Roadside	100.0	100.0			**40.4**		36.2

Table A.5 – AQMA1 Ultralow Emission Zone B2123

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
C04-2010	531228	104088	Roadside	82.0	82.0	**49.0**	**43.8**	**48.2**	**43.5**	33.6
C10-2012	530995	104271	Roadside	100.0	100.0	**48.3**	**45.2**	**45.5**	**41.3**	32.3
C11-2007	530947	104284	Roadside	51.5	51.5	**60.3**	**57.3**	**54.6**	**48.5**	35.0
C11-2012	530890	104302	Kerbside	75.6	84.2	**100.3**		**90.8**	**77.4**	**51.2**
C13-2014	530770	104363	Roadside	100.0	100.0	**41.5**	**41.6**	**40.5**	36.6	31.2

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
W10-2006	530302	104415	Roadside	91.7	91.7	**41.9**	**40.9**	**41.4**	38.0	28.0
W11-2020	530154	104444	Roadside	82.6	82.6					26.7

Table A.6 – AQMA1 Main Railway Station Approach Including the A2010

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
C12-2010	530900	104451	Roadside	87.7	87.7	**45.9**	**43.1**	**45.3**		30.4
C12-2013	531014	104874	Roadside	100.0	100.0	**44.7**	**43.1**	**40.5**	32.0	21.4
W01-2005	530969	104785	Roadside	100.0	100.0	**45.7**	**43.1**	**41.1**	34.0	25.8
W02-2012	530961	104832	Roadside	100.0	100.0	37.9	37.9	39.2	34.0	24.6
W03-2006	5309963	104994	Roadside	100.0	100.0	**40.4**	**42.6**	**40.4**	37.5	31.4
C26-2020	531147	105129	Roadside	100.0	100.0					20.4
C28-2010	531032	104843	Roadside	100.0	100.0	**43.1**	**46.0**	**42.9**	37.7	33.5

Table A.7 – AQMA1 New England Road and Lewes Road A270

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
C24-2005	531101	105443	Roadside	100.0	100.0	**52.4**	**54.8**	**51.1**	**44.0**	38.3
C25-2010	530985	105419	Roadside	91.7	91.7	**50.2**	**47.8**	**44.3**	**42.7**	38.6
W04-2006	530808	105340	Roadside	100.0	100.0	**42.0**	**41.0**	39.9	39.0	31.8
W05-2006	530778	105362	Roadside	100.0	100.0	**47.2**	**44.9**	**44.5**	38.1	34.0
E07-2019	531838	105349	Roadside	100.0	100.0				**58.0**	**46.5**
E08-1996	532090	105752	Roadside	100.0	100.0	**55.4**	**55.7**	**52.6**	**48.7**	**42.5**
E10-2015	532126	105838	Roadside	100.0	100.0	**40.9**	**43.0**	**40.8**	38.0	33.5
E12-2002	532021	105946	Roadside	100.0	100.0	**45.6**	**46.2**	**45.3**	**41.1**	37.6
E14-2019	532377	106314	Roadside	82.6	82.6	37.4	37.2	39.3	35.0	31.7
E15-2012	532300	106159	Roadside	100.0	100.0	**43.7**	38.6	**40.7**	37.4	34.0

Table A.8 – AQMA2 Rottingdean B2123 and A259

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
E22-2009	536970	102280	Roadside	100.0	100.0	39.1	**41.4**	36.2	32.7	28.4

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
E23-2010	536966	102273	Kerbside	100.0	100.0	38.4	35.3	37.2	35.2	31.7
E25-2018	537014	102238	Roadside	92.2	92.2			35.5	31.7	27.2
E30-2020	536947	102341	Roadside	100.0	100.0					26.0
E31-2020	536932	102454	Roadside	100.0	100.0					16.5
E32-2020	537011	102099	Rural	74.5	74.5					13.5

Table A.9 – AQMA3 South West Portslade A293 and A259

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
W16-2020	526233	104860	Roadside	90.9	90.9					35.9
W17-2009	525931	104961	Roadside	75.3	75.3	**42.4**	**44.4**	**42.0**	39.2	38.1
W18-2010	525970	105230	Urban Background	100.0	100.0	19.8	22.3	20.2	18.4	17.0
W19-2009	525658	105695	Roadside	100.0	100.0	**40.2**	38.1	**41.7**	39.9	34.4

Table A.10 – AQMA5 South Street Link Under the Railway and the Preston Road A23

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
E02-2009	530233	106515	Roadside	100.0	100.0	**41.3**	**40.3**	**41.1**	34.7	31.4
E02-2012	530063	106368	Roadside	100.0	100.0	**42.4**	**44.4**	**42.0**	39.2	35.7

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

☒ **Diffusion tube data has been biased 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.**

During 2020 there was no new monitoring to report from AQMA4 and AQMA6. This has resumed from January 2021. Monitoring has been added during 2020/21 close to Valley Gardens Phase Three Transport Scheme and from the second half of 2021 next to the proposed western extension of the Old Shoreham Road bicycle Lane.

Notes:

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

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

Not relevant for 2020 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**.

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.

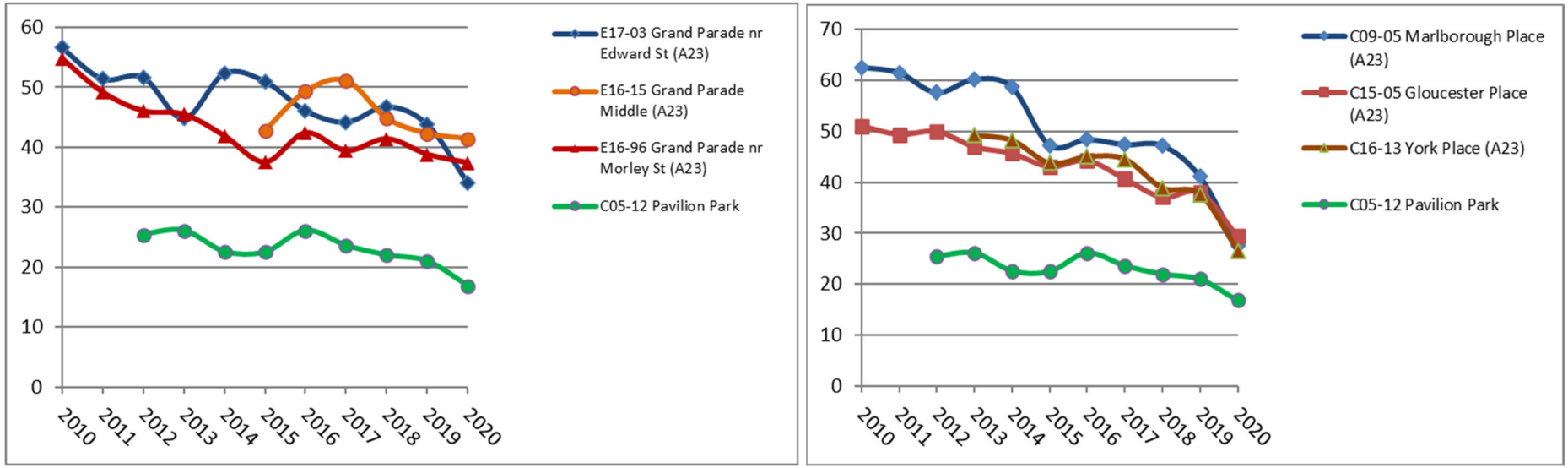
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Trends in Annual Mean NO_2 Concentrations

It is important to present trends by geographical areas defined by the AQMAs, because each transport corridor has a unique mix of emission sources (bus, lorry, van, taxi, car and motorcycle and other combustion). Monitors along the same transport corridor are effectively downstream from one another and more likely to agree or correlate. Similar results and trend patterns reinforce the available evidence collectively. We have a higher confidence in results when results are repeated over many years at more than one location.

The emission sources associated with different transport corridors will help guide the Air Quality Action Plan (AQAP). The best value solutions and mitigation mix will vary for each arm of AQMA1 and for the smaller AQMAs outside the City Centre.

Figure A.1 - Diffusion Tubes AQMA1-A23 NO_2 2010 to 2020



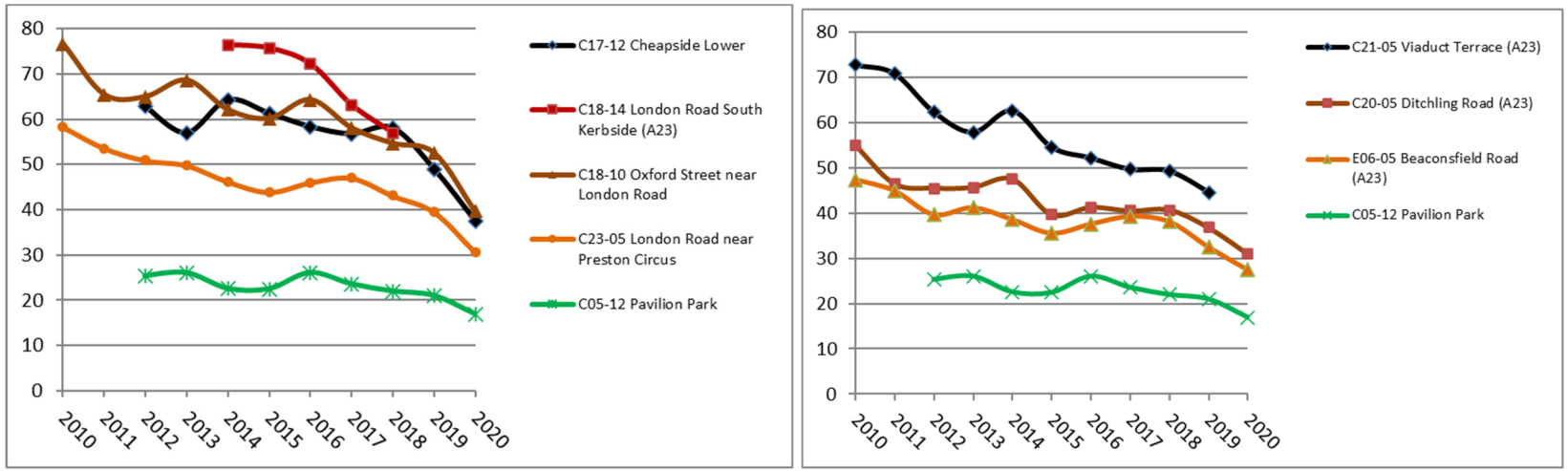


Figure A.1 - Façade Diffusion Tubes AQMA1 ULEZ NO_2 2008 to 2020

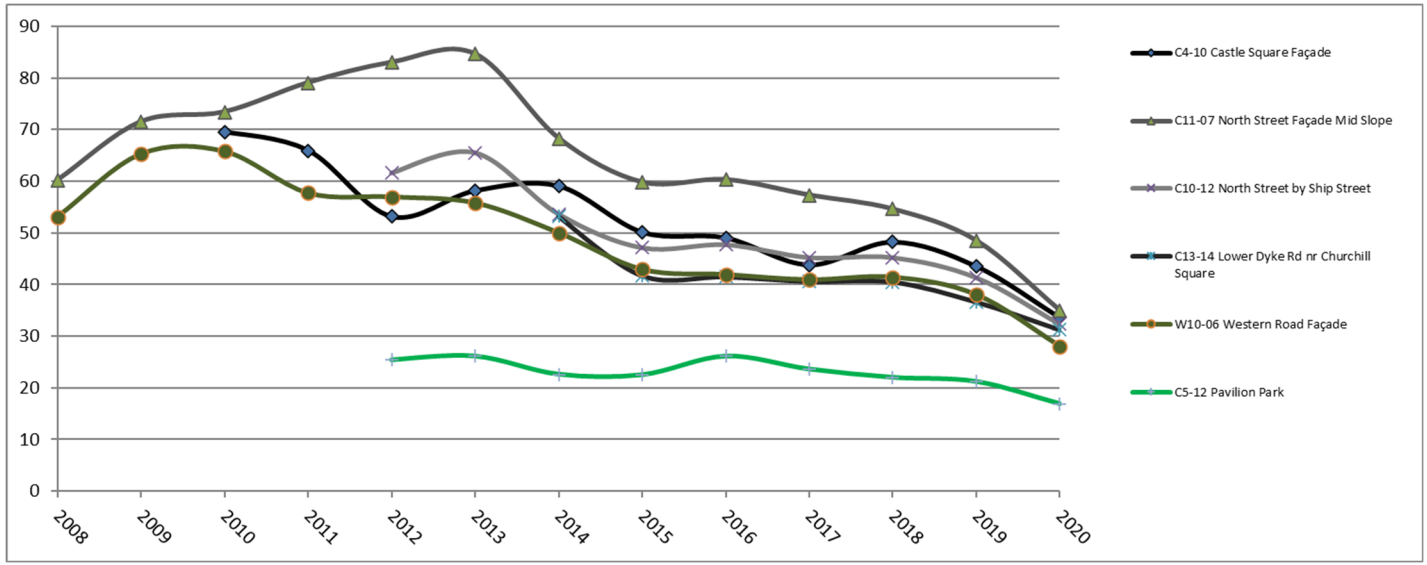
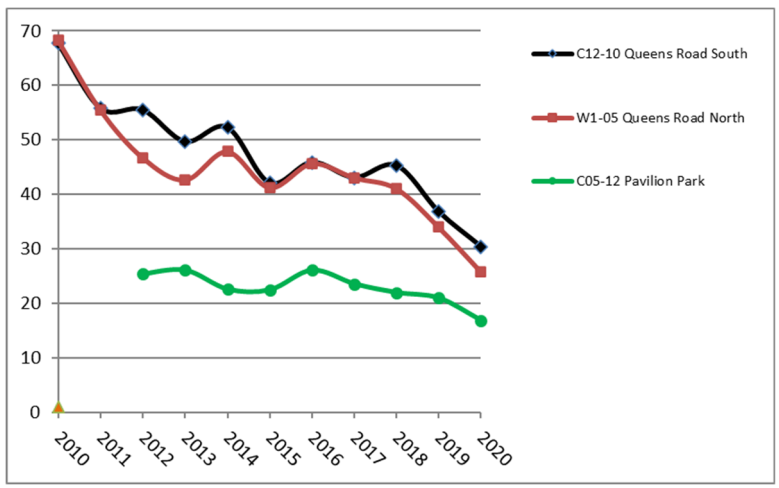
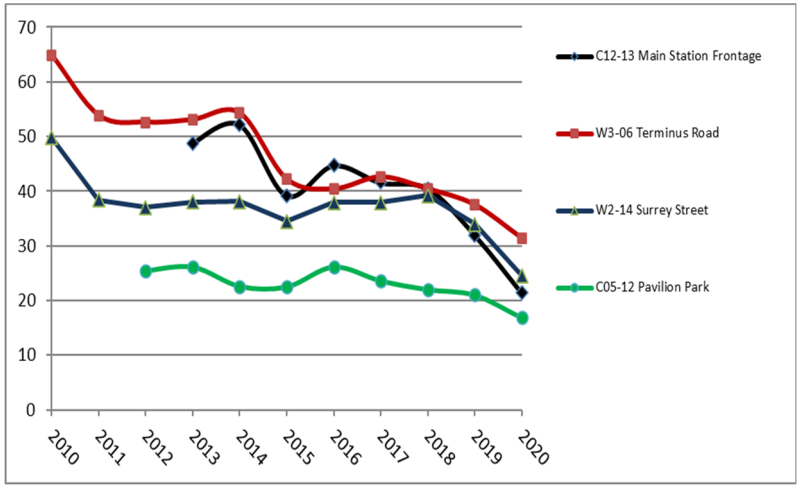


Figure A.2 - Diffusion Tubes AQMA1 Main Railway Station Approach NO_2 2010 to 2020





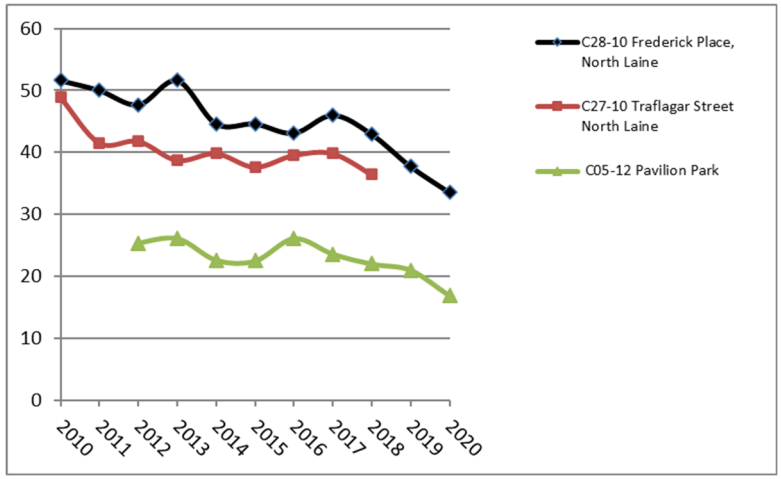
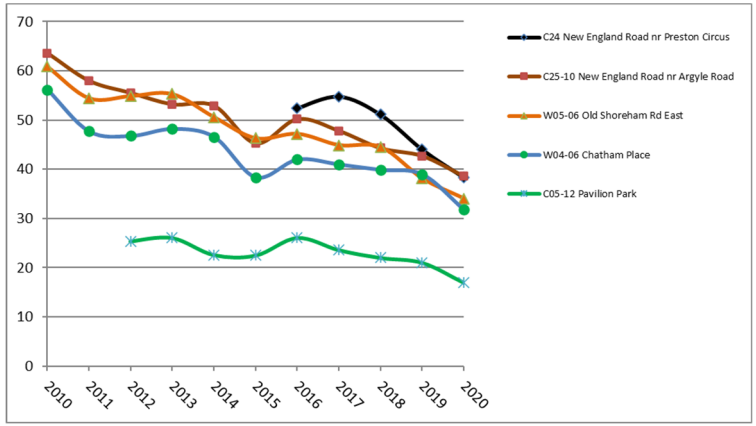
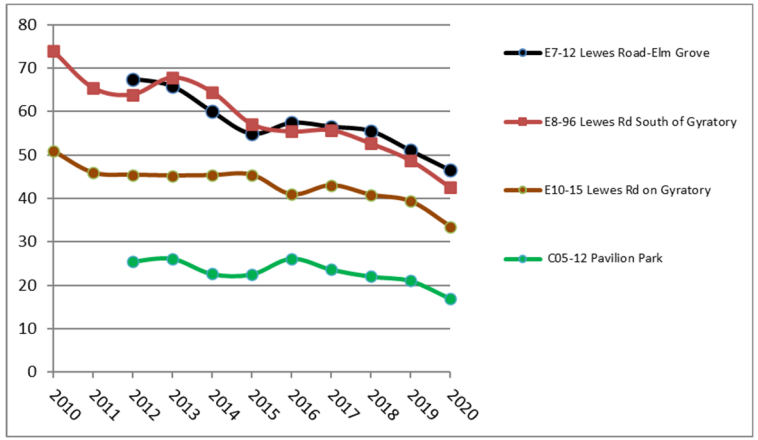


Figure A.3 - Diffusion Tubes AQMA1 New England and Lewes Road A270 NO_2 2010 to 2020





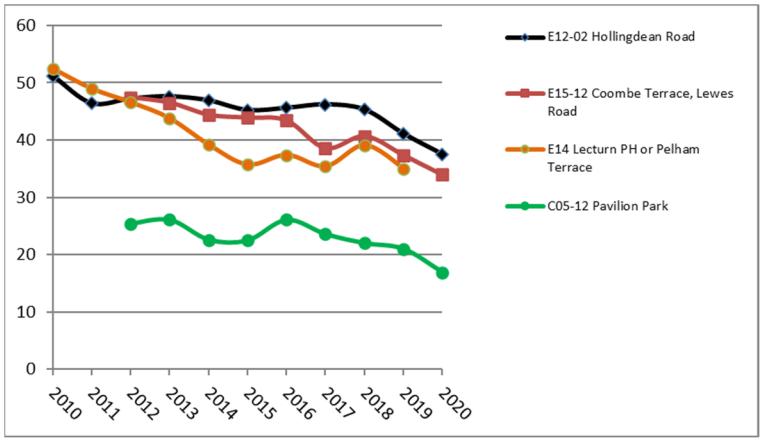


Figure A.4 - Diffusion Tubes AQMA2 Rottingdean B2123 and A259

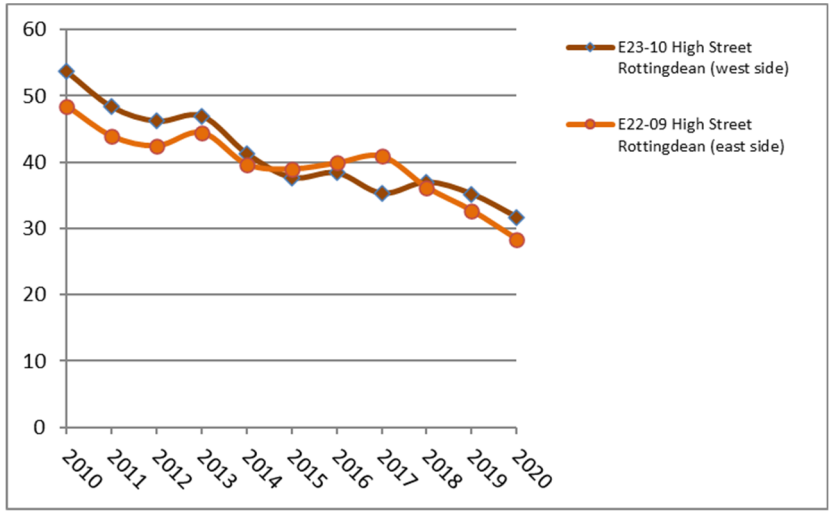
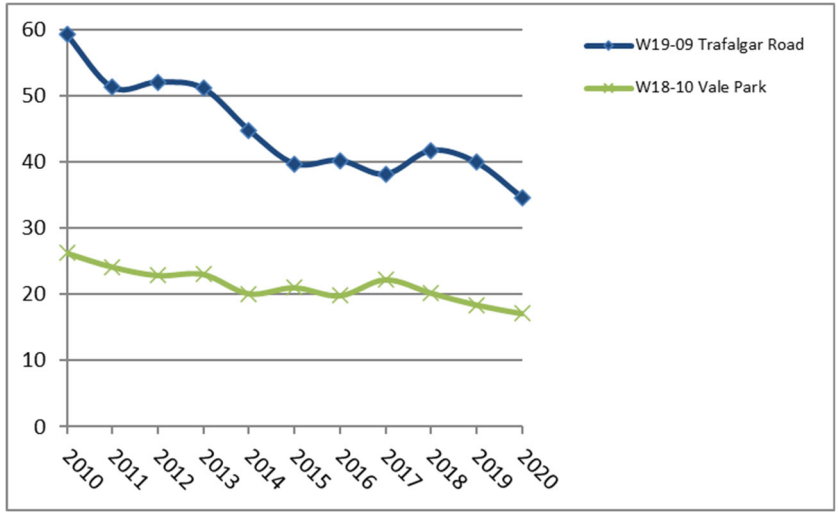


Figure A.5 - Diffusion Tubes AQMA3 South Portslade A293 and A259



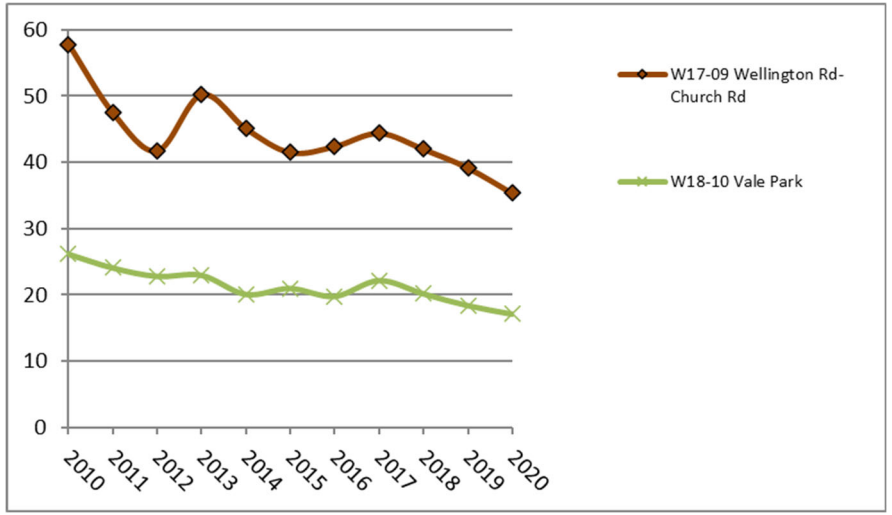


Figure A.6 - Diffusion Tubes AQMA5 South Street Link to A23

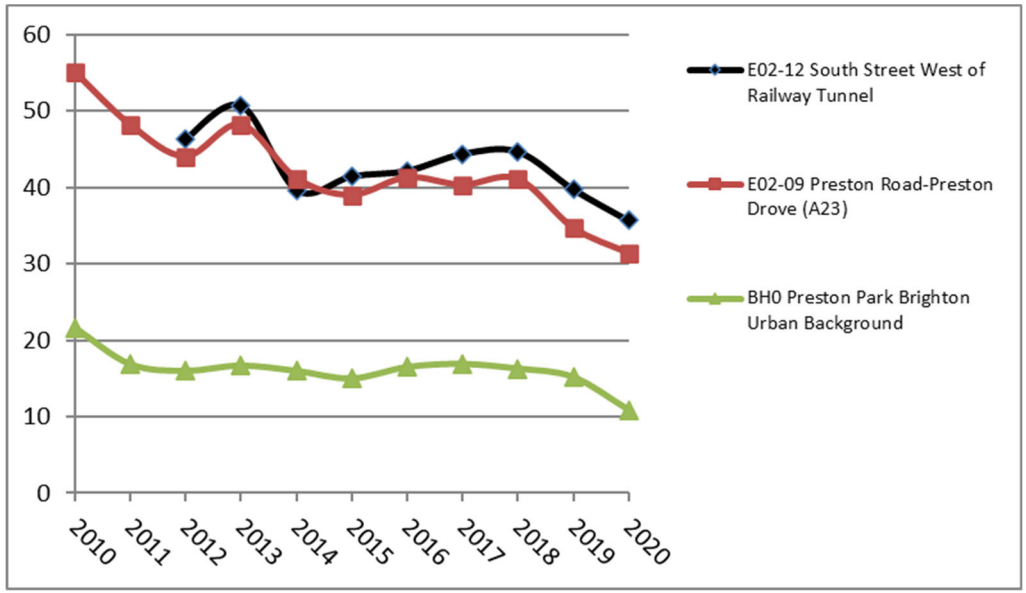


Table A.4 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

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
BH6	532082	105694	Roadside	85.8	85.8	0	**69**	16	0	0
BH10	530995	104271	Roadside	92	92	0	0	3	0	0

Notes:

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

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**.

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.

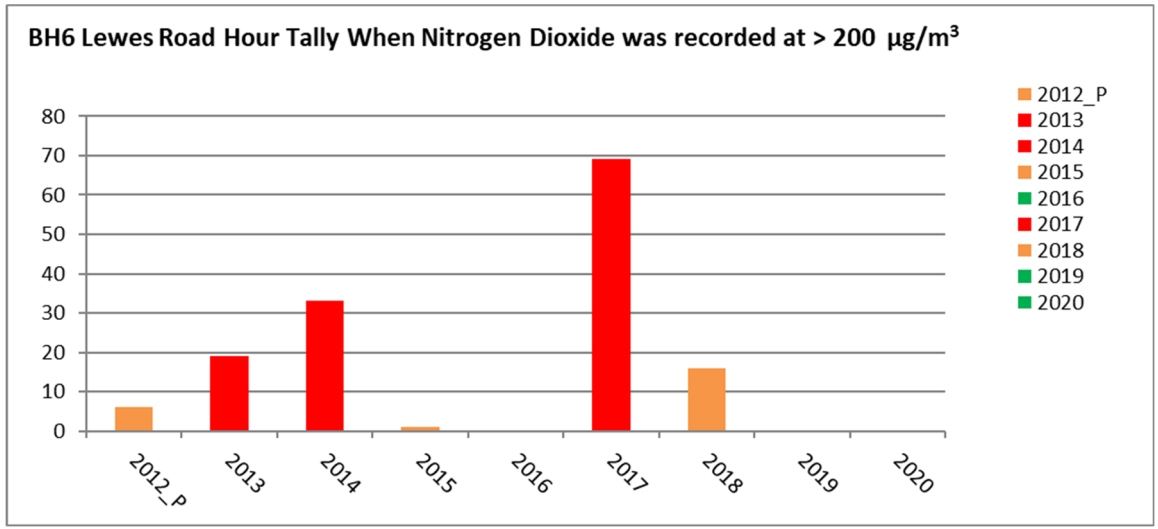
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

At monitoring site BH6 five hours were recorded at > 100 µg/m^3 NO_2, four of these hours were during the winter: either during January or on the 2nd of March. Two were in the evening, one in the morning and two in the middle of the day. The highest hourly value recorded at BH6 in 2020 was 132 µg/m^3 at 15:00 on Monday 20th January.

Site BH10 six metres from North Street near Ship Street recorded forty-nine hours > 100 µg/m^3 NO_2, 67% of these relatively polluted hours occurred during the winter on or before the 6th of March, that is prior to travel restrictions. 33% of the most polluted hours in the year occurred on or after 30th July during August up to 15th September when the weather was fine, travel restrictions eased, and visitor numbers increased. The highest hourly value recorded of NO_2 at BH10 in 2020 was 137 µg/m^3 at 18:00 on Saturday 8th August.

The background Automatic Urban Rural Network (AURN BH0) Site at Preston Park had very high data capture (99.2%) for NO_2 during 2020. There were no recorded exceedances of the hourly standard, the highest recorded hourly average during the year was 84 µg/m^3 at 20:00 hours on the 6th of March.

Figure A.7 – Trends in Number of NO_2 1-Hour Means > 200µg/m³



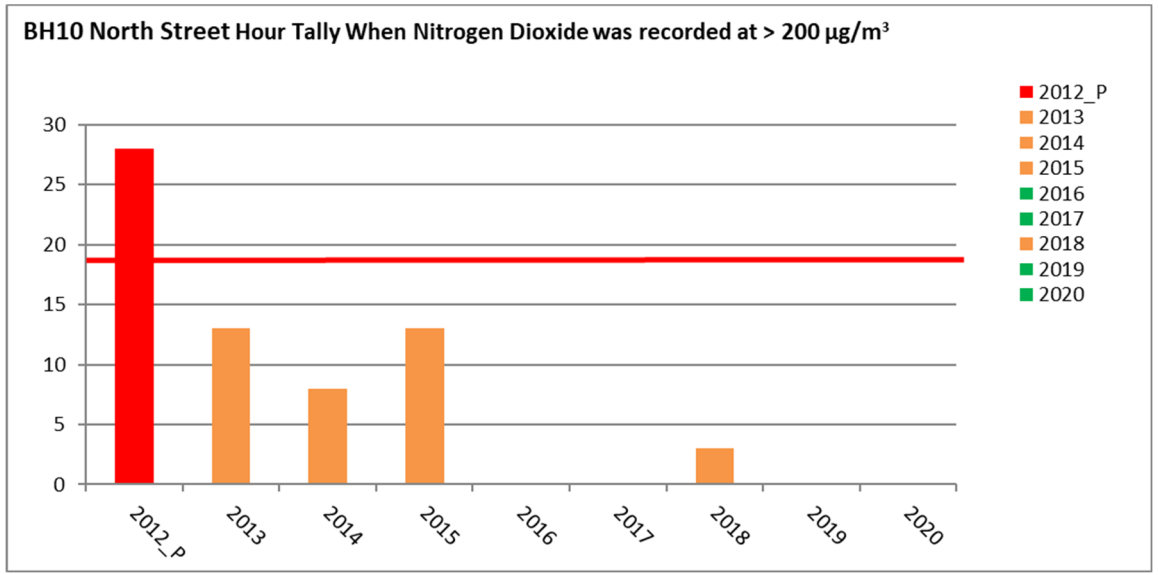


Table A.5 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

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
BH6	532082	105694	Roadside	93.1	93.1	7.2	6.4	5.8	5.7	5.5
BH10	530995	104271	Roadside	88.8	88.8	11	10.6	10.3	9.8	8.4
BH0 AURN	530526	106218	Urban Background	41.2	41.2	9	8.9	8.9	low data capture + new method	

Notes:

Due to intermittent data capture $PM_{2.5}$ is not reported for AURN site BH0. A BAM monitor started in 2020 replacing the previous partisol method. Caution should be taken when comparing different monitoring methods.

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

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

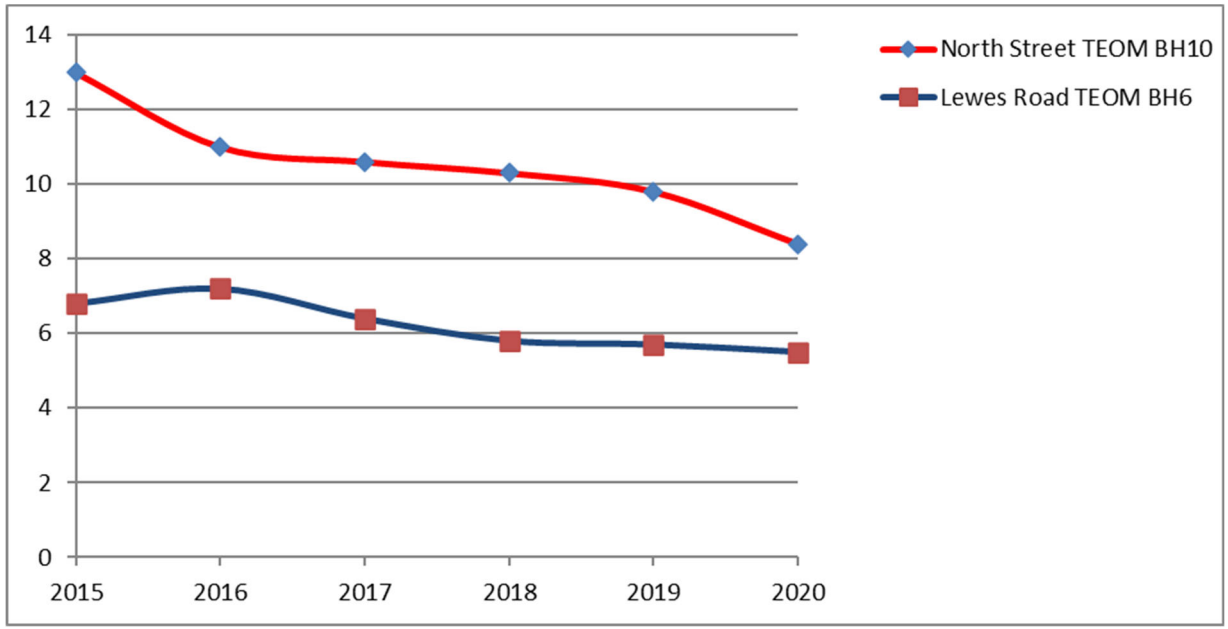
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

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

At site BH6 Lewes Road there were no recorded exceedance of the $PM_{2.5}$ WHO daily guideline during 2020. Throughout the year results were also below the UK air quality index moderate level. The highest recorded day at the site was 24.7 µg/m^3 on 5th November. The second highest day of the year measured at the site: 17.5 µg/m^3 occurred on the 1st of January. Both dates suggest an airborne particulate contribution from firework sources in Brighton & Hove or further afield.

At site BH10 North Street there were no recorded exceedances of the $PM_{2.5}$ WHO daily guideline during 2020. Throughout the year results were below the UK air quality index moderate level. Consistent with other sites results indicate a particulate episode from 10th August peaking on 12th of August with a 24-hour average of 22.2 µg/m^3. 21.4 µg/m^3 was recorded on 5th November and 18.5 µg/m^3 on 1st of January which shows strong agreement with the highest days of the year at Lewes Road suggesting regional rather than localised influences.

Figure A.8 – Trends in Annual Mean $PM_{2.5}$ Concentrations



Notes:

Roadside monitors using the TEOM method.

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 Diffusion Tube Results In and Around AQMA1 A23 (µg/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 0.95	Annual Mean: Distance Corrected to Nearest Exposure	Comment
C01-2020	531361	104040	20.9	30.5	24.7	20.9		23.0	25.7	29.6	31.0	26.8	29.6	31.7	26.4	25.1	-	For Valley Gardens Phase III
C02-2009	531361	104006	24.6	26.8	21.6	20.4		22.1	23.0	34.4	25.4	24.5	25.9		24.5	23.4	-	Former position reinstated
C03-1996	531439	104045	32.9	30.7	21.3	20.3		21.1	23.7	27.6	29.9	28.0	40.9		27.1	25.8	-	Kept because very long term
C05-2012	531230	104260	17.6	23.8	17.8	14.6		12.8	14.1	17.4	19.2	19.4	21.3	20.7	17.8	16.9	-	Background
C09-2005	531302	104392	36.5	27.4		18.9		23.0	29.3	33.3	32.2	33.0	33.4		28.9	27.5	-	Since September 2019 Improvement in air quality due to Valley Gardens shift in A23 general traffic
C15-2005	531401	104669	36.1	35.9	25.7	20.2		26.6	32.8	33.9	32.6	36.2	34.0	31.2	30.9	29.4	-	
C16-2005	531400	104844	31.6	27.7	25.4	18.9		23.0	25.8	34.5	26.3	33.3	33.2	33.2	28.0	26.6	-	
C17-2012	531364	104982	47.8	45.4	36.5	26.3		34.2	38.1	43.0	40.0	22.0	61.0	47.4	39.4	37.5	-	Near Miss requires continued improvement
C18-2019	531369	105042	65.5	66.2	39.1	29.8		44.0	47.0	52.1	46.9	53.0	35.3	45.5	47.1	**44.8**	-	Above Footway Kerbside
C18-2010	531373	105136	53.9	46.8	47.0	28.1		34.7	35.3	46.9	45.5	50.3	43.5	35.6	41.7	39.7	-	Roadside near exceedance
C19-2009	531472	105161	45.9	44.3										35.1	41.7	29.0	-	
C20-2005	531496	105315	38.5	30.8	32.5	27.3		29.6	29.0	38.1	33.7	31.2	33.8	36.7	32.5	31.0	-	
C21-2005	531451	105356	46.3	36.6	32.9	28.8		35.1	41.3	48.1	37.7	40.0	44.5	36.0	38.3	36.5	-	
C23-2005	531189	105375	38.6	40.6	26.2	23.6		24.9	30.5	36.7	31.9	38.0		35.6	32.1	30.6	-	Better than further south on A23
E01-2016	531101	105498	40.7	27.2	31.8	29.4		26.6	26.3	38.3	31.8	31.8	33.8	35.1	31.7	30.2	-	Suggests long term compliance
E06-2020	531107	105595	42.1	33.0	19.6	19.7		17.7	27.8	35.5	35.3	30.7	32.3	32.4	28.8	27.5	-	Suggests long term compliance
E16-1996	531465	104629	50.2	42.4	41.8	33.3		30.0	39.0	50.5	36.8	37.3	37.5	39.7	39.2	37.4	-	A23 General Traffic Requires Improvement
E16-2015	531426	104514	56.4	45.0	45.6	36.3			36.7	47.2					44.0	**41.4**	-	

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 0.95	Annual Mean: Distance Corrected to Nearest Exposure	Comment
E17-2003	531394	104338	42.7	36.1	38.5	31.5		29.9	33.3	49.6	34.8	34.9	35.8	31.5	35.7	34.0	-	
E17-2018	531408	104233	46.7	45.0	34.5	26.0		31.2	38.4	47.6	40.2	39.6	40.7	37.0	38.0	36.2	-	

Table B.2 – NO_2 2020 Diffusion Tube Results AQMA1 Ultralow Emission Zone B2123 ($\mu g/m^3$)

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 0.95	Annual Mean: Distance Corrected to Nearest Exposure	Comment
C04-2010	531228	104088	50.5		34.3	21.4		29.9	35.3	42.5	41.5		38.5	33.2	35.3	33.6	-	Improvement Castle Square
C10-2012	530995	104271	35.1	43.3	35.7	21.8		28.4	33.0	38.0	41.3	35.8	36.0	33.2	34.0	32.3	-	
C11-2007	530947	104284	35.2	53.8							46.2	45.5	54.8	41.1	46.0	35.0	-	Façade monitor further improvement required North Street
C11-2012	530890	104302	55.7	82.7	59.4	27.4		46.7	53.1	59.4		61.5		50.3	53.7	**51.2**	-	Kerbside above the footway North Street
C13-2014	530770	104363	42.3	39.4	32.7	19.6		24.7	31.2	35.5	38.7	33.3	35.0	36.7	32.7	31.2	-	
W10-2006	530302	104415	36.4	40.4	32.3	19.1		22.5	26.7	31.0	30.8	31.1		30.4	29.4	28.0	-	Suggests long term compliance along Western Road
W11-2020	530154	104444			32.5	21.1		23.7	27.9	33.8	28.2	26.4	34.5	29.9	28.1	26.7	-	

Table B.3 – NO_2 2020 Diffusion Tube Results AQMA1 Main Railway Station Approach Including the A2010 ($\mu g/m^3$)

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 0.95	Annual Mean: Distance Corrected to Nearest Exposure	Comment
C12-2010	530900	104451	38.9	36.6	23.5	21.1			29.3	38.2	35.2	34.0	35.9	31.2	31.9	30.4	-	Less Traffic to and from main railway station
C12-2013	531014	104874	26.1	29.8	21.9	15.6		16.0	20.5	26.6	23.6	12.8	32.9	27.8	22.5	21.4	-	Substantial Improvements in NO2 since less vehicle pick up and drop off at the railway station
W01-2005	530969	104785	23.9	32.7	23.5	17.2		22.6	26.4	30.7	34.1	29.8	30.9	32.8	27.1	25.8	-	
W02-2012	530961	104832	25.3	24.5	28.7	17.7		20.3	24.6	31.6	27.5	26.9	33.1	30.7	25.9	24.6	-	
W03-2006	5309963	104994	33.2	32.3	32.9	22.3		26.8	32.4	43.1	35.5	33.6	39.6	38.2	32.9	31.4	-	Suggests better exhaust mitigation on hill climbs
C26-2020	531147	105129	29.7	25.8	19.1	16.3		13.4	17.9	22.0	22.2	23.9	25.0	25.0	21.4	20.4	-	Clean air quality at rear of railway station
C28-2010	531032	104843	43.5	40.2	34.6	29.9		23.3	31.8	37.5	32.6	40.7	40.5	39.2	35.2	33.5	-	Further Improvement required Frederick Street, North Laine

Table B.4 – NO_2 2020 Diffusion Tube Results AQMA1 New England Road and Lewes Road A270 ($\mu g/m^3$)

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 0.95	Annual Mean: Distance Corrected to Nearest Exposure	Comment
C24-2005	531101	105443	47.7	44.1	38.1	31.6		33.1	34.5	47.2	42.8	42.3	49.3	39.4	40.3	38.3	-	Further Improvement required on New England Road
C25-2010	530985	105419	46.2	43.7	36.0	32.6		34.0	41.2	50.1	43.5	44.2		40.9	40.6	38.6	-	
W04-2006	530808	105340	29.0	39.9	36.7	25.9		25.0	29.7	36.9	37.6	36.6	41.0	36.1	33.4	31.8	-	
W05-2006	530778	105362	28.7	36.5	38.7	30.2		30.4	30.8	40.2	41.3	41.5	41.5	38.5	35.7	34.0	-	
E07-2019	531838	105349	82.7	64.8	40.2	28.9		28.0	41.5	45.9	58.6	60.4	54.7	47.4	48.8	**46.5**	-	Exceedance within 100 metre approach of Elm Grove and Vogue Gyratory Junctions on Lewes Road
E08-1996	532090	105752	67.8	58.7	36.9	25.7		29.0	38.3	52.5	52.7	52.7	44.2	46.7	44.6	**42.5**	-	
E10-2015	532126	105838	50.7	45.1	29.0	23.7		22.3	33.7	37.0	39.0	37.4	40.8	38.1	35.2	33.5	-	
E12-2002	532021	105946	52.7	40.0	35.5	33.2		30.5	37.8	44.9	43.2	40.6	44.7	38.2	39.5	37.6	-	Further Improvement required on Hollingdean Road
E14-2019	532377	106314	42.3	30.6	34.3	26.6		24.3		39.8	37.7		45.9	26.3	33.3	31.7	-	
E15-2012	532300	106159	48.5	34.4	37.4	28.4		30.5	36.1	35.0	36.2	36.6	38.6	35.7	35.7	34.0	-	Further Improvement required on Coombe Terrace

Table B.5 – NO_2 2020 Diffusion Tube Results AQMA2 Rottingdean B2123 and A259 ($\mu g/m^3$)

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 0.95	Annual Mean: Distance Corrected to Nearest Exposure	Comment
E22-2009	536970	102280	34.4	26.0	25.2	23.6		27.3	29.4	38.5	31.8	28.0	37.7	31.4	29.9	28.4	-	
E23-2010	536966	102273	38.6	33.9	28.8	25.0		28.2	36.6	44.9	34.9	34.8	31.9	35.2	33.3	31.7	-	Sustained improvement required in Rottingdean High Street
E25-2018	537014	102238	31.7	24.3	25.6	29.9		29.8	25.9		31.0	26.0	32.3	28.4	28.5	27.2	-	
E30-2020	536947	102341	31.3	20.6	25.1	24.0		22.8	24.9	35.4	29.1	28.6	33.1	29.2	27.3	26.0	-	
E31-2020	536932	102454	24.0	16.2	14.0	13.9		14.0	17.7	20.8	16.7	15.1	20.4	20.3	17.3	16.5	-	
E32-2020	537011	102099	20.4			14.2		10.7		13.0	12.9	13.5	18.2	15.0	14.5	13.5	-	Clean Background Air Quality Rottingdean

Table B.6 – NO_2 2020 Diffusion Tube Results AQMA3 South West Portslade A293 and A259 ($\mu g/m^3$)

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 0.95	Annual Mean: Distance Corrected to Nearest Exposure	Comment
W16-2020	526233	104860	43.2	38.1	35.3	33.8		35.4	41.8	35.7	35.4	46.6	32.7		37.7	35.9	-	Further Improvement required along A259, Portslade AQMA3
W17-2009	525931	104961		37.0	43.0	38.9		40.7			46.2	37.6	39.8	36.8	39.8	38.1	-	
W18-2010	525970	105230	19.1	20.7	20.0	14.4		12.9	14.5	15.1	17.8	18.8	25.6	20.5	17.8	17.0	-	Improved Background West part of the City
W19-2009	525658	105695	41.7	38.2	30.9	27.2		31.4	36.6	40.6	38.6	38.0	41.9	37.8	36.1	34.4	-	

Table B.7 – NO_2 2020 Diffusion Tube Results AQMA5 South Street Link Under the Railway and the Preston Road A23 ($\mu g/m^3$)

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 0.95	Annual Mean: Distance Corrected to Nearest Exposure	Comment
E02-2009	530233	106515	44.1	35.4	22.8	21.1		22.6	31.8	37.8	58.7	35.1	32.5	32.3	32.9	31.4	-	
E02-2012	530063	106368	51.8	39.6	29.2	26.6		28.3	34.0	43.8	37.6	42.7	42.9	43.5	37.5	35.7	-	Sustained Improvement required in AQM5

☒ **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**

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

☒ **Brighton & Hove 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 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**.

See Appendix C for details on bias adjustment and annualisation.

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

Changed Sources Identified Within Brighton & Hove Since 2019

Around Valley Gardens II A23 traffic flow has been altered to include two-way general traffic on the east side and buses on the westside. Additional Georeferenced buses (about one fifth of the bus fleet) will alter what emissions in the ULEZ and other parts of the AQMAs. These updates can be woven into the emission and dispersion model assessments prior to the AQAP going to committee.

Additional Air Quality Works Undertaken by Brighton & Hove During 2020

To determine the six AQMAs declared in 2020 a detailed air quality assessment accompanied the report to Environment Transport and Sustainability Committee. This was in advance of a report outlining intention to expand the cities Ultralow Emission Zone. The report can be updated prior to the AQAP being considered by ETS committee.

QA/QC of Diffusion Tube Monitoring

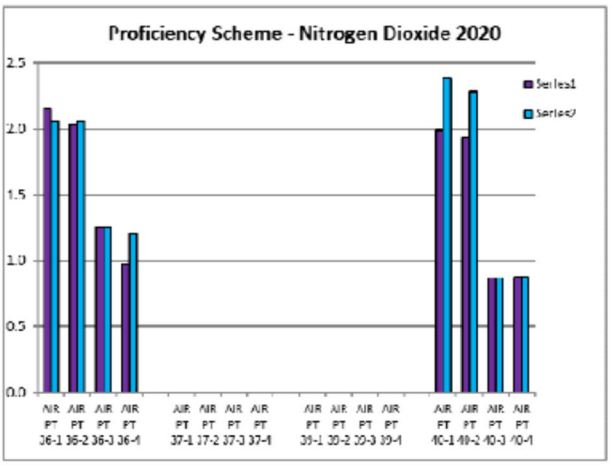
- Gradko International diffusion tubes have been consistently used for many years by Sussex Local Authorities using the 20% TEA in water method
- 2020 diffusion tube monitoring covered eleven periods and most of these alternated between four- and five-week exposure periods. The notable exception being one longer period from 8th April 2020 during the Coivid travel restrictions, prior to the laboratory shutdown.
- Accreditation of the diffusion tube monitoring method like previous years is as follows:

gradko environmental
(A division of Gradko International Ltd.)
St. Martins House, 77 Wales Street Winchester, Hampshire SO23 0RH
tel.: 01962 860331 fax: 01962 841339 email:diffusion@gradko.com

AIR PT Nitrogen Dioxide Proficiency Scheme Results 2020

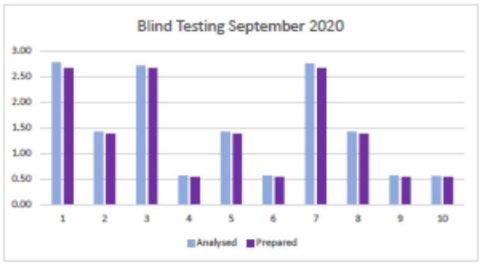
Methods: GLM 7 – CARY 60 Spectrophotometer

AIR PT Proficiency Scheme - Nitrogen Dioxide 2020					
Date	Round	Assigned value	Procedure GLM 7		
			Measured concentration	z-Score	% Bias
Feb-20	AIR PT 36-1	2.06	2.15	0.58	4.4%
Feb-20	AIR PT 36-2	2.06	2.03	-0.19	-1.5%
Feb-20	AIR PT 36-3	1.26	1.26	0	0.0%
Feb-20	AIR PT 36-4	1.21	0.98	-2.43	-19.0%
May-20	AIR PT 31-1	Proficiency scheme not available			
May-20	AIR PT 31-2				
May-20	AIR PT 31-3				
May-20	AIR PT 31-4				
Aug-20	AIR PT 33-1	Proficiency scheme not available			
Aug-20	AIR PT 33-2				
Aug-20	AIR PT 33-3				
Aug-20	AIR PT 33-4				
Oct-20	AIR PT 34-1	2.38	1.99	-2.08	-16.4%
Oct-20	AIR PT 34-2	2.28	1.93	-1.90	-15.4%
Oct-20	AIR PT 34-3	0.87	0.87	0	0.0%
Oct-20	AIR PT 34-4	0.88	0.88	0.08	0.0%



Sep-20

	Analysed	Prepared	%Bias
1	2.78	2.67	4.1
2	1.43	1.38	3.1
3	2.71	2.67	1.7
4	0.57	0.55	4.3
5	1.43	1.38	3.1
6	0.57	0.55	4.1
7	2.75	2.67	3.1
8	1.43	1.38	3.1
9	0.57	0.55	4.3
10	0.56	0.55	2.3
			Average %bias
	RSD 0.55	0.95	3.33
	RSD 1.38	0.04	
	RSD 2.67	1.15	



Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. For 2020 five diffusion tubes sites required annualisation these are detailed 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 or regulatory monitor. LAQM.TG16 provides guidance regarding 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.

Brighton & Hove have applied a local bias adjustment factor of 0.95 to the 2020 monitoring data using triplicate co-location factor derived from automatic analyser BH10 on North Street. This site in AQMA 1 and the ULEZ is most representative of the local area. The 2020 local bias correction factor is consistent with those used by Brighton & Hove over the past decade. This is important given that trend graphs are presented since 2008 or 2010. A summary of bias adjustment factors used by Brighton & Hove over the past five years is presented in

Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	National	Gradko Average	Local
2020	Local	Not used		**0.95**
2019	National	06/20	**0.92**	1.01
2018	National	06/19	**0.93**	1.04
2017	National	06/18	**0.93**	0.98
2016	National	06/17	**0.92**	0.92

NO_2 Fall-off with Distance from the Road

Brighton & Hove has ensured that monitoring locations are representative of exposure on a building line façade or equal distance between the traffic sources and receptor. Kerbside monitors in AQMA1 declared for the hourly mean assess transient exposure to pollutants above busy footways. Some of Brighton & Hove's monitors are at background locations or are complaint with standards and therefore do not require an NO_2 fall-off with distance calculation. No diffusion tube NO_2 monitoring locations within Brighton & Hove required distance correction during 2020.

In practice the NO_2 fall-off with distance calculator works best for open field settings and is less suited to confined spaces, the lee side of buildings and street canyons, that are the typical scenario for significant portions of Brighton & Hove's AQMAs declared in 2020.

QA/QC of Automatic Monitoring

TRL carry out the QA/QC on behalf of Brighton & Hove Council for the monitoring stations BH6 and BH10 on Lewes Road and North Street.

Site operation

Routine instrument calibrations are conducted approximately once per fortnight, which involve zero and span checks, a written record of the gas analyser diagnostics and a general visual inspection of all equipment is undertaken. There is a written operating procedure and a calibration record sheet is completed at every site visit.

Data retrieval and daily data checking

Data from the monitoring station is retrieved directly via a Siemens TC35i GSM modem at 8-hourly intervals. The data is then stored on Envista Arm software hosted at TRL. This was used to retrieve, check and archive data. TRL's internal QA/QC procedures require all

data to be backed up on a secure server and all documentation associated with each site to be uniquely identified and securely stored to provide an audit trail. Daily data inspections are undertaken during office hours using the facilities of the Data Management System. Initial observations of the Management System indicate whether the site has been contacted during its nominated 'poll time' overnight. If this has not been successful a manual poll of the site may be required. If this is not successful further investigation of the communications integrity will be required to establish contact with the site modem and data logger. Three day plots of recorded data are viewed for the requested site, and these are inspected and assessed for continuity, validity, minimum and maximum values, date and time, power failures and general integrity. All anomalies are recorded on the Daily Check log, as required. Any anomalies or queries arising from daily inspection of data, or system operation, are brought to the attention of the Project Manager who will evaluate the situation, and initialise any necessary action. In the event that the PM is not available, contact will be made with the next available senior person within the monitoring team. Any issues identified with equipment operation will be referred to the client for attention within 24 hours (excluding weekends). On a weekly basis, data are examined using summary statistics and outlier analysis to establish data validity. If unusual data episodes are recorded, these would be routinely examined over longer data periods to establish their impact on trends but would also be cross referenced with data peaks and troughs recorded at other national monitoring stations. In addition, integrity and validity of data logger clock times are checked, and any significant errors recorded in the Data Management System logbook. All site data recorded through the Data Management System is archived on TRL's Network. The data is backed up daily, and the TRL IT Department maintains these data within their long-term and secure archives. This secures all data in the event of any system failure.

Data calibration and ratification

Data is ratified as per Automatic Urban Rural Network (AURN) recommended procedures. The calibration and ratification process for automatic gas analysers corrects the raw dataset for any drift in the zero baseline and the upper range of the instrument. This is done using Evista-based calibration and ratification which incorporates the zero and span check information from the calibration visits. The zero-reading recorded during the calibration visits is used to adjust any offset of the baseline of the data. The difference between the span value obtained between one calibration visit and the next visit is used to calculate a factor. This change is assumed to occur at the same rate over the period between calibrations and

as such the factor is used as a linear data scaler. This effectively results in the start of the period having no factor applied and the end of the period being scaled with the full factor with a sliding scale of the factor in-between. After applying the calibration factors, it is essential to screen the data, by visual examination, to see if they contain any unusual measurements or outliers. Errors in the data may occur because of equipment failure, human error, power failures, interference, or other disturbances. Data validation and ratification is an important step in the monitoring process. Ratification involves considerable knowledge of pollutant behaviour and dispersion, instrumentation characteristics, field experience and judgement. On completion of this data correction procedure, the data is converted to hourly means and provided to Brighton & Hove City Council at quarterly intervals and a calendar year annual report is prepared.

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

Site ID	Annualisation Factor Site BH0 Preston Park	Annualisation Factor Horley Gatwick	Annualisation Factor	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
C11-2007	0.8371	0.7596			0.7984	46.0	36.8	*Sample Fastening went missing part way through the year*
C19-2009	0.7854	0.6783			0.7318	41.7	30.5	
E16-2015	0.9975	0.9790			0.9883	44.0	43.5	
E32-2020	0.9539	0.9947			0.9743	14.5	14.2	*Low Sample above the beach*
W17-2009	0.9912	1.0170			1.0041	39.8	40.0	*Diffusion Tube Lost amongst Scaffolding for part of the year*

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	10				
Bias Factor A	0.95 (0.88 - 1.05)				
Bias Factor B	5% (-4% - 14%)				
Diffusion Tube Mean (µg/m^3)					
Mean CV (Precision)	35.5				
Automatic Mean (µg/m^3)	4.4%				
Data Capture					
Adjusted Tube Mean (µg/m^3)	33.9				

Notes:

Overall Diffusion Tube Precision: Good

Overall Continuous Monitor Data Capture: Good

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 – Automatic Monitoring Site

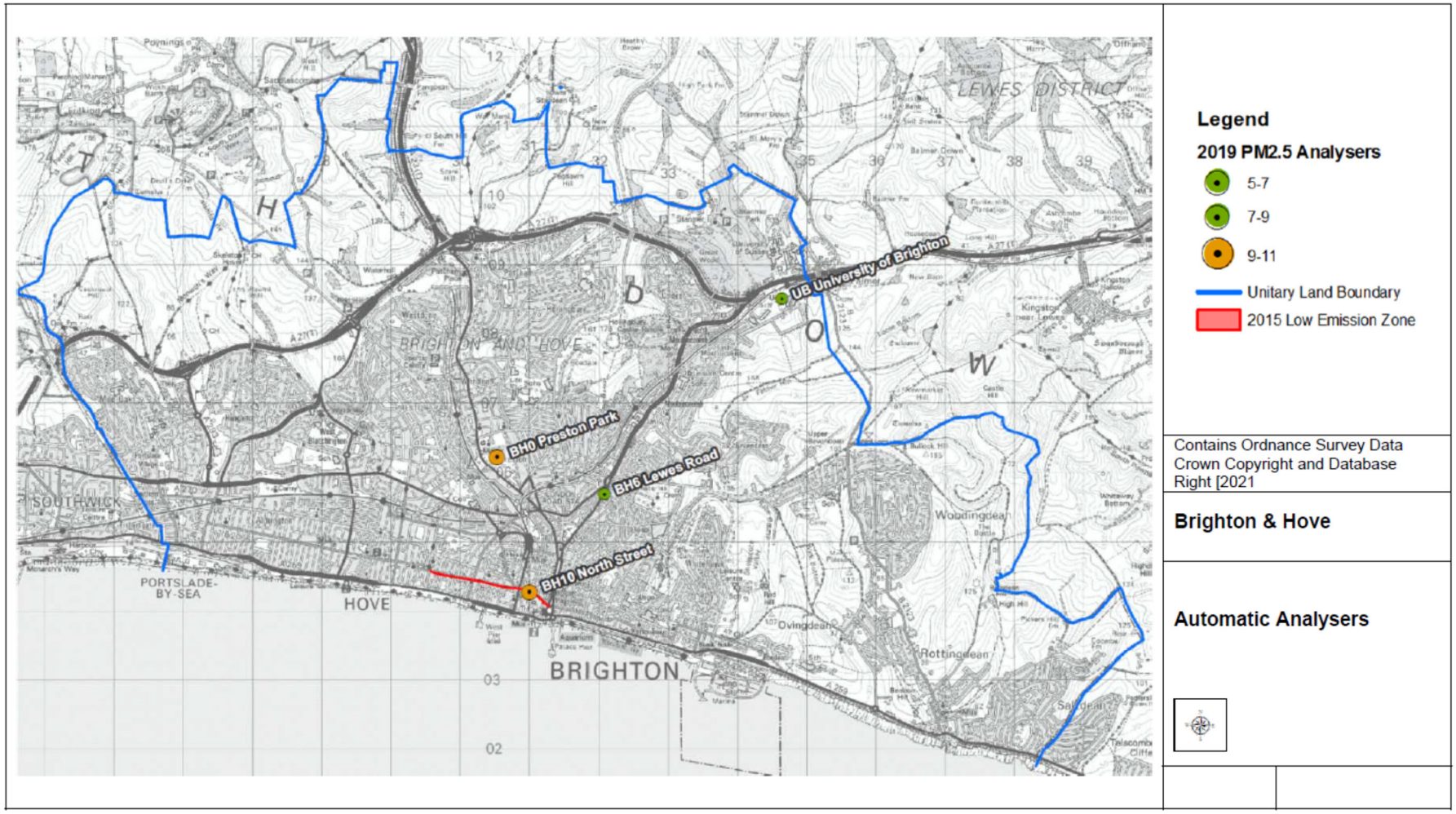


Figure D.2 - 2020 Six AQMAs

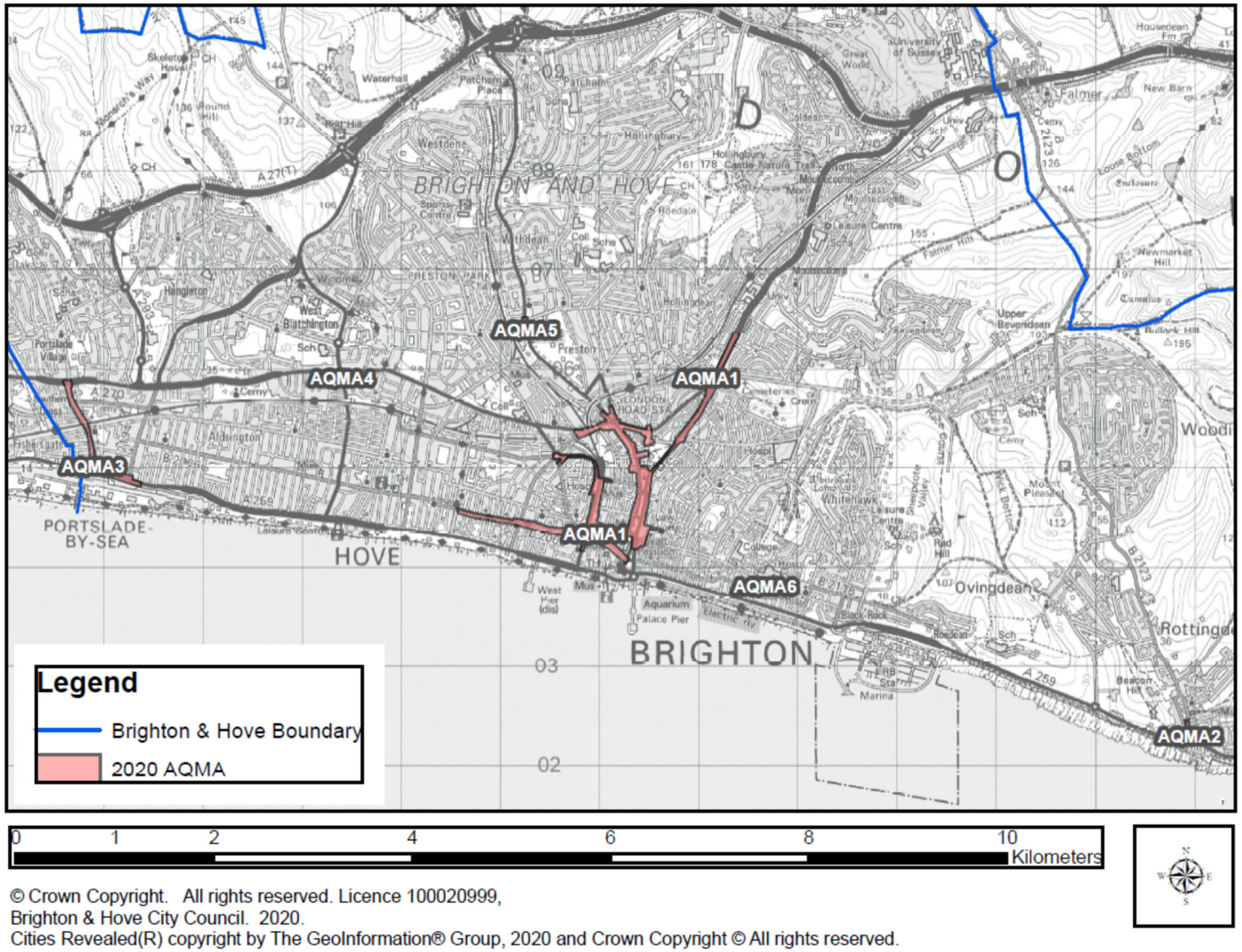
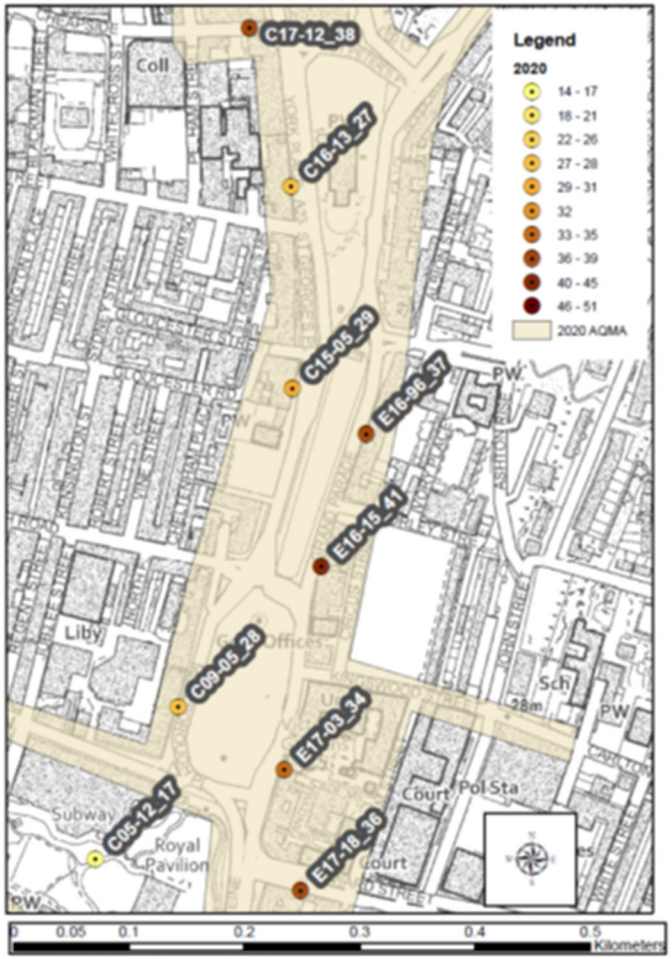


Figure D.3 – Diffusion Tube Monitoring Sites AQMA1 A23



Note: Label shows Diffusion Tube Area: C Central, W West and E East and the year started. Number after diffusion tubes is the 2020 NO_2 result rounded to whole number for presentation purposes. Improvement at monitors C09, C15 and C16 occurred one year prior to AQMA declaration.

Figure D.4 – Non-Automatic Monitoring Sites AQMA1 ULEZ

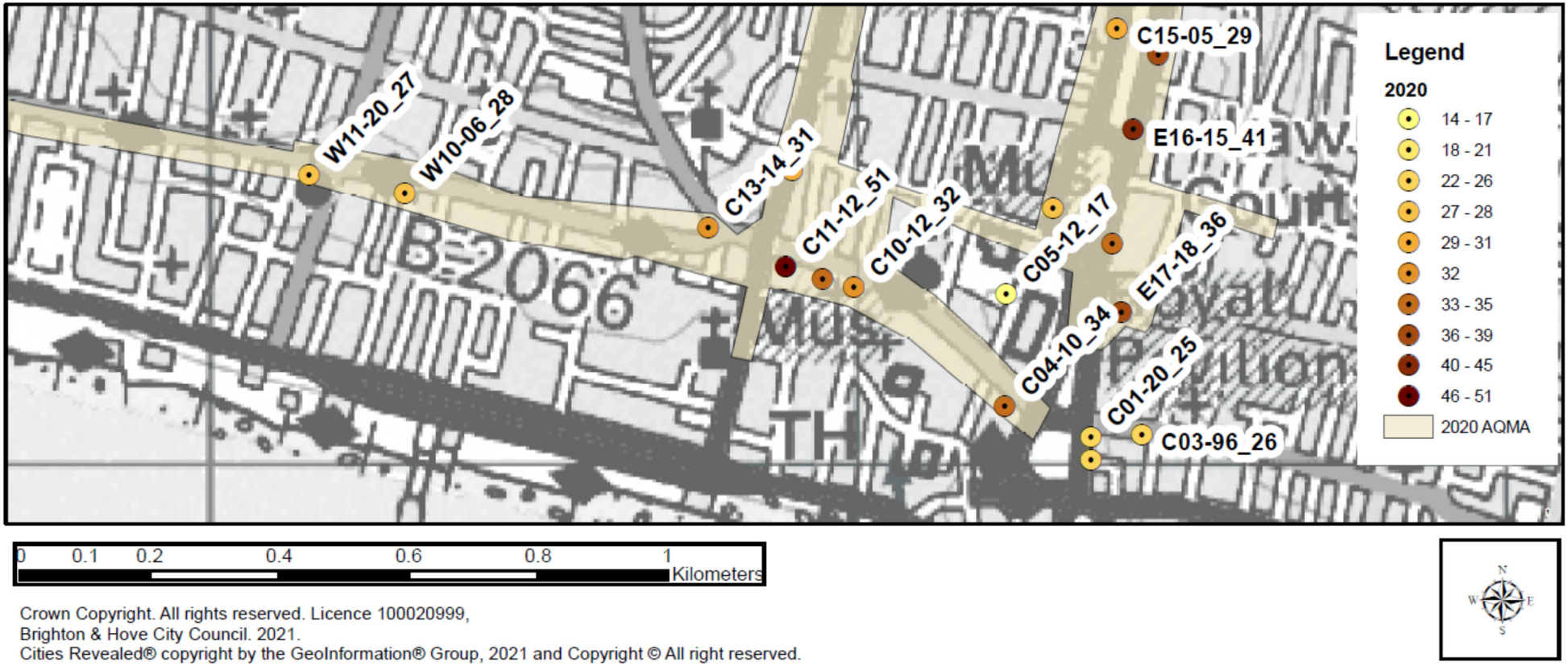


Figure D.5 – Non-Automatic Monitoring Sites AQMA1 Main Railway Station Approach

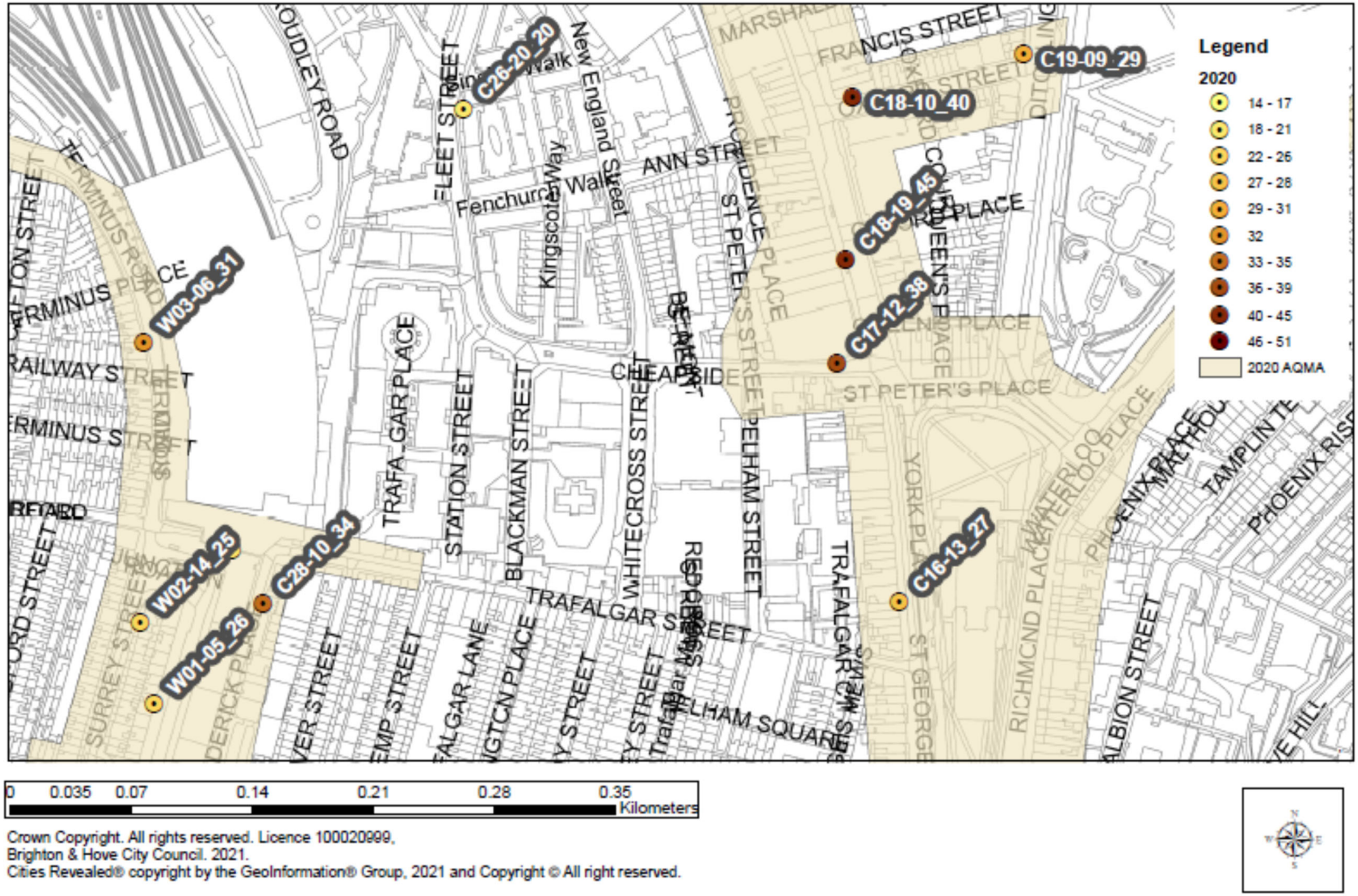


Figure D.6 – Non-Automatic Monitoring Sites AQMA1 Preston Circus A23-A270

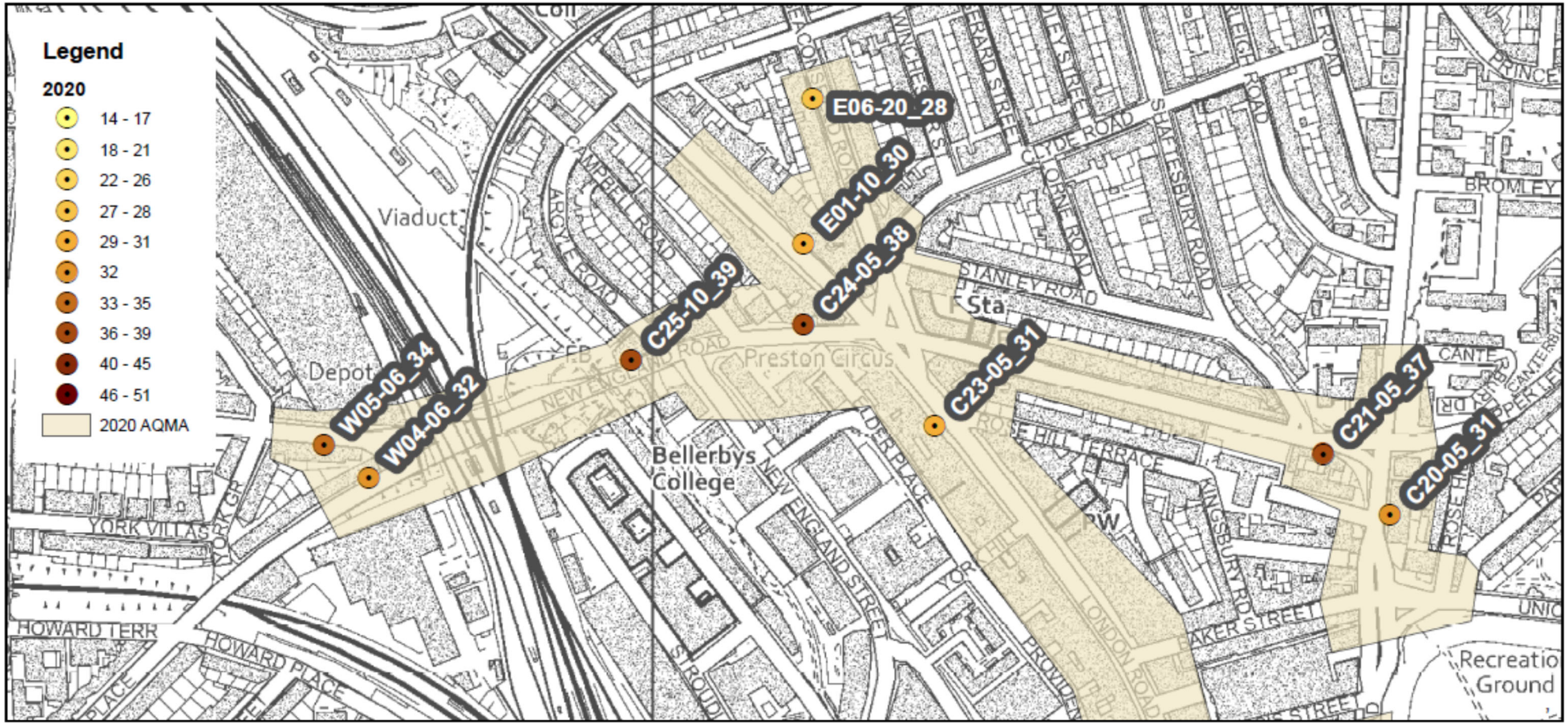


Figure D.7 – Non-Automatic Monitoring Sites AQMA1 Lewes Road-A270

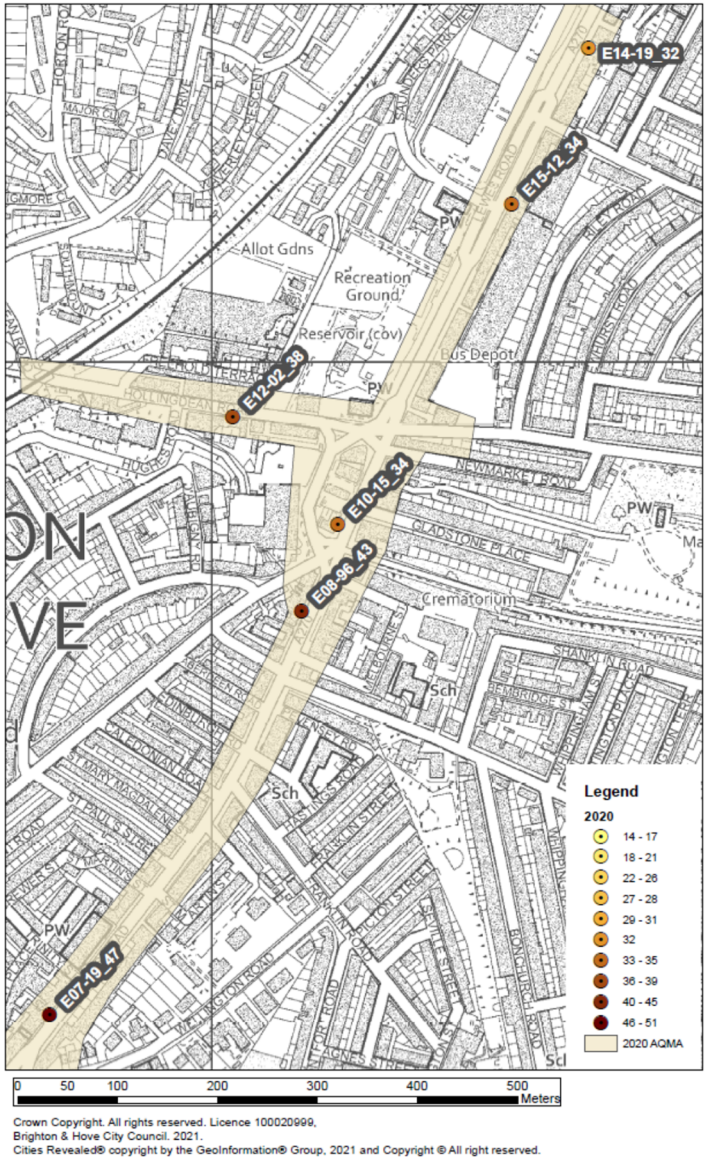


Figure D.8 – Non-Automatic Monitoring Sites AQMA2 Rottingdean B2123 and A259

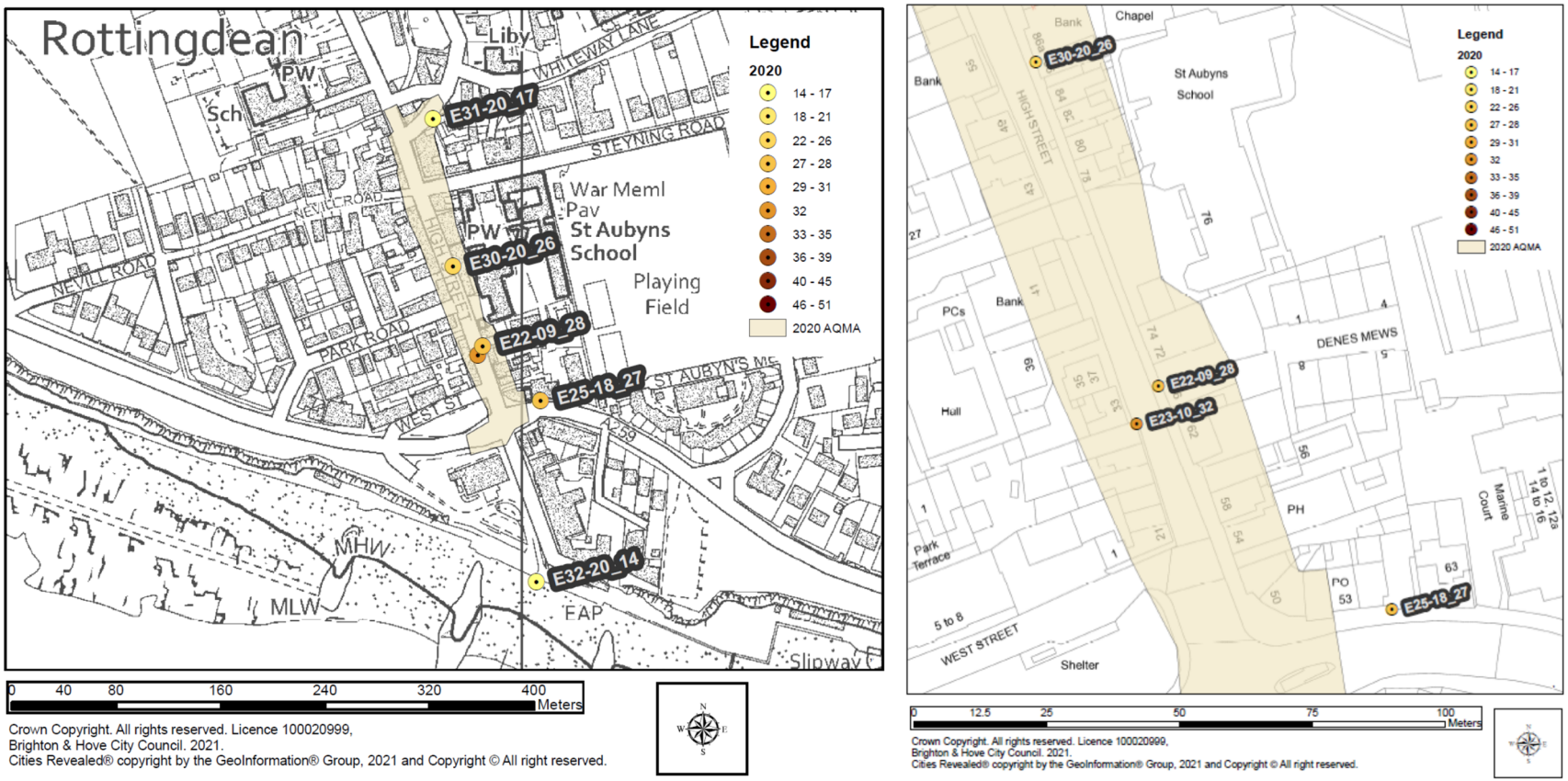


Figure D.9– Non-Automatic Monitoring Sites AQMA3 Portslade A293 and A259

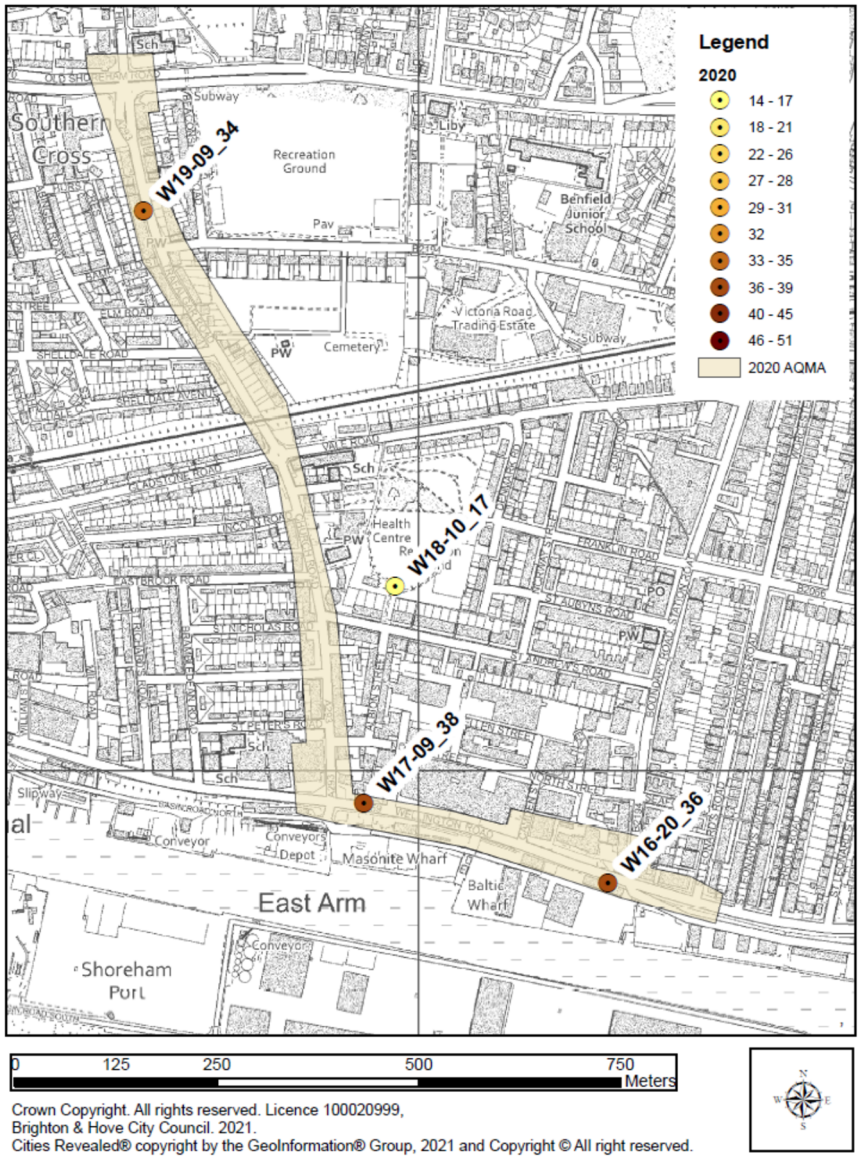
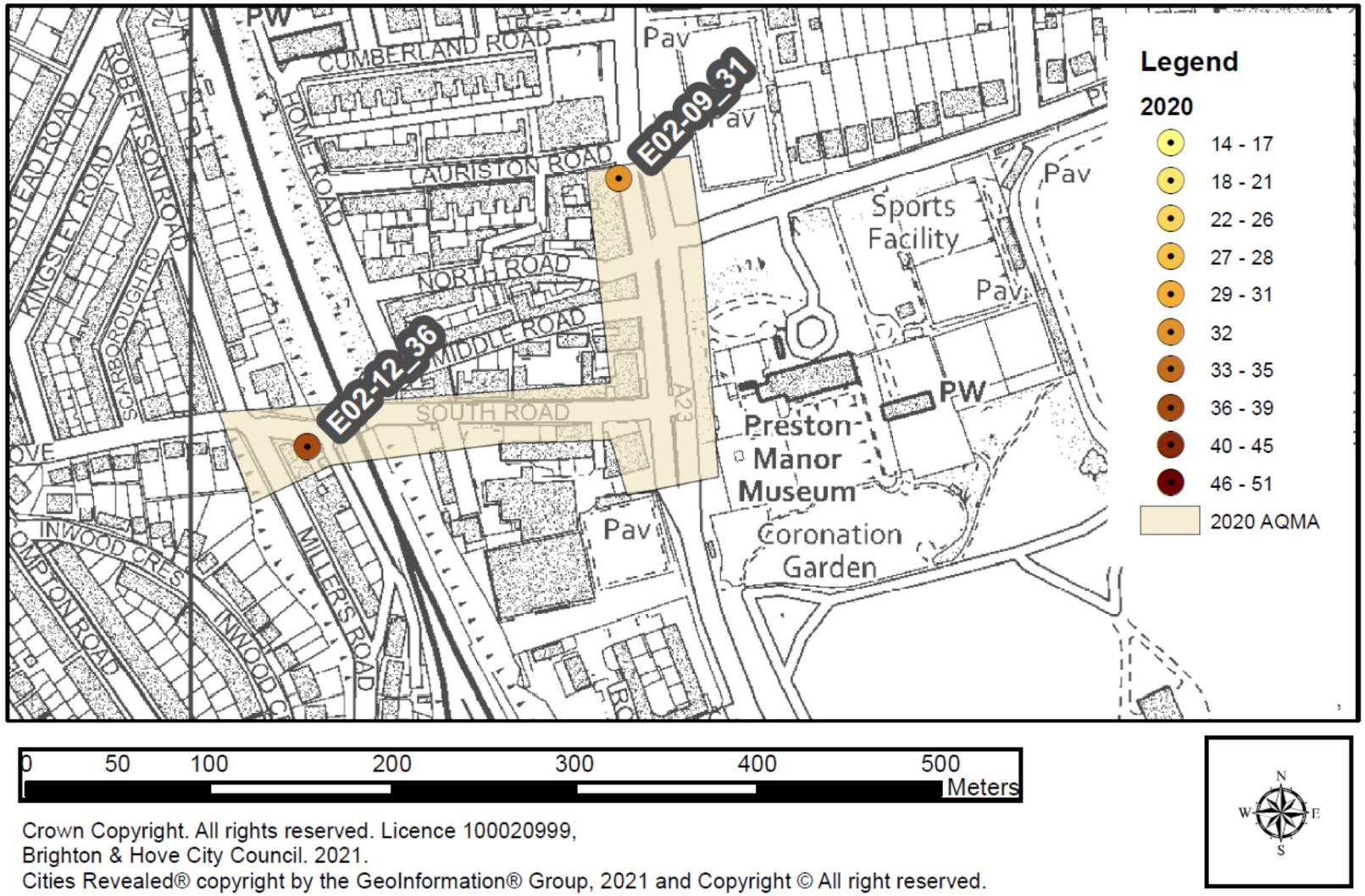


Figure D.20– Non-Automatic Monitoring Sites AQMA5 South Street and Preston Road Section of A23



Appendix E: Summary of English Air Quality Standards

Table E.1 – Air Quality Standards in England[8]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[8] 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 for air quality at local, regional, and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM (Local Air Quality Management) 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 Air Quality Action Plans (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. It was an excellent opportunity to monitor differences and very important that monitoring continued despite staff being lost to organisations. 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 necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdown that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[9] suggests reductions in vehicle traffic of 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)[10] has estimated that during the initial lockdown

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

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

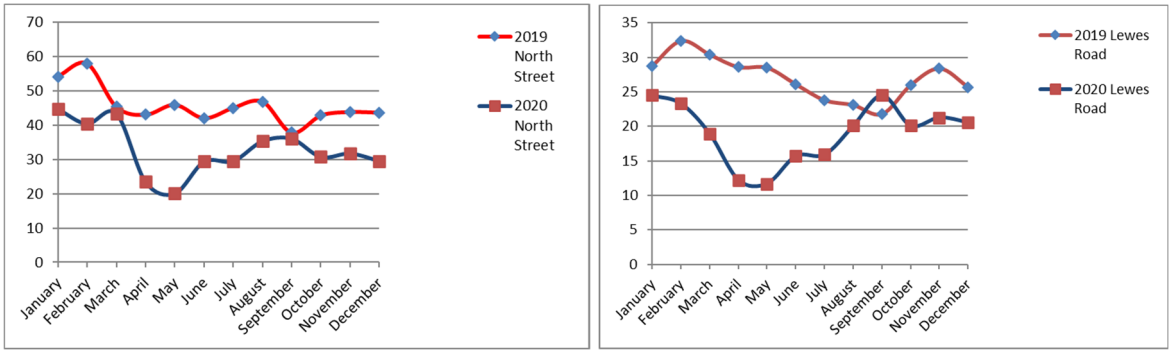
period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ 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 5µg/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 Brighton & Hove

Further analysis will be included as part of the detailed air quality assessment prior to Environment Transport Sustainability (ETs) committee.

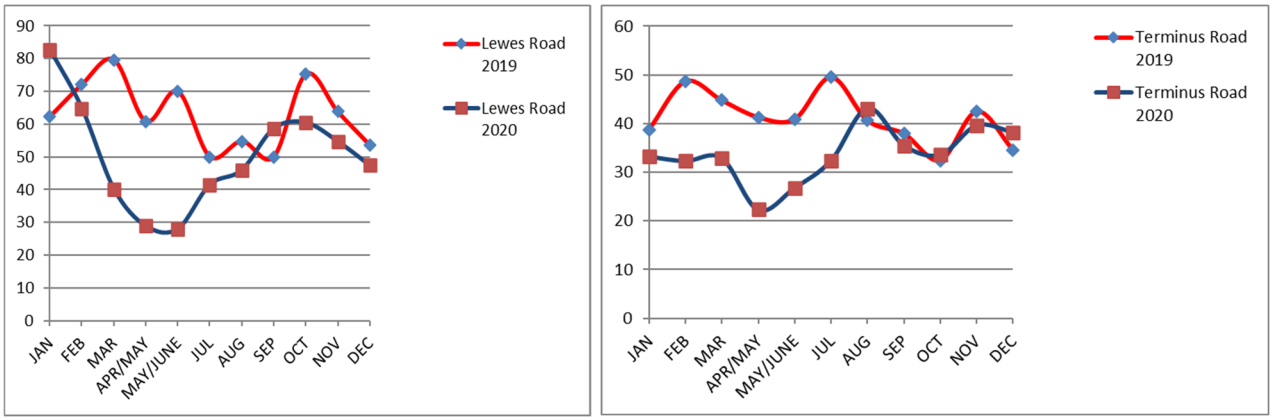
Figure E.3 Nitrogen Dioxide AQMA1 Automatic Analysers 2020 compared with 2019



- Reductions of NO_2 concentrations of 57% were experienced at roadside automatic analysers within AQMA 1, between April and May 2020. This equated to a 30% reduction in outdoor annual mean concentrations (not emissions) relative to 2019 and a more substantial reduction compared with 2017 & 2018. For roadside NO2 to improve this much road traffic emissions of NO + NO2 would have needed to be less than half. The reduction in NO_2 experienced within the first half of 2020 has allowed the Council to provide an evidence base in relation to the annual mean objective being achievable for some, but not all areas.
- The later part of February 2020 prior to lockdowns, had stormy weather with high winds, that helped with dilution and dispersion of emissions. The most polluted

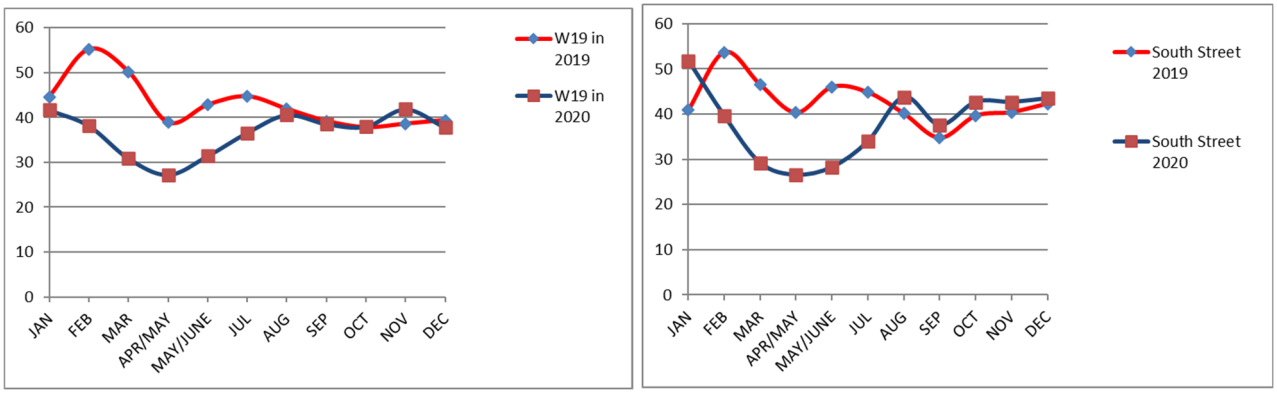
hours of the year during 2020 were substantially lower compared to 2017 and 2018. Since 2019 the highest levels of pollution show comparatively weaker correlation with commuting peaks for example 08:00 and 17:00 rush hours. The influence of collegiate and school runs on motorised traffic emissions diminished during 2020. It appears that a higher proportion of vehicle trips were associated with servicing, food and goods distribution, construction work and Brighton & Hove visitor journeys.

Figure E.2 - NO_2 AQMA1 Diffusion Tubes 2020 compared with 2019



Monitoring on Lewes Road (north of Elm Grove) in AQMA1 suggested more than a 50% improvement in the springtime NO_2. The only months with higher levels in 2020 compared to 2019 were January and September before and after travel restrictions. Monitoring on Terminus Road near Brighton's main railway stations suggested a 46% improvement around April, that said NO_2 concentrations tacked the previous year from August onwards.

Figure E.3 - NO_2 AQMA3 and AQMA 5 Diffusion Tubes 2020 compared with 2019



Monitoring in AQMA3 suggest a 30% improvement late winter and spring, compared to the previous year. The second half of 2020 NO_2 tacked the same roadside levels as the previous year. In AQMA5 monitoring results suggest 26% to 34% decrease on the spring compared to the previous year with slightly higher levels in the second half of the year.

Opportunities Presented by COVID-19 upon LAQM within Brighton & Hove

- Temporary Cycle Lanes – A temporary cycle lane was implemented on Marine Drive and Old Shoreham Road from April 2020.
- Homeworking and a substantial drop in commuting and vehicular access to railway stations. On the whole homeworking has generally been more productive.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Brighton & Hove

- April 2020, staff movement restrictions and laboratory closures limited diffusion tube monitoring change overs. Therefore, it was not possible to maintain diffusion tube schedule changes in line with the national monitoring calendar. This did not affect constant data capture through 2020. Extra effort was required from one staff member to utilise the samples supplied. 51/56 samples did not require annualisation and in most case eleven instead of twelve periods were returned to the laboratory for analysis **Small Impact**
- A revised AQAP is being developed for six NO_2 AQMAs, there is also public interest to advance monitoring and action to improve dust and particles. Progress has made with this over the past twelve months. Time is required to update the detailed air quality assessment and allow for the consultation and committee process. Current estimates are that a new AQAP will be prepared and sent out for draft consultation towards the end of 2021. **Small Impact**
- There have been delays during 2020 accessing computer hardware, software, and networks. **Large 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
ADMS-Urban	Atmospheric Dispersion Model System
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
ATC	Automatic Traffic Counter
AURN	UK Automatic Urban Rural air Monitoring Network
CAZ	Clean Air Zone
CEMP	Construction Environment Management Plans
COMEAP	Committee on the Medical Effects of Air Pollutants
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EFT	Emission Factor Toolkit
EMIT	Atmospheric Emissions Inventory Toolkit
EU	European Union
HGV	Heavy Goods Vehicle
LAQM	Local Air Quality Management
LAQM (TG)16	LAQM Technical Guidance 2016

LAQM (PG)16	LAQM Policy Guidance 2016
LGV	Light Goods Vehicle
NRMM	Non-Road Mobile Machinery
NAEI	National Atmospheric Emissions Inventory
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen usually an emission rather than an outdoor concentration
NPL	National Physical Laboratory
PHE	Public Health England
PHOF	Public Health Outcomes Framework
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
SCA	Smoke Control Zone
Section 106	Section 106 Planning Agreement Under Town and Country Planning Act
SO_2	Sulphur Dioxide
ULEZ	Ultralow Emissions Zone

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.

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[i] 2020 Ozone Episode Covid-19 lockdown caused complex and harmful local air quality effects | Phlorum
[ii] Brighton Bike Share https://www.btnbikeshare.com/
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[x] University of Brighton Air Monitor found at: Air Quality - last 7 days (brighton.ac.uk)