2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: September 2022

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Executive Summary: Air Quality in Our Area

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

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

Air pollution can come from many different sources – traffic, imported air pollution from the Continent, air emissions from shipping, and domestic wood burning. There are also natural sources of air pollution too, such as dust from soils, ash and sea-spray. Burning wood and coal in open fires and stoves makes up 38% of the UK's primary emissions of fine particulate matter ($PM_{2.5}$). Particulates are not a single pollutant; they are made up from a huge variety of chemical compounds and materials. Around 15% of UK PM comes from naturally occurring sources, up to a third from other European countries and around half from UK human-made sources. (Clean Air Strategy 2019, Defra[4]).

Unfortunately, there is no 'quick fix' with regard to air quality. The air is a constantly changing and evolving environment. We may get days when air pollution is higher than others, due to a number of meteorological conditions and chemical reactions occurring in the air. We can receive 'imported' pollution from the Continent and also from sources such as domestic wood burning and shipping. Wind speed, wind direction and the topography of the land mass plays an important part in where air pollution ends up. Particles or particulate matter are extremely small bits of liquid or solid suspended in the air. They can originate from engine emissions, brake and tyre wear, industry and natural sources as

[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 2021

[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

previously mentioned. Very fine particulates ($PM_{2.5}$) can therefore remain in the air for weeks and travel great distances (e.g. from the continent).

Air Quality in Lewes District Council

There are two Air Quality Management Areas (AQMAs) within the administrative boundary of Lewes District Council (LDC), both of which had been declared due to exceedances of the UK Air Quality Standard value for annual mean Nitrogen dioxide (NO_2). Full details of these AQMAs can be viewed at: https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=146.

The AQMAs cover parts of Lewes Town Centre and Newhaven Ring Road, and were declared in 2005 and 2014, respectively. In 2009 and 2016, Air Quality Action Plans (AQAPs) were put in place for Lewes and Newhaven, respectively, to reduce pollutant emissions and manage air quality monitoring stations established to assess the impact of the measures proposed by the aforementioned action plans.

In 2021, nitrogen dioxide monitoring using diffusion tubes was carried out at 50 measurement sites, positioned in strategic locations throughout the district. No new NO_2 diffusion tube monitoring locations were added to the Council's local air pollution monitoring network in 2021.

NO_2 concentrations at all diffusion tube locations were observed to be below the 40µg/m^3 annual mean objective concentration during 2021. The highest recorded concentration at any diffusion tube within LDC was at 36.9µg/m^3 (Diffusion Tube 3: 16 Southway – Newhaven). The latest monitoring data show NO_2 levels are increasing slightly in 2021 compared to 2020. This is likely due to increased road traffic emissions as traffic activities recovered from the impact of lockdowns as a response to the COVID-19 pandemic.

There is one locally-managed automatic monitoring station (LS7) on Lewes Road, Newhaven (within the existing AQMA) in LDC during 2021. The station monitors NO_X, PM_{10} and O_3. Additionally, consideration is being given to the monitoring of $PM_{2.5}$ at this location in the coming year. No exceedance of 1-hour mean objective was recorded in LDC during 2021.PM_{10} recorded at LS7 in 2021 was 23.8 µg/m^3 which is well below the annual mean AQS of 40 µg/m^3.

Ground level ozone (O_3) is normally formed when other pollutants including nitrous oxides react in sunlight to form ozone (sometimes leading to a haze/smog); ozone levels are highly dependent on the weather and warm sunny periods can cause a sharp increase in

mean levels. Ozone concentrations in the summer months tend to be higher in the south-east because it is closer to European pollution sources and tends to receive more sunlight than other areas of the country.

Similar to the observation in 2020, due to the reduction in NO_X emissions after the COVID-19 pandemic, ozone concentrations were still uncharacteristically high throughout 2021. Such trends were identified across much of the South-East, and were also seen at LS7, with a total of 16 exceedances of the O_3 objective (100µg/m^3 as an 8 hour mean, not to be exceeded more than 10 times a year) in 2021.

Air Quality in Eastbourne Borough Council

Eastbourne Borough Council (EBC) has no declared AQMAs within the borough, as currently, and historically, there have been no identified areas within the borough where the UK Air Quality Standards for NO_2 or particulate matter (PM_{10} and $PM_{2.5}$) have been exceeded.

Concentrations of PM_{10} recorded at EBC's automatic monitoring stations EB1 (Devonshire Park) and EB3 (Holly Place) have been consistently well below the annual mean and 24-hour mean UK Air Quality Standard values since the commencement of monitoring at these locations. The annual mean PM_{10} in 2021 was 17.2 µg/m^3 at EB1 and was 13.1 µg/m^3 at EB3. Currently, only one location within the borough measures $PM_{2.5}$ concentrations; EB3 (Holly Place), and at this location, recorded annual mean $PM_{2.5}$ concentrations have been consistently well below the 25µg/m^3 UK Air Quality Standard value (8.4 µg/m^3 in 2021).

Despite no exceedances of the 40µg/m^3 UK Air Quality Standard value being recorded for annual mean concentrations of NO_2, this pollutant remains the primary pollutant of concern within the borough. In 2021, EBC undertook diffusion tube monitoring at 21 sites. Diffusion tube 14 (109 Whitley Road) recorded the highest annual mean NO_2 concentration of 26.4µg/m^3, which is well below the 40µg/m^3 UK AQS. The latest monitoring data show NO_2 levels are increasing slightly in 2021 compared to 2020. This is likely due to increased road traffic emissions as traffic activities recovered from the impact of lockdowns as a response to the COVID-19 pandemic.

Overall, measured concentrations of NO_2, PM_{10} and $PM_{2.5}$ have shown a gradual decline in recent years (except for the increase of NO_2 from 2020 to 2021 due to the recovery from

COVID-19), and are expected to continue this trend due to local, national, and international plans and measures to reduce emissions across all sectors.

Eastbourne also monitors O_3 at the Devonshire Park site. The monitor had a data capture rate of 94.9% (which is classed as adequate data capture and therefore not requiring annualisation). Due to the reduction in NO_X emissions after the COVID-19 pandemic, ozone concentrations were still uncharacteristically high throughout 2021. At this monitor in 2021, there were a total of 16 exceedances of the O_3 objective (100µg/m^3 as an 8 hour mean, not to be exceeded more than 10 times a year). which demonstrates the adverse impacts of the COVID-19 pandemic on O_3. Concentrations recorded at the Devonshire Park monitor did not meet the UK Air Quality Standards for ground level ozone.

Actions to Improve Air Quality

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

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

Actions to Improve Air Quality in Lewes District Council

During 2021, LDC continues to progress the Cycle Route 90. Eastern section route, from Cliffe High Street to Southerham roundabout, has been agreed by Cycle Lewes. The town centre and western section requires more design work and further consultation with key stakeholders.

[5] Defra. Clean Air Strategy, 2019

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

The enhancement work of Newhaven Ring Road and A259 which are funded by East Sussex County Council (ESCC) has also been completed in July/August 2021 and April 2022 respectively.

LDC is also continuing the anti-idling education campaign aimed at schools across both Lewes and Eastbourne councils. This anti-idling message will be continually delivered to schools over the next few years.

Other measures can be found in Section 2 and Table 2.2.

Conclusions and Priorities for Lewes District Council

No exceedances of nitrogen dioxide or particulate matter were recorded at any monitoring location in 2021. Slight increase in NO_2 concentrations were seen at most monitoring locations, but concentrations at all monitoring locations were still well below the annual mean AQS of 40 µg/m^3.

Excluding the year 2020, which is likely to be considered an anomaly due to the Covid-19 pandemic, this is the first year that there is no annual exceedance within both Newhaven AQMA and Lewes AQMA.

LDC will continue to monitor NO_2, PM_{10} and O_3, and intends to monitor $PM_{2.5}$ in the next year. The Council will continue to work on developing the updated AQAP covering both the Lewes Town AQMA and the Newhaven AQMA which will outline the key strategies to improve air quality in Lewes town centre.

LDC will continue to work with ESCC, Sustrans and Living Streets to implement transport-related measures which will improve air quality across the district.

Actions to Improve Air Quality in Eastbourne Borough Council

In 2021 March, EBC has completed the Eastbourne Town Centre Improvement scheme Phase 1. The Eastbourne Town Centre Improvement Scheme (ETCIS) is a joint project between East Sussex County Council and Eastbourne Borough Council. The ETCIS aims to Create an attractive pedestrian friendly environment addressing current issues of pedestrian congestion experienced along Terminus Road.

EBC is also continuing the anti-idling education campaign aimed at schools over both Lewes and Eastbourne councils. This anti-idling message will be continually delivered to schools over the next few years.

Other measures can be found in Section 2 and Table 2.3.

Conclusions and Priorities for Eastbourne Borough Council

No exceedances of nitrogen dioxide or particulate matter were recorded at any monitoring location in 2021. Slight increase in NO_2 concentrations were seen at all monitoring locations except for DT14, but concentrations at all monitoring locations were still well below the annual mean AQS of 40 µg/m^3.

EBC will continue to monitor NO_2, PM_{10}, $PM_{2.5}$ and O_3 in the next year.

EBC will continue to work with ESCC, Sustrans and Living Streets to implement transport-related measures which will improve air quality across the borough.

Local Engagement and How to get Involved

Both LDC and EBC have recently set a carbon zero target for Council activities to be carbon neutral by 2030. The link to the Lewes climate change and sustainability strategy can be found here and the Eastbourne sustainability policy can be found here.

Measures so far achieved include:

- Air source heat pumps installed in off-gas social houses
- Social housing photovoltaics installed
- Stock condition surveys completed as preliminary to retrofitting
- Green electricity supply purchased corporately
- Alternative fuelled refuse vehicles trialled
- Community action facilitation
- Tree planting and re-wilding
- Procurement underway for EV charge points

Help improve your own environment:

Can you cut down on the use of your vehicle?

- Use public transport
- Cycle
- Walk
- Use alternative routes to get from A to B. Instead of walking or cycling along a major road, use alternative quieter and less polluted routes.

Not only can you help in improving our environment, but it gives you the added benefit of exercise and helps improve general health and well-being.

Idling engines:

Vehicle idling causes air pollution and engines should not be left running unnecessarily. Breathing polluted air is not only extremely unpleasant but is also detrimental to our health. The air inside the vehicle can be worse than outside!

Why it's good to turn off vehicle engines - Cut Engine Cut pollution

- Exhaust emissions contain a range of air toxic pollutants such as carbon monoxide, benzene, formaldehyde, Polyaromatic hydrocarbons, nitrogen dioxide and particulate matter.
- Every minute your car idles you could fill 150 balloons with harmful chemicals.
- Turning off your car engine and restarting it after one minute causes less pollution and uses less fuel than keeping the engine running.
- Modern batteries need less engine running time to stay charged.
- It takes up to an hour for an engine to cool down which means your car heating fan will work with your engine turned off.
- Idling does not keep a catalytic converter warm. They retain heat for approximately 25 minutes after the engine is switched off.

Air quality is as important as exercise and diet for health. Reducing air pollutants can help reduce respiratory problems, heart disease, lung cancer and asthma attacks.

Changing your vehicle:

- If you are considering buying a new or second-hand vehicle/s consider the options of newer cleaner models – e.g. hybrids, electric.
- Have a good look at the vehicles emission credentials before buying.
- Consider alternatives – could you join a Car Club?

There are various organisations and clubs which offer help and advice on getting active, for example:

- Sustrans: http://www.sustrans.org.uk/what-you-can-do,
- Walking: https://www.livingstreets.org.uk/walk-to-school
- Bikeability: http://bikeability.org.uk/

These programmes involve schools and workplaces to try to encourage sustainable and active travel (cycling and walking activities).

Public Health England published a very informative document on air pollution and health. This can be found on this link: https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution. Public Health England[7] says: '*Epidemiological studies have shown that long-term exposure to air pollution (over years or lifetimes) reduces life expectancy, mainly due to cardiovascular and respiratory diseases and lung cancer. Short-term exposure (over hours or days) to elevated levels of air pollution can also cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in respiratory and cardiovascular hospital admissions and mortality.'*

Details, including local air quality monitoring data, annual air quality reports and the impact air quality may have on health can be found on the Sussex-air website. Sussex-air also runs the Sussex Air Quality Alert service providing warnings to people with respiratory and cardiovascular conditions, health professionals and carers in Sussex. The service is FREE to register/subscribe to and anyone can join. Alerts are sent direct to the Sussex Air Quality Alert app, email, mobile phone via text message or home phone. The app is provided as a free service by the Sussex Air Quality Partnership and supported by the Public Health Bodies (East Sussex & West Sussex County Council). Further information can be found: www.sussex-air.net or telephone 01273 484337.

Business

Businesses in East Sussex can obtain assistance from energy advisors LoCASE (Low Carbon Across the South East). Your business may be eligible for a free energy audit and funding for energy efficiency solutions identified with a grant. More information can be found on: http://locase.co.uk/partners-and-services/

Local Responsibilities and Commitment

This ASR was prepared by the Green Consultancy – Air Quality Department of Lewes District Council and Eastbourne Borough Council with the support and agreement of the following officers and departments:

- Councillor Matthew Bird
- Lead Member for Sustainability LDC

This ASR has been approved by:

Rachel Sadler

This ASR has not been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to Rachel Sadler at:

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1 Local Air Quality Management

This report provides an overview of air quality in of Lewes District Council (LDC) and Eastbourne Borough Council (EBC) during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Lewes District and Eastbourne Borough Councils to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

Air Quality Management Areas

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

There are currently two AQMAs within the administrative area of LDC. A summary of AQMAs declared by LDC can be found in Table 2.1. The table presents a description of the 2 AQMAs that are currently designated within LDC. Further information, including maps of the AQMA boundaries are available online at:

https://uk-air.defra.gov.uk/aqma/details?aqma_ref=04

https://uk-air.defra.gov.uk/aqma/details?aqma_ref=41576

Appendix D: Maps of Monitoring Locations and AQMAs provides maps of the AQMAs and the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean;

EBC currently does not have any declared AQMAs. A map of all monitoring locations within the administrative area of EBC is provided in Appendix D: Maps of Monitoring Locations and AQMAs.

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 National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year/ Highest Concentration within AQMA Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Lewes Town Centre	30/06/05	NO_2 Annual Mean	An area encompassing a section of Lewes Town Centre extending north to the old police station, south to St Andrews Place	NO	53µg/m^3	30.0 µg/m^3	May-09	http://www.sussex-air.net/Reports/LewesAQAP2009.pdf
A259 Newhaven Ring Road	16/07/14	NO_2 Annual Mean	Incorporates Newhaven Town Centre, Southway, Northway and sections of the A259 Brighton Road, Lewes Road and the swing bridge	NO	49µg/m^3	36.9 µg/m^3	Jun-16	http://www.sussex-air.net/Reports/NewhavenAQAP2016.pdf

☒ **LDC confirm the information on UK-Air regarding their AQMAs is up to date.**

☐ **LDC confirm that all current AQAPs have been submitted to Defra.**

Progress and Impact of Measures to address Air Quality in Lewes District Council and Eastbourne Borough Council

Defra's appraisal of last year's ASR concluded that "the report is well structured, detailed, and provides the information specified in the Guidance". Additional comments made are as follows:

1. *"The Council have provided an extremely detailed and comprehensive ASR. Trends are presented and discussed, and a robust comparison to air quality objectives is provided.*

2. *Reductions in NO_2 levels due to COVID-19 were observed at all monitoring sites. Site DT12 in Lewes Town Centre AQMA achieved compliance for the first time which shows the impact of reduced traffic flows on the local air quality. The Council should take this as an opportunity to reflect on the importance of traffic measures listed on the action plans.*

3. *The Council has plans to renew and update the Lewes Town Centre AQAP in the upcoming year. Newhaven AQAP is also due for renewal. It is noted that COVID-19 pandemic and related pressure on available resources has delayed the progress on action plan measures. Any update on the AQAPs should be reported in next year's report.*

4. *It is recommended that reference be made to the Public Health Outcomes Framework (PHOF) in Section 2 '$PM_{2.5}$ –Council's Approach to Reducing Emissions and/or Concentrations'. The PHOF sets out a high-level overview of public health outcomes, at national and local level, supported by a broad set of indicators. These indicators are helpful to compare the Council's outcomes with regional and national outcomes. More information on PHOF is available here: https://fingertips.phe.org.uk/profile/public-health-outcomes-framework*

5. *LDC has installed a new automatic monitor LS7 in Lewes Road within Newhaven AQMA. Both of the AQMAs within LDC now have continuous data which will help in establishing profiles for both NO_2 and PM_{10}. This is encouraging to see and shows the Council's commitment to improving the local air quality.*

6. *Following last year's appraisal, the Council has decided to change their single diffusion tube collocated at the automatic monitor to a triplicate site. This would*

benefit the Council in deriving a local bias adjustment factor that could be compared with the national factor to ensure the most representative choice. It is recommended to present a local bias factor in next year's report.

7. *As mentioned in last year's appraisal, Site 21, has shown exceedances in the past years. This site was compliant this year, most likely due to the impact of COVID-19 but the Council is strongly recommended to observe this location for any further exceedances. It is advised that the Council amend the AQMA to include Site 21 if further exceedances persist, as outlined under the LAQM guidance. Furthermore, the Council are encouraged, if practicable, to commission additional passive monitoring in the area to determine the spatial extent of this exceedance prior to the amendment of the current AQMA boundary.*

8. *Overall, the report is highly detailed, satisfies the criteria of relevant standards, and is a good source for members of the Public to find out about air quality in their area. The Councils should continue their good work and submit an Annual Status Report in 2022."*

This year, LDC are working to update the AQAP for Lewes Town Centre and Newhaven. Current estimates are that the AQAP will be prepared and sent out for draft consultation by the end of 2022. The importance of traffic measures will be noted in the updated AQAP. According to Defra's recommendation, discussion about PHOF is included in this year's report. The deployment of triplicate diffusion tubes was delayed during 2021, LDC will attempt to implement this during the next reporting year. LDC will also continue to monitor Site 21 to decide any amendment of the current AQMA boundary.

2.1.1 Progress and Impact of Measures to address Air Quality in Lewes District Council

LDC has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 22 measures are included within Table 2.2, with the type of measure and the progress LDC have made during the reporting year of 2021 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 measures can be found in their respective Action Plans, the Lewes District Local Plan, East Sussex Strategic Partnership and the Local Transport Plan. Key completed measures are:

- Air source heat pumps installed in off-gas social houses to improve indoor air quality;
- Social housing photovoltaics installed;
- Stock condition surveys completed as preliminary to retrofitting;
- Green electricity supply purchased corporately;
- Alternative fuelled refuse vehicles trialled;
- Community action facilitation;
- Tree planting and re-wilding.

LDC expects the following measures to be completed over the course of the next reporting year:

- EV charge points being rolled out across car park estate- 84 installs expected by end of March 2023;
- Diesel for fleet vehicles to be replaced with cleaner 'renewable diesel' by April 2023

LDC worked to implement these measures in partnership with the following stakeholders during 2021:

- National Highways (NH);
- EBC;
- ESCC;
- Lewes Town Council (LTC);
- Sussex Police;
- Cycle Lewes;
- OVESCo;
- BuroHappold.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, LDC anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Lewes Town Centre AQMA and A259 Newhaven Ring Road AQMA. The additional measures will be included in the updated AQAP.

Lewes Town Centre AQAP

The Lewes Town Centre AQAP is currently being updated and is estimated to be prepared for public consultation next year. The update is slightly delayed because LDC intended to produce a combined AQAP for both AQMAs within LDC. A detail modelling assessment will

be undertaken for the Lewes Town Centre AQMA and A259 Newhaven Ring Road AQMA to evaluate the current pollution condition of the AQMAs and identify the main source of pollution. The AQAP is estimated to be reviewed by the Council and be provided for public consultation by the end of 2022. This is later than initially planned, but has been held back due to staff shortages and the Covid-19 pandemic.

A successful bid by Brighton & Hove City Council supported by Lewes District Council saw a grant of £149,000 awarded from the Defra Air Quality Fund to convert a series of double decker buses from the Euro-V to the Euro-VI emission standard.

The converted buses serve transboundary routes 28 and 29 (Brighton – Lewes – Tunbridge Wells) maximising the benefit in terms of improving areas of poor air quality in Brighton, Tunbridge Wells and in the Lewes AQMA.

The link to the current Lewes AQAP is:

http://www.sussex-air.net/Reports/LewesAQAP2009.pdf

Many of the actions originally placed into the Lewes AQAP 2009 have been completed: for example, there have been reductions in NO_2 concentrations (e.g. change of traffic priority in Fisher Street); the car club is well established; 20mph zones established in the town centre and beyond; Offham Road pedestrian crossing installed; a pedestrian crossing installed on the A277 Brighton Road (near corner of Montacute Road); Ringmer to Lewes cycle route completed; improvements at Lewes Railway Station; many buses coming through Lewes have cleaner engines and installation of anti-idling signs.

Newhaven AQAP

Following the declaration of an Air Quality Management Area in July 2014 for the centre of Newhaven, an Air Quality Action Plan was prepared in 2016 to address the high concentrations of NO_2 which people are exposed to alongside the busy roads in the centre of Newhaven. Road transport is the main source of emissions relating to NO_2, and particularly diesel vehicles in stop-start traffic, which make the biggest contribution resulting in higher emissions.

The delivery of the 2016 Newhaven Action Plan is dependent on adequate levels of resourcing, both for capital costs and staffing. Currently, increases in traffic around the ring road are likely assuming planned development for Newhaven proceeds. Any improvements made will therefore be challenged by an increase in vehicles due to new developments. The plan can be found on this link:

http://www.sussex-air.net/Reports/NewhavenAQAP2016.pdf

The Newhaven AQAP is currently being updated and is estimated to be prepared for public consultation next year as a combined AQAP covering both Lewes Town Centre AQMA and Newhaven AQMA.

Additional actions

Cycling

Under the Active Access for Growth – ESCC have launched Pedal Power which gives people the opportunity to try cycling by offering bikes for rent for between 1 and 6 months. There are a range of bikes to try – for more information please see this link: https://eastsussexpedalpower.com/

There are further plans to introduce a new cycle route on Avis Road which will tie into the existing NCR2 cycle route on the A259.

E-cargo bike hire scheme has launched in Lewes and in Newhaven. Get Bikery is a brand-new eCargo bike social venture for Lewes. Set up by local community energy company OVESCo, in partnership with Lewes District Council, with funding from the Energy Saving Trust, it aims to provide a carbon emissions-free way to transport goods and items locally – with electric power helping to take the strain of transporting loads around Lewes' hilly streets and roads.

Walking

Under the ESCC Active Access for Growth not only is cycling encouraged but also walking opportunities: using active travel maps, journey planning and giving people walking challenges and pledges. There are also opportunities to explore the South Downs by walking and or cycling.

Many of the above initiatives feed into the Newhaven A259 Ring Road AQAP 7 main actions, with other improvements such as improvements to bus shelters and facilities which should help encourage further use of buses.

More detail on these measures can be found in their respective Action Plans (see Table 2.1 for links)

The planned installation of the Newhaven air quality monitoring station was slow due to a variety of issues, one being difficulties in locating a suitable site within the AQMA. This station was eventually installed and up and running during 2020. The AQAP review may

give rise to further challenges. Progress on the Lewes AQAP has been slower than expected due to staff shortages and the Covid-19 pandemic.

DEFRA's, Clean Air Strategy (Jan 2019)[4] states:

'New legislation will create a stronger and more coherent framework for action to tackle air pollution. This will be underpinned by new England-wide powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to take action in areas with an air pollution problem. These will support the creation of Clean Air Zones to lower emissions from all sources of air pollution, backed up with clear enforcement mechanisms.'

If local authorities are going to be given 'new powers' to 'take action' the government need to consider how they will support and fund resources for this. Staff resourcing and funding is already an issue for many local authorities. Other challenges range from: changing people's behaviour on their travel choices, getting people to recognise the polluting and health effects of engine idling, linking of cycle routes to encourage and make cycling safer (particularly if trying to encourage more children to cycle – the safety aspect of this can make parents very anxious), the increased popularity of domestic wood burning stoves in homes and how quickly can/will company vehicle fleets change to cleaner vehicles?

There are lots of pressures placed upon local authorities – on one hand they must improve air quality but on the other they must find suitable locations for development. In Newhaven, for example, the need for economic regeneration places pressure on air quality and the environment. There is significant investment in the Port area (following approval for a deep water berth at the harbour mouth) – which should grow the ferry service for both freight and passenger travel between Newhaven and Dieppe. There are more businesses moving into the area and residential plans in the pipeline. Investment will also entail increased business premises and new homes in the Newhaven area, which in turn will increase traffic loading to the Ring Road. Careful planning measures will be required.

Table 2.2 – Progress on Measures to Improve Air Quality in Lewes District Council

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	Lewes – Cycle Route 90	Transport Planning and Infrastructure	Cycle network		Estimated for eastern section March 2024	ESCC NH Cycle Lewes LTC	Development Contributions and ESCC	No			Planning	Reduction of NO_2 (and PM) emission	Increased use of sustainable transport modes	Preliminary design for eastern section complete. Designs ongoing for town centre and western section options.	Eastern section route, Cliffe High Street to Southerham roundabout has been agreed by Cycle Lewes. The town centre and western section requires more design work and further consultation with key stakeholders. Physical constraints on a coherent route
2	Better coordination of building and road works in the Lewes town area (LTP+) - Enhance existing LTP scheme to include building works and haulage route management	Transport Planning and Infrastructure	Other			ESCC Network Management	TBC	TBC			Implementation	Reduction of NO_2 (and PM) emission	Number of agreements and s.61 agreements	Ongoing	
3	Target long-distance freight management & heavy traffic through town (LTP+) a) Intensification of existing LTP programmes b) Review signage on weight restrictions at access road links	Transport Planning and Infrastructure	Other			ESCC, LDC, Sussex Police (enforcement)	TBC	TBC			Planning	Reduction of NO_2 (and PM) emission	Traffic counts		Will be reviewed as part of Local Transport Plan 2021 onwards
4	Reduce emissions from idling vehicles a) Install “cut engine cut pollution” signs (i.e. schools, taxi & bus terminals) b) Raise awareness through eco-driving campaign c) investigate enforcing legislation (issue fines	Transport Planning and Infrastructure	Other			LDC	In-house resources	No			Implementation	Reduction of NO_2 (and PM) emission	NO_2/ Participation/ Enforcements	Ongoing	As funding available
5	Lewes Parking Management (LTP+) - Intensification of existing/planned LTP programmes a) extension of parking controlled area b) re-allocation of parking/loading spaces c) higher charges for long stay parking d) higher charges for residents second parking permits e) discounted permits for low-emission vehicles f) introduce car spaces for low-emission vehicles, car-clubs and car share g) maintain/increase provision of two-wheelers parking	Transport Planning and Infrastructure	Other			ESCC, LDC, Lewes Town Council, Business Community, Network Rail/Southern (Lewes Rail Station), private operators	TBC	TBC			Ongoing	Reduction of NO_2 (and PM) emission	reduced traffic and congestion at peak time, reduced re-circulation, reduced emissions; and modal shift and sustainable travel behaviour	Higher charges for residents second parking permits and discounted permits for lower emission vehicles; the most recent increase was in 2020.	Will be undertaken as part of parking reviews.
6	Partnership work with bus & train operators (LTP+) a) Reduce	Transport Planning and Infrastructure	Other			ESCC/LDC Bus Operators	TBC	TBC			Implementation	accessibility/ awareness		Ongoing Point c – Lewes	As funding is available.

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
	emissions: calculate emissions from existing bus fleet, route/fleet management (i.e. only cleaner vehicles through AQMA), eco-driving training b) Increase bus and train patronage: through supporting marketing campaign, extend use of subsidised/discounted fares, improve bus connection to key area, bus stop facilities, bus information c) Provision of additional undercover cycle parking at Lewes station					Train Operating Companies								station cycle parking is complete	
7	New pipeline schemes - cycling infrastructure (Local Cycling & Walking Infrastructure Plan)	Transport Planning and Infrastructure	Cycle network		2023	ESCC	ESCC Local Transport Capital Programme	No			Planning	Reduction of NO_2 (and PM) emission		Feasibility	Commissioning delayed due to impact of the Covid 19 Pandemic on operations of the council
8	Address traffic flow & congestion on Newhaven Ring Road	Traffic Management	UTC, Congestion management, traffic reduction				ESCC	No			Implementation	Reduction of NO_2 emission from traffic	Traffic flow/NO_2	Improvements to crossings completed summer 2021 has helped to address flow and congestion	Will be further considered through A259 South Coast Corridor Package
9	Newhaven Ring Road – Pedestrian Crossings	Transport Planning and Infrastructure	Other		July/August 2021		ESCC	No			Completed	Reduction of NO_2 emission		Constructed	
10	A259 South Coast Corridor Package – A259 Corridor Package	Transport Planning and Infrastructure	Other		Apr-22		ESCC	No			Implementation	Reduction of NO_2 emission		Feasibility	
11	Air source heat pumps installed in off-gas social houses	Other	Other		2022	LDC/EBC	TBC	TBC			Completed		Indoor air quality	Completed	
12	Social housing photovoltaics installed	Other	Other		2023	LDC/EBC	TBC	TBC			Implementation	Reduction in emission from traditional fuel	No. of PV installed	Ongoing	Social housing photovoltaics installed, Solar PV surveys completed to facilitate new and replacement PV on social housing
13	Stock condition surveys completed as preliminary to retrofitting	Other	Other		2022	LDC/EBC	TBC	TBC			Completed	N/A	N/A	Completed	
14	Green electricity supply purchased corporately	Other	Other		2022	LDC/EBC	TBC	TBC			Completed	N/A	N/A	Completed	
15	Alternative fuelled refuse vehicles trialled	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging		2022	LDC/EBC	TBC	TBC			Completed	Reduced emissions from vehicles	TBC	Completed	
16	Community action facilitation	Public Information	Other		2022	LDC/EBC	TBC	TBC			Completed	Through public awareness	TBC	Completed	
17	Installation of EV charge points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging		2023	LDC/EBC	TBC	TBC			Planning	Reduced emissions from vehicles	No. of EV chargepoint installed	Ongoing	EV chargepoints being rolled out across car park estate- 84 installs expected by end of March 2023

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
18	Car club partner Co-Wheels to go electric	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging		Ongoing	LDC/EBC	TBC	TBC			Ongoing	Reduced emissions from vehicles	No. of EV	Ongoing	Car club partner Co-Wheels to go partially electric in Lewes town (facilitated by chargepoint rollout), new sites being enabled in Eastbourne, one of which will be electric. Further sites in Seaford being assessed for viability
19	E-cargo bike hire scheme	Promoting Travel Alternatives	Promotion of cycling		Ongoing	LDC/ OVESCo	Energy Saving Trust	No			Ongoing	Reduced emissions from vehicles	No. of bike hired	Ongoing	E-cargo bike hire scheme launched in Lewes and in Newhaven
20	Electrification of small RCV's	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging		Ongoing	LDC/EBC	TBC	TBC			Ongoing	Reduced emissions from vehicles	TBC	Ongoing	Pathway to a zero carbon waste fleet by 2030 has been agreed at both Councils to include initial electrification of small RCV's
21	Renewable diesel	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging		2023	LDC/EBC	TBC	TBC			Ongoing	Reduced emissions from vehicles	TBC	Ongoing	Diesel for fleet vehicles to be replaced with cleaner 'renewable diesel' by April 2023
22	Communiheat project in Barcombe	Other	Other		Ongoing	LDC/EBC/ BuroHappold	TBC	TBC			Ongoing	Reduced emissions from traditional fuel	TBC	Ongoing	Communiheat project in Barcombe - aims to plan for electrification of an off-gas rural villageA6:P27, in conjunction with BuroHappold consultants

2.1.2 Progress and Impact of Measures to address Air Quality in Eastbourne Borough Council

EBC has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 18 measures are included within Table 2.2, with the type of measure and the progress EBC have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

Key completed measures are:

- Eastbourne Town Centre Improvement scheme Phase 1;
- Air source heat pumps installed in off-gas social houses to improve indoor air quality;
- Social housing photovoltaics installed;
- Stock condition surveys completed as preliminary to retrofitting;
- Green electricity supply purchased corporately;
- Alternative fuelled refuse vehicles trialled;
- Community action facilitation;
- Tree planting and re-wilding.

EBC expects the following measures to be completed over the course of the next reporting year:

- EV charge points being rolled out across car park estate- 84 installs expected by end of March 2023;
- Diesel for fleet vehicles to be replaced with cleaner ‘renewable diesel’ by April 2023.

EBC worked to implement these measures in partnership with the following stakeholders during 2021:

- ESCC;
- Wealden District Council (WDC).

Table 2.3 – Progress on Measures to Improve Air Quality in Eastbourne Borough Council

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	Hailsham/Polegate/Eastbourne Sustainable Transport Corridor PHASE 1	Transport Planning and Infrastructure	Other		2023/24 earliest	ESCC, EBC,WDC	ESCC Local Growth Funding	No			Planning	Reduction of NO_2 (and PM) emission		Detailed design	Delivery delayed due to impact of the Covid 19 Pandemic on operations of the council and need to rework detailed design to address drainage issues
2	Hailsham/Polegate/Eastbourne Sustainable Transport Corridor PHASE 2 Victoria Drive bus lane	Transport Planning and Infrastructure	Other		Completion within 4 years	ESCC, EBC,WDC	Local Growth Funding/Development Contributions/DfT Capability Funding/Other national funding	No			Planning	Reduction of NO_2 (and PM) emission		Detailed design	
3	Hailsham/Polegate/Eastbourne Sustainable Transport Corridor PHASE 3 Ersham Road roundabout, Hailsham	Transport Planning and Infrastructure	Other		Completion within 2/3 years	ESCC, EBC,WDC	CIL	No			Planning	Reduction of NO_2 (and PM) emission		Feasibility design completed Consultation undertaken in May/June 2022. LMTE report on next steps Oct 22 Village Green de-designated to enable roundabout to be delivered	Various other junction improvement on the A22 corridor around Hailsham will mean construction will need to be fitted into that wider delivery programme
4	Hailsham/Polegate/Eastbourne Sustainable Transport Corridor PHASE 4 A2021 Kings Drive/Rodmill Roundabout	Transport Planning and Infrastructure	Other		Completion – within 3 – 4 years	ESCC, EBC	Bus Service Improvement Plan funding	No			Planning	Reduction of NO_2 (and PM) emission		Feasibility	Need to reallocate road space may cause local opposition Short timescales for design and delivery
5	Hailsham/Polegate/Eastbourne Sustainable Transport Corridor PHASE 5 – Rodmill roundabout to town centre	Transport Planning and Infrastructure	Other		Completion – within 3 -4 years	ESCC, EBC,WDC	Development Contributions/Bus Service Improvement Plan funding	No			Planning	Reduction of NO_2 (and PM) emission		Feasibility	Need to reallocate roadspace may cause local opposition Short timescales for design and delivery
6	Eastbourne Town Centre Improvement scheme Phase 1	Transport Planning and Infrastructure	Other		March 2021	ESCC, EBC	ESCC Local Growth Funding	No			Completed	Reduction of NO_2 (and PM) emission		Constructed	
7	Eastbourne town centre improvement scheme Phase 2a	Transport Planning and Infrastructure	Other		mid 2024	ESCC, EBC	ESCC Local Growth Funding, ESCC	No			Planning	Reduction of NO_2 (and PM) emission		Detailed design	
8	Eastbourne town centre improvement scheme Phase 2b	Transport Planning and Infrastructure	Other		March 2025	ESCC, EBC	EBC Levelling Up Fund	No			Planning	Reduction of NO_2 (and PM) emission			Public consultation still be undertaken
9	A22/A2290 MRN Corridor Study (Golden Jubilee Way to Seaside)	Transport Planning and Infrastructure	Other		Unknown	ESCC	Major Road Network Funding	No			Planning	N/A		Construction to commence in 2023	
10	Eastbourne Walking and Cycle Network - Horsey Way Phase 1B (Cavendish Place to Ringwood Road)	Transport Planning and Infrastructure	Cycle network		March 2024	ESCC	ESCC Local Growth Funding	No			Planning	Reduction of NO_2 (and PM) emission		Detailed design	TRO consultation
11	Eastbourne Walking and Cycle Network - Langney Rise cycle route	Transport Planning and Infrastructure	Cycle network		December 2024	ESCC	ESCC Local Growth Funding	No			Planning	Reduction of NO_2 (and PM) emission	Increased use of sustainable transport modes	Consultation undertaken in summer 2021 & Strategic Outline business case developed	
12	Eastbourne Walking and Cycle Network- Willingdon Drove cycle route	Transport Planning and Infrastructure	Cycle network		March 2023	ESCC	ESCC Local Growth Funding	No			Planning	Reduction of NO_2 (and PM) emission	Increased use of sustainable transport modes	Consultation completed 2021.Detailed Design being undertaken in 2022.	

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
														Construction to commence 2023.	
13	Eastbourne / South Wealden cycling and walking improvements - Stone Cross Royal Parade via Langney	Transport Planning and Infrastructure	Cycle network		Unknown	ESCC	ESCC Local Growth Funding	No			Planning	Reduction of NO_2 (and PM) emission	Increased use of sustainable transport modes	Consultation completed 2021.Detailed Design being undertaken in 2022. Construction to commence 2023.	Securing funding
14	Eastbourne / South Wealden cycling and walking improvements-Eastbourne Cycle Parking	Transport Planning and Infrastructure	Cycle network		April 2023	ESCC	ESCC Local Growth Funding	No			Planning	Reduction of NO_2 (and PM) emission	Increased use of sustainable transport modes	Consultation completed 2021.Detailed Design being undertaken in 2022. Construction to commence 2023.	Delivery delayed due to impact of the Covid 19 Pandemic on operations of the council
15	Eastbourne / South Wealden cycling and walking improvements - Eastbourne town centre cycle routes	Transport Planning and Infrastructure	Cycle network		December 2023	ESCC	ESCC Local Growth Funding	No			Planning	Reduction of NO_2 (and PM) emission	Increased use of sustainable transport modes	Consultation completed 2021.Detailed Design being undertaken in 2022.	Traffic Regulation Orders (TROs) need to be in place ahead of construction
16	Eastbourne / South Wealden cycling and walking improvements- Eastbourne Town Centre Wayfinding	Transport Planning and Infrastructure	Cycle network		March 2023	EBC	ESCC Local Growth Funding	No			Planning	Reduction of NO_2 (and PM) emission	Increased use of sustainable transport modes	Consultation completed in 2022	Delivery delayed due to impact of the Covid 19 Pandemic on operations of the council
17	Eastbourne seafront cycle feasibility study	Transport Planning and Infrastructure	Cycle network		March 2024	ESCC	ESCC Local Transport Capital Programme	No			Planning	N/A	N/A	Consultation completed 2021.Detailed Design being undertaken in 2022. Construction to commence late 2022.	Traffic Regulation Orders (TROs) need to be in place ahead of construction
18	New pipeline schemes - cycling infrastructure (Local Cycling & Walking Infrastructure Plan)	Transport Planning and Infrastructure	Cycle network		March 2024	ESCC	ESCC Local Transport Capital Programme	No			Construction	Reduction of NO_2 (and PM) emission	Increased use of sustainable transport modes	Construction	

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), 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.

Lewes District Council

Although LDC does not directly measure $PM_{2.5}$ at this stage, by taking other various measures such as the schools anti-idling campaign and other actions/plans mentioned in Section 2 and by reviewing, remodelling and implementing possible new initiatives under the Lewes Air Quality Action Plan – these would only benefit the reduction in pollutants generally, including $PM_{2.5}$.

Plans are also in place for the addition of $PM_{2.5}$ monitors at both of LDC's Automatic Monitoring Stations. It is expected that both locations will monitor $PM_{2.5}$ in 2022, helping the Council to gain a clearer understanding of local concentrations and the effects of measures to improve them.

In 2021, Lewes District Council monitored PM_{10} at the new Newhaven automatic monitor (LS7), which can be used in the interim to estimate $PM_{2.5}$ concentrations. In accordance with LAQM.TG(22), $PM_{2.5}$ concentrations can be estimated from PM_{10} monitoring using either a local PM_{Coarse} (the fraction of PM between 10µm and 2.5µm, i.e. PM_{10} minus $PM_{2.5}$), or a nationally derived correction PM_{Coarse} which is updated annually. As there is no local monitoring for $PM_{2.5}$, the nationally derived correction PM_{Coarse} of 5.7 was applied to the PM_{10} concentration (23.8 µg/m^3) at the automatic monitoring site Newhaven. The estimated $PM_{2.5}$ concentration in 2021 at the automatic monitoring site Newhaven was 18.1 µg/m^3 which is below the annual $PM_{2.5}$ objective of 20 µg/m^3.

The Public Health Outcomes Framework data tool[7] compiled by Public Health England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority

[7] Public Health Outcomes Framework, Public Health England. data tool available online at https://fingertips.phe.org.uk/search/air%20quality#page/1/gid/1/pat/6/ati/202/are/E10000011/iid/30101/age/230/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1/page-options/ovw-do-0

scale. The 2020 fraction of mortality attributable to $PM_{2.5}$ pollution across England is 5.6%, and the fraction within HPBC is below the national average at 5.4%, as well as the South East regional average of 6.0%.

LAQM.TG(16) Table A.1 Action toolbox presents a list of measures that can be implemented to help reduce concentrations of $PM_{2.5}$. Where required LDC will review any proposed actions to be implemented with the County Council Public Health team to consider the potential impact of the actions and whether any further action is required.

Eastbourne Borough Council

Within EBC, Site EB3 Holly Place has a continuous automatic monitor measuring $PM_{2.5}$. Data capture at this site during 2021 was 99.8%, giving an annual mean of 8.4 µg/m^3. This figure is lower than last years (9 µg/m^3).

The Public Health Outcomes Framework data tool[7] compiled by Public Health England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale. The 2020 fraction of mortality attributable to $PM_{2.5}$ pollution across England is 5.6%, and the fraction within EBC is slightly higher than the national average at 5.7%, but below the South East regional average of 6.0%.

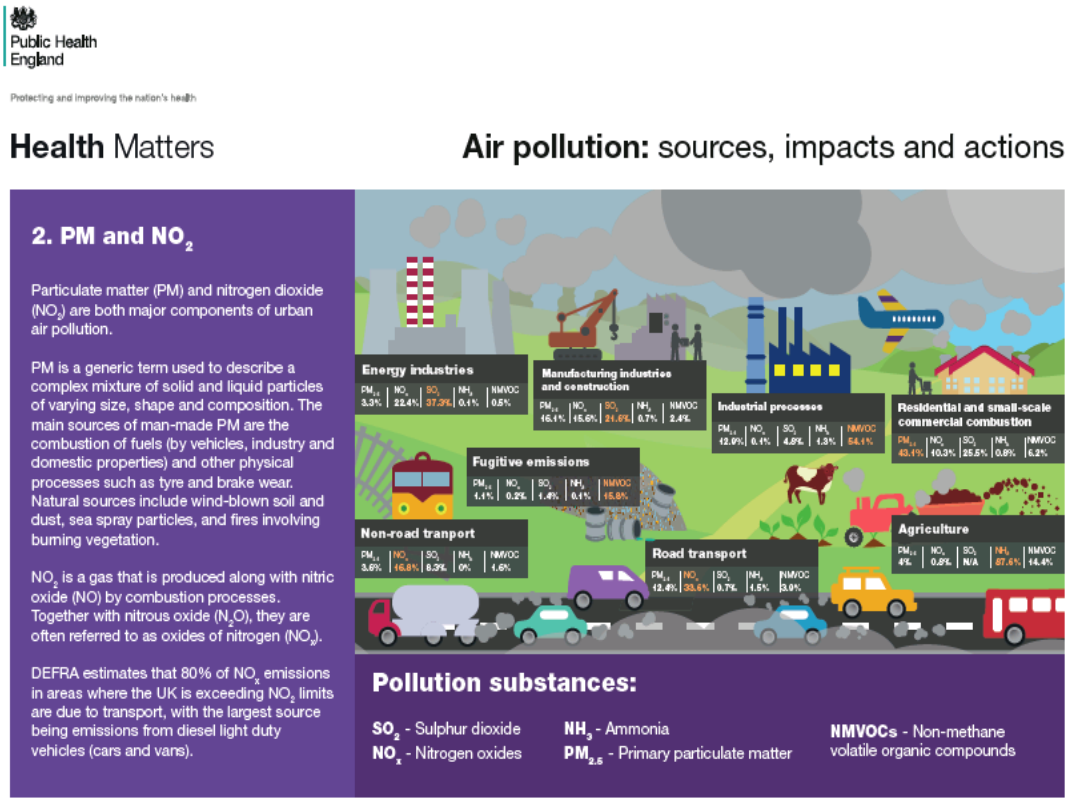
In DEFRA's recently published Clean Air Strategy 2019 the government want to cut $PM_{2.5}$ levels to those recommended by the World Health Organisation:

'We will progressively cut public exposure to particulate matter pollution as suggested by the World Health Organisation. We will halve the population living in areas with concentrations of fine particulate matter above WHO guideline levels (10 µg/m^3) by 2025.'

Public Health England published a very informative 'Health Matters'[8] of which an example page is reproduced below. The document demonstrates the causes and effects of pollutants and links the problems of air pollution and health. This connects well with the schools anti-idling campaign the council are running, anti-idling signage installed in a few heavily trafficked/problematic areas and the new Clean Burn Sussex education campaign which has been recently undertaken. Results for this will be reported next year.

Figure 2.1 Air Pollution: Sources, impacts and actions

[8] Health Matters: air pollution, Public Health England, published 14 November 2018. Available at: https://www.gov.uk/government/publications/health-matters-air-pollution



Whilst the measures stated in this section are not necessarily aimed directly at one pollutant such as $PM_{2.5}$, they will indirectly aid reductions in all pollutant levels, including particulates such as $PM_{2.5}$ by encouraging more people to walk and cycle and make use of public transport rather than private vehicles.

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

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

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Lewes District Council undertook automatic (continuous) monitoring at two sites during 2021. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The Sussex-Air monitoring data page presents automatic monitoring results for LDC.

Eastbourne Borough Council undertook automatic (continuous) monitoring at two sites during 2021. Table A.2 in Appendix A shows the details of the automatic monitoring sites. The Sussex-Air monitoring data page presents automatic monitoring results for EDC.

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

LDC undertook non- automatic (i.e. passive) monitoring of NO_2 at 50 sites during 2021. Table A.3 in Appendix A presents the details of the non-automatic sites.

EBC undertook non- automatic (i.e. passive) monitoring of NO_2 at 21 sites during 2021. Table A.4 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 any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.1.3 Nitrogen Dioxide (NO_2)

Lewes District Council

Table A.5 and Table A.7 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations in LDC for the past five years with the air quality objective 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 (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes in LDC, the full 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.9 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations in LDC for the past five years with the air quality objective of 200 µg/m^3, not to be exceeded more than 18 times per year.

Figures A.1 – A.4 show trends in nitrogen dioxide measured by diffusion tubes from 2017 to 2021. Each figure illustrates the concentration for groups of sites with data readings.

Newhaven AQMA

Figure A.1 shows the diffusion tubes within Newhaven AQMA. DT3 (16 Southway) recorded the highest NO_2 concentration of 36.9 µg/m^3 in 2021, which is within 10% of the annual mean AQS. It is clear that two sites, DT 3 and DT 40 (The Old Chapel) have illustrated consistent exceedances over the pre-Covid period from 2017 to 2019. The Old Chapel is located on a hill, near a junction and will receive ‘launch’ exhaust from vehicles that have stopped and then started on the hill at the nearby pedestrian crossing. 16 Southway is at the apex of the hill, where vehicles queue and there is a nearby bus stop.

Table A.9 shows that there was no recorded 1-hour NO2 concentration greater than 200 µg/m^3.

The concentrations recorded at all sites (7 sites) within Newhaven AQMA increased in 2021 and were all below the annual mean objective of 40 µg/m^3. The increased trend of NO_2 concentrations is likely due to the increased traffic emission from the recovered traffic activities from the lockdowns during Covid-19 pandemic. Excluding the year 2020, which is likely to be considered an anomaly, this the first year that there is no annual exceedance within Newhaven AQMA.

Lewes AQMA

Figure A.2 shows the diffusion tubes within Lewes AQMA. DT12 (Fisher St East) recorded the highest NO2 concentration of 30.0 µg/m^3 within Lewes AQMA. Fisher Street diffusion tubes have shown consistently lower concentrations towards the middle and western end of this street where a change of priority in traffic was implemented as part of recommendations made in the Lewes AQAP 2009.

Table A.9 shows that there was no recorded 1-hour NO2 concentration greater than 200 µg/m^3.

The concentrations recorded at all sites (8 sites) within Lewes AQMA in 2021 were all below the annual mean objective of 40 µg/m^3. Except for DT13 (Market Street), concentrations at all other sites increased from 2020 to 2021. The increase trend of NO_2 concentrations is likely due to the increased traffic emission from the recovered traffic activities from the lockdowns during Covid-19 pandemic. Excluding the year 2020, which is likely to be considered an aberrational year in the future, this the first year that there is no annual exceedance within Lewes AQMA.

Outside of AQMAs

Figure A.3 and Figure A.4 show the diffusion tubes outside of any AQMAs in LDC. During 2021, all sites outside of AQMA in LDC recorded NO_2 concentrations below the annual mean AQS of 40 µg/m^3. DT21 (204 High Street) recorded the highest NO_2 concentration of 33.0 µg/m^3 outside of any AQMAs in LDC. School Hill sits on a steep incline with a bus stop nearby and just above the area of site DT 21 (204 High St). When this road is busy, there is fume from vehicle ‘launch’ and often idling when waiting in traffic.

Except for DT45 (Kingston Primary School), NO_2 concentrations at all other sites outside of AQMA in LDC increased from 2020 to 2021. This is likely due to the recovery of traffic activities from impacts of lockdowns as a response to the Covid-19 pandemic and thus increasing traffic emissions during 2021.

Eastbourne District Council

Table A.6 and Table A.8 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations in EBC for the past five years with the air quality objective 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 (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes in EBC, the full 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.2 includes distance corrected values, only where relevant.

Table A.6 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations in EBC for the past five years with the air quality objective of 200 µg/m^3, not to be exceeded more than 18 times per year.

Figure A.5 and Figure A.6 show all the diffusion tubes within EBC. Results show that no monitoring location has been in exceedance of the annual mean objective of 40µg/m^3 in the last 5 years. DT14 (109 Whitley Road) recorded the highest concentrations of 26.4 µg/m^3. Except for DT14, concentrations at all other sites increased from 2020 to 2021. The increase trend of NO_2 concentrations is likely due to the increased traffic emission from the recovered traffic activities from lockdowns during Covid-19 pandemic.

3.1.4 Particulate Matter (PM_{10})

Lewes District Council

Table A.11 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations within LDC for the past five years with the air quality objective of 40µg/m^3.

Table A.13 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations within LDC for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

LS7 on London Road (Newhaven) monitored PM_{10} with a data capture of 84.9% of the year. The annual concentration recorded at LS7 was 23.8µg/m^3, well below the annual mean AQS, with 5 recorded exceedance of the 24-hour mean 50µg/m^3 AQS.

Eastbourne District Council

Table A.12 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations within EBC for the past five years with the air quality objective of 40µg/m^3.

Table A.14 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations within EBC for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

In 2021, PM_{10} data was collected at both automatic monitors EB1 and EB3, with data capture rates of 87.8% and 99.8%. In 2021, the annual concentrations recorded were 17.2µg/m^3 and 13.1µg/m^3, at EB1 and EB3, respectively, well below the annual mean AQSs, with just 2 recorded exceedance of the 24-hour mean 50µg/m^3 AQS at EB1 and 1 recorded exceedance of the 24-hour mean AQS at EB3.

3.1.5 Particulate Matter ($PM_{2.5}$)

Table A.15 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

In 2021, $PM_{2.5}$ data was collected at EB3 Holly Place, with data capture rates of 99.8%. In 2020, the annual concentrations recorded was 8.4 µg/m^3, well below the annual mean AQSs of 20 µg/m^3.

3.1.6 Ozone (O_3)

Ground level ozone (O_3) is normally formed when other pollutants including nitrous oxides react in sunlight to form ozone (sometimes leading to a haze/smog); ozone levels are highly dependent on the weather and warm sunny periods can cause a sharp increase in mean levels. Ozone concentrations in the summer months tend to be higher in the south-east because it is closer to European pollution sources and tends to receive more sunlight than other areas of the country.

Similar to the observation in 2020, due to the reduction in NO_X emissions after the COVID-19 pandemic, ozone concentrations were still uncharacteristically high throughout 2021. Such trends were identified across much of the South-East, and were also seen at LS7 in LDC, with a total of 16 exceedances of the O_3 objective (100µg/m3 as an 8 hour mean, not to be exceeded more than 10 times a year) in 2021. At site EB1 in EBC, there were a total of 16 exceedances of the O_3 8-hour mean objective.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites in Lewes District Council

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)
LS5	Lewes Town West Street	Roadside	541541	110246	NO_2;	YES (Lewes AQMA)	Chemiluminescent	5	2.5	2
LS7	Lewes Road, Newhaven	Roadside	544366	101367	NO_2; PM_{10}; O_3	Yes (Newhaven AQMA)	Chemiluminescent, BAM Beta-attenuation, UV Absorption	3.3	2.1	1.9

Notes:

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

(2) N/A if not applicable

Table A.2 – Details of Automatic Monitoring Sites in Eastbourne Borough Council

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)
EB1	EB1 Devonshire Park	Urban Background	561150	98341	NO2, PM10, O3	NO	Chemiluminescent BAM Beta-attenuation; UV absorption	N/A	5	3
EB3	EB3 Holly Place	Urban Background	560085	103118	NO2, PM10, PM2.5	NO	Chemiluminescent FDMS	N/A	N/A	4

Notes:

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

(2) N/A if not applicable

Table A.3 – Details of Non-Automatic Monitoring Sites in Lewes District Council

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)
1	Seaford- Sutton Pk Rd/Warwick Ave	Roadside	548420	99223	NO2	No	4.5	2.8	No	2.8
2	LDC 10 - 9 Southway – Newhaven	Kerbside	544354	101388	NO2	Yes - Newhaven AQMA	5.0	1.0	No	2.5
3	LDC - 16 Southway – Newhaven	Kerbside	544414	101273	NO2	Yes - Newhaven AQMA	2.5	1.0	No	2.5
4	LDC 11 - Lewes Rd – Newhaven	Roadside	544273	101532	NO2	No	4.0	2.0	No	2.5
5	Telscombe – South Coast Rd/Central Ave	Roadside	540063	101263	NO2	No	6.0	1.8	No	2.6
6	LDC 8 - 8 Bay Vue Rd - Newhaven	Urban Background	544521	101089	NO2	No	3.0	N/A	No	2.5
7	LDC 25 - Westgate Chapel	Roadside	541285	109969	NO2	No	2.2	1.9	No	2.3
8	LDC 26 - Mount Pleasant/Sun Street	Roadside	541481	110277	NO2	Yes- Lewes AQMA	0.5	2.0	No	2.5
9	LDC 27 - West St Police Station	Roadside	541541	110246	NO2	Yes- Lewes AQMA	5.0	2.6	No	2.3
10	LDC 18 - Fisher Street	Kerbside	541505	110236	NO2	Yes- Lewes AQMA	0.0	1.4	No	2.5
11	LDC 36 - Fisher St West	Kerbside	541519	110167	NO2	Yes- Lewes AQMA	N/A	1.0	No	2.2
12	LDC 1- Fisher St East	Kerbside	541540	110130	NO2	Yes- Lewes AQMA	N/A	1.0	No	3.5
13	LDC 29 - Market St	Kerbside	541598	110169	NO2	Yes- Lewes AQMA	1.5	1.0	No	2.5
14	Peacehaven – o/s 223 South Coast Rd	Kerbside	540969	100974	NO2	No	2.9	1.4	No	2.7
15	LDC 31 - North St	Kerbside	541646	110370	NO2	No	5.0	1.0	No	3.0

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)
16	LDC 33 - Cuilfail Tunnel/Thomas St	Roadside	542178	110454	NO2	No	8.0	5.0	No	3.0
17	LDC 4 - 159 Malling St – Lewes	Roadside	542315	110733	NO2	No	3.0	2.0	No	3.5
18	LDC 6 East Street	Roadside	541669	110278	NO2	No	0.0	3.5	No	2.5
19	LDC 30 - Little East St	Roadside	541726	110335	NO2	No	1.0	2.7	No	2.5
20	LDC 45 - School Hill	Kerbside	541755	110206	NO2	No	2.5	1.0	No	2.5
21	LDC 34 - 204 High St (School Hill)	Roadside	541684	110181	NO2	No	0.0	2.7	No	2.6
22	LDC 35 - Walmer Lane/Lansdowne Terrace	Roadside	541709	109990	NO2	No	1.8	3.0	No	2.4
23	LDC 23 - Station St/Lansdowne Terrace	Roadside	541615	109968	NO2	Yes- Lewes AQMA	N/A	1.8	No	2.5
24	LDC 14 - Station St - Lewes	Roadside	541603	110001	NO2	Yes- Lewes AQMA	2.0	1.9	No	3.0
25	LS6 - Denton Community Centre	Urban Background	545142	102433	NO2	No	N/A	N/A	No	2.0
26	Peacehaven – South Coast Rd/Steyning Ave	Roadside	541231	100957	NO2	No	10.0	3.0	No	2.7
27	LDC 46 - No Entry Sign Adj. To 1 Abinger Place	Roadside	541438	110293	NO2	No	4.0	1.5	No	2.0
28	LDC 47 - 8 Abinger Place	Roadside	541430	110328	NO2	No	1.2	1.5	No	2.5
29	Peacehaven – o/s 53 South Coast Rd	Roadside	542168	100675	NO2	No	10.0	3.0	No	2.7
30	ESCC 20 - A259 SFD (nr Chyngton Gardens)	Roadside	550077	99291	NO2	No	10.0	1.5	No	3.0

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)
31	ESCC 23 - Railway Rd – Newhaven	Kerbside	544996	101264	NO2	No	5.0	1.0	No	3.0
32	ESCC 24 - 35 Heighton Crescent - Denton	Urban Background	544908	102704	NO2	No	10.0	N/A	No	1.8
33	ESSCC 2 - Ringmer Village Hall	Roadside	544681	112441	NO2	No	N/A	1.8	No	2.0
34	ESCC 18 - High St – Ditchling	Roadside	532605	115203	NO2	No	5.0	2.0	No	2.5
35	Ditchling High Street 2	Kerbside	532587	115410	NO2	No	1.0	1.0	No	1.8
36	ESCC 22 - Southover High St – Lewes	Roadside	541032	109613	NO2	No	1.0	2.0	No	2.1
37	Newhaven - Bridge Pub	Kerbside	544603	101485	NO2	Yes - Newhaven AQMA	N/A	0.5	No	2.0
38	Newhaven- Essex Place	Roadside	544497	101499	NO2	Yes - Newhaven AQMA	5.0	1.2	No	2.0
39	Newhaven - Rathan Court	Roadside	544330	101423	NO2	Yes - Newhaven AQMA	10.0	1.5	No	2.0
40	Newhaven - The Old Chapel	Roadside	544497	101285	NO2	Yes - Newhaven AQMA	3.0	1.5	No	2.5
41	Drove Rd - Newhaven	Roadside	544948	101549	NO2	No	N/A	4.0	No	2.5
42	Kings Gate Road - Falmer Roundabout	Roadside	535187	108928	NO2	No	20.0	2.5	No	1.9
43	A26 South Heighton/nr Hollow	Roadside	544886	102879	NO2	No	12.0	1.0	No	1.0
44	C7 Piddinghoe Rd	Roadside	543431	103022	NO2	No	3.5	1.3	No	1.8
45	O/S Kingston Primary school	Roadside	539543	108284	NO2	No	15.0	2.5	No	1.8

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)
46	Opp Seaford Station - Station Approach	Roadside	548167	99160	NO2	No	2.0	1.5	No	3
47	Plumpton Green/Station Rd, flood sign	Roadside	536441	116231	NO2	No	7.0	1.0	No	2
48	Barcombe High Str o/s old shop	Roadside	542029	115781	NO2	No	3.0	2.5	No	2.5
49	O/S Covers, Cooksbridge	Roadside	540141	113548	NO2	No	0.0	2.0	No	2
50	O/S 64 Brighton Rd	Roadside	544185	101350	NO2	No	2.5	1.5	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.4 – Details of Non-Automatic Monitoring Sites in Eastbourne Borough Council

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)
1	PO Upperton Road	Kerbside	560774	99163	NO2	No	2.0	0.0	No	3.1
2	E/B1 Langney Rd	Kerbside	561458	99116	NO2	No	4.0	0.0	No	2.9
3	SRTS4 Pevensey Rd	Kerbside	561568	99108	NO2	No	3.0	0.0	No	2.7
4	SRTS2 Seaside East	Kerbside	561717	99061	NO2	No	3.0	0.0	No	2.8
5	SRTS1 Seaside West	Kerbside	561621	99004	NO2	No	3.0	0.0	No	2.8
6	SRTS3 Cavendish Place	Kerbside	561737	98948	NO2	No	3.0	0.0	No	2.6
7	61 Royal Parade Princes Park	Kerbside	562692	100149	NO2	No	4.0	0.0	No	2.7
8	53- Seaside (Tesco)	Kerbside	562655	100970	NO2	No	10.0	0.0	No	2.8
9	ESCC102/EB6 Friday St/Larkspur Dr	Kerbside	561885	103847	NO2	No	8.0	1.0	No	2.7
10	26- East Dean Road	Roadside	557829	98190	NO2	No	20.0	3.0	No	2.0
11	6 The Goffs	Roadside	560440	99352	NO2	No	3.0	2.0	No	3.0
12	32 The Avenue	Kerbside	560943	99480	NO2	No	7.0	0.9	No	2.4
13	68 Susans Rd	Kerbside	561354	99279	NO2	No	3.0	0.6	No	2.4
14	109 Whitley Rd	Roadside	561527	99846	NO2	No	6.5	1.5	No	2.5
15	opp 7 Lewes Rd	Roadside	561043	99828	NO2	No	2.0	1.6	No	2.7
16	Lottbridge Drove Tesco	Kerbside	562583	101109	NO2	No	N/A	0.9	No	2.7
17	Mountfield Rd, next to rail crossing	Roadside	560749	102189	NO2	No	5.0	1.6	No	2.6
18	o/s 43 Brassy Ave	Roadside	560505	102196	NO2	No	7.0	1.7	No	2.5
19	Kings Drive/ Weavers Close	Roadside	560134	100561	NO2	No	5.5	2.9	No	2.8
20	o/s/ 181 Kings Drive	Roadside	559894	101035	NO2	No	11.0	0.9	No	2.9
21	114 Willingdon Rd	Roadside	559730	100251	NO2	No	10.0	1.5	No	2.4

Notes:

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

(2) N/A if not applicable.

Table A.5 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3) in Lewes District Council

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
LS5	541541	110246	Roadside	99.9	99.9	21	19	19	16	14.7
LS7	544366	101367	Roadside	87.8	87.8	-	-	-	21	23.6

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

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

Notes:

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

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

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.6 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3) in Eastbourne Borough Council

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
EB1	561150	98341	Urban Background	97.4	97.4	16	14	15.5	11	13.1
EB3	560085	103118	Urban Background	90.5	90.5	13	12	11	9	9.4

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

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

Notes:

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

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

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.7 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3) in Lewes District Council

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
1	548420	99223	Roadside	100.0	100.0	-	24.5	25.2	18.5	20.7
2	544354	101388	Kerbside	100.0	100.0	33.6	37.2	33.4	24.2	28.5
3	544414	101273	Kerbside	92.3	92.3	**47.6**	39.9	**40.7**	31.6	36.9
4	544273	101532	Roadside	100.0	100.0	31.5	28.1	30.7	22.0	24.3
5	540063	101263	Roadside	100.0	100.0	25.6	23.0	23.4	16.6	18.0
6	544521	101089	Urban Background	100.0	100.0	18.0	18.7	14.8	12.4	15.5
7	541285	109969	Roadside	92.3	92.3	29.5	28.7	29.9	19.9	21.0
8	541481	110277	Roadside	90.4	90.4	24.9	22.3	23.7	14.9	18.0
9	541541	110246	Roadside	90.4	90.4	22.3	20.8	21.0	14.4	16.2
10	541505	110236	Kerbside	90.4	90.4	23.7	23.4	24.1	15.5	16.8
11	541519	110167	Kerbside	100.0	100.0	31.0	32.4	32.0	20.6	24.1
12	541540	110130	Kerbside	100.0	100.0	**43.0**	**42.2**	**41.9**	27.6	30.0
13	541598	110169	Kerbside	92.3	92.3	39.3	36.0	36.8	27.9	26.5
14	540969	100974	Kerbside	100.0	100.0	32.5	28.8	30.5	21.3	23.3
15	541646	110370	Kerbside	100.0	100.0	23.0	21.9	21.4	15.1	15.2
16	542178	110454	Roadside	100.0	100.0	31.0	29.5	30.4	22.3	24.9
17	542315	110733	Roadside	100.0	100.0	30.8	30.5	29.8	20.9	22.3
18	541669	110278	Roadside	100.0	100.0	25.9	24.1	23.2	15.3	17.0
19	541726	110335	Roadside	100.0	100.0	23.3	22.1	21.4	14.1	15.5
20	541755	110206	Kerbside	92.3	92.3	38.9	37.6	38.5	27.6	29.4
21	541684	110181	Roadside	100.0	100.0	**45.6**	**41.4**	**43.6**	31.6	33.0
22	541709	109990	Roadside	90.4	90.4	20.7	22.0	20.4	13.5	14.8
23	541615	109968	Roadside	92.3	92.3	27.4	25.8	24.7	16.1	19.1
24	541603	110001	Roadside	100.0	100.0	35.9	34.4	33.7	22.2	24.4
25	545142	102433	Urban Background	82.7	82.7	14.1	11.6	11.2	8.2	9.1
26	541231	100957	Roadside	73.1	73.1	25.4	23.2	22.8	16.9	17.4
27	541438	110293	Roadside	100.0	100.0	29.7	29.6	30.7	21.4	21.7
28	541430	110328	Roadside	100	42.3	29.0	28.3	29.4	19.2	21.2
29	542168	100675	Roadside	100.0	100.0	21.4	21.9	19.5	14.5	16.9
30	550077	99291	Roadside	100.0	100.0	33.5	30.2	29.0	22.5	26.7
31	544996	101264	Kerbside	100.0	100.0	21.5	22.0	20.1	15.4	18.6
32	544908	102704	Urban Background	100.0	100.0	17.0	14.4	13.8	10.5	11.7
33	544681	112441	Roadside	92.3	92.3	22.5	21.8	20.9	14.7	17.2
34	532605	115203	Roadside	100.0	100.0	27.9	29.7	26.9	18.2	20.8
35	532587	115410	Kerbside	100.0	100.0	23.6	23.1	21.4	13.8	16.2

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 2021 (%) (2)	2017	2018	2019	2020	2021
36	541032	109613	Roadside	90.4	90.4	31.7	31.9	32.2	20.3	22.8
37	544603	101485	Kerbside	92.3	92.3	39.3	38.7	39.2	28.7	28.8
38	544497	101499	Roadside	100.0	100.0	31.5	31.2	30.7	21.5	24.0
39	544330	101423	Roadside	100.0	100.0	23.4	28.4	27.1	19.9	21.8
40	544497	101285	Roadside	82.7	82.7	**44.7**	**44.1**	**44.6**	34.1	35.8
41	544948	101549	Roadside	67.3	67.3	-	27.0	23.6	19.1	20.1
42	535187	108928	Roadside	100.0	100.0	-	-	**57.0**	25.6	30.8
43	544886	102879	Roadside	92.3	92.3	-	-	29.5	18.3	20.1
44	543431	103022	Roadside	84.6	84.6	-	-	24.3	15.8	17.1
45	539543	108284	Roadside	90.4	90.4	-	-	21.1	16.9	13.5
46	548167	99160	Roadside	100.0	100.0	-	-	29.5	17.9	21.6
47	536441	116231	Roadside	90.4	90.4	-	-	13.9	8.5	11.8
48	542029	115781	Roadside	100.0	100.0	-	-	16.6	10.7	13.8
49	540141	113548	Roadside	100.0	100.0	-	-	18.5	10.7	13.1
50	544185	101350	Roadside	100.0	100.0	-	-	**42.6**	25.8	29.1

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

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

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

Notes:

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

Exceedances of the NO_2 annual mean 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**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.8 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3) in Eastbourne Borough Council

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
1	560774	99163	Kerbside	100.0	100.0	16.0	14.0	15.5	19.8	22.5
2	561458	99116	Kerbside	100.0	100.0	13.0	12.0	11.7	14.2	16.9
3	561568	99108	Kerbside	100.0	100.0	29.5	-	26.0	19.1	19.3
4	561717	99061	Kerbside	100.0	100.0	21.1	-	21.6	22.9	23.9
5	561621	99004	Kerbside	90.4	90.4	24.9	-	24.7	22.8	23.9
6	561737	98948	Kerbside	100.0	100.0	31.4	-	30.1	15.5	17.8
7	562692	100149	Kerbside	92.3	92.3	27.2	-	31.9	16.6	20.9
8	562655	100970	Kerbside	100.0	100.0	26.9	-	24.2	22.4	25.9
9	561885	103847	Kerbside	92.3	92.3	25.4	-	23.8	15.0	17.5
10	557829	98190	Roadside	100.0	100.0	24.0	-	21.5	12.5	13.8
11	560440	99352	Roadside	84.6	84.6	10.8	-	10.4	17.5	19.6
12	560943	99480	Kerbside	100.0	100.0	20.4	-	18.5	17.1	18.7
13	561354	99279	Kerbside	100.0	100.0	-	-	25.9	17.3	18.2
14	561527	99846	Roadside	84.6	84.6	-	-	27.3	26.8	26.4
15	561043	99828	Roadside	100.0	100.0	-	-	25.6	17.3	18.4
16	562583	101109	Kerbside	100.0	100.0	-	-	39.3	18.9	22.2
17	560749	102189	Roadside	100.0	100.0	-	-	27.4	18.0	21.6
18	560505	102196	Roadside	100.0	100.0	-	-	31.8	16.2	17.6
19	560134	100561	Roadside	100.0	100.0	-	-	30.8	12.9	14.4
20	559894	101035	Roadside	100.0	100.0	-	-	25.1	18.0	20.9
21	559730	100251	Roadside	100.0	100.0	-	-	20.8	21.0	24.8

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

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

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

Notes:

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

Exceedances of the NO_2 annual mean 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**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations Within Newhaven AQMA in Lewes District Council

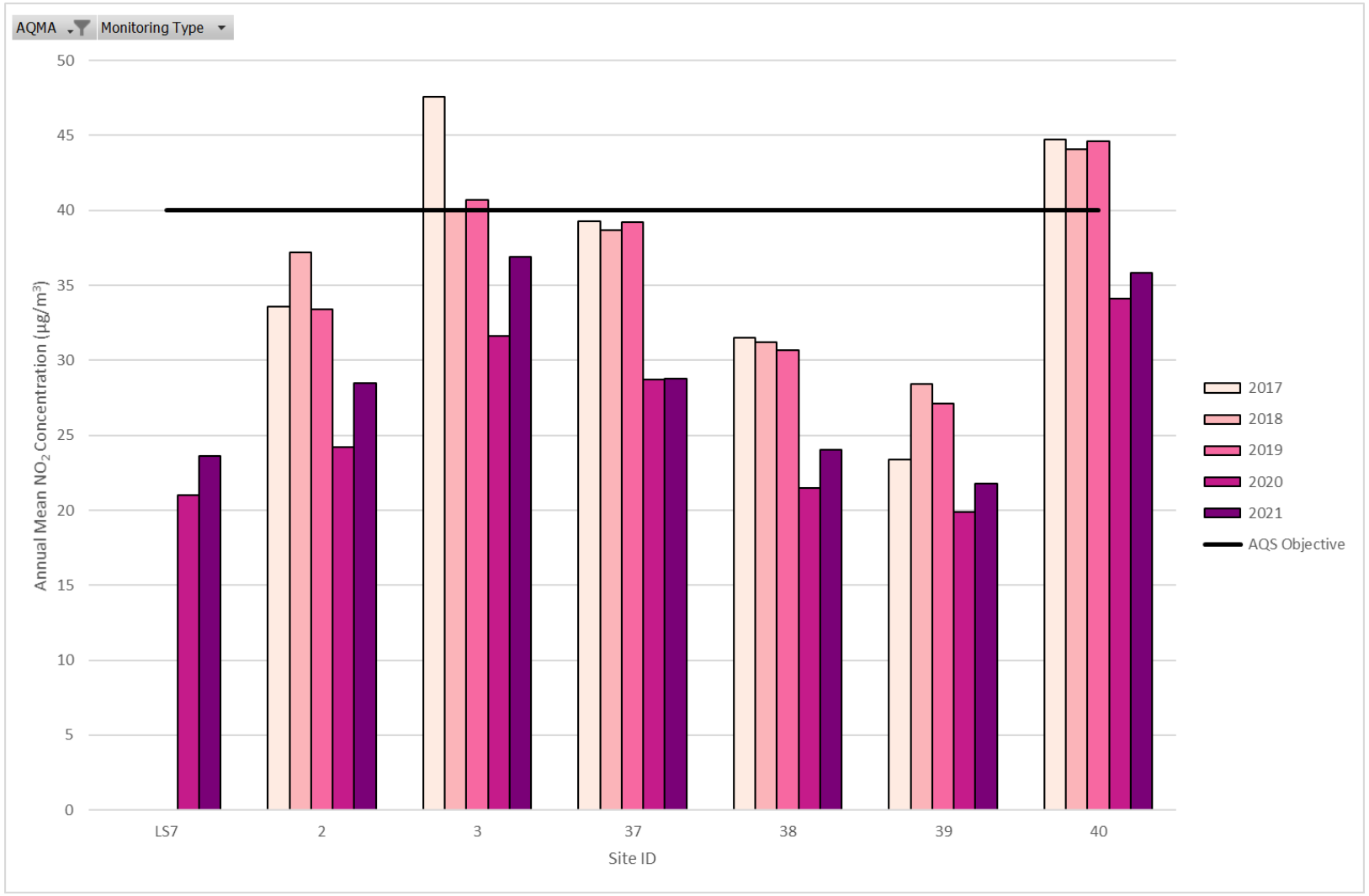


Figure A.2 – Trends in Annual Mean NO_2 Concentrations Within Lewes AQMA in Lewes District Council

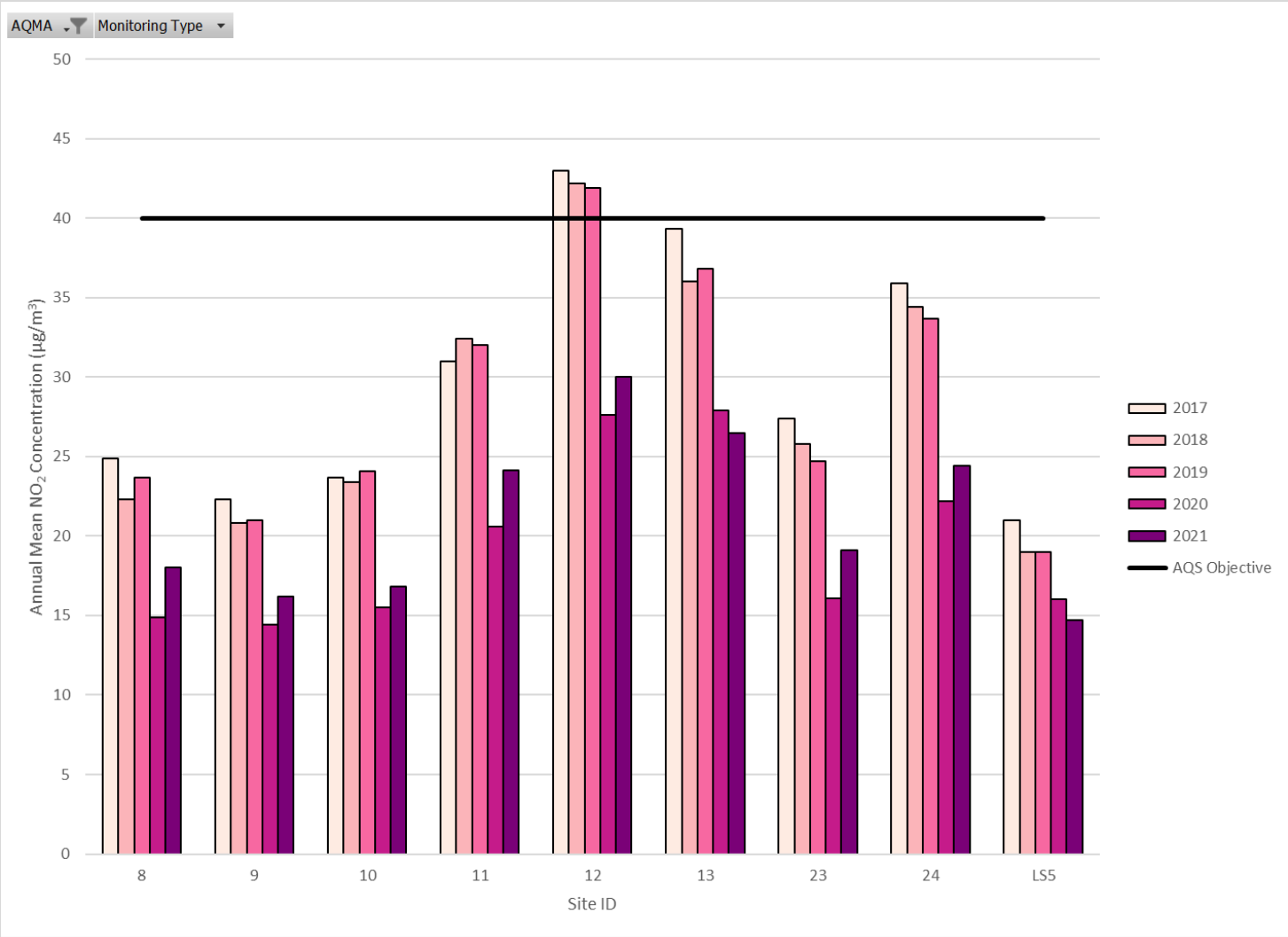


Figure A.3 – Trends in Annual Mean NO_2 Concentrations Outside of AQMAs in Lewes District Council: Part 1

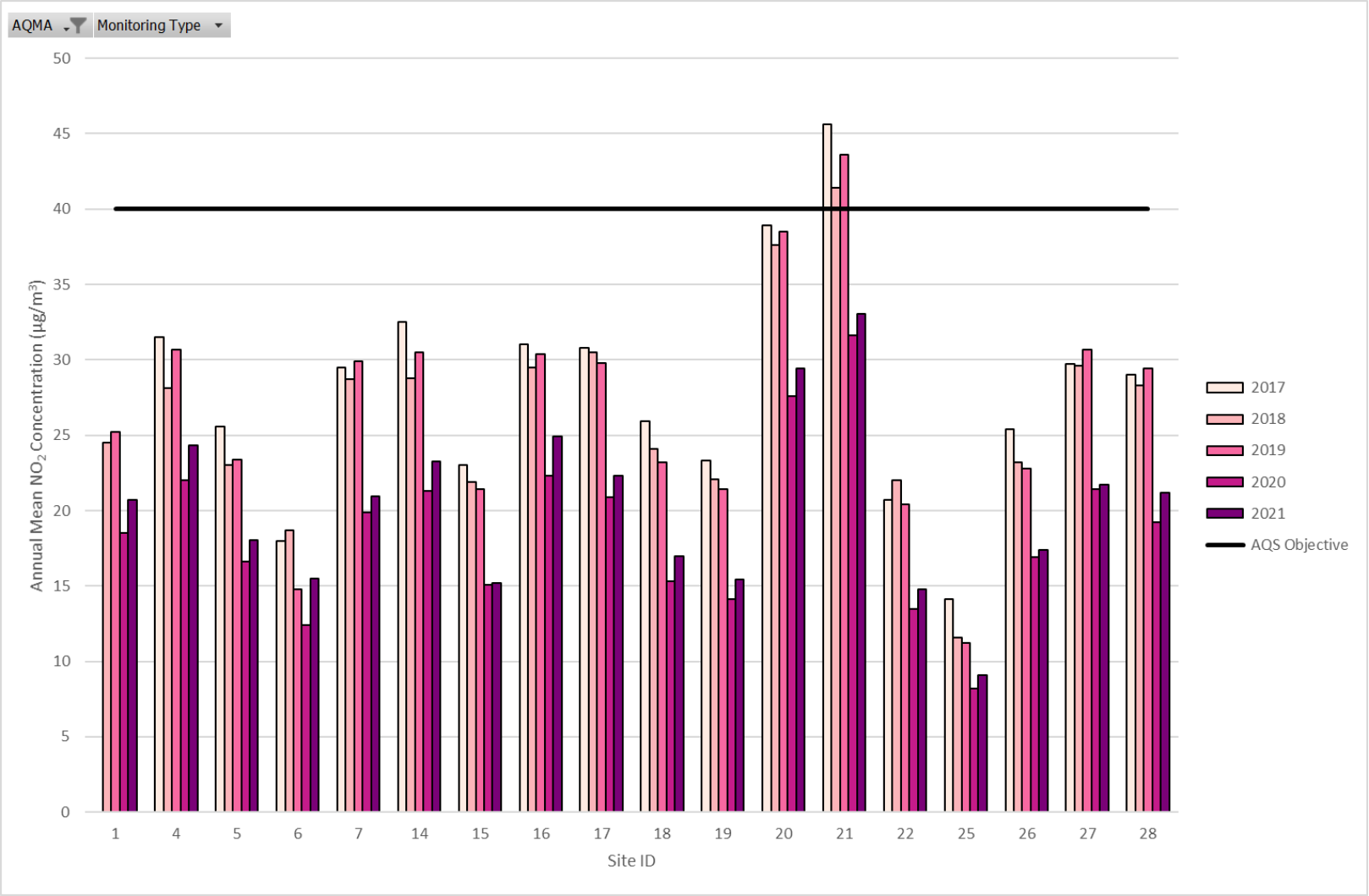


Figure A.4 – Trends in Annual Mean NO_2 Concentrations Outside of AQMAs in Lewes District Council: Part 2

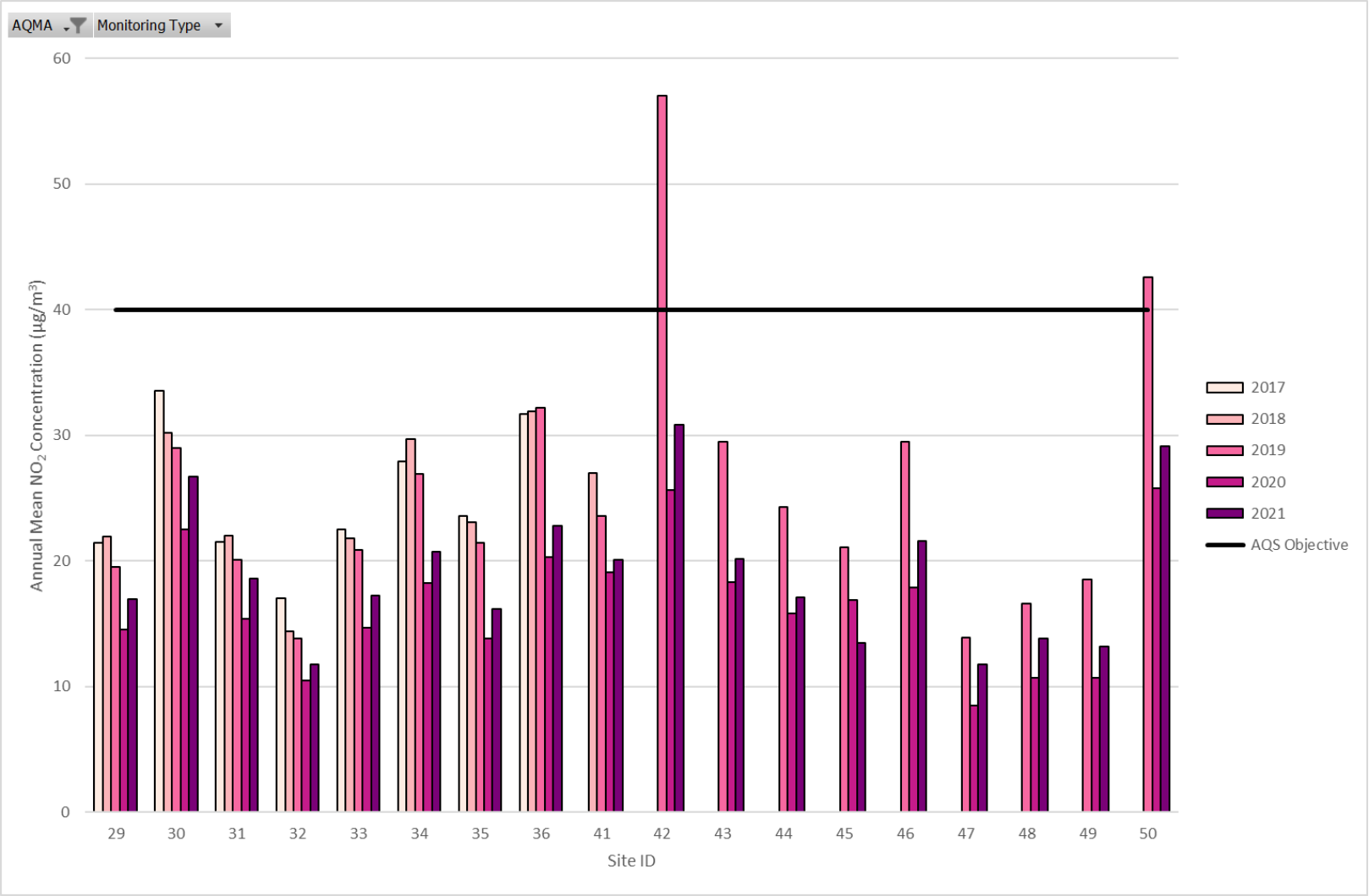


Figure A.5 – Trends in Annual Mean NO_2 Concentrations in EDC: Part 1

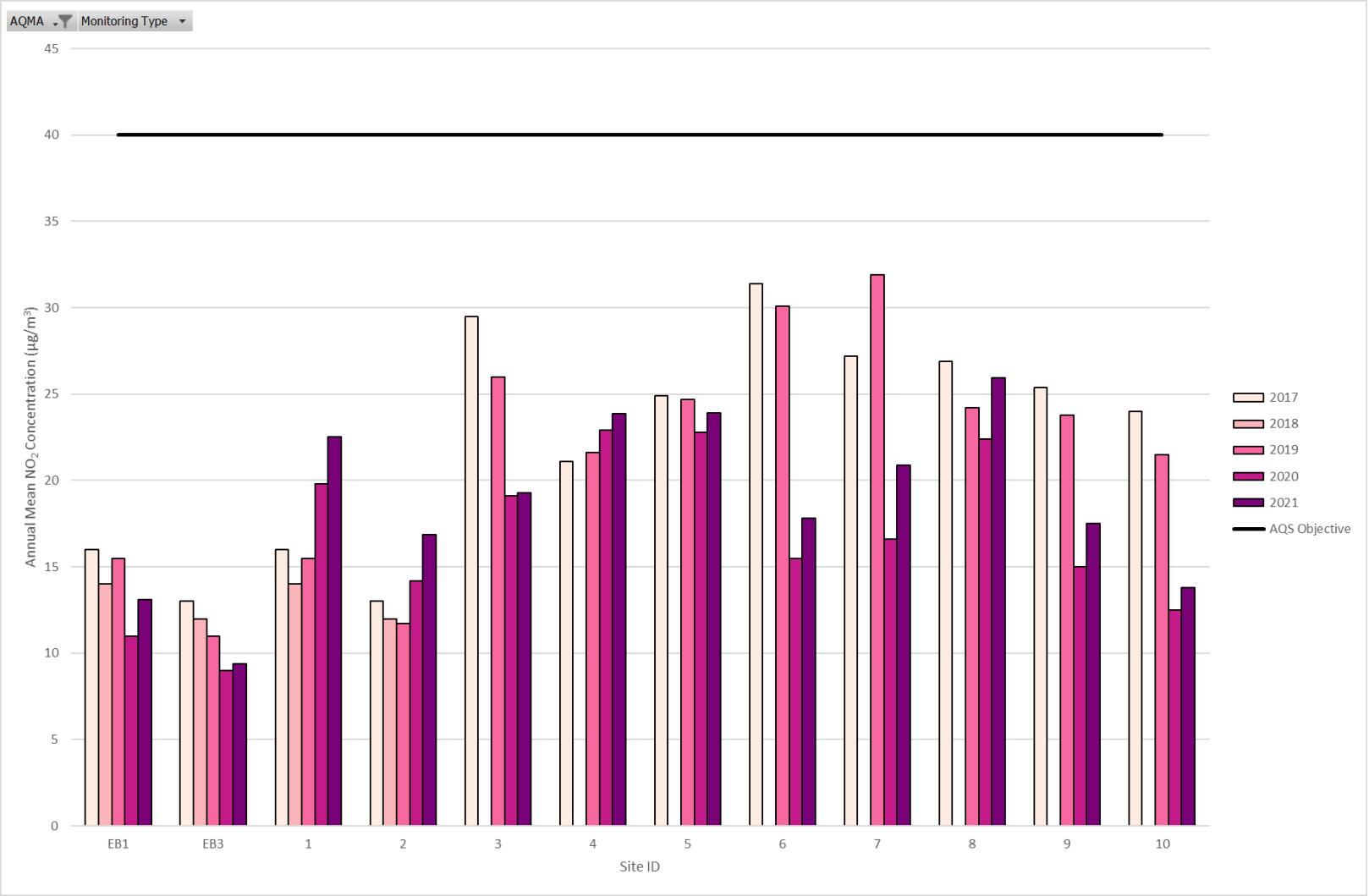


Figure A.6 – Trends in Annual Mean NO_2 Concentrations in EDC: Part 2

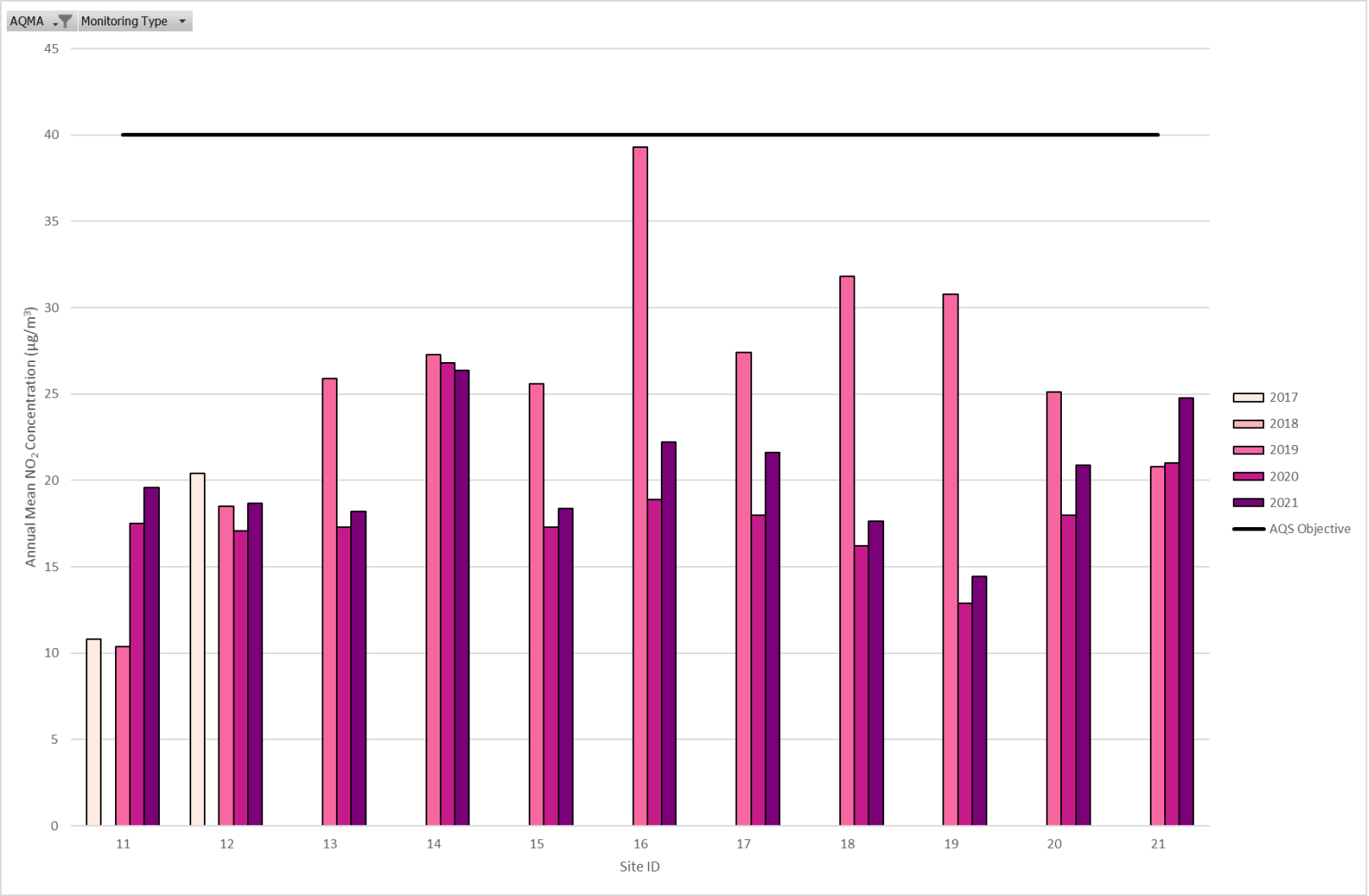


Table A.9 – 1-Hour Mean NO_2 Monitoring Results in Lewes District Council, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
LS5	541541	110246	Roadside	99.9	99.9	0	0	0	0	0
LS7	544366	101367	Roadside	87.8	87.8	N/A	N/A	N/A	0 (60)	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%).

Table A.10 – 1-Hour Mean NO_2 Monitoring Results in Eastbourne Borough Council, 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 2021 (%) (2)	2017	2018	2019	2020	2021
EB1	561150	98341	Urban Background	97.4	97.4	0	0	0	0	0
EB3	560085	103118	Urban Background	90.5	90.5	0	0	0	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%).

Table A.11 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$) in Lewes District Council

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
LS7	544366	101367	Roadside	84.9	84.9	**N/A**	**N/A**	**N/A**	23.9	23.8

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

Notes:

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

Exceedances of the PM_{10} annual mean objective of $40\mu g/m^3$ are shown in **bold**.

All means have been "annualised" as per LAQM.TG22 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%).

Table A.12 – Annual Mean PM_{10} Monitoring Results (µg/m^3) in Eastbourne Borough Council

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
EB1	561150	98341	Urban Background	87.8	87.8	19	19	17	17	17.2
EB3	560085	103118	Urban Background	99.8	99.8	**N/A**	**N/A**	15.5	14	13.1

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

Notes:

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

Exceedances of the PM_{10} annual mean objective of 40µg/m^3 are shown in **bold**.

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure A.7 – Trends in Annual Mean PM_{10} Concentrations in Lewes District Council

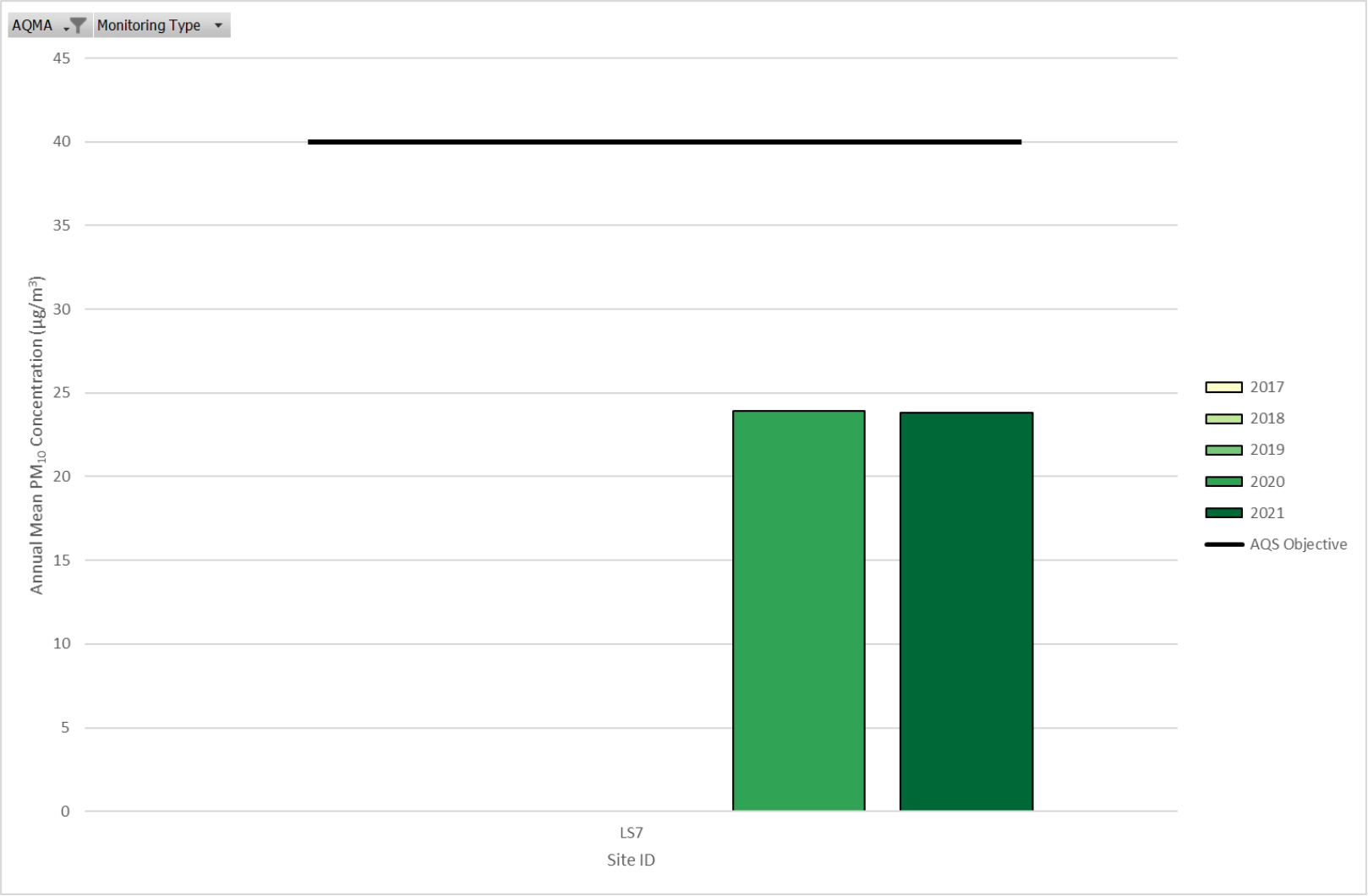


Figure A.8 – Trends in Annual Mean PM_{10} Concentrations in Eastbourne Borough Council

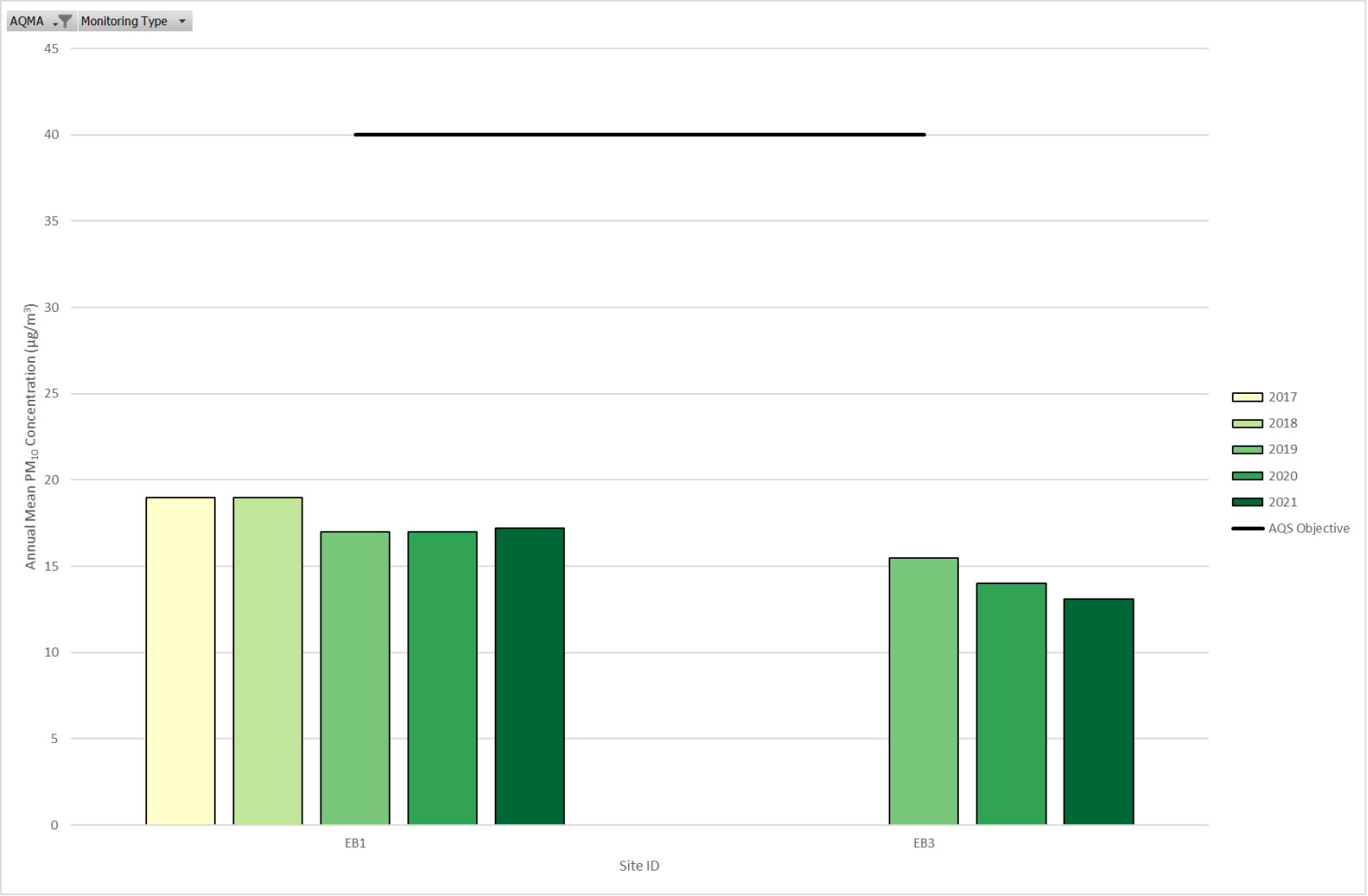


Table A.13 – 24-Hour Mean PM_{10} Monitoring Results in Lewes District Council, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
LS7	544366	101367	Roadside	84.9	84.9	N/A	N/A	N/A	1 (35)	5 (35)

Notes:

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

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

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

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

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

Table A.14 – 24-Hour Mean PM_{10} Monitoring Results in Eastbourne Borough Council, Number of PM_{10} 24-Hour Means > 50µg/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 2021 (%) (2)	2017	2018	2019	2020	2021
EB1	561150	98341	Urban Background	87.8	87.8	0	2	1	1	2
EB3	560085	103118	Urban Background	99.8	99.8	N/A	N/A	3	0	1

Notes:

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

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

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

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

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

Figure A.9 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3 in Lewes District Council

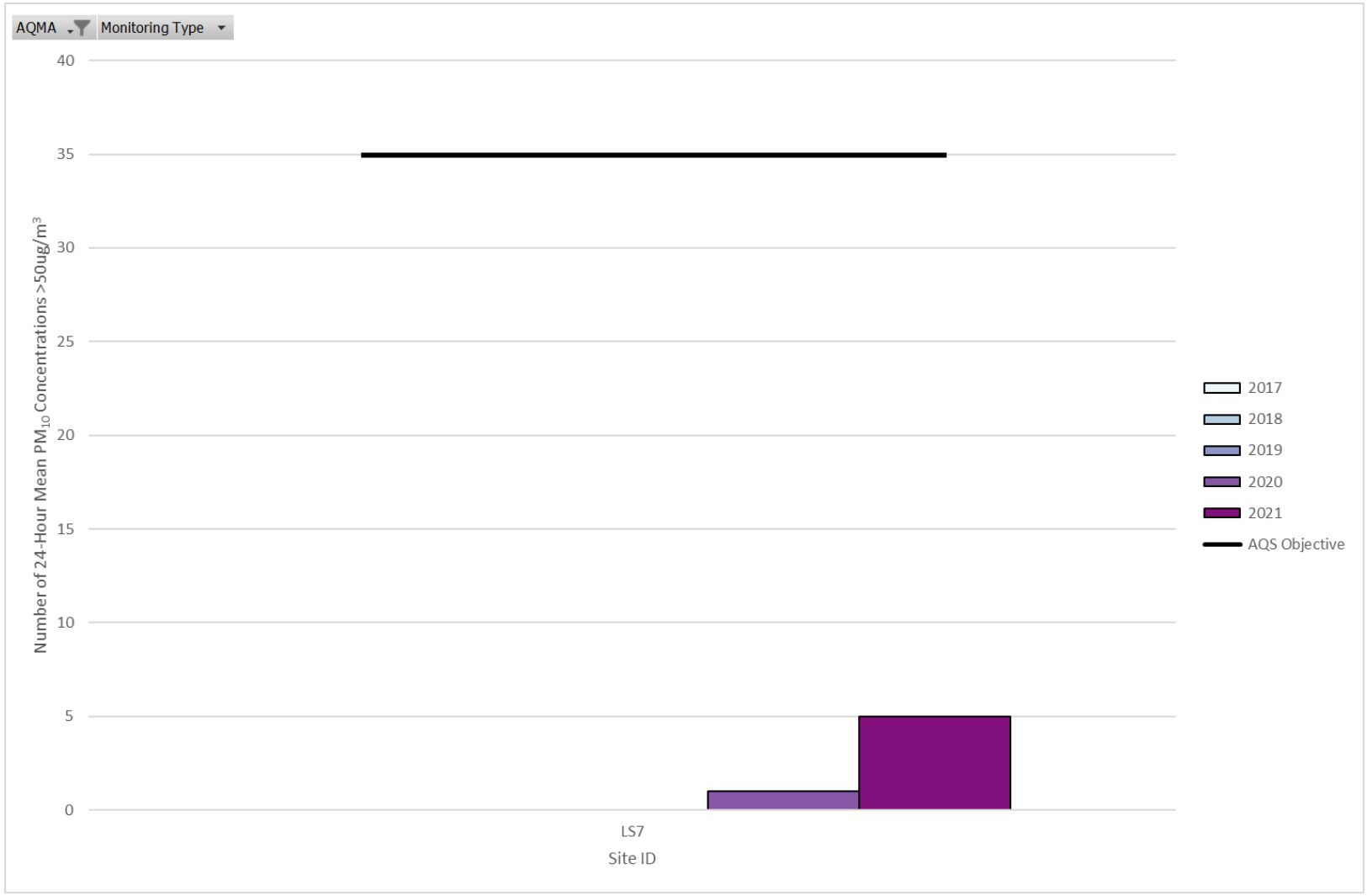


Figure A.10 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3 in Eastbourne Borough Council

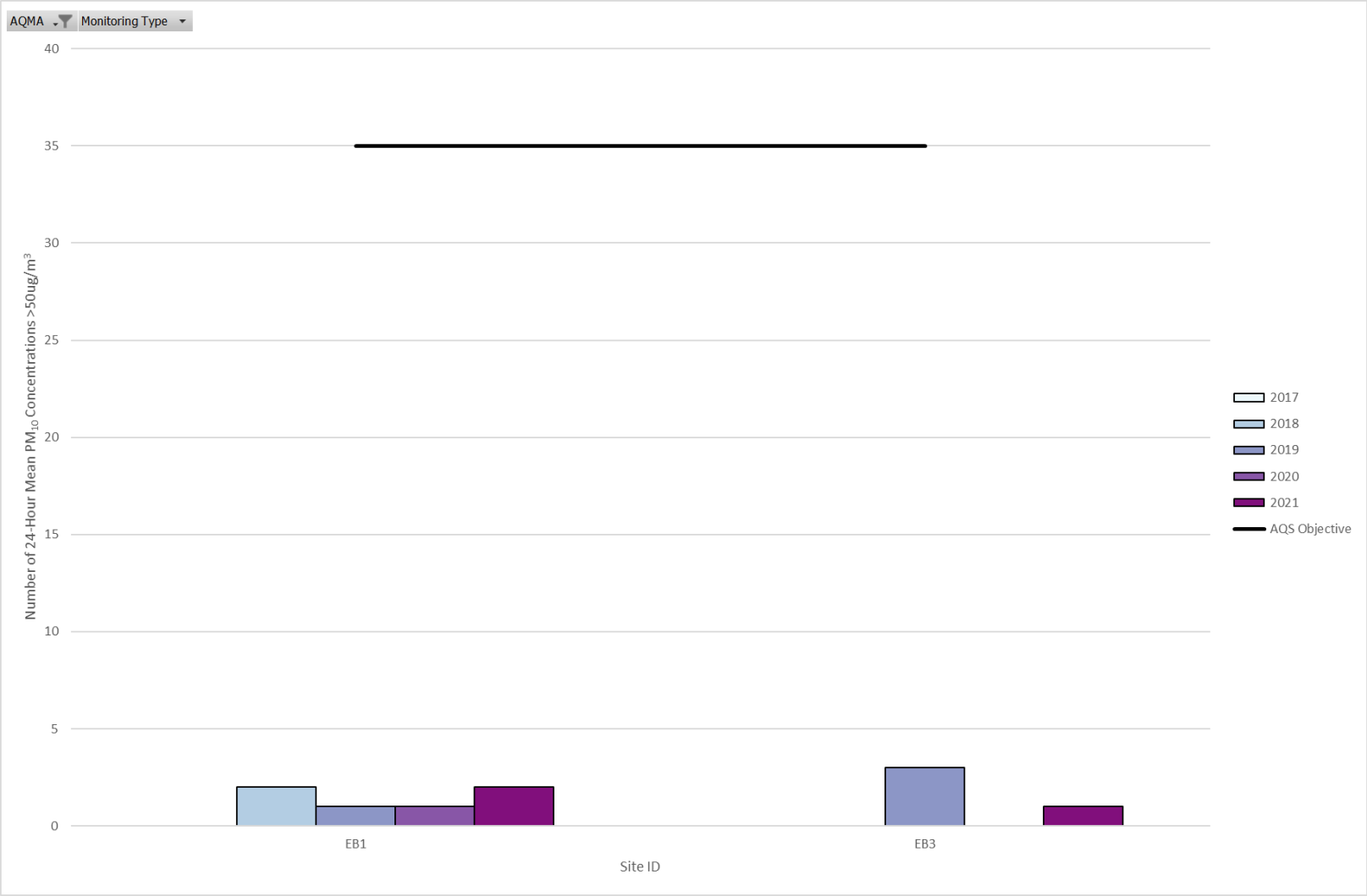


Table A.15 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3) in Eastbourne Borough Council

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
EB3	560085	103118	Urban Background	99.8	99.8	11	13	10.4	9	8.4

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

Notes:

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

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

Figure A.11 – Trends in Annual Mean $PM_{2.5}$ Concentrations in Eastbourne Borough Council

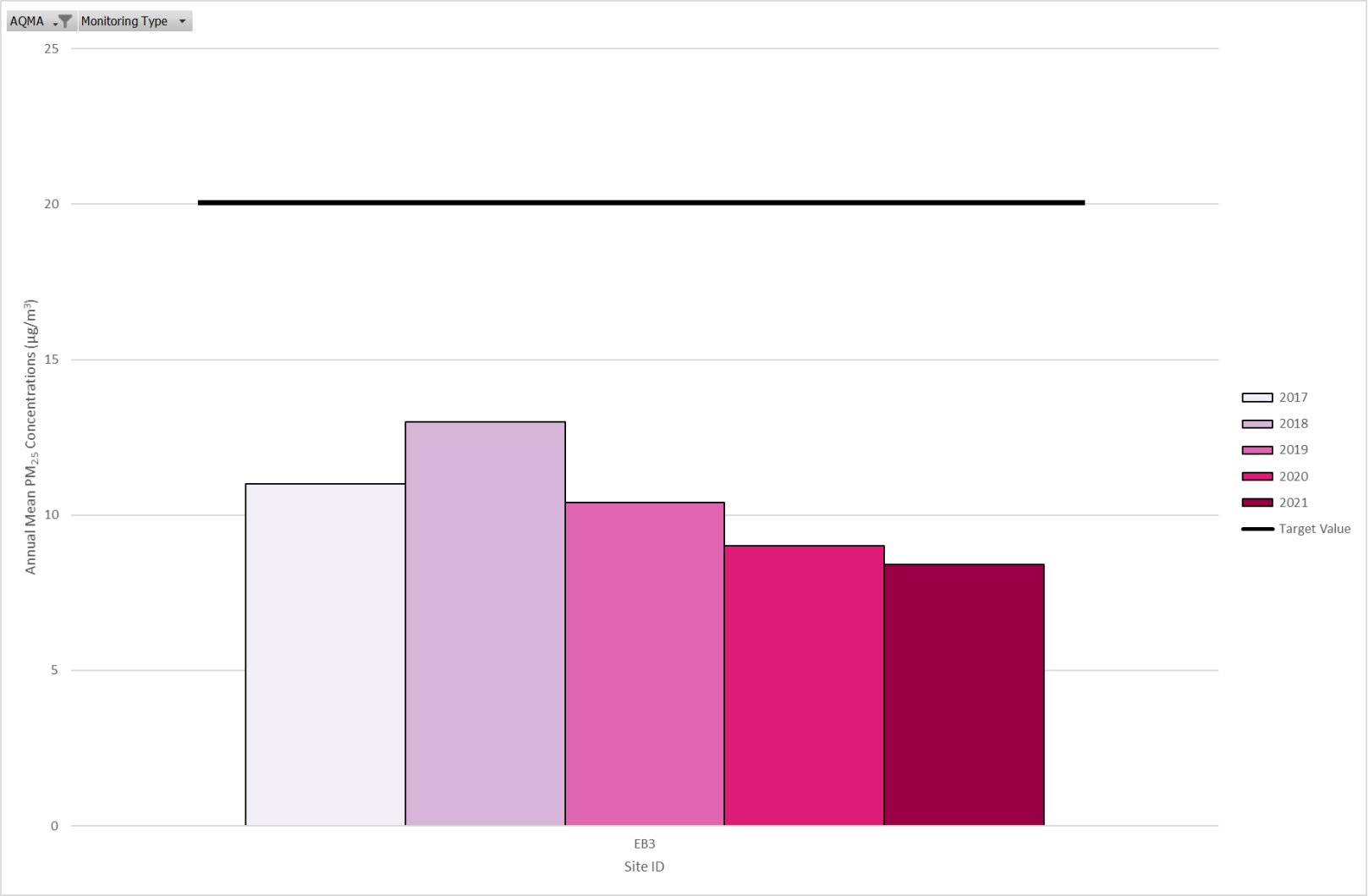


Table A.16 – Running 8-Hour Mean O_3 Monitoring Results in Lewes District Council, Number of 8-Hour Means > 100µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
LS7	544366	101367	Roadside	85.9	85.9	N/A	N/A	N/A	**17**	**16**

Notes:

Results are presented as the number of running 8-hour periods where concentrations greater than 100µg/m^3 have been recorded.

Exceedances of the O_3 8-hour mean objective (100µg/m^3 not to be exceeded more than 10 times/year) are shown in **bold**.

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

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

Table A.17 – Running 8-Hour Mean O_3 Monitoring Results in Eastbourne Borough Council, Number of 8-Hour Means > 100µg/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 2021 (%) (2)	2017	2018	2019	2020	2021
EB1	561150	98341	Urban Background	94.9	94.9	N/A	**31**	**13**	**26**	**16**

Notes:

Results are presented as the number of running 8-hour periods where concentrations greater than 100µg/m^3 have been recorded.

Exceedances of the O_3 8-hour mean objective (100µg/m^3 not to be exceeded more than 10 times/year) are shown in **bold**.

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Diffusion Tube Results (µg/m^3) in Lewes District Council

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	548420	99223	25.7	29.0	26.6	22.4	24.3	28.0	27.0	18.8	21.5	23.5	25.0	23.7	24.6	20.7	-	
2	544354	101388	22.6	42.5	34.3	42.9	31.3	36.1	42.8	22.4	35.8	31.8	32.9	31.4	33.9	28.5	-	
3	544414	101273	42.4	40.7	41.7	33.4	40.7		28.5	38.8	51.6	55.8	62.7	46.6	43.9	36.9	29.8	
4	544273	101532	31.6	34.5	29.1	25.5	26.7	29.7	26.6	21.7	25.5	28.5	38.3	29.9	29.0	24.3	-	
5	540063	101263	22.7	25.8	23.8	18.5	20.0	25.0	21.1	18.4	20.0	19.0	23.5	19.5	21.5	18.0	-	
6	544521	101089	19.9	34.4	19.3	18.4	14.4	17.8	16.0	9.3	16.6	14.9	23.8	16.3	18.4	15.5	-	
7	541285	109969	27.7		28.5	28.1	24.1	16.2	31.6	18.2	25.0	23.8	29.2	22.2	25.0	21.0	-	
8	541481	110277	21.5	18.1	22.7	17.5	41.0	11.7	22.9	14.5	16.8		27.3	22.2	21.5	18.0	-	
9	541541	110246	21.0	34.1	21.9	17.4	16.7	10.2	20.8	12.7	14.6	18.4	24.4		19.3	16.2	-	
10	541505	110236	21.3	19.1	22.4		18.2	12.7	24.4	14.6	18.7	21.8	26.1	21.3	20.0	16.8	-	
11	541519	110167	25.9	26.5	34.2	29.3	26.5	19.0	38.0	19.3	29.0	28.6	35.9	32.6	28.7	24.1	-	
12	541540	110130	29.4	32.9	44.7	37.7	37.4	25.0	48.9	23.6	38.7	36.1	45.5	28.8	35.7	30.0	-	
13	541598	110169	34.0	31.8	33.7	29.5	31.6	19.7	44.9	25.5	30.6	36.3		28.8	31.5	26.5	-	
14	540969	100974	24.8	33.1	30.8	25.0	16.9	33.5	28.6	23.6	25.8	28.0	34.0	28.2	27.7	23.3	-	
15	541646	110370	18.3	18.8	21.1	17.8	16.5	11.0	24.1	10.9	16.1	20.6	23.2	19.1	18.1	15.2	-	
16	542178	110454	28.5	30.7	28.8	28.0	27.8	17.4	36.9	19.6	27.9	45.3	33.9	31.1	29.7	24.9	-	
17	542315	110733	27.7	27.7	28.9	31.5	26.3	17.8	33.2	16.9	25.2	25.5	31.6	26.6	26.6	22.3	-	
18	541669	110278	23.1	17.6	25.3	24.8	18.7	12.4	24.2	12.3	15.4	20.8	29.2	18.7	20.2	17.0	-	
19	541726	110335	18.7	17.3	19.6	15.5	16.3	10.0	22.8	12.0	21.3	23.0	23.0	21.2	18.4	15.5	-	
20	541755	110206	35.0	34.5	38.8	40.5		23.6	48.3	21.5	33.3	35.2	43.7	30.7	35.0	29.4	-	
21	541684	110181	43.3	20.4	40.9	40.2	43.4	25.9	55.0	29.6	40.8	45.2	46.0	41.1	39.3	33.0	-	
22	541709	109990	21.4	17.5	22.7	20.1	14.1	10.9		9.4	16.3	20.0	23.2	17.8	17.6	14.8	-	
23	541615	109968	23.8		25.7	22.3	19.0	14.4	27.5	15.5	23.2	27.3	29.4	22.4	22.8	19.1	-	
24	541603	110001	28.5	26.2	34.8	26.6	27.3	18.3	37.8	21.0	28.0	31.1	36.6	32.4	29.1	24.4	-	
25	545142	102433	14.5	13.8	11.5		9.2		10.0	6.7	8.5	10.2	13.1	11.0	10.8	9.1	-	
26	541231	100957	24.3	23.9	21.4			22.9	18.5	15.6	17.4		23.5	18.6	20.7	17.4	-	
27	541438	110293	25.1	27.5	28.5	26.5	27.8	16.3	31.8	16.0	25.4	29.8	27.6	27.6	25.8	21.7	-	
28	541430	110328								15.7	24.9	30.1	33.4	24.7	25.8	21.2	-	
29	542168	100675	21.5	24.3	20.1	17.7	29.7	18.7	18.2	10.5	16.4	18.1	28.1	18.4	20.1	16.9	-	
30	550077	99291	30.7	28.1	33.4	26.9	28.5	37.3	32.4	30.4	31.0	34.9	37.4	30.5	31.8	26.7	-	
31	544996	101264	24.7	25.6	23.8	18.3	18.5	21.3	21.6	14.9	20.5	23.9	31.6	20.7	22.1	18.6	-	
32	544908	102704	15.9	17.6	16.8	10.2	11.1	13.3	14.8	10.0	11.6	13.8	17.6	14.9	14.0	11.7	-	
33	544681	112441	21.5	16.9	24.9	21.6	17.1	12.8	25.7	13.6		24.6	27.6	19.2	20.5	17.2	-	
34	532605	115203	24.1	22.8	29.1	30.8	22.4	17.0	34.2	16.4	28.1	24.2	21.6	25.8	24.7	20.8	-	
35	532587	115410	19.3	16.2	22.0	20.0	14.9	10.8	24.7	14.4	21.4	18.2	31.8	17.8	19.3	16.2	-	
36	541032	109613	29.9	22.2	31.5		25.7	17.3	33.8	15.9	28.7	28.6	37.5	27.1	27.1	22.8	-	
37	544603	101485	33.8	38.2	37.2	34.8	31.9	39.3	31.8	29.8	34.7	32.8		32.4	34.3	28.8	-	
38	544497	101499	29.0	19.9	28.8	27.0	26.9	35.0	27.5	21.4	26.8	28.2	44.9	27.9	28.6	24.0	-	
39	544330	101423	25.6	35.2	27.0	24.3	23.2	24.5	22.6	18.5	27.5	26.5	29.5	26.6	25.9	21.8	-	
40	544497	101285	44.8	39.8	46.3	44.3	45.4			32.9	42.9	41.8	47.1	41.2	42.6	35.8	-	
41	544948	101549	29.2	29.1				26.6	21.8	16.0		23.2	32.7	20.8	24.9	20.1	-	
42	535187	108928	39.4	25.6	40.0	29.9	43.3	38.9	37.0	36.0	17.4	42.9	49.6	40.7	36.7	30.8	-	
43	544886	102879	25.0	25.2	24.6	21.9	24.5	27.3	25.0	19.9		25.4	25.6	19.3	24.0	20.1	-	
44	543431	103022	19.7			20.3	20.8	19.7	20.3	14.9	20.3	21.8	26.3	19.1	20.3	17.1	-	
45	539543	108284	18.2	17.0	14.6	14.9	16.6	16.5	15.5	12.2	10.6		23.7	16.4	16.0	13.5	-	
46	548167	99160	28.2	27.7	27.5	28.4	23.5	29.4	24.3	16.3	27.2	21.6	31.7	22.3	25.7	21.6	-	
47	536441	116231	14.7	11.6	15.0	11.1	8.9	7.2	15.8	7.5	34.2	11.4	16.5		14.0	11.8	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
48	542029	115781	16.8	14.1	20.6	14.2	12.5	22.5	17.4	9.7	17.8	15.0	21.6	15.4	16.5	13.8	-	
49	540141	113548	14.4	14.1	17.7	16.8	13.0	11.3	24.0	7.7	17.5	15.6	19.7	15.8	15.6	13.1	-	
50	544185	101350	35.6	37.1	37.7	36.5	33.3	38.1	30.3	23.2	34.9	34.3	43.7	31.4	34.7	29.1	-	

☒ **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.TG22.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **LDC confirm that all 2021 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.

Table B.2 – NO_2 2021 Diffusion Tube Results (µg/m^3) in Eastbourne Borough Council

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	560774	99163	27.1	28.7	23.8	27.7	27.0	29.8	22.0	22.0	33.5	27.0	28.8	24.5	26.8	22.5	-	
2	561458	99116	21.7	22.7	19.9	20.9	16.7	21.0	15.2	15.2	21.5	19.4	27.2	19.5	20.1	16.9	-	
3	561568	99108	22.0	26.5	21.2	22.4	23.1	23.0	18.9	18.9	25.4	23.7	25.4	24.9	23.0	19.3	-	
4	561717	99061	27.4	31.4	22.6	29.0	30.8	29.7	24.0	24.0	33.0	30.5	30.7	27.9	28.4	23.9	-	
5	561621	99004	28.6	29.0	26.2	27.9	25.8	30.3	25.0	25.0	33.0		35.2	27.2	28.5	23.9	-	
6	561737	98948	21.7	25.8	19.2	22.6	16.9	22.7	16.2	16.2	24.2	20.9	28.6	19.4	21.2	17.8	-	
7	562692	100149	23.8	25.3	23.0	24.7		26.2	21.7	21.7	31.6	23.9	27.6	23.8	24.9	20.9	-	
8	562655	100970	31.8	33.1	28.0	32.6	30.6	32.4	25.4	25.4	37.1	32.1	30.5	31.3	30.9	25.9	-	
9	561885	103847	23.6	24.6	20.9	21.3	18.5	21.3	14.9	14.9		21.9	27.2	20.5	20.9	17.5	-	
10	557829	98190	13.3	22.4	14.0	18.7	15.1	20.7	13.8	13.8	22.2	15.2	13.1	15.0	16.4	13.8	-	
11	560440	99352	29.2	26.3	22.1	22.7	20.9		19.6	19.6	25.6	24.1		22.8	23.3	19.6	-	
12	560943	99480	25.8	30.1	20.8	23.2	19.3	21.9	16.1	16.1	23.0	23.8	25.8	20.6	22.2	18.7	-	
13	561354	99279	23.5	21.9	20.5	22.4	20.6	21.5	17.2	17.2	23.9	24.2	24.6	22.4	21.7	18.2	-	
14	561527	99846	33.6			33.9	33.6	31.5	25.8	25.8	39.4	32.5	31.2	26.4	31.4	26.4	-	
15	561043	99828	25.3	29.1	20.6	23.8	13.0	22.8	15.2	15.2	25.0	23.8	27.1	21.6	21.9	18.4	-	
16	562583	101109	22.5	28.4	27.3	27.6	23.5	29.7	20.8	20.8	33.5	24.1	33.0	26.0	26.4	22.2	-	
17	560749	102189	27.1	31.8	24.5	26.9	25.0	28.3	19.2	19.2	28.9	25.0	27.4	25.6	25.7	21.6	-	
18	560505	102196	21.8	26.1	19.0	22.4	20.7	21.5	14.9	14.9	23.7	19.4	25.8	21.6	21.0	17.6	-	
19	560134	100561	20.3	20.5	16.2	16.5	14.2	16.5	12.7	12.7	19.6	17.7	22.5	17.0	17.2	14.4	-	
20	559894	101035	22.5	29.1	20.6	27.0	24.9	26.0	19.7	19.7	29.0	25.9	29.0	24.8	24.8	20.9	-	
21	559730	100251	28.5	32.1	28.9	34.0	25.9	31.9	24.9	24.9	34.3	23.6	37.7	27.3	29.5	24.8	-	

☒ **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.TG22.**

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **EBC confirm that all 2021 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

New or Changed Sources Identified Within Lewes District Council and Eastbourne Borough Council During 2021

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

Additional Air Quality Works Undertaken by Lewes District Council and Eastbourne Borough Council During 2021

Due both to staff shortages and the Covid-19 pandemic, progression on the development of the Lewes Town AQAP was temporarily inhibited and is currently at Draft stage. Progress will continue to be made throughout the next year.

EBC has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

The Ambient, Indoor, Workplace Air and Stack Emissions Proficiency Testing Scheme (AIR PT) is an independent analytical proficiency-testing scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). Defra and the Devolved Administrations advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the AIR PT scheme. AIR NO_2 PT forms an integral part of the UK NO_2 Network's QA/QC, and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM).
During 2021 Gradko participated in the AIR PT programme, and obtained a 50% rating for AIR-PT AR042 (January – February 2021), a 100% rating for AIR-PT AR043 (May – June 2021), a 100% rate for AIR-PT AR04 (July – August 2021). Further information can be found on this link:

https://laqm.defra.gov.uk/wp-content/uploads/2022/07/LAQM-NO2-Performance-data_Up-to-June-2022_V2.1.pdf

The diffusion tubes are supplied and analysed by Gradko utilising the 20% triethanolamine (TEA) in water preparation method. Diffusion tube monitoring during 2021 was undertaken in line with the Diffusion Tube Monitoring Calendar and recommended exposure period (5 weeks (+/- 4 days)).

Diffusion Tube Annualisation in Lewes District Council

Annualisation was required for two non-automatic monitoring sites DT28 and DT41. The sites requiring annualisation, along with details of the calculation method undertaken provided in Table C.1. Annualisation is required for any site with data capture less than 75% but greater than 25%.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3) in Lewes District Council

Site ID	Annualisation Factor Brighton Preston Park	Annualisation Factor Eastbourne	Annualisation Factor Canterbury	Annualisation Factor Rochester Stoke	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
28	0.9968	1.0149	0.9586	0.9426	0.9782	25.8	25.2
41	1.0011	0.9378	0.9677	0.9259	0.9581	24.9	23.9

Diffusion Tube Annualisation in Eastbourne Borough Council

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

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Lewes District Council and Eastbourne Borough Council have applied a national bias adjustment factor of 0.84 to the 2021 monitoring data. A summary of bias adjustment factors used by LDC and EBC over the past five years is presented in Table C.2.

A national bias adjustment factor was used as there are not yet any collocated triplicate tubes to identify local factors. This is set to change in the coming year. The national factor was obtained from the National Diffusion Tube Bias Adjustment Factor Spreadsheet (version 06/22), for which Gradko had obtained a factor of 0.84 from 34 studies.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	06/22	0.84
2020	National	09/21	0.81
2019	National	03/20	0.93
2018	National	03/19	0.93
2017	National	03/18	0.89

NO_2 Fall-off with Distance from the Road

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

In line with LAQM.TG(16), distance correction has been applied to NO_2 monitoring sites that have recorded an annual mean concentration above or within 10% of the annual mean objective. During 2021 there were one location in Lewes District Council that recorded concentration greater than 36 µg/m^3 that is not sited at location of relevant exposure. This concentration was distance-corrected using the Diffusion Tube Data Processing Tool (version 2.0)[9],as shown in **Error! Reference source not found.** below.

[9] Diffusion Tube Data Processing Tool (v2.0) available https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/

Table C.3 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3) in Lewes District Council

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor
3	1.0	3.5	36.9	8.6	29.8

No diffusion tube NO_2 monitoring locations within Eastbourne Borough required distance correction during 2021.

QA/QC of Automatic Monitoring

The continuous monitoring station in Lewes District Council is managed by the Sussex Air Quality Partnership (https://www.sussex-air.net). All continuous monitoring activities are subject to the same quality assurance/quality control objectives set out in the AURN local site operator's manual. These procedures are:

- Overnight 24-hour IZS calibration checks (NOx analyser);
- Fortnightly manual zero/span calibration using certified cylinders (carried out by Council employees fully trained in LSO duties);
- Full data analysis and ratification by the Environmental Research Group at King's College London for Devonshire Park and by Ricardo Energy & Environment for Holly Place;

Six monthly service visits are undertaken. Full site audits are not undertaken.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

Precise details of the adjustment factors used for monitors within Lewes District Council and Eastbourne District Council are unknown, as the process is carried out by separate organisation on behalf of local authorities involved with Sussex-Air.

Automatic Monitoring Annualisation

All automatic monitoring locations within Lewes District Council and Eastbourne District Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Automatic Monitoring NO_2 Fall-off with Distance from the Road

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

No automatic NO_2 monitoring locations within Lewes District Council or Eastbourne Borough Council required distance correction during 2021.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitoring Site in LDC: Northern Lewes with Lewes Town Centre AQMA

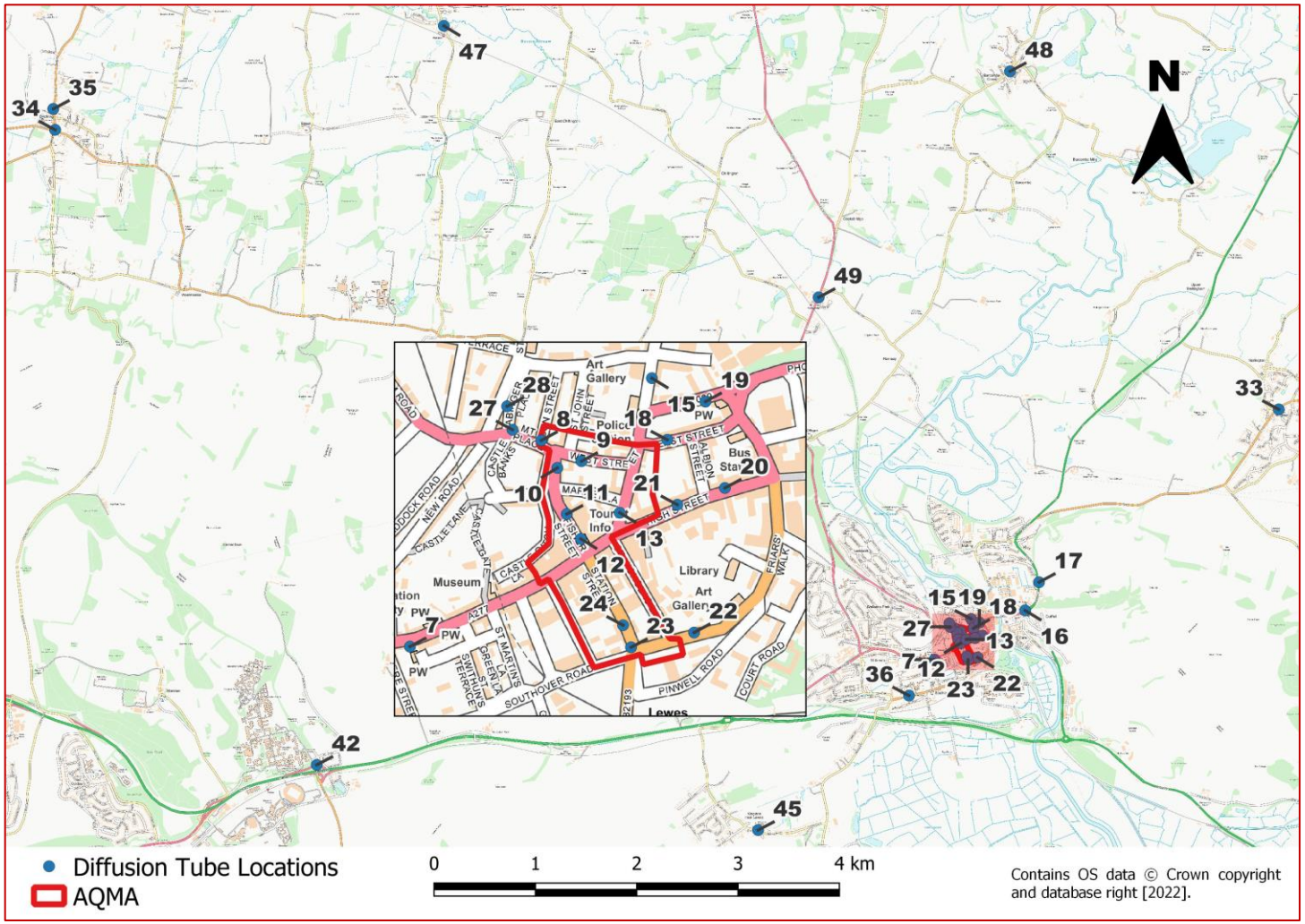


Figure D.2 – Map of Monitoring Site in LDC: Southern Lewes with Newhaven Ring Road AQMA

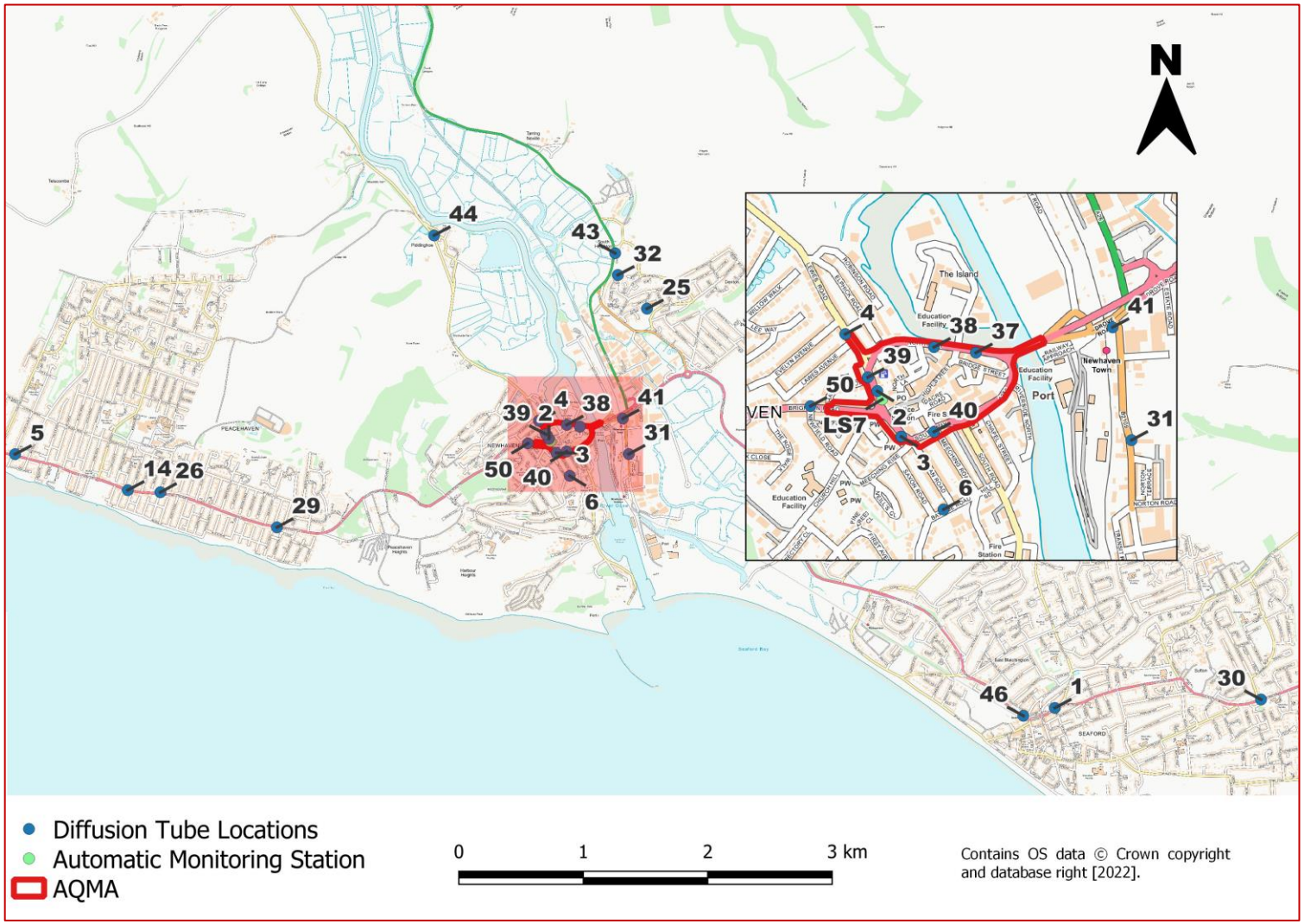
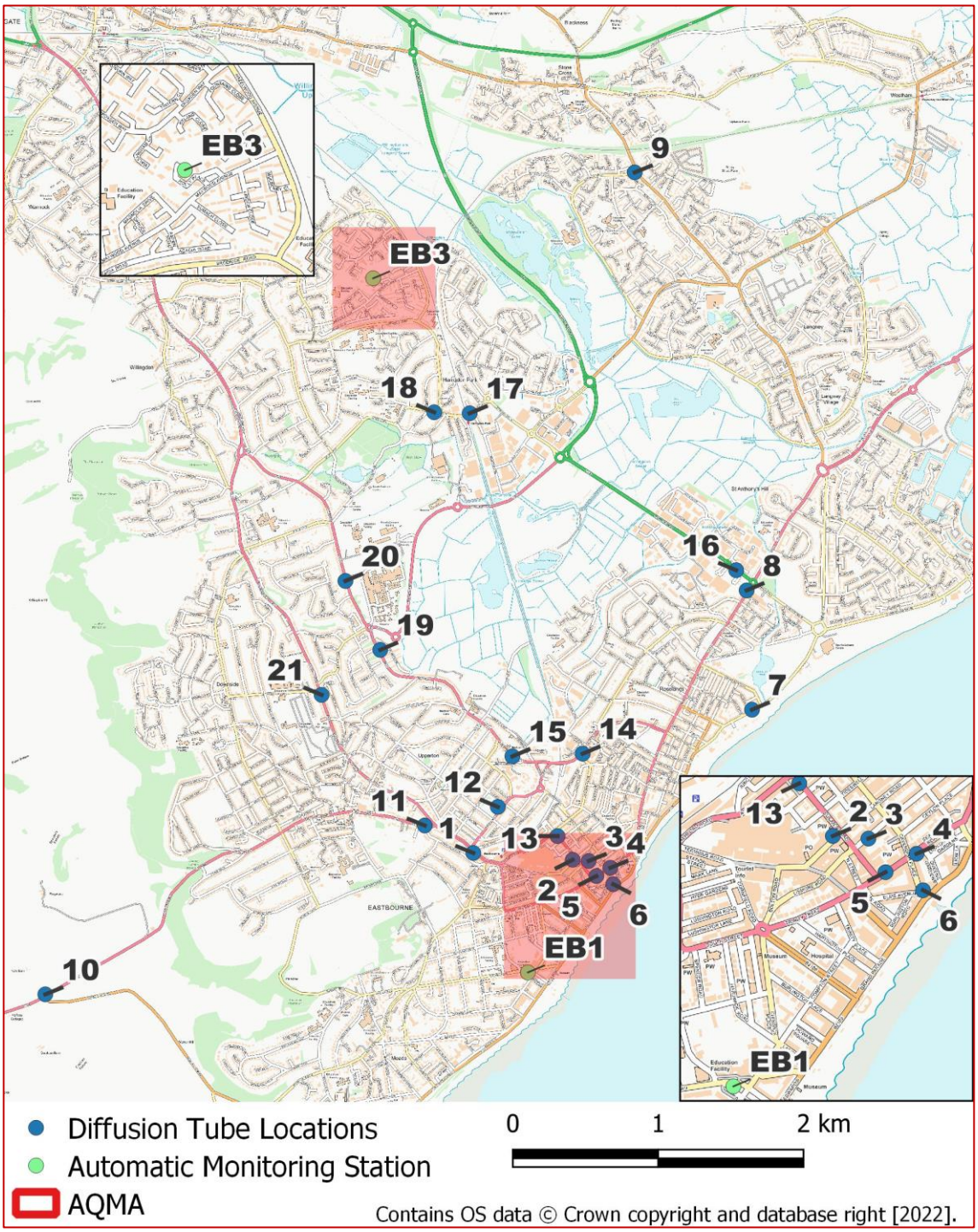


Figure D.3 – Map of Monitoring Site in EBC



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[10]

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
LDC	Lewes District Council
EBC	Eastbourne Borough Council
NH	National Highways
ESCC	East Sussex County Council
LTC	Lewes Town Council
WDC	Wealden District Council
ETCIS	Eastbourne Town Centre Improvement Scheme

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. 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.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Lewes District Council 2019 Annual Status Report.
- Eastbourne Borough Council 2019 Annual Status Report.
- Lewes District Council 2020 Annual Status Report.
- Eastbourne Borough Council 2020 Annual Status Report.
- Lewes District Council and Eastbourne Borough Council 2021 Annual Status Report.
- National Diffusion Tube Bias Adjustment Factor Spreadsheet, published June 2022.
- Diffusion Tube Data Processing Tool version 2.0, March 2022, Defra.