



Lewes District Council

2020 Air Quality Annual Status Report (ASR)

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



June 2020

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Executive Summary: Air Quality in Our Area

Air Quality in Lewes District Council

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

Both Lewes and Newhaven have an Air Quality Management Area (AQMA). Nitrogen dioxide concentrations were measured above annual objective concentrations and Air Quality Management Areas (AQMA) were declared in June 2005 and July 2014, respectively. Air Quality Action Plans were put in place (Lewes, May 2009 and Newhaven, June 2016) to manage the reduction in air pollution and air quality monitoring stations established to assess the impact of the measures put forward by the action plans.

In 2019, nitrogen dioxide monitoring using diffusion tubes took place at 50 locations throughout the Lewes District Council area. Of which, 9 diffusion tubes were added in May 2019 at the following locations, to ensure the monitoring network covers more than the current AQMAs:

- Knights Gate Road, Falmer Roundabout
- A26, South Heighton
- Piddinghoe Road, Piddinghoe
- Iford and Kingston CofE School, Kingston
- Opposite Seaford Station, Seaford
- Station Road, Plumpton Green
- High Street, Barcombe Cross

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

- A275, Cooksbridge
- Brighton Road, west of the Newhaven AQMA

More information on these new diffusion tubes is provided in Tables A.2, A.3 and B.1, with locations also shown on Figure D.1.

Concentrations above the 40 µg/m³ annual objective concentration were still observed in both AQMAs. However, once corrected for fall-off of NO₂ concentration away from the kerb⁷ the concentrations drop below the annual objective concentration, except at three sites (See Table 7): LDC34 – 204 High Street, Lewes (ID21), The Old Chapel, Newhaven (ID40) and LDC1 – Fisher Street East (ID12) (this however has not been corrected as there is no receptor). LDC34 is situated approximately 30m east of the Lewes Town Centre, LDC1 is within the Lewes Town Centre AQMA and The Old Chapel is within the A259 Newhaven Ring Road AQMA. All three sites have been in exceedance of the air quality standard (AQS) for NO₂ consistently since the declaration of these AQMAs. It is also noted that the new diffusion tube on Brighton Road, west of the Newhaven AQMA was within 10% of the AQS for NO₂ following distance correction.

Nitrogen dioxide concentration measurements should continue within the AQMAs to monitor progress of the respective action plans in reducing air pollution. The Lewes Town Centre AQMA also has a continuous automatic monitoring station situated within it measuring: nitrous oxides - NO, NO₂, NO_x and particulate (PM₁₀) concentrations. NO₂ at the automatic monitoring station appears to show improvement over the last 5 years (See Appendix A, Table A.3). PM₁₀ shows no discernible trend, though concentrations are well below the relevant AQS.

Figure 1 & 2: Fisher Street and Station Street in the Lewes Town Centre AQMA.

Illustrates the historic narrow roads where vehicle pollutants can often get trapped



Figure 3 & 4: A259 Newhaven Ring Road AQMA. This area is frequently clogged with traffic particularly during rush hour and when the swing bridge is in operation.



For both Lewes Town Centre and A259 Newhaven Ring Road AQMA's please click the following link/s:

https://uk-air.defra.gov.uk/aqma/details?aqma_ref=404

https://uk-air.defra.gov.uk/aqma/details?aqma_ref=1576

For a countrywide list of local authority AQMA's please follow this link:

<http://uk-air.defra.gov.uk/aqma/list>

Actions to Improve Air Quality

Lewes District Council has taken forward a number of initiatives during the current reporting year of 2019 in pursuit of improving local air quality. East Sussex County Council (ESCC) managed to secure £1.4 million funding from the Department for Transport to deliver a programme of active travel across East Sussex. The Active Access for Growth Programme will run from 2017 to 2020, focusing on a number of growth areas, one of these being Newhaven (See Section 2.2). Other measures can be found in Section 2.2.1 and 2.2.2 and Table 2.2.

East Sussex County Council (ESCC) successfully applied to DEFRA's air quality grant fund on behalf of the Sussex Air Quality Partnership to deliver interventions with 25 schools and 25 businesses in Sussex to contribute to reducing exceedances of the annual mean objective for NO₂ in the designated AQMAs (or near to), caused mainly by local traffic. Sustrans and Living Streets were commissioned to deliver this project into schools, adding value to the ESCC Access Programme. A consultancy company, Phlorum was commissioned to deliver the business interventions.

A short description of the project

The purpose of this project is to contribute to a reduction in the emissions within the AQMAs in Sussex, and thereby speed up the date at which compliance will be achieved. The project will deliver the following outputs:

- 1) An intensive and targeted intervention with 25 schools in the AQMAs across Sussex to:
 - a. reduce idling during school drop-off and pick-up times;
 - b. increase walking and cycling rates to and from school;
 - c. measure the change in walking and cycling rates, and idling, and assess the effect on local air quality.
- 2) An intensive and targeted intervention with 25 businesses in the AQMAs across Sussex to:
 - a. reduce local emissions from fixed and mobile plant;
 - b. increase walking and cycling rates to and from work, and reduce business mileage;
 - c. deliver eco-driver training to staff working in the 25 businesses;
 - d. evaluate the change in local emissions from the above measures.

- 3) The dissemination of the project results and key lessons learned:
 - a. amongst the 14 Sussex Local Authority partners through the project board;

- b. to all schools in Sussex, as the Sussex Air partners include the Sussex Local Education Authorities for Sussex;
- c. to a wider audience of key stakeholders, including Public Health colleagues, through a conference;
- d. to the wider public through improvements to the existing Sussex Air website (<http://www.sussex-air.net/>).

Briefly, some of the results by the end of May 2019:

Sustrans - 26 schools took part, students usually coming to school by car reduced by 13% after the sessions, students usually cycling to school doubled from 3% to 6% and students cycling outside of school time rose by 6%. It was found, on average the levels of nitrogen dioxide were 26% higher outside the school gates than in the classroom. Living Streets: Recruited 21 schools and delivered 13 events with a further 8 schools confirmed for events in June 2019. Living Streets created a student-led anti-idling programme - events included talks in assemblies about anti-idling, some school pupils talked to drivers and have handed out hundreds of postcards with the anti-idling message. Schools are encouraged to continue the anti-idling message with Living Streets 'Walking on Clean Air – Your 'How To' Anti-idling Guide.' Link to Living Streets website: <https://www.livingstreets.org.uk/>

On the business side – there has been some engagement with small and medium sized businesses and engagement with Sussex Transport for eco driver training. Delivering and promoting a Sustainable Transport eVent with Gatwick Airport, Manor Royal and Crawley BC was held in June 2019.

Conclusions and Priorities

In order to fulfil its goal in producing quantifiable outcomes to appropriate timescales, Lewes District Council will work closely and in collaboration with all its delivery partners, such as ESCC. Collaborative working is extremely beneficial in many ways e.g. in reviewing, updating and implementing measures regarding Air Quality Action Plan (AQAP)'s and other projects or initiatives.

The Lewes Town AQAP is in the process of being updated and has identified key polluters within the AQMA and interventions to reduce emissions and improve air quality across Lewes. The updated Lewes AQAP will be presented to Council and public consultation in 2020.

All AQAP's should be seen as live documents and reviewed as necessary. For example, the Newhaven AQAP has an action for 'use of traffic management to

reduce emissions' – ESCC are commissioning work to develop designs in improving the traffic flow around the Ring Road by co-ordination of existing signalised pedestrian crossings plus improvements to the layout of the area. It is envisaged for construction by March 2020.

Lewes District Council has secured a new continuous air quality monitoring station in Newhaven (in the current AQMA). There have been various issues encountered along the way, but a suitable location has been secured. The monitoring station is now installed and running.

Further temporary anti-idling signs have been deployed in and around both Lewes and Newhaven AQMA's (mentioned as an action in the Lewes 2009 AQAP).

Deployment was highlighted in the local press and on social media. We have placed a few more of these signs in areas where there may have been additional issues highlighted by members of the public. We are continuing this anti-idling initiative and in March 2019 we launched an anti-idling education campaign aimed at schools over both Lewes and Eastbourne councils. We will be continuing this anti-idling message into schools over the next few years.

The Sussex-air Quality Partnership led by Horsham District Council were successful in bidding for a DEFRA grant (for period 2019/2020). This project is an educational campaign on solid fuel burning, promoting cleaner fuels, low smoke appliances and the correct way of installing and maintaining them. We plan to gather information and data on the type of appliance and solid fuels that house-holders use in the region, to heat their home. We aim to promote cleaner burning choices. We would like to try and ascertain why householders use particular appliances and fuels and understand their decision making process when considering energy efficiency improvements. Advice and information to householders will be provided online via a dedicated website. (www.sussex-air.net).

In addition, leaflets will be posted or be available to download from the website. Each questionnaire respondent will be either directed or referred to energy improvement programmes.

We continue to work with our neighbouring authorities via Sussex-air, with our county council and increasingly with our public health colleagues. For example, the schools anti-idling campaign – part of the information we send out includes '*Health Matters by*

Public Health England'. The link: <https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution>

We recognise the importance of joint working and the successful award of both last year's grant and this year's grant demonstrates the importance and success that combining forces can create. We also recognise that joint working provides the public with a greater understanding of how air quality and health are intrinsically linked.

**More exercise – less obesity – less vehicles on the road – improved air quality -
= increased general health**

Local Engagement and How to get Involved

The Council has recently set a carbon zero target for Council activities to be carbon neutral by 2030. People in Lewes District have been invited to take part in a citizen science projects by having a particulate monitor installed at their home. Residents of Lewes District are very aware of their environment and eco-minded. We intend to set up an Air Quality Partnership in Lewes in the coming years.

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 toxic air 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/> - programmes – involving schools and workplaces (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 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.*⁸

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 airAlert 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 airAlert app, email, mobile phone via text message or home phone. Sussex-air also provides a free coldAlert service – providing extreme cold weather warnings and information and also a heatAlert service. The apps, airAlert, coldAlert and heatAlert are 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/>

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1 Local Air Quality Management

This report provides an overview of air quality in Lewes District Council during 2019. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives (AQOs) 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 Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by Lewes District Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of 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

Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides a map of air quality monitoring locations in relation to the AQMA(s).

Table 2.1: Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Lewes Town Centre	30.06.05	NO ₂ Annual Mean	Lewes	An area encompassing a section of Lewes Town Centre extending north to the old police station, south to St Andrews Place	NO	53	µg/m ³	42 *Not Distance Corrected as No Receptor	µg/m ³	Lewes Town Centre	May-09	http://www.sussex-air.net/Reports/LewesAQAP2009.pdf
A259 Newhaven Ring Road	16.07.14	NO ₂ Annual Mean	Newhaven	Incorporates Newhaven Town Centre, Southway, Northway and sections of the A259 Brighton Road, Lewes Road and the swing bridge	NO	49	µg/m ³	40	µg/m ³	A259 Newhaven Ring Road	Jun-16	http://www.sussex-air.net/Reports/NewhavenAQAP2016.pdf

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

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

Defra's appraisal of last year's ASR concluded that the report was clear, detailed and robust. It also instructed that any update of the Lewes AQAP should be included in this year's report (2020) – some further modelling has been completed during this time and is included in this report. The Lewes AQAP is going to have further review and input during 2020/21 and be updated in its entirety. Defra also pointed out that monitoring results suggest that the pollution exceedances in Lewes are small scale and localised. It was also recommended that at the automatic monitor, a triplicate set of diffusion tubes be used so that a 'local' bias adjustment factor be used. This has not been carried out this year, due to staff changes, but could be considered in future.

Lewes District Council has taken forward a number of direct measures during the current reporting year in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.4.:

On the 11th April 2019, Lewes Town Council's Neighbourhood Plan for 2015-2033 was 'made' by the South Downs National Park Authority (<http://www.lewes4all.uk/>).

⁹*The plan sets out a vision for the town through to 2033 in a set of planning policies supported by a series of proposed projects.*

'5.17 The Lewes Neighbourhood Plan will seek to ensure there are appropriate opportunities for renewable energy generation and energy storage in new and existing developments. Demand for energy will also be reduced by using land efficiently and imaginatively so new developments are close to services and open spaces, reducing the need for car use and car parking, and cutting air and noise pollution.'

The Lewes District Local Plan, Part 1 Joint Core Strategy 2010-2030 (May 2016) includes Core Policy 9 – Air Quality: Link below

<https://www.lewes-eastbourne.gov.uk/planning-policy/lewes-local-plan-2003-saved-policies/>. Its key strategic objectives are: *'reducing the need for travel and to promote a sustainable system of transport and land use for people who live, work, study in*

9 Lewes Town Council Neighbourhood Plan (2019)

and visit the district’ and ‘to ensure the district reduces locally contributing causes of climate change and is pro-active regarding climate change initiatives’.

In brief: Local planning must have regard to AQMA areas and AQAP’s. Planning must ensure applications for developments: provide mitigation measures where traffic may adversely affect an AQMA, ensure development will not have a negative impact on the surrounding area in terms of its health, promote opportunities for walking, cycling and public transport and congestion management to reduce traffic levels in areas of reduced air quality and secure best methods to reduce levels of dust and other pollutants arising from construction.

A collaborative approach has been taken in order to improve the environment as a whole – for example the East Sussex Strategic Partnership:

<http://www.essp.org.uk/What-we-do/Pride-of-Place/Environment>

The current priority themes in the Lewes District Sustainable Community Strategy are:

- A valued environment
- Decent and affordable housing for all
- Safer and stronger communities
- Access to good local facilities
- Healthier communities
- Vibrant and sustainable economy

More on the link below:

<http://www.essp.org.uk/East-Sussex-Strategic-Partnership-Media/East-Sussex-Strategic-Partnership-Document-Library/PoP%20documents/Lewes.pdf>

One of the key tasks under the Environment and Climate Change theme is to reduce traffic by increasing alternative sustainable travel choices and to improve air quality.

Lewes District Council works in partnership with East Sussex County Council to improve local air quality. One of the main mechanisms to achieve this is through the Local Transport Plan (LTP3, 2011-2021). An update on the Local Transport Plan is

provided in the Second Implementation Plan (2016/2017 to 2020/2021) which can be found at:

<https://www.eastsussex.gov.uk/roadsandtransport/localtransportplan/ltp3/downloadltp3>

It identifies the importance of various improvements to key walking and cycling corridors (e.g. improving signs for cycle Regional Route 90), focussing on improvements to public transport corridors, better use of technology e.g. Real Time Bus Information and charging points for electric vehicles. Further information can be found on: <https://www.eastsussex.gov.uk/roadsandtransport/localtransportplan>

While air quality is not an explicit objective for the LTP, there will be co-benefits in terms of the measures designed to tackle climate change and improve quality of life.

2.2.1 Lewes Town Centre AQMA

In Table 2.1 the monitoring location of initial exceedance (at declaration) was measured in Fisher Street (Fisher Street East). Initially measured at $53\mu\text{g}/\text{m}^3$ (annual mean) in 2005/06, this has gradually decreased to a reading of $42\mu\text{g}/\text{m}^3$ (however this is still above the annual AQO of $40\mu\text{g}/\text{m}^3$). There is a bus stop on this street and traffic has to wait behind the bus if it stops here. This queuing traffic will add to NO_2 emissions at this end of the street. This tube is also very close to the crossroads in the High Street.

However, there has been steady reductions in NO_2 at Fisher Street West and 18 Fisher Street and this is probably due to the change of traffic priority at the that end of Fisher Street where traffic is more free-flowing. This is a narrow street with high buildings either side, thus enclosing pollutants; a very common problem for old historic towns.

Lewes Town Centre AQAP

The Lewes AQAP is currently being updated and will be prepared for public consultation in 2020. The review of air quality in Lewes identified continued exceedances of the annual mean NO_2 AQO into 2021 and the requirement for interventions to improve air quality. The review also provided information on the main source of pollution responsible for the exceedances, this source apportionment identified significant (NO_x) emissions were from diesel vehicles especially buses,

cars/taxis and light duty vehicles (vans). The AQAP assessed a series of interventions to improve air quality including different types of Bus and taxi low emission zone (LEZ) type measures. These LEZ measures were assessed and the most effective measure identified was a Lewes Bus LEZ which would include upgrading the emissions systems or replacements of existing buses operating in the centre of Lewes. The AQAP will be reviewed by Council and be provided for public consultation in 2020. (*Note: these measures were assessed pre COVID-19*).

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 NO₂ concentrations (e.g. change of traffic priority in Fisher Street), car club is well established, 20mph zones in 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.

2.2.2 A259 Newhaven Ring Road AQMA

In Table 2.1 the monitoring location of initial exceedance (at declaration) was measured at LDC-16 Southway, Newhaven with an annual NO₂ mean of 49µg/m³ in 2013. This year the annual mean for this location was 40.7µg/m³ but when corrected for distance to receptor the annual mean was 35.9µg/m³. This location has shown annual means above 40µg/m³ for the few years so this is a welcome reading. It is located on a busy road, near a bus stop and traffic lights and is at the top of a steep incline so these factors will affect NO₂ readings at this location. However, the diffusion tube by The Old Chapel, Newhaven, which is located on that inclined link of the A259 ring road, has been shown to be in exceedance of the AQS at the nearest relevant receptor (40.1µg/m³) for the past few years.

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 to address the high concentrations of nitrogen dioxide (NO₂) which people are exposed to alongside the busy roads in the centre of Newhaven. Road transport is the main source of emissions relating to NO₂, and particularly diesel vehicles in stop- start traffic which make the biggest contribution resulting in higher emissions.

The AQAP has seven broad areas of action to help deliver better air quality, with specific measures then identified for each of these actions areas. The categories of action are as follows:

Action 1: Enable the use of sustainable travel choices through the delivery of transport infrastructure and initiatives

Action 2: Actively promote low emission vehicles and supporting infrastructure.

Action 3: Use the planning system to ensure that air quality is fully considered for new development.

Action 4: Use traffic management to reduce emissions within the AQMA.

Action 5: Work with Public Health colleagues to inform the public about health impacts of Air Pollution and how they can change behaviour to reduce emissions and reduce exposure.

Action 6: Continue to monitor and assess air quality in line with Government guidance on Local Air Quality Management (LAQM).

Action 7: Target point sources in Newhaven Town Centre

The above actions are evaluated in terms of their impact on:

- Air quality
- Cost & feasibility
- Timescale for implementation

The delivery of the 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>

Additional actions

East Sussex County Council are looking into developing proposals to improve the A259 Newhaven Ring Road by way of improving traffic flow and linking existing signals with crossings and improving road layout.

ESCC’s LTP links in well with the *Active Access for Growth Programme* (See Tables Table 2.2 and Table 2.4:)

Table 2.2: Summary of ESCC Local Transport Capital Programme 2018/19 – Supporting Cycling/Walking/Public Transport for Lewes and Newhaven

Location	Measure	Scheme Phase
Newhaven		
A259 South Coast Corridor package - Newhaven Ring Road Junction Improvements	Traffic Management	Completed detailed design by March 2019
A259 South Coast Corridor package - Newhaven Cycling Improvements (Avis Way)	Cycle Route	Completed detailed design by March 2019
Lewes		
Lewes Traffic Management - New Malling 20mph Scheme	20mph Scheme (Traffic Calming Old Malling Way + signs)	Completed detailed design by March 2019
Lewes Walking and Cycling Network - Cycle route 90	Cycle route 90	Commenced preliminary design by March 2019

Lewes Bus Stop Accessibility Improvements - High Street and town centre	Accessible Bus Stops	Completed detailed design by March 2019
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Table 2.3: Summary of ESCC Local Transport Capital Programme 2019/20 – Supporting Cycling/Walking/Public Transport for Lewes and Newhaven

Newhaven		
A259 South Coast Corridor package - A259 corridor study	Multi Modal	Completed initial feasibility work by March 2020
A259 South Coast Corridor package - Newhaven Ring Road Junction Improvements	Traffic Management	Construction by March 2020
A259 South Coast Corridor package - Newhaven Cycling Improvements (Avis Way)	Cycle Route	Completed detailed design by March 2020
Lewes		
Lewes Traffic Management - New Malling 20mph Scheme	20mph Scheme (Traffic Calming Old Malling Way + signs)	Completed construction by March 2020
Lewes Walking and Cycling Network - Cycle route 90	Cycle route 90	Completed detailed design by March 2020

<p>Lewes Bus Stop Accessibility Improvements - High Street and town centre</p>	<p>Accessible Bus Stops</p>	<p>Following a review of preliminary design, alternative locations to be identified during 19/20</p>
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East Sussex County Council (ESCC) managed to bid successfully from the *Active Access for Growth Programme*, obtaining a £1.4 million grant from the Department for Transport to deliver a programme of active travel across East Sussex. The Growth programme will run from 2017-2020, focusing on particular growth areas, one of them being Newhaven.

The key objectives of this are:

- Improve access to jobs, skills, training and education
- Seek support for local economic growth
- Demonstrate an alignment to health, air quality and reduced carbon emissions and improve air quality
- Increase walking and cycling by 2%/year and increase the proportion of people completing 30 minutes of physical activity/day

The programme is split into 3 strands and covers a wide range of audiences and has many partners to deliver the programmes:

1. Business and Workforce Development
2. Education and Training
3. Healthy Communities

The Community Grant Scheme (AAfG Community Fund) aims to assist community groups, voluntary organisations and educational establishments to actively promote increasing the number of people traveling to work/education/training to walk and cycle and actively promote increased physical activity and AAfG officers have built important links with workplaces and colleges in relation to the first two strands above.

See

link:

<https://www.eastsussex.gov.uk/roadsandtransport/localtransportplan/funding/active-access-for-growth/active-access-for-growth/>

Under point 1: *Sustrans Active Steps, Living Streets, Sustrans Active Travel and Pedal Power have all delivered activities aimed at enabling employees to travel more actively for every day journeys.*

Under point 2: *In surveyed Sustrans schools, cycling more than tripled after 1 year of engagement*

Point 3 works with public health colleagues tackling physical inactivity in the county. It aims to integrate a number of cycling and walking initiatives into existing community development plans to promote increased levels of exercise into people's daily lives.

During the 2018/19 period there have been various cycling and walking schemes in the design phase with design and construction planned for 2019/20 (also see Tables 3 & 4). For example:

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.

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.

There are other plans in development, e.g. looking towards 2019/20, ESCC are looking to propose a Local Cycling & Walking Infrastructure Plan later in 2019, where integrated travel behaviour programmes and road safety initiatives will be a key element of the plan.

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 above for links)

The principal challenges to implementation of air quality improvements that Lewes District Council face - funding will be required for the replacement of automatic analysers at the Lewes automatic monitoring station. The planned installation of the Newhaven air quality monitoring station has been slow due to a variety of issues, one being a suitable site within the AQMA. We envisage this station will be installed and up and running during 2019. The AQAP review may give rise to further challenges. Progress on the Lewes AQAP has been slower than expected due to data collation from a third party and further modelling which was necessary.

⁴DEFRA's, Clean Air Strategy (Jan 2019) 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 business's 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.

Whilst the measures stated above in Section 2 and in Table 2.4: will help to contribute towards compliance, Lewes District Council 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 and Newhaven A259 Ring Road AQMA's.

Table 2.4: Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	White Hill / Fisher Street / West street scheme (LTP) - Change of priority at Commercial Square to improve flow in Fisher Street; review traffic signals at Station Street; greater priority to pedestrians. Two phases: (a) Experimental change in junction priority (b) Formalise priority working including other works in the area	Traffic Management	UTC, Congestion management, traffic reduction		East Sussex County Council		NO2	4-6.5 ug/m3 or 9-12% red in NO ₂ (Fisher Street) Some air quality benefits will be achieved from the experimental scheme	Completed	Completed	Reductions in NO2
2	Beddingham Crossing (LTP) - Rebuilding the Southerham and Beddingham roundabouts on the A27 outside Lewes and a new railway bridge to avoid queuing at Beddingham rail crossing.	Traffic Management	UTC, Congestion management, traffic reduction		Highways Agency		Traffic Count	None	Completed	Completed	Reduced congestion & emissions on A27. Longer term better traffic flow so reduced traffic flow through Lewes.
3	Lewes Town Centre 20mph zone - Provision of 20mph area in addition to the existing 20mph Zone. Will include majority of the AQMA.	Traffic Management	Reduction of speed limits, 20mph zones		East Sussex County Council		Traffic Count/NO2/CO2	None	Completed	Completed	Wider Impacts: Safety, walking, cycling, congestion
4	Signalised access from Phoenix Causeway, signalised junction Eastgate Str/Little East Str/Phoenix Causeway, East Str closed western end, made one way, priority change at West Str/Market Str, implied roundabout at Boots/High Str	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, inc Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane		East Sussex County Council & South Downs National Park		Traffic Count	None	In planning	planning	Improve traffic flows. Any reduction could be offset by increased traffic generated from Phoenix development. Project is a development lead opportunity.
5	The Living Cliffe (LTP) - Creation of pedestrian zone in Cliffe High Street with restricted vehicular access. Introduction of 20mph zone to vehicles allowed to enter the zone (e.g. for deliveries)	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, inc Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane		East Sussex County Council		Traffic Count	None	Completed	Completed	Existing through-traffic in Cliffe High Street will tend to go across Phoenix Causeway via School Hill and Market Street until Phoenix Roundabout scheme is implemented. Improved safety, walking & cycling facilities, reduced impact of car outside the AQMA
6	Offham Road Pedestrian Priority Scheme (LTP) Improvement to pedestrian facilities and vehicle speed	Traffic Management	Reduction of speed limits, 20mph zones		East Sussex County Council		Traffic Counts	None	Mini roundabout at The Avenue and Offham Road construction completed in August	Completed	Improved safety, walking & cycling facilities, reduced impact of car outside the AQMA

	management.								2010. Pedestrian crossing installed Offham Road early summer		
7	Ringmer –Lewes cycleway (LTP) - Introduction of off-road cycleway on the Lewes-Ringmer road link – heavily used by commuters from Ringmer to the Town Centre. Scheme split into two, (a) Phase 1 (Eastern section), (b) Phase 2 (Western section)	Transport Planning and Infrastructure	Cycle network		East Sussex County Council		Traffic Counts	None	Ongoing	Ongoing	Encourage long term modal shift.
8	Lewes Railway Station Forecourt Scheme (LTP) Improved facilities for pedestrian, buses and taxis	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services		East Sussex County Council		Increased use of sustainable transport modes	None	Completed	Completed	Bridge repairs completed and pedestrian crossing completed. Should encourage modal shift
9	Lewes – Cycle Route 90	Transport Planning and Infrastructure	Cycle Network		East Sussex County Council		Increased use of sustainable transport modes	Not known	Pre-liminary design/design work commences 2019/20	March 2020	
10	Lewes Bus Stop Accessibility – High Street 7 Town Centre	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services		East Sussex County Council		Increased use of sustainable transport modes	Not known	Design work commences 2019/20	Mar-20	
11	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	Policy Guidance and Development Control	Other policy		East Sussex County Council		Number of agreements and s.61 agreements	None	Informal p-partnership working between ESCC and LDC and also through the planning process and s61 agreements.	Ongoing	Improved flow resulting from better management of deliveries to sites. So emissions reduced in Lewes AQMA.
12	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	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's		East Sussex County Council		Traffic Counts	None	ESCC started investigation into freight movement and impacts on town	Unknown	Linkage to M10. Reduction in HGV since Beddingham improvements completed (M2)
13	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)	Traffic Management	Anti-idling enforcement		LDC		NO2/Participation/E nforcements	Ongoing	ongoing - Temporary signs installed around AQMA's	Ongoing	Public engagement work targeting schools been carried out since 2018 Sustrans/Living Streets. If more funding can be secured will look to do further. Anti-idling campaign aimed at schools commenced Mar 2019. Anti-idling signs installed around AQMA areas in Newhaven & Lewes Town Centre. Emissions reductions may have to be calculated rather than

										measured.	
14	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	Traffic Management	Other		East Sussex County Council		reduced traffic and congestion at peak time, reduced re-circulation, reduced emissions; and modal shift and sustainable travel behaviour	None	Parking review and consultation undertaken 2013. c) New charges at longer stay car parks d) Residents permits now limited with new build *f) 4 off street car park spaces provided for community car club. 2 EV charging bays now installed at Lewes railway station Investigating the provision of a low emission car park within the AQMA to include preferential parking.	Unknown	Parking costs are increasing in Lewes
15	Partnership work with bus & train operators (LTP+) a) Reduce 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	Vehicle Fleet Efficiency	Driver training and ECO driving aids		LDC		accessibility, awareness	None	a) Brighton and Hove bus drivers are now eco trained, preparing scheme to target other operators. New generation of LE buses starting to penetrate smaller fleets. b) LSTF monies invested in real time bus information on key routes through Lewes. In addition a travel choices marketing campaign will be delivered promoting bus and train patronage. c) New 150 space secure cycle hub has been installed at Lewes train station with card entry system. LDC now working as part of the Sussex community rail partnership current projects include route guide.	Ongoing	Long term modal shift from car to bus.
16	Lewes Town Travel Plans (LTP+) - a) Review existing County & District Travel Plans b) Accelerate implementation of workplace travel plans c) Accelerating implementation/review of local school travel plans (including colleges) d) Link to other actions (i.e.	Promoting Travel Alternatives	Other		LDC		lead by example, change in travel behaviour, education, awareness	None	a) LDC travel plan currently being reprioritised with a number of actions agreed by CMT including reduction in kgCo2/KM allowance on contract cars to 120.	None	Encouragement of modal shift and appropriate use of cars at workplace. Contract cars not available to staff. Car park capacity reduced to encourage modal shifts.

	school monitoring projects, cycling and car-sharing promotion) e) Target shorter journeys – investigate personal travel planning marketing										
17	Car-sharing Database (LTP+) - Support LTP car-sharing	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure		East Sussex County Council		Travel Behaviour	None	Completed	Completed	Modal shift
18	Car clubs - a) Support existing club in Lewes town (i.e. marketing) b) Accelerate introduction of new clubs c) Provide parking locations for car parks (Require car-clubs for large new developments – M21)	Alternatives to private vehicle use	Car Clubs		LDC		Usage of Car club	None	Completed	Completed	Modal shift and appropriate use of lower emission vehicles within and around the AQMA.
19	Walking and cycling (LTP+) – a) implementation of LTP actions within Lewes town (i.e. improvement to existing cycle routes, identify new ones, improve signage and facilities) b) Promoting walking and cycling as a healthy and more preferable option to car for local journeys	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure		East Sussex County Council		Delivery of LTP Actions	None	Completed .	Completed	Modal shift and long term habit forming intervention.
	Lewes Town Travel Plans (LTP+) – a) Review existing County & District Travel Plans b) Accelerate implementation of workplace travel plans c) Accelerating implementation/review of local school travel plans (including colleges) d) Link to other actions (i.e. school monitoring projects, cycling and car-sharing promotion) e) Target shorter journeys – investigate personal travel planning marketing		Other		LDC		lead by example, change in travel behaviour, education, awareness	None	Completed	Completed	Encouragement of modal shift and appropriate use of cars at workplace.
20	Better control of impact of new developments – a) Facilitate funding from S106 agreement b) Conditions to require reduced parking allocation and inclusion of electric vehicle changing points, completion of Sustainability Checklist; travel plans for large developments and inclusion of pedestrian & sustainable transport facilities such as car-club dedicated car spaces and	Alternatives to private vehicle use	Car Clubs		LDC		Number of s.61 agreements	None	a) Sustainable accessibility s106 agreements secured on numerous applications including increased car club provision. b) Conditions and sustainability checklist completed on all large planning applications including provision of car club by developer for town centre development. Car club policy note	None	Modal shift and integration of new developments into the urban landscape to enable pedestrian access throughout the town.

	bus lanes								drafted to secure funding from developers for additional car club cars.		
21	Greater planning controls within or near the AQMA for new developments or applications a) Stricter conditions limiting permitted uses and changes of use for new applications b) Request detailed air quality assessment for developments affecting AQMA. c) Encourage the uptake of Low emission strategies by developers d) Investigate production of supplementary guidance notes on air quality for new developments	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality		LDC		Planning Conditions and Guidance Production	None	a) LDC officers consulted on all planning applications, good awareness of AQMA including training session. b) AQ assessments requested for developments affecting AQMA	None	Sussex-air Guidance enables quantification of air quality impacts (health) and emissions mitigation options for new developments. Guidance updated in 2020.
22	Intensify promotion of national schemes on domestic heating and energy efficiency – Increase promotion of scheme aimed to improve insulation, replace/service boilers, encourage energy efficiency in the Town Centre.	Promoting Low Emission Plant	Other		LDC		CO2/NO2 Reduction	None	93.80 tonnes of CO2 annual saving from cavity wall and loft insulation based on 178 installs in Lewes Town from Insulation Campaign and My Home 2012.	Ongoing	Reduction in point source emission within and around the AQMA from non-transport domestic sources.
23	Educational campaign on solid fuel burning across Sussex area	Promoting Low Emissions	Other		Sussex-air partnership		Particulate reduction	None	Defra funding (through Sussex-air bid) for Clean Burn Sussex campaign for 2019-2020 – education campaign	Ongoing	The DEFRA project is an educational campaign on solid fuel burning, promoting cleaner fuels, low smoke appliances and the correct way of installing and maintaining them
24	Continue investing in new technologies and pilot projects through the LDC Waste & Recycling a) Electric vehicles for recycling fleet b) NOx reducing additive for HGV diesels c) Eco-driving training d) Route management (GPRS) e) Monitoring of fuel use & efficiency	Vehicle Fleet Efficiency	Other		LDC		Fuel Usage/Maintenance Records	None	a) Fleet being maintained ESCC has undertaken a scoping study on the use of smart technology for use in transport b) NOx additive still used c) Eco driver training for operatives d) All vehicles GPRS controlled e) All fuel use monitored	Ongoing	Reduction of LDC fleet emissions in the AQMA. LDC is in the top 10 of EV users amongst councils in the UK: http://www.intelligentcarleasing.com/blog/new-study-compares-every-uk-council-electric-vehicles/
25	Raising awareness & engagement of non-statutory stakeholders a) Organise one-off events, talks, workshops and targeted campaigns on public transport marketing and eco-driving, involving the local community b) web-sites improvements to provide better	Promoting Travel Alternatives	Other		LDC		Participation in events	None	Measures in M20 and a) Active Travel Challenge for work – County wide – 2018 & 2019 through ESCC Active Access for Growth Programme	Ongoing	Informative: potentially significant cumulative impact by modal shift.

	information & allow feedback/participation from members of the public c) Pilot LDC internal pop-up messaging providing air quality/sustainable transport information										
26	Strengthen partnership work with ESCC (LTP), LDC Sustainability(Climate Change), Planning & Communities (LDF & LSP), Sussex Air (emissions inventory, air-alert) a) Intensify links to existing strategies b) Accelerate implementation of those schemes which may improve local air quality. c) Joint participation to events, campaigns, grants applications, data collation surveys d) Plan monitoring programme (i.e. traffic) to assess action plan effectiveness	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality		LDC		climate change, transport, social inclusion, communication, effective partnership work	None	a)Working on links to LDF b)LES being promoted through RGI scheme c)Ongoing working with ESCC transport through emerging Local Cycling & Walking Infrastructure Plan and cycling and walking travel behaviour change programmes Dev control and environment team and local groups. d)Lewes town monitoring currently assessing M1 effectiveness	Ongoing	Informative: potentially significant cumulative impact due to modal shift and adoption of ULEV.
27	Address traffic flow & congestion on Newhaven Ring Road	Traffic Management	UTC, Congestion management, traffic reduction		ESCC		Traffic flow/NO2	None	Junction improvements proposed – design and construct 2019/20	Ongoing	Wider Impacts: Safety, walking, cycling, congestion
28	Improve cycling facilities	Promoting Travel Alternatives	Promotion of cycling		ESCC		Cycling facilities	None	Provision of new cycle stands at key locations in Newhaven town Centre	Completed	Wider Impacts: Safety, walking, cycling, congestion
29	Upgrades and signs for cycling	Promoting Travel Alternatives	Promotion of cycling		ESCC		Traffic counts	None	Upgrades to routes and signage in and through Lewes	Ongoing. Likely to be integrated as part of any measures identified and delivered through ESCC emerging Cycling & Walking Investment Plan	Encourage long term modal shift.
30	Improve cycling facilities	Promoting Travel Alternatives	Promotion of cycling		ESCC		Cycling route	None	Provision of new cycle route Egrets Way from Newhaven to Lewes along River Ouse.	75% completed	Wider Impacts: Safety, walking, cycling, congestion
30	A259 South Coast Corridor Package – A259 Corridor Package	Multi Modal Transport Study	Other		ESCC		Currently unknown	Currently unknown	Commence 2019/20	Not yet started	

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

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

Lewes District Council is developing its approach to addressing PM_{2.5} in partnership with public health local authority officers (e.g. the planned Clean Burn Sussex project for year 2019-20 mentioned in section Conclusions and Priorities). The automatic analysers in the Lewes District Council area do not measure PM_{2.5}. In DEFRA's recently published ⁴Clean 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/m₃) by 2025.'

Although Lewes District Council do not directly measure PM_{2.5}, 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 can only benefit the reduction in pollutants generally, including PM_{2.5}.

Lewes District Council does not monitor for PM_{2.5}. It does, however, monitor PM₁₀ concentrations at 1 location (LS5) which can be used to estimate PM_{2.5} concentrations. A report by UK-AIR which compared the concentrations of PM₁₀ and PM_{2.5} at numerous locations throughout the UK found that in urban areas, the ratio of PM_{2.5}:PM₁₀ is, on average, 0.67. The annual mean concentration of PM₁₀ recorded in LDC in 2019 was 17.9µg/m³ using this ratio, it is possible to estimate that PM_{2.5} concentrations at this location would be 12µg/m³.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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

Lewes District Council undertook automatic (continuous) monitoring at one site during 2019. Table A.1 in Appendix A shows the details of the LS5 Lewes Town Centre site.

NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. National monitoring results are available at <http://www.sussex-air.net/>.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

Figure 1: Annual average NO₂ concentration in µg/m³ measured at Lewes automatic monitoring site in the Lewes district 2014-2018



Figure 1 shows the annual average NO₂ concentrations measured at the automatic monitoring site from 2015-2019. Annual mean concentration levels demonstrate consistent levels below the 40µg/m³ annual mean objective for NO₂.

3.1.2 Non-Automatic Monitoring Sites

Lewes District Council undertook non- automatic (passive) monitoring of NO₂ at 50 sites during 2019. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias⁴, “annualisation” (where the data capture falls below 75%), and distance correction⁵. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the AQO of 40µg/m³. Note that the concentration data presented in Table A.3 represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2019 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.

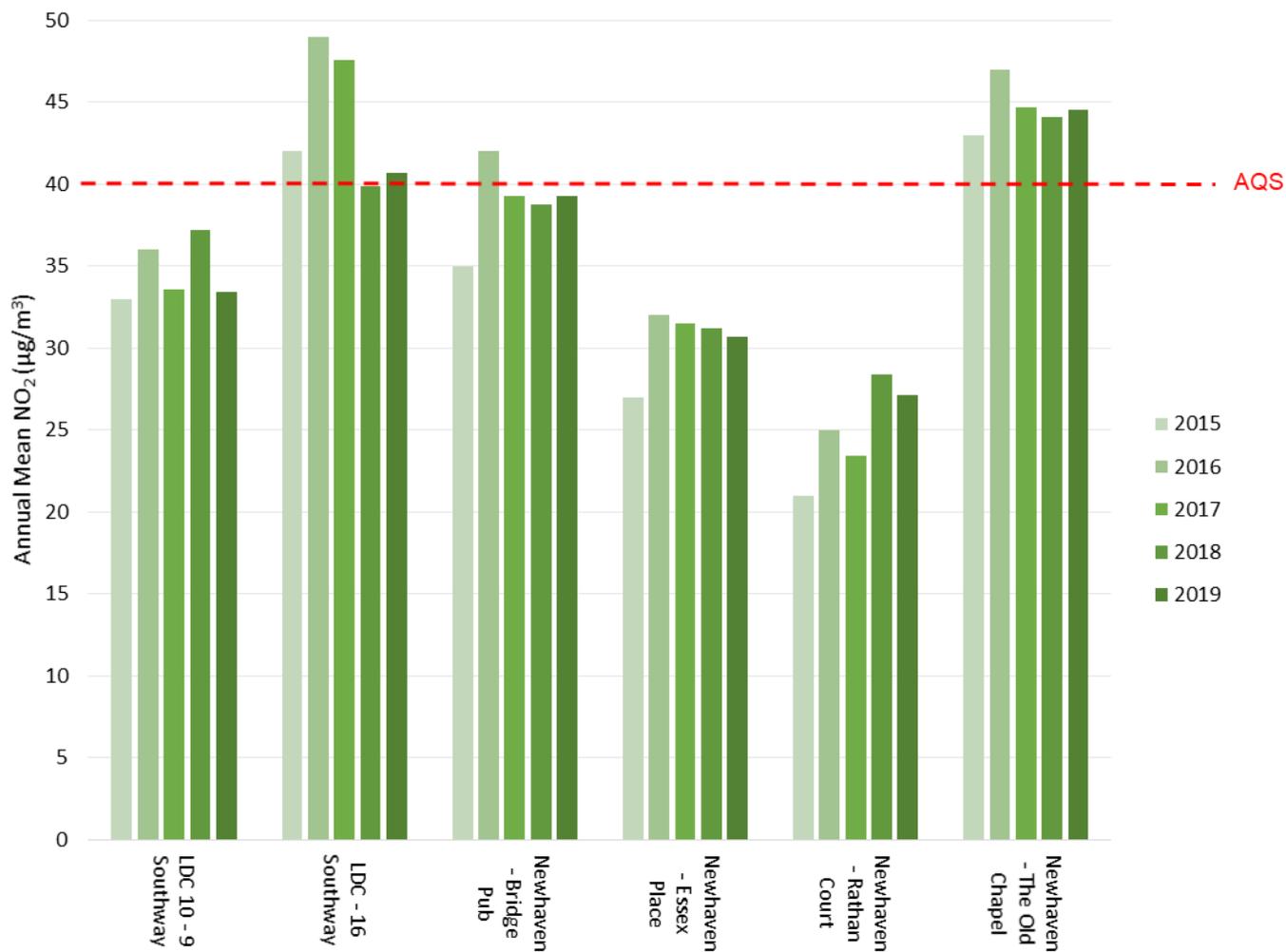
For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. The 9 new sites added during 2019 had only 8 months of data, so were annualised using continuous monitoring data from 3 other sites – see Table 9.

⁴ <https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html>

⁵ Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

Figures 3.2 -3.5 show trends in nitrogen dioxide measured by diffusion tube from 2015 to 2019. Each figure illustrates the concentration for groups of sites with data readings.

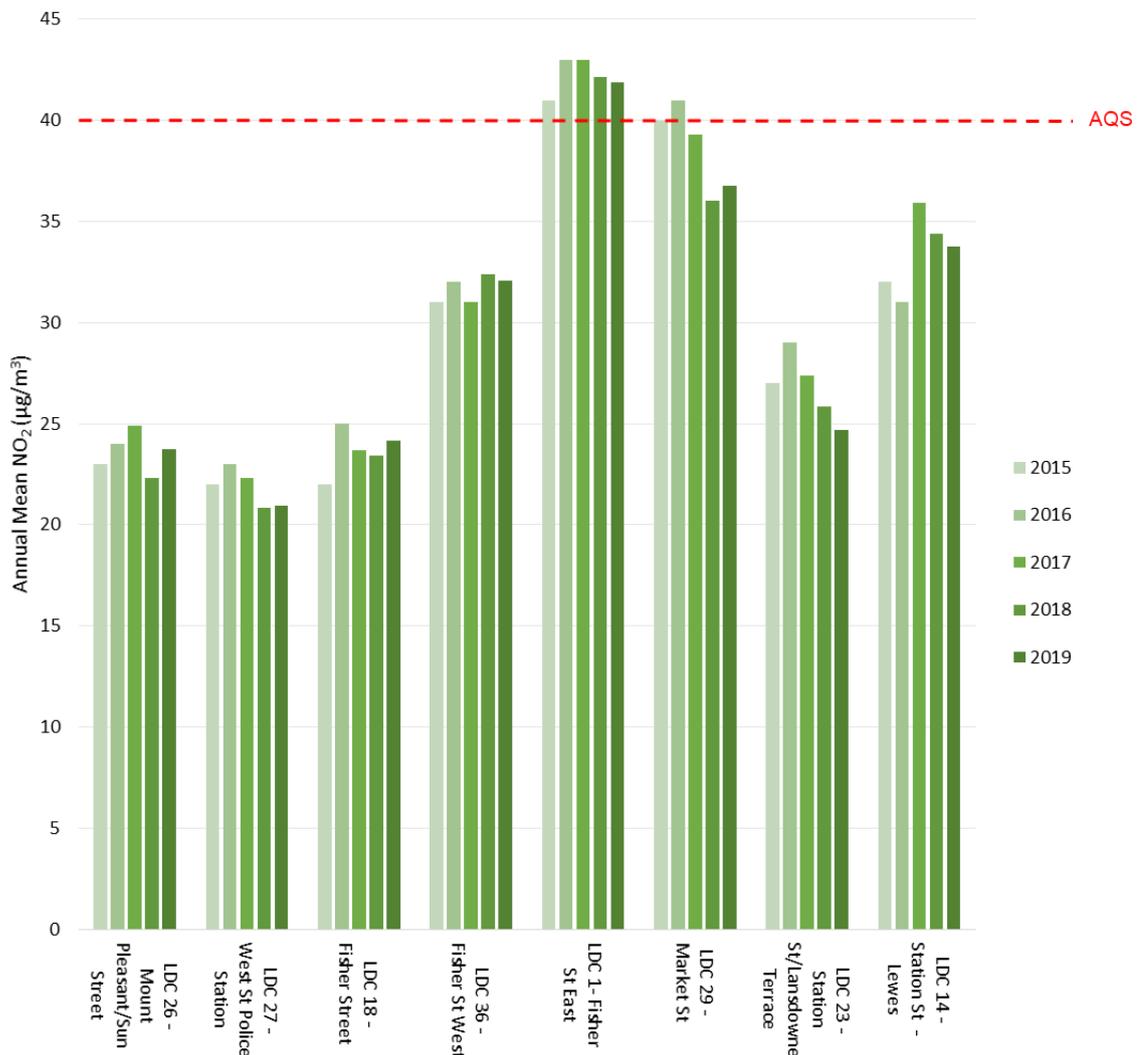
Figure 2: Annual average NO₂ concentration (diffusion tubes) located within the A259 Newhaven Ring Road AQMA from 2015-2019:



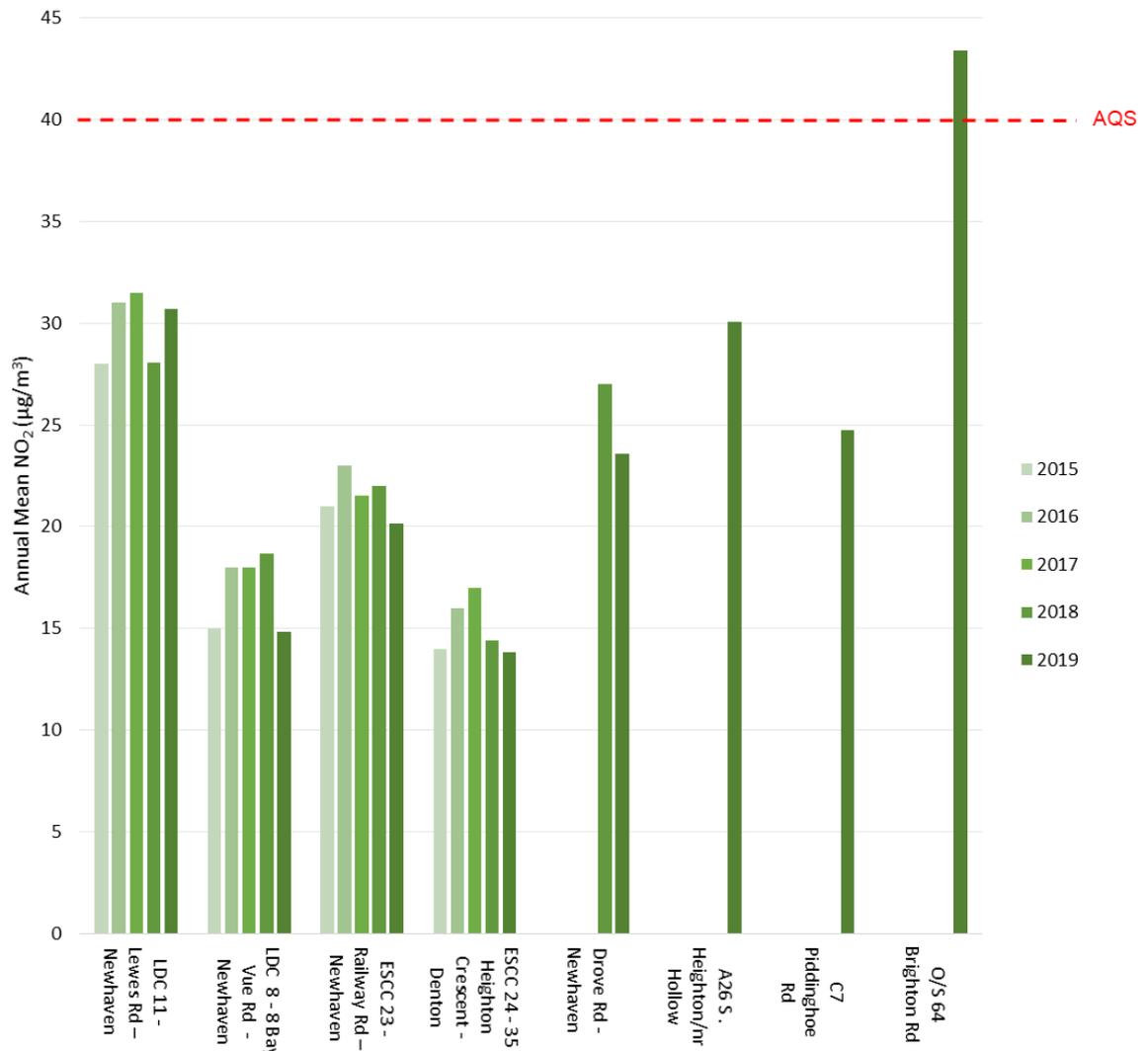
The above figure shows the diffusion tubes within the Newhaven AQMA – it is clear that two sites, LDC- 16 Southway and The Old Chapel have illustrated consistent exceedances over the last few years. The Old Chapel is located on a hill, near a junction and will receive ‘launch’ exhaust from vehicles that 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. Following the distance correction to the nearest relevant receptor (see Table 7), 16 Southway met the annual objective of below 40µg/m³. However, an annual mean exceedance was still identified following distance correction of the Old Chapel diffusion tube. As such,

there are still receptors by the steepest parts of the A259 link road that are experiencing NO₂ concentrations above the annual mean AQS, but other sections of the link road are likely to be below that objective. Lastly, there is no discernible trend to suggest an overall increase or decrease in NO₂ concentrations – they appear to have slightly fallen on some tubes but increased on others (e.g. LDC10 and Rathan Court).

Figure 3: Annual average NO₂ concentration (diffusion tubes) located within the Lewes Town Centre AQMA from 2014-2018



The above figure shows the diffusion tubes which are located within the Lewes AQMA. LDC 1 – Fisher St East has consistently shown above annual objective concentrations over the last 5 years, albeit those concentrations are demonstrating slight reductions recently. This is the only diffusion tube within the Lewes Town Centre AQMA to be in exceedance of the annual mean AQS since 2017. LDC 18 and



LDC 36 Fisher Street have shown consistently lower concentrations towards the middle and other end of this street where a change of priority in traffic was implemented as part of recommendations made in the Lewes AQAP 2009. Most sites have either remained static or shown small reductions in concentrations compared to 2018. Station St and Market St show notable decreases in recent years.

Figure 4: Annual average NO₂ concentration (diffusion tubes) located within the Newhaven area but not in the AQMA from 2015-2019.

From Figure 15 it is clear to see that the majority of sites demonstrate considerably lower concentrations than those tubes found within the Newhaven AQMA, except for the newly added tube outside 64 Brighton Road which shows readings above the annual mean AQS. It should be noted that this tube location sits on the edge of the Newhaven AQMA, therefore actions taken to improve air quality within the AQMA are

likely to have a positive influence on this diffusion tube as well. Furthermore, when distance-corrected, this diffusion tube falls below the relevant AQS. All other tubes demonstrate that annual mean NO₂ concentrations have not exceeded the annual objective for the last 5 years.

Figure 5: Annual average NO₂ concentration (diffusion tubes) located within the Lewes area but not in the AQMA from 2015-2019

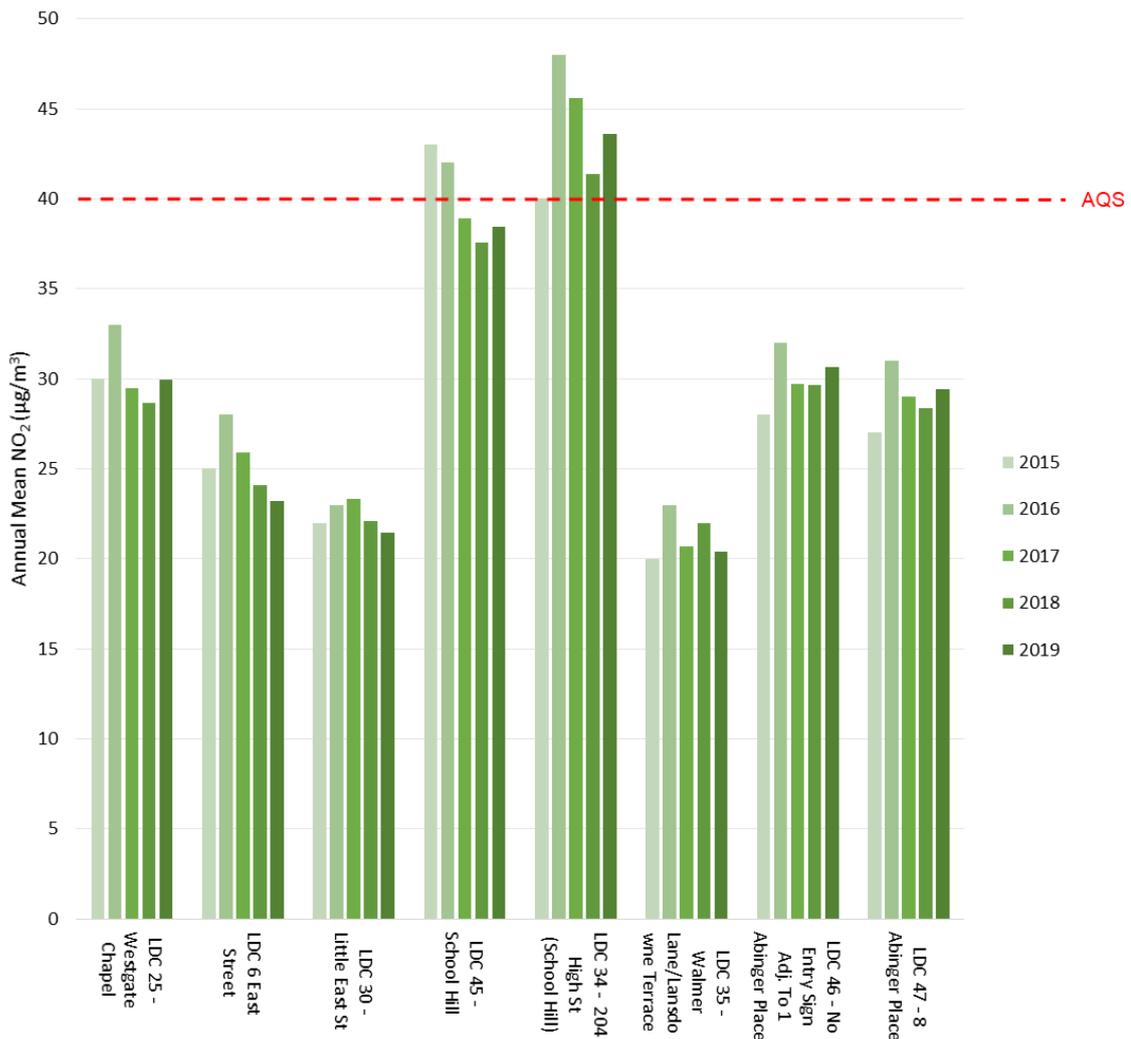


Figure 16 demonstrates that although all of these sites may be out of the Lewes AQMA, not all are meeting the annual objective. School Hill sits on a steep incline with a bus stop nearby and just above the area of site LDC 34- 204 High Str. When this road is busy, there is fume from vehicle ‘launch’ and often idling when waiting in traffic. However, it is encouraging to see that the general trend of readings appears to be reducing over time, most notably at LDC 45, which has been below the AQS for

the past three years. As such, the only diffusion tube in exceedance in at LDC 34. Following distance-correction, the recorded concentration still remains above the annual mean AQS.

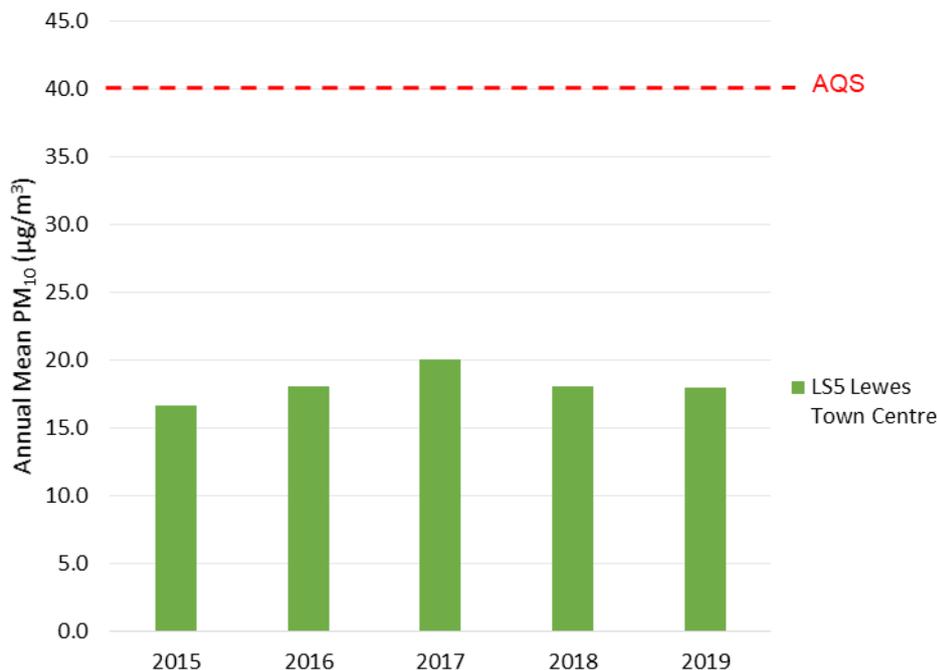
All other sites indicate concentrations within the annual objective, with most showing a decrease over time.

Error! Reference source not found. in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the AQO of 200µg/m³, not to be exceeded more than 18 times per year. There have been no exceedances of the hourly objective of 200µg/m³ since monitoring began.

3.2.2 Particulate Matter (PM₁₀)

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

Figure 6: Annual average PM₁₀ concentration measured at LS5 Lewes Town West Street (Automatic Monitoring site) 2015-2019



As identified in Figure 6 it is clear that PM₁₀ annual mean concentrations have remained well below the annual AQO over the last 5 years..

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the AQO of 50µg/m³, not to be exceeded more than 35 times per year.

Appendix A: Monitoring Results

Table A.1 - Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	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 ; PM ₁₀	YES (Lewes AQMA)	Chemiluminescent and TEOM	5	2.5	2

Notes:

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

(2) N/A if not applicable

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

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
1	Seaford- Sutton Pk Rd/Warwick Ave	Roadside	548420	99223	NO2	N	4.5	2.8	NO	2.8
2	LDC 10 - 9 Southway – Newhaven	Kerbside	544354	101388	NO2	Y	5	1	NO	2.5
3	LDC - 16 Southway – Newhaven	Kerbside	544414	101273	NO2	Y	2.5	1	NO	2.5
4	LDC 11 - Lewes Rd – Newhaven	Roadside	544273	101532	NO2	N	4	2	NO	2.5
5	Telscombe – South Coast Rd/Central Ave	Roadside	540063	101263	NO2	N	6	1.8	NO	2.6
6	LDC 8 - 8 Bay Vue Rd - Newhaven	Urban Background	544521	101089	NO2	N	3	N/A	NO	2.5
7	LDC 25 - Westgate Chapel	Roadside	541285	109969	NO2	N	2.2	1.9	NO	2.3
8	LDC 26 - Mount Pleasant/Sun Street	Roadside	541481	110277	NO2	Y	0.5	2	NO	2.5
9	LDC 27 - West St Police Station	Roadside	541541	110246	NO2	Y	5	2.6	YES	2.3
10	LDC 18 - Fisher Street	Kerbside	541505	110236	NO2	Y	0	1.4	NO	2.5
11	LDC 36 - Fisher St West	Kerbside	541519	110167	NO2	Y	N/A	1	NO	2.2

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12	LDC 1- Fisher St East	Kerbside	541540	110130	NO2	Y	N/A	1	NO	3.5
13	LDC 29 - Market St	Kerbside	541598	110169	NO2	Y	1.5	1	NO	2.5
14	Peacehaven – o/s 223 South Coast Rd	Kerbside	540969	100974	NO2	N	2.9	1.4	NO	2.7
15	LDC 31 - North St	Kerbside	541646	110370	NO2	N	5	1	NO	3
16	LDC 33 - Culfail Tunnel/Thomas St	Roadside	542178	110454	NO2	N	8	5	NO	3
17	LDC 4 - 159 Malling St – Lewes	Roadside	542315	110733	NO2	N	3	2	NO	3.5
18	LDC 6 East Street	Roadside	541669	110278	NO2	N	0	3.5	NO	2.5
19	LDC 30 - Little East St	Roadside	541726	110335	NO2	N	1	2.7	NO	2.5
20	LDC 45 - School Hill	Kerbside	541755	110206	NO2	N	2.5	1	NO	2.5
21	LDC 34 - 204 High St (School Hill)	Roadside	541684	110181	NO2	N	0	2.7	NO	2.6
22	LDC 35 - Walmer Lane/Lansdowne Terrace	Roadside	541709	109990	NO2	N	1.8	3	NO	2.4
23	LDC 23 - Station St/Lansdowne Terrace	Roadside	541615	109968	NO2	Y	N/A	1.8	NO	2.5
24	LDC 14 - Station St - Lewes	Roadside	541603	110001	NO2	Y	2	1.9	NO	3
25	LS6 - Denton Community Centre	Roadside	545142	102433	NO2	N	N/A	N/A	NO	2

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26	Peacehaven – South Coast Rd/Steving Ave	Roadside	541231	100957	NO2	N	10	3	NO	2.7
27	LDC 46 - No Entry Sign Adj. To 1 Abinger Place	Roadside	541438	110293	NO2	N	4	1.5	NO	2
28	LDC 47 - 8 Abinger Place	Roadside	541430	110328	NO2	N	1.2	1.5	NO	2.5
29	Peacehaven – o/s 53 South Coast Rd	Roadside	542168	100675	NO2	N	10	3	NO	2.7
30	ESCC 20 - A259 SFD (nr Chyngton Gardens)	Roadside	550077	99291	NO2	N	10	1.5	NO	3
31	ESCC 23 - Railway Rd – Newhaven	Kerbside	544996	101264	NO2	N	5	1	NO	3
32	ESCC 24 - 35 Heighton Crescent - Denton	Urban Background	544908	102704	NO2	N	10	N/A	NO	1.8
33	ESSCC 2 - Ringmer Village Hall	Roadside	544681	112441	NO2	N	N/A	1.8	NO	2
34	ESCC 18 - High St – Ditchling	Roadside	532605	115203	NO2	N	5	2	NO	2.5
35	Ditchling High Street 2	Kerbside	532587	115410	NO2	N	1	1	NO	1.8
36	ESCC 22 - Southover High St – Lewes	Roadside	541032	109613	NO2	N	1	2	NO	2.1
37	Newhaven - Bridge Pub	Kerbside	544603	101485	NO2	Y	N/A	0.5	NO	2
38	Newhaven- Essex Place	Roadside	544497	101499	NO2	Y	5	1.2	NO	2

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39	Newhaven - Rathan Court	Roadside	544330	101423	NO2	Y	10	1.5	NO	2
40	Newhaven - The Old Chapel	Roadside	544497	101285	NO2	Y	3	1.5	NO	2.5
41	Drove Rd - Newhaven	Roadside	544948	101549	NO2	N	N/A	4	NO	2.5
42	Kings Gate Road - Falmer Roundabout	Roadside	535187	108928	NO2	N	20	2.5	NO	1.9
43	A26 S . Heighton/nr Hollow	Roadside	544886	102879	NO2	N	12	1	NO	1
44	C7 Piddinghoe Rd	Roadside	543431	103022	NO2	N	3.5	1.3	NO	1.8
45	O/S Kingston Primary school	Roadside	539543	108284	NO2	N	15	2.5	NO	1.8
46	Opp Seaford Station - Station Approach	Roadside	548167	99160	NO2	N	2	1.5	NO	3
47	Plumpton Green/Station Rd, flood sign	Roadside	536441	116231	NO2	N	7	1	NO	2
48	Barcombe High Str o/s old shop	Roadside	542029	115781	NO2	N	3	2.5	NO	2.5
49	O/S Covers, Cooksbridge	Roadside	540141	113548	NO2	N	0	2	NO	2
50	O/S 64 Brighton Rd	Roadside	544185	101350	NO2	N	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.3 – Annual Mean NO₂ Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ^{(3) (4)}				
							2015	2016	2017	2018	2019
LS5	541541	110246	Roadside	Automatic	100	100	23	24	21	19	19
1	548420	99223	Roadside	Diffusion Tube	100	100	-	-	-	24.5	25.2
2	544354	101388	Kerbside	Diffusion Tube	100	100	33	36	33.6	37.2	33.4
3	544414	101273	Kerbside	Diffusion Tube	100	100	42	49	47.6	39.9	40.7
4	544273	101532	Roadside	Diffusion Tube	100	100	28	31	31.5	28.1	30.7
5	540063	101263	Roadside	Diffusion Tube	100	100	-	-	25.6	23.0	23.4
6	544521	101089	Urban Background	Diffusion Tube	92	92	15	18	18	18.7	14.8
7	541285	109969	Roadside	Diffusion Tube	100	100	30	33	29.5	28.7	29.9
8	541481	110277	Roadside	Diffusion Tube	100	100	23	24	24.9	22.3	23.7
9	541541	110246	Roadside	Diffusion Tube	100	100	22	23	22.3	20.8	21.0
10	541505	110236	Kerbside	Diffusion Tube	100	100	22	25	23.7	23.4	24.1
11	541519	110167	Kerbside	Diffusion Tube	92	92	31	32	31	32.4	32.0
12	541540	110130	Kerbside	Diffusion Tube	100	100	41	43	43	42.2	41.9
13	541598	110169	Kerbside	Diffusion Tube	100	100	40	41	39.3	36.0	36.8
14	540969	100974	Kerbside	Diffusion Tube	100	100	-	-	32.5	28.8	30.5

15	541646	110370	Kerbside	Diffusion Tube	92	92	21	25	23	21.9	21.4
16	542178	110454	Roadside	Diffusion Tube	100	100	30	32	31	29.5	30.4
17	542315	110733	Roadside	Diffusion Tube	100	100	30	33	30.8	30.5	29.8
18	541669	110278	Roadside	Diffusion Tube	92	92	25	28	25.9	24.1	23.2
19	541726	110335	Roadside	Diffusion Tube	100	100	22	23	23.3	22.1	21.4
20	541755	110206	Kerbside	Diffusion Tube	100	100	43	42	38.9	37.6	38.5
21	541684	110181	Roadside	Diffusion Tube	100	100	40	48	45.6	41.4	43.6
22	541709	109990	Roadside	Diffusion Tube	92	92	20	23	20.7	22.0	20.4
23	541615	109968	Roadside	Diffusion Tube	92	92	27	29	27.4	25.8	24.7
24	541603	110001	Roadside	Diffusion Tube	92	92	32	31	35.9	34.4	33.7
25	545142	102433	Roadside	Diffusion Tube	100	100	11	13	14.1	11.6	11.2
26	541231	100957	Roadside	Diffusion Tube	92	92	-	-	25.4	23.2	22.8
27	541438	110293	Roadside	Diffusion Tube	92	92	28	32	29.7	29.6	30.7
28	541430	110328	Roadside	Diffusion Tube	92	92	27	31	29	28.3	29.4
29	542168	100675	Roadside	Diffusion Tube	100	100	-	-	21.4	21.9	19.5
30	550077	99291	Roadside	Diffusion Tube	100	100	30	35	33.5	30.2	29.0
31	544996	101264	Kerbside	Diffusion Tube	100	100	21	23	21.5	22.0	20.1
32	544908	102704	Urban Background	Diffusion Tube	100	100	14	16	17	14.4	13.8

33	544681	112441	Roadside	Diffusion Tube	100	100	22	24	22.5	21.8	20.9
34	532605	115203	Roadside	Diffusion Tube	100	100	28	31	27.9	29.7	26.9
35	532587	115410	Kerbside	Diffusion Tube	100	100	22	27	23.6	23.1	21.4
36	541032	109613	Roadside	Diffusion Tube	92	92	29	36	31.7	31.9	32.2
37	544603	101485	Kerbside	Diffusion Tube	100	100	35	42	39.3	38.7	39.2
38	544497	101499	Roadside	Diffusion Tube	92	92	27	32	31.5	31.2	30.7
39	544330	101423	Roadside	Diffusion Tube	100	100	21	25	23.4	28.4	27.1
40	544497	101285	Roadside	Diffusion Tube	100	100	43	47	44.7	44.1	44.6
41	544948	101549	Roadside	Diffusion Tube	92	92	-	-	-	27.0	23.6
42	535187	108928	Roadside	Diffusion Tube	100	67	-	-	-	-	57.0
43	544886	102879		Diffusion Tube	100	67	-	-	-	-	29.5
44	543431	103022	Roadside	Diffusion Tube	100	67	-	-	-	-	24.3
45	539543	108284	Roadside	Diffusion Tube	100	67	-	-	-	-	21.1
46	548167	99160	Roadside	Diffusion Tube	100	67	-	-	-	-	29.5
47	536441	116231	Roadside	Diffusion Tube	100	67	-	-	-	-	13.9
48	542029	115781	Roadside	Diffusion Tube	100	67	-	-	-	-	16.6
49	540141	113548	Roadside	Diffusion Tube	100	67	-	-	-	-	18.5
50	544185	101350	Roadside	Diffusion Tube	100	67	-	-	-	-	42.6

- ☒ Diffusion tube data has been bias corrected
- ☒ Annualisation has been conducted where data capture is <75%
- ☒ 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 adjustment

Notes:

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

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

- (1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
- (3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.
- (4) Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
							2015	2016	2017	2018	2019
LS5	541541	110246	Roadside	Automatic	100	100	0	0	0	0	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Table A.5 – Annual Mean PM₁₀ Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
						2015	2016	2017	2018	2019
LS5	541541	110246	Roadside	88	88	16.6	18	20	18	17.9

Annualisation has been conducted where data capture is <75%

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	PM ₁₀ 24-Hour Means > 50µg/m ³ ⁽³⁾				
						2015	2016	2017	2018	2019
LS5	541541	110246	Roadside	88	88	1	2	1	0	1

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO₂ Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO ₂ Mean Concentrations (µg/m ³)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.93) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
1	548420	99223	32.0	37.1	29.1	26.5	26.9	22.0	25.0	27.4	23.4	22.4	28.9	24.8	27.1	25.2	
2	544354	101388	43.7	51.9	34.4	42.6	32.2	20.1	33.6	32.1	33.6	32.0	47.2	28.2	36.0	33.4	
3	544414	101273	55.6	56.5	44.7	37.8	40.0	43.2	42.6	39.3	39.6	38.5	51.5	35.9	43.8	40.7	35.9
4	544273	101532	44.2	44.6	34.2	28.9	29.5	29.0	31.3	27.8	27.1	27.9	37.0	34.7	33.0	30.7	
5	540063	101263	33.1	34.3	27.5	23.2	23.2	23.8	23.7	23.4	19.2	20.8	26.7	23.3	25.2	23.4	
6	544521	101089	27.2		19.1	19.5	12.7	15.6	14.8	12.8	13.6	15.4	24.3	0.6	16.0	14.8	
7	541285	109969	36.9	41.4	34.2	33.0	29.2	30.9	28.6	29.6	30.3	29.7	36.4	25.9	32.2	29.9	
8	541481	110277	31.9	40.2	26.2	19.4	19.7	19.9	22.0	22.9	22.3	24.8	31.5	25.5	25.5	23.7	
9	541541	110246	29.5	37.1	24.8	17.9	20.5	16.7	19.5	20.5	19.1	20.1	27.2	17.6	22.5	21.0	
10	541505	110236	31.2	36.1	27.8	25.7	24.3	24.3	24.7	16.3	20.8	25.6	31.7	23.2	26.0	24.1	
11	541519	110167	39.9	48.3	33.3	37.3	32.9	32.7	34.3	23.2	30.6	35.0		31.5	34.5	32.0	
12	541540	110130	50.1	61.0	44.2	40.1	43.4	41.8	45.3	41.0	40.8	38.7	54.7	39.2	45.0	41.9	No Nearby Receptor
13	541598	110169	43.9	55.4	40.7	31.3	35.1	34.7	40.4	41.7	36.6	34.8	42.5	37.4	39.5	36.8	
14	540969	100974	39.5	52.1	34.2	28.1	31.4	29.5	32.1	29.9	25.4	21.5	38.0	32.6	32.8	30.5	
15	541646	110370	27.9	31.8	22.3	22.3	19.2	17.9	17.9	18.0		22.2	28.3	25.2	23.0	21.4	

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16	542178	110454	38.0	48.1	34.2	28.8	28.8	27.0	29.3	30.7	28.6	28.7	39.3	31.1	32.7	30.4	
17	542315	110733	41.6	44.4	29.1	32.3	27.9	26.8	30.3	28.1	26.4	30.8	38.4	29.0	32.1	29.8	
18	541669	110278	27.6	28.7	22.5	25.8	24.1	22.1	20.9	19.9		25.0	32.2	25.7	24.9	23.2	
19	541726	110335	34.4	31.4	28.3	20.0	18.9	17.5	19.2	19.4	18.7	22.0	22.6	24.3	23.1	21.4	
20	541755	110206	50.2	47.8	48.8	38.6	39.6	35.4	41.9	36.6	38.4	37.7	40.9	40.5	41.4	38.5	
21	541684	110181	51.2	56.3	51.7	38.9	41.3	41.3	54.1	53.4	48.6	45.5	48.2	32.1	46.9	43.6	43.6
22	541709	109990	28.6	29.3	22.9	20.1	19.4	17.9	17.8	16.8		19.9	28.6	20.3	22.0	20.4	
23	541615	109968	36.1		31.2	24.9	22.5	21.8	24.1	22.3	23.7	26.9	34.1	24.1	26.5	24.7	
24	541603	110001	46.2	37.6	41.5	27.3	33.3	29.7	35.8	37.7		32.7	39.9	37.5	36.3	33.7	
25	545142	102433	17.2	18.4	13.2	10.7	10.7	9.1	9.4	10.7	8.3	10.7	14.1	12.9	12.1	11.2	
26	541231	100957	29.7	31.8	26.9	20.1	19.9	22.6	22.4	23.7	20.1		26.1	26.0	24.5	22.8	
27	541438	110293	38.9	41.9	35.1	29.8	24.2	29.4	32.8	31.6		30.3	40.5	28.2	33.0	30.7	
28	541430	110328	39.5	39.0	28.8	29.7	28.3	27.7	26.9	26.3		30.8	38.6	32.3	31.6	29.4	
29	542168	100675	30.7	25.6	22.2	23.5	15.7	16.8	16.7	14.7	14.4	20.8	30.8	19.2	20.9	19.5	
30	550077	99291	39.6	40.8	37.6	28.4	30.9	17.3	32.9	35.8	29.9	25.8	24.9	30.1	31.2	29.0	
31	544996	101264	29.8	29.5	24.0	20.6	20.4	17.7	18.7	18.4	17.7	18.6	28.9	15.7	21.7	20.1	
32	544908	102704	22.3	22.1	17.4	12.3	14.5	12.3	13.3	13.8	0.6	15.3	18.7	15.7	14.9	13.8	
33	544681	112441	30.5	26.5	24.7	16.0	20.8	18.5	20.5	22.7	18.4	20.1	29.2	21.2	22.4	20.9	
34	532605	115203	36.3	31.1	30.8	35.8	30.0	27.2	26.6	22.1	18.7	25.3	36.8	26.4	28.9	26.9	
35	532587	115410	26.6	27.1	23.5	26.4	21.7	21.2	22.2	20.3	25.5	22.3	30.7	9.0	23.0	21.4	
36	541032	109613	46.7	45.2	40.6	32.6	31.0	25.8	28.6	24.7		32.9	46.7	25.9	34.6	32.2	
37	544603	101485	51.9	58.6	49.2	38.9	36.1	37.2	41.6	43.3	35.7	35.5	37.9	40.5	42.2	39.2	
38	544497	101499	40.3	40.1	33.3	30.6	29.3		34.4	34.5	27.3	29.1	38.6	25.6	33.0	30.7	
39	544330	101423	37.9	41.0	29.8	31.0	23.9	24.7	27.9	24.8	23.4	23.7	35.9	25.9	29.1	27.1	
40	544497	101285	55.7	56.7	54.6	42.8	49.4	47.0	46.2	53.3	45.6	40.5	45.3	38.0	47.9	44.6	40.1
41	544948	101549	36.1	28.3	28.2	25.7	23.2	24.0	19.2	19.5	21.5	20.7	32.4		25.3	23.6	

42	535187	108928					46.6	42.4	47.5	56.6	50.5	41.0	46.1	56.1	48.3	57.0	33.9
43	544886	102879					26.4	24.1	27.9	26.2	23.2	24.1	30.1	18.2	25.0	29.5	
44	543431	103022					22.5	18.8	18.7	19.9	17.5	19.7	27.8	20.0	20.6	24.3	
45	539543	108284					20.2	20.2	20.5	19.4	17.3	17.6	25.4	2.7	17.9	21.1	
46	548167	99160					24.6	25.5	24.7	21.6	23.9	24.1	33.9	22.0	25.0	29.5	
47	536441	116231					11.8	11.0	11.0	8.1	10.1	12.8	18.6	10.9	11.8	13.9	
48	542029	115781					10.4	12.8	12.9	11.2	14.1	16.5	20.9	13.8	14.1	16.6	
49	540141	113548					15.8	16.6	14.8	12.3	14.2	16.3	20.2	15.1	15.7	18.5	
50	544185	101350					39.1	37.4	33.9	36.2	35.1	35.8	43.4	28.2	36.1	42.6	39.4

- Local bias adjustment factor used
 National bias adjustment factor used
 Annualisation has been conducted where data capture is <75%
 Where applicable, data has been distance corrected for relevant exposure in the final column

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

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

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 (NO_x 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.

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 NO₂ PT forms an integral part of the UK NO₂ 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 2019 Gradko participated in the AIR PT programme, and obtained a 100% rating for the whole year (AIR PT rounds AR024, AR025, AR027, AR028 and AR030). Further information can be found on this link:

<https://laqm.defra.gov.uk/assets/laqmno2performancedatauptofebruary2019v1.pdf>

National bias adjustment factor

The diffusion tubes are supplied and analysed by Gradko utilising the 20 % triethanolamine (TEA) in water preparation method. A bias adjustment of 0.93 for the year 2019 has been derived from the national bias adjustment calculator. The spreadsheet is shown below in Table C.1.

Table C.1 : National Bias Adjustment Factor Spreadsheet (Version 03/2020)

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 03/20				
Follow the steps below in the correct order to show the results of relevant co-location studies							This spreadsheet will be updated at the end of June 2020				
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods							Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet				
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.							LAQM Helpdesk Website				
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.							Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.				
Step 1:	Step 2:	Step 3:	Step 4:								
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ⁴ shown in blue at the foot of the final column.								
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953								
Analysed By ¹	Method ² <small>To undo your selection, choose (All) from the pop-up list</small>	Year ³ <small>To undo your selection, choose (All)</small>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁴	Bias Adjustment Factor (A) (Cm/Dm)	
Gradko	20% TEA in water	2019	R	Blackburn with darwen Borough Council	10	29	21	36.9%	G	0.73	
Gradko	20% TEA in water	2019	R	Cheshire West and Chester	12	39	38	2.0%	G	0.98	
Gradko	20% TEA in water	2019	R	Cheshire West and Chester	11	34	34	-2.1%	G	1.02	
Gradko	20% TEA in water	2019	R	Gedling Borough Council	12	32	30	7.3%	G	0.93	
Gradko	20% TEA in water	2019	R	NOTTINGHAM CITY COUNCIL	10	37	40	-7.0%	G	1.07	
Gradko	20% TEA in water	2019	R	Bedford Borough Council	11	29	29	-1.0%	G	1.01	
Gradko	20% TEA in water	2019	R	Bedford Borough Council	12	37	32	13.0%	G	0.89	
Gradko	20% TEA in water	2019	R	Gateshead Council	12	30	25	18.1%	G	0.85	
Gradko	20% TEA in water	2019	R	Gateshead Council	10	32	34	-7.2%	G	1.08	
Gradko	20% TEA in water	2019	R	Gateshead Council	12	34	27	23.7%	P	0.81	
Gradko	20% TEA in water	2019	R	Gateshead Council	11	40	44	-10.5%	G	1.12	
Gradko	20% TEA in water	2019	KS	Manylebone Road Intercomparison	12	85	65	30.1%	G	0.77	
Gradko	20% TEA in water	2019	R	Borough Council of King's Lynn and West Norfolk	9	27	21	28.4%	G	0.78	
Gradko	20% TEA in water	2019	R	Lancaster City Council	13	40	34	16.4%	G	0.86	
Gradko	20% TEA in water	2019	R	Lancaster City Council	12	31	31	1.6%	G	0.98	
Gradko	20% TEA in Water	2019	R	Monmouthshire County Council	12	39	39	1.3%	G	0.99	
Gradko	20% TEA in water	2019	UC	Belfast City Council	10	29	24	21.8%	G	0.82	
Gradko	20% TEA in water	2019	R	Dudley MBC	12	33	32	4.5%	G	0.96	
Gradko	20% TEA in water	2019	R	Dudley MBC	12	44	42	3.9%	G	0.96	
Gradko	20% TEA in water	2019	UB	Dudley MBC	12	23	19	19.8%	G	0.83	
Gradko	20% TEA in water	2019	UB	Eastleigh Borough Council	12	24	26	-7.1%	G	1.08	
Gradko	20% TEA in water	2019	R	Gateshead Council	12	34	27	23.7%	P	0.81	
Gradko	20% TEA in water	2019	R	Gateshead Council	11	40	44	-10.5%	G	1.12	
Gradko	20% TEA in water	2019	R	Gateshead Council	10	32	34	-7.2%	G	1.08	
Gradko	20% TEA in water	2019	R	Gateshead Council	12	30	25	18.1%	G	0.85	
Gradko	20% TEA in water	2019	R	Thurrock Borough Council	12	29	24	21.6%	G	0.82	
Gradko	20% TEA in water	2019	R	Brighton & Hove City Council	11	45	50	-9.3%	G	1.10	
Gradko	20% TEA in water	2019		Overall Factor⁴ (27 studies)					Use	0.93	

Annualisation of measurements

All 9 new diffusion tubes needed to be annualised in 2019, as monitoring commenced from May 2019 through to the end of the year. All 9 tubes recorded results for the same months (May-December), so the same annualisation factor was applied to each annual mean result.

Following Defra's LAQM.TG(16), data used for annualisation should derive from background continuous monitors connected to the AURN network, within 100 miles of the relevant diffusion tubes.

Table C.2: NO₂ Annual Ratio Factor Calculation

Site	NO ₂ Annual Mean 2019 µg/m ³ (A _m)	NO ₂ Period Mean 2019 µg/m ³ (P _m)	Ratio (A _m /P _m)
Eastbourne AURN Urban background Site (91% data capture)	11.7	9.4	1.26
Brighton Preston Park AURN Urban Background Site (97% data capture)	15.3	12.7	1.20
Lullington Heath AURN Background Site (98% data capture)	7.3	5.4	1.35
		Annual Ratio Factor = 1.27	

The annual mean for the 8 months of diffusion tube data was multiplied by 1.27 (3 s.f.) to give best estimates of annual mean for NO₂ at these sites. *Note: Bias adjustment = 0.93 from Table C.1.*

Table C.3: NO₂ Annualised Mean for all 9 new Diffusion Tube sites:

Diffusion Tube	Bias Adjusted Mean (µg/m ³)	Annualised Mean (µg/m ³)
Knights Gate Rd, Falmer Rbt	45.0	57.0
A26 S. Heighton/nr Hollow	23.3	29.5
C7 Piddinghoe Rd	19.2	24.3
O/S Kingston Primary school	16.7	21.1
Opp Seaford Station	23.3	29.5
Plumpton Green/Station Rd, flood sign	11.0	13.9
Barcombe High Str	13.1	16.6
O/S Covers, Cooksbridge	14.6	18.5
O/S 64 Brighton Rd	33.6	42.6

Distance correction for NO₂ measurements

Distance correction of NO₂ diffusion tube measurements used the NO₂ fall-off with distance calculator⁶ available on the LAQM website, as discussed in Paragraphs 7.77-7.79 of LAQM.TG16. Background concentrations were sourced from Defra’s background 1km x 1km maps⁷.

The spreadsheet is shown in Table C.4 below presents the 2019 NO₂ diffusion tube measurements as distance corrected to the nearest sensitive receptor (i.e. a location of exposure).

Table C.4 : The NO₂ fall off with distance from roads calculator (Version 4.2)

Site		Distance (m)		NO ₂ Annual Mean Concentration (µg/m ³)		
Name	ID	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor
LDC - 16 Southway – Newhaven	3	1.0	2.5	14.9	40.7	35.9
LDC34-204 High Str (School Hill)	21	2.7	2.7	12.8	43.6	43.6
The Old Chapel, Newhaven	40	1.5	3.0	14.9	44.6	40.1
Kings Gate Road - Falmer Roundabout	42	2.5	22.5	14.5	57.0	33.9
O/S 64 Brighton Rd	50	2.5	4.0	14.9	42.6	39.4

After distance correction the site LDC34-204 High St (School Hill) shows an annual mean concentration over 40µg/m³. This location is just outside the AQMA. Due to this fact and that it is so intrinsically linked into the one way system of the town centre it is deemed unnecessary to extend the AQMA boundary to include it, as any actions that we take to reduce NO₂ concentrations would encompass this road anyway. This site is outside a shop but above there is residential property.

Furthermore, the Old Chapel in Newhaven also remains above 40µg/m³ following correction. This site is within Newhaven’s AQMA, and indicates that revocation of the AQMA may not be appropriate at this time. The relevant receptors are not directly behind the diffusion tube (the chapel), but either side of the building.

⁶Defra (2020) Nitrogen Dioxide fall off with distance :<https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>
⁷ Defra (2020) UK-Air Information Resource: <https://uk-air.defra.gov.uk/data/laqm-background-home>

Following distance correction, all other location fell below the annual mean AQS. It should be noted that LDC1 Fisher Street East is not representative of any receptor locations in the immediate vicinity.

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

Figure D.1 LDC Pollutant Monitoring Network

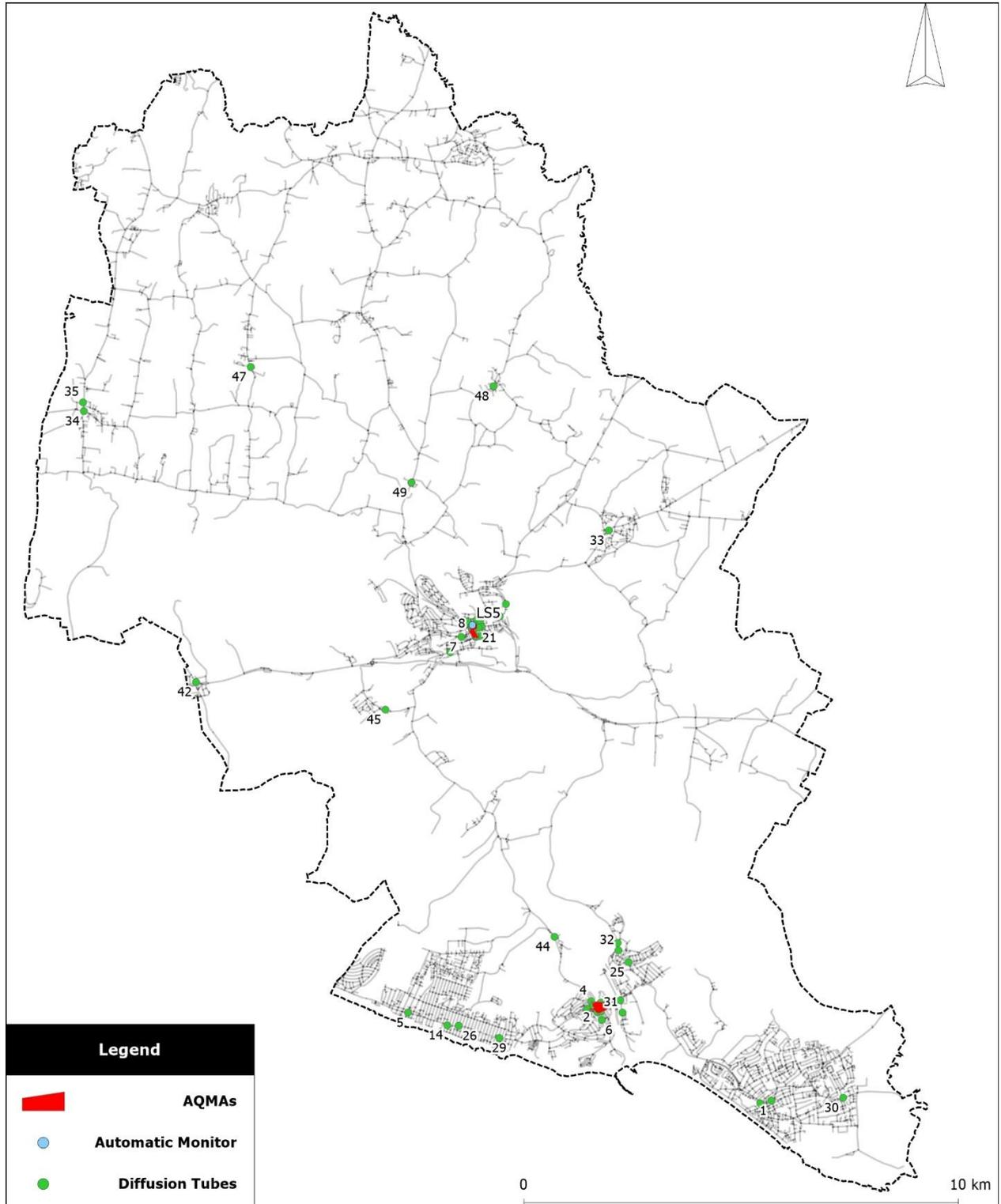


Figure D.1: LDC Pollutant Monitoring Network

Contains Ordnance Survey data © Crown copyright and database right 2019

May 2020

Figure D.2 Lewes Town Centre AQMA

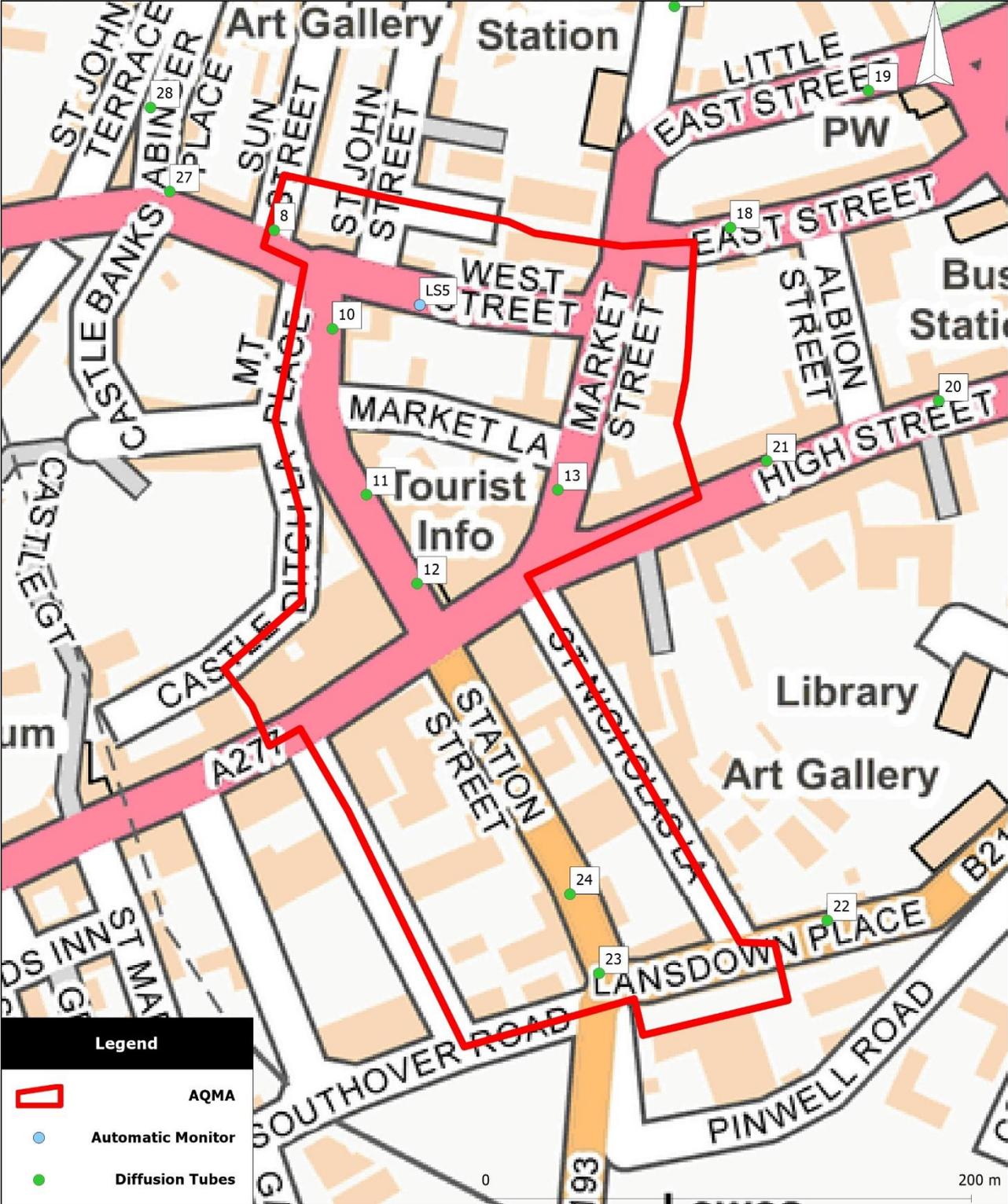


Figure D.2: Lewes Town Centre AQMA

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Figure D.3: Newhaven Ring Road AQMA



Figure D.3: A259 Newhaven Ring Road AQMA

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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁸	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁸ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

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
AQS	Air Quality Standard - The UK Air Quality Strategy (UKAQS) ⁹ sets out air quality standard (AQS) concentrations for a number of key pollutants that are to be achieved at sensitive receptor locations across the UK
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

⁹ Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2) July 2007.

References

- ¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010
- ² Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
- ³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013
- ⁴ Defra. Clean Air Strategy (2019)
- ⁵ Kings College London. Sussex Air Pollution Monitoring Network Annual Report (May 2019)
- ⁶ Air Quality Bulletin (May 2019) Environmental Management Publishing Ltd
- ⁷ Defra. LAQM website: <https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>
- ⁸ Health matters (2018) Public Health England
- ⁹ Lewes Town Council neighbourhood Plan 2015-2033 (Apr 2019)
- ¹⁰ Phlorum. Report 1 Baseline Modelling (May 2019)