



ADUR DISTRICT COUNCIL



2017 Air Quality Annual Status Report (ASR)

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

September 2017

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Executive Summary: Air Quality in Our Area

Air Quality in Adur

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.

This report covers monitoring and actions during 2016. There are two Air Quality Management Areas (AQMA's) within the Adur District Council area: AQMA 1 – High Street, Shoreham-by-Sea and AQMA 2 – Old Shoreham Road, Southwick. We encountered a large number of faults with the automatic (continuous) Nitrogen Dioxide (NO₂) and Particulate Matter (PM₁₀) monitoring equipment located in Shoreham High Street, resulting in no reliable data being captured during 2016. We therefore reluctantly took the decision to temporarily close the site during the summer of 2016. It is our intention to reinstate the monitoring site in late 2017.

Adur District Council undertook passive monitoring of NO₂ using passive diffusion tubes at 23 sites during 2016. All 23 sites showed an increase in measured levels over 2015 results. One site exceeded the annual mean objective – Shoreham High Street within AQMA 1, however concentrations decrease away from the road and are estimated to be below the annual objective at the nearest location with relevant exposure.

Within AQMA 2 concentrations have been consistently below the annual mean objective of 40µg/m³ since 2012 and as a result, we are considering revoking this AQMA.

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

Elsewhere within the District NO₂ concentrations remain below the annual objective, although some sites remain under scrutiny as they are close to the annual mean objective.

Adur District Council has an air quality action plan in place which aims to reduce emissions from traffic and works closely with neighbouring councils, Sussex-air, West Sussex County Council and developers. The action plan dates back to 2007 and was partially revised in 2015 and 2016 to report to Defra. We propose to thoroughly revise it in 2017 as many of the listed measures are outdated or duplicated.

More information is available on our website at <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/local-air-quality-management/#page-content>.

Actions to Improve Air Quality

Adur District Council has continued to ensure the Sussex Air Quality Emissions Mitigation Planning Guidance is used as part of the planning process. Working with our partners at West Sussex County Council, planning policy and development control we have attempted to engage with developers at any early stage, achieving mixed results to date. Discussions with developers were progressing into 2017.

We continue to work with West Sussex County Council to explore improvements to cycling and walking provision throughout the District. In late 2016 the Local Strategic Partnership 'Waves Ahead' held a conference themed on sustainable transport across Adur & Worthing, exploring what can be done together in the community to improve transport and achieve better social, economic and environmental sustainability in our transport networks.

The Council has embarked on an electric vehicle charge point strategy for Adur (and Worthing), giving consideration to the provision of charge points across the District to encourage residents and visitors to switch to electric vehicles.

Conclusions and Priorities

Measured concentrations of NO₂ remained below the annual objective at most sites during 2016. Within AQMA 2 concentrations have been measured consistently below

the annual mean objective of $40\mu\text{g}/\text{m}^3$ since 2012. This downward trend therefore means Adur District Council will consider revoking Adur District Council AQMA 2.

Some monitoring sites remain under scrutiny as they are close to the annual mean objective. The main threat to air quality comes from the number and scale of developments planned for the sub-region resulting in additional traffic on the strategic road network, primarily the A27 and A259. We work hard to ensure the air quality impacts of major developments are assessed and use the Sussex Planning and Emissions Mitigation Guidance to assist us - <https://www.adur-worthing.gov.uk/media/media.121587.en.pdf>. The Guidance is signposted in the Local Plans but is not (at this stage) a Supplementary Planning Document.

Priority areas for action include increasing multi-agency involvement in solutions to poor air quality; bringing through improvements to infrastructure as development sites are brought forward (e.g. Shoreham Harbour) in order to minimise the impacts on existing AQMA's and thus avoid creating new hotspots; to agree effective emissions mitigation (such as electric vehicle charge points, improvements to public transport, etc.); and increasing public awareness and public involvement in the solutions to poor air quality.

Specific priority actions include discussions with developers to embed effective air quality mitigation within local development schemes, the promotion and establishment of effective Travel Plans (with West Sussex County Council) and the establishment of new and improvement of existing walking and cycling routes across the District. In addition, through attempting to influence decisions made by members of the general public with regard to daily transport mode selection, some reduction in emissions can be achieved. We also aim to replace the continuous air quality monitoring station in Shoreham High Street by the end of 2017.

Local Engagement and How to get Involved

We are engaging with interested parties in the District, including an action group, elected members, transport planners, planning policy and other interested parties. We are active members of the Sussex Air Quality Partnership. The Partnership provides assistance to members and information to the public via their web-site with air quality data, news updates, educational resources, links and other services such as airAlert. Please see <http://www.sussex-air.net/> for more information.

With the number and scale of developments planned across Adur, it is important that all parties work together to achieve favourable outcomes. The problems of air pollution will only be addressed if all parties work together.

The Council is interested in hearing from residents who may have innovative ideas to reduce traffic congestion/air pollution in and around the District. You may contact us using our online form at <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/local-air-quality-management/#have-your-say>.

Road vehicles are a major source of pollutants in urban areas. They produce over 50 per cent of the emissions of nitrogen oxides in the UK.

Before using your car, ask yourself:

- could I walk or cycle instead of taking the car?
- could I take a bus or train?
- are the levels of air pollution high today? (See our website for forecasts: <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/air-quality-monitoring/#airalert>)

You can plan your journey using the West Sussex Journey Planner, <http://www.travelwestsussex.co.uk/>. This allows you to plan journeys using different modes of transport.

If you must drive:

- drive smoothly and don't rev your engine unnecessarily. You'll save fuel, and your engine will also pollute less;
- maintain your car. Keep the engine properly tuned and the tyres at the right pressure; and
- turn off your engine when your car is stationary for prolonged periods, particularly at level crossings.

At home

- Buy water-based or low-solvent paints, varnishes, glues and wood preservatives.

- Avoid burning solid fuels where possible. If you must burn solid fuel we recommend using smokeless fuels. Whilst Adur is not a smoke control area smokeless fuels are less polluting and less likely to cause a nuisance to your neighbours.
- Try to avoid lighting bonfires. If you must have a bonfire only burn dry material and never burn household waste, particularly plastic, rubber, foam or paint. Levels of pollution can be quite high on bonfire night and other events/festivals with bonfires, and sensitive people, including people with respiratory conditions, may notice some effects. However exposure can be considerably reduced by remaining indoors and keeping windows closed. Further information is available on our website - <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/bonfires-and-smoke/>.

Information on Air Quality, including reports and monitoring results, is available on our website at <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/>. Information is also available at <http://www.sussex-air.net/>.

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1 Local Air Quality Management

This report provides an overview of air quality in Adur District Council during 2016. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Adur 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 Adur 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://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/local-air-quality-management/#local-aqma> and the LAQM website:

Shoreham AQMA: https://uk-air.defra.gov.uk/aqma/details?aqma_id=173

Southwick AQMA: https://uk-air.defra.gov.uk/aqma/details?aqma_id=174

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

We propose to revoke Adur District Council AQMA 2, Old Shoreham Road, (see monitoring section).

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 (inc. date of publication)
						At Declaration	Now	
Adur District Council AQMA 1	Declared 2005	NO ₂ Annual Mean	High Street Shoreham-by-Sea	An area encompassing the A259 High Street, Shoreham-by-Sea between the Ropetackle Roundabout and Surry Street.	YES	42µg/m ³	30µg/m ³	Adur Air Quality Action Plan 2007 https://www.adur-worthing.gov.uk/media/media,104971,en.pdf Adur Air Quality Action Plan 2007 https://www.adur-worthing.gov.uk/media/media,104971,en.pdf
Adur District Council AQMA 2	Declared 2005	NO ₂ Annual Mean	Old Shoreham Road Southwick	An area encompassing the A270 Old Shoreham Road, Southwick between Kinston Lane and Lower Drive	YES	46µg/m ³	33µg/m ³	

☒ **Adur DC** 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 Adur

Defra's appraisal of last year's ASR concluded

1. *"Section 3.2 reports on the impact of distance corrections for monitoring results in Shoreham, but this is not considered for Southwick results, or within the main results Table A.3."*

This year's report includes distance corrections for all monitoring locations.

2. *"None of the monitoring sites are representative of relevant exposure, and consequently all results in Table A.3 should be corrected for distance as detailed within the latest version of LAQM Technical Guidance LAQM TG(16). The impact of these corrections will be to reduce the monitored concentrations in all locations, significantly below objective levels."*

We have included distance corrections within this report in Table B.1

3. *"On this basis, both of these AQMAs, in Shoreham and Southwick should be considered for revocation during the next reporting period."*

We wish to review measured levels when the automatic monitor has been up and running again for a period of time before making any decisions on the future of the High Street AQMA. In addition, with the number and scale of developments planned for the sub-region resulting in additional traffic on the strategic road network (primarily the A27 and A259), we are not considering revocation of the Shoreham High Street AQMA at this time.

Levels in the Southwick AQMA have been consistently below the annual mean objective of $40\mu\text{g}/\text{m}^3$ since 2012. This downward trend means that Adur District Council proposes to revoke Adur District Council AQMA 2.

4. *"Further explanation for the accuracy of the data would be welcome. In Section 3.2.2 it is stated that "There were 32 exceedances of the $50\mu\text{g m}^{-3}$*

threshold. Most of these occurred in December 2015 and it is not clear whether the data is correct as although it is marked as ratified, there remains some doubt on its accuracy". More detail regarding why the data is considered to be inaccurate and potential exceedances of PM₁₀ should be carefully monitored in future reports."

This has been noted.

Adur District Council has taken forward a number of direct measures during the current reporting year of 2016 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in their respective Action Plans. Key completed measures are:

- ✓ We have continued to use the Sussex Air Quality Emissions Mitigation Planning Guidance as part of the planning process. The aim is to ensure mitigation is included in all major developments. Working with our partners at West Sussex County Council, planning policy and development control we have achieved mixed results to date and discussions with developers were progressing into 2017. The guidance is signposted within the Adur Local Plan and also on our website.
- ✓ Embarked on an electric vehicle charge point strategy for Adur (and Worthing). This outlines the Councils approach to the expansion of charge points across the District to encourage residents and visitors to switch to electric vehicles. This will be split into several phases, with Council owned sites being targeted first and existing charge points being replaced.
- ✓ We worked with West Sussex County Council to explore alternatives to car use, such as cycling and walking improvements through the District.
- ✓ In November 2016 the Local Strategic Partnership 'Waves Ahead' held a conference focussed on sustainable transport across Adur & Worthing. Delegates were asked to 're-think transport'. The conference set to explore what can be done together in the community to improve transport and achieve better social, economic and environmental sustainability in our transport

networks. In particular, looking at cycling, walking and public transport as an alternative to the car. Attendees included representatives from local cycling forums, local government, businesses (see <http://www.wavesahead.org.uk/get-involved/annual-conference/>).

- ✓ Improve emissions from the Council's vehicle fleet. The Council continues to review its fleet and consider cost effective alternatives to diesel vehicles. The number of pool cars (petrol) was proposed to be increased for staff to use for work related journeys (through Enterprise Leasing). As the number of pool cars increases we hope to add electric and/or hybrid vehicles to the fleet.
- ✓ Bus fleet improvements. As in 2015 discussions with Brighton & Hove City Council continued in a bid to achieve improvements to bus vehicle technology for routes coming into Adur. We had partial success with this as some Brighton & Hove buses were replaced with newer Euro V models. We are still awaiting further improvements.

Adur District Council expects the following measures to be completed over the course of the next reporting year:

- ✓ The provision of electric vehicle charge points across the District, in line with the Council's developing electric vehicle chargepoint strategy.
- ✓ Expansion of the Council's pool car provision leading to a reduction in private car journeys made by Council staff.
- ✓ Further implementation of the Sussex Air Quality Guidance and delivery of effective and meaningful emissions mitigation at local major developments.
- ✓ Replacement of the continuous air quality monitoring station in Shoreham High Street.

Adur District Council's priorities for the coming year are

- ✓ To work with developers as and when sites come forward for major development in order to minimise impacts on the existing AQMA's and avoid creating new hotspots and to agree effective emissions mitigation (such as

electric vehicle charge points, improvements to public transport, cycling provision, etc.);

- ✓ Replacement of the continuous air quality monitoring station in Shoreham High Street.
- ✓ To expand the local electric vehicle charging network and promote the use of low emission vehicles alongside the government grants available.

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

- ✓ Air Quality is just one of a large number of considerations with local development. So when it comes to developer contributions (mitigation, s106 agreements etc.) air quality is competing with other 'worthy causes'. This can result in reduced emission mitigation due to finances.
- ✓ The Council is committed to replacing the air quality monitoring station in Shoreham High Street and finance has been sought to cover the main costs. Challenges will occur where issues arise during the replacement process, such as replacing ancillary equipment to ensure the station operates correctly, e.g. cables, loggers, etc. These are likely to remain unknown until the station is being replaced. Other pressures relate to officer time to complete the works.
- ✓ With the electric vehicle charging network the main challenge will be obtaining the finance required to purchase and install the charge points. Budgets are tight so we will need to ensure a sound business case is put forward before any commitment is made by elected Members.

Progress on the following measures has been slower than expected due to:

- ✓ Adur (& Worthing) Car Club - investigations into viability and affordability were put on hold as the Council began pursuing a different car sharing model internally. This may be opened-up to the wider public in the near future.
- ✓ LEZ feasibility and HGV/LGV Assessment – in November 2016 the Council submitted a bid for £125K under the Government's Air Quality Grant Scheme

2016-17. The bid comprised an up to date Shoreham High Street AQMA Source Apportionment study, followed by a Clean Air Zone (CAZ) feasibility study for Shoreham High Street; and Provide an Adur Eco-STARS programme for HGV's /LGV's (& Buses) associated with local industrial estates and Shoreham Port close to the High Street AQMA. Unfortunately we were unsuccessful. Finances dictate that we are unable to pursue these projects at this time. We hope to revisit these soon, although the subject of CAZ's has moved on since with the publication of the national air quality action plan and guidance on CAZ's.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Adur District Council anticipates that further additional measures not yet prescribed may be required in subsequent years to achieve compliance and enable the revocation of Adur District Council AQMA 1 in Shoreham High Street.

The original air quality action plan was published in 2007. Many of the measures are now outdated so we are currently reviewing the Action Plan and hope to publish a revised version for consultation very soon.

The Table in 2.2 contains a fewer number of measures than those reported in the 2015 report. Many of those measures duplicated one another, so the list below amalgamates some measures and refines the list of actions to make them easier to understand.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Adur/Worthing Car Club	Alternatives to private vehicle use	Car Clubs	Adur DC/Worthing BC. Funding: Developer contributions	2014/15	2016/17	Number of people using the service	1-5%	Discussions with car club providers and attempting to obtain s106 monies from local developments	2017/18	V small reduction, however principle of car sharing is key here, funding an issue.
2	LEZ/CAZ Feasibility	Promoting Low Emission Transport	Low Emission Zone (LEZ)	Adur DC Funding: unknown	2015/16	2016/17	Reduction in older Euro class HGV's/LGV's and buses within the AQMA	10-20%	Unsuccessful Defra LA AQ Grant bid for £100K submitted in Nov 2016. No other funding identified.	Ongoing	Over a third of movements in AQMA are by HGV's and LGV's so targeting them is priority for emission reduction. Funding problematic as costly.
3	Embed AQ Emissions Mitigation Planning Guidance for Sussex into the planning process	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Adur DC/Worthing BC. Funding: LA	2012	2014	LE mitigation secured in developments	1-5%	Guidance signposted within the new draft Adur Local Plan. Emission mitigation assessments being pursued with developers to ensure meaningful mitigation is proposed. Some eV charge points secured at development sites, cycling and walking initiatives secured.	Ongoing	Focus on minimising number of trips made by cars, especially diesels and installation of EV chargepoints
4	Improve emissions from the Council's vehicle fleet	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	Adur DC/Worthing BC Funding: LA	2014/15	2015	No. of vehicles replaced with better Euro standard models	<1%	Funding streams identified. Unsuccessful bid to OLEV for two eV vehicles to replace mayoral car and courier van. Replacement programme agreed.	Ongoing	Council to demonstrate leadership. Low reduction within AQMA

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5	Reduce AQ impact of ADC/WSCC staff travel	Promoting Travel Alternatives	Encourage / Facilitate home-working	Adur DC/Worthing BC/WSCC Funding: Adur DC/WSCC	2012/13	2013/14	Staff travel surveys reduced commuting and business travel by car	<1%	New ways of working implemented. Staff car allowances review, increase in pool car provision considered.	New ways of working introduced	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work
6	HGV/LGV assessment	Vehicle Fleet Efficiency	Other	Adur DC	2015/16	2016/17	Data on Euro Classes	<5%	Some discussions on feasibility with highway authorities. Discussions with Sussex-air on process. Failed Defra AQ funding bid in Nov 16 for Ecostars.	2016/17	By identifying operator and Euro Class we can better target fleets that regularly pass through the AQMA. Funding and time issues.
7	eV charging infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Adur DC/Worthing BC/developer contributions	Ongoing	Ongoing	Number of charge points provided	1%	Investigation into locations ongoing. Discussions with developers as part of AQ mitigation packages.	Ongoing	Focus is to increase the number of eV's on the District's roads. Funding an issue.
8	Bus fleet improvements	Transport Planning and Infrastructure	Bus route improvements	Adur DC/WSCC Funding: WSCC or OLEV grants	2009	2011 to date	Journey time and passenger number improvements	1-5%	Journey time reductions of 3.6-17.5% achieved; some increase in patronage but yet to prove. Further grant funding applied for but unsuccessful; further funding due this year	Ongoing	Improvement in journey times points towards improved traffic flow. Retrofitting or fleet replacement targeted next and should bring reductions in emissions; small in AQMA
9	Traffic light/pelican crossing optimisation/MOVA traffic control	Traffic Management	UTC, Congestion management, traffic reduction	WSCC Funding: WSCC	2007/09	Ongoing	Improvement in traffic flows	5-10%	Signals optimised as far as reasonably practicable/MOVA installed on A270, on A259 High St 2011/12. Signals updated on A270 in 2014 to alleviate queueing	Ongoing	Improved flow/decrease in stop start driving will have a significant beneficial impact on emissions
10	Travel Plans secured through the	Promoting Travel Alternatives	Other	WSCC/Adur DC Funding: developer contributions	Process established	Ongoing	Number of plans delivered	1-5%	Plans continue to be secured as and when developments come forward.	Ongoing	Focus on minimising number of trips made by car. Discussions must include emissions mitigation

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	planning process for all significant development sites in West Sussex										considerations, can be protracted.
11	Promotion of walking and cycling	Promoting Travel Alternatives	Personalised Travel Planning	WSSC/Adur DC Funding: WSSC/developer contributions	2014/15	2015/16	Automatic cycle counters and travel surveys	1-5%	Various projects implemented. To access employment, education and training through Access Fund supported Living Streets 'Walk To' project/Other initiatives ongoing	Subject to ongoing funding. WSSC Cycling Strategy published 2017	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work
12	School Travel Plans.	Promoting Travel Alternatives	School Travel Plans	WSSC Funding: WSSC	Approach established	Ongoing	Hands-up travel mode surveys in schools	1%	98% of schools in county have travel plans. Continuation of engagement with schools to encourage and support roll out of initiatives	Ongoing	Focus on promoting sustainable travel amongst young people and reducing peak time car traffic
13	Promotion of LEV's	Public Information	via the Internet	Adur DC/Worthing BC Funding: LA/OLEV grants	2015	Ongoing	Number of LEV's	1%	Discussions with respect to eV recharging points and associated publicity. Grant funding signposted on Council website.		Funding issues. Developer contributions/installation sought at new developments.
14	WSSC Travelwise/new multi-modal journey planner (Travel West Sussex)/Promotion of www.westsussexcarshare.com	Public Information	via the Internet	WSSC Funding: WSSC	Travelwise webpages established and continually reviewed. Travel West Sussex online journey planner developed during 2014/15	Ongoing	Website hits/journeys planned/Number of registrants/take-up of initiatives	1-5%	Travelwise pages established, new multi modal online journey planner Travel West Sussex launched.	Ongoing	Focus on promoting sustainable travel

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15	Increase availability of AQ information	Public Information	via other mechanisms	Adur DC/Worthing BC Funding: LA	Ongoing	Ongoing	Fewer car journeys	1%	Sussex air alert has been operating for many years. Drive to push Air alert via local NHS Trust & providing more information on website.	Ongoing	Aim is for a reduction in the number of car journeys, particularly on poor air quality days
16	Health & Wellbeing Promotion	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Adur DC/Worthing BC/WSCC Funding: LA & WSCC	Ongoing	Ongoing	Fewer car journeys	<1%	Liaison with WSCC PH and Worthing BC Communities and Wellbeing Team to identify options. Also info via Sussex-air.	Ongoing	Attempt to reduce car journeys, particularly through the AQMA
17	Air Quality Monitoring	Public Information	via the Internet	Adur DC Funding: LA	2006	Ongoing	Reduction in levels of NO2	N/A	AQM station set up in 2007. Temporarily switched off in 2016, awaiting replacement. Historical info at sussex-air.net.	Ongoing	Measure success of AQAP, funding to replace and maintain the monitoring station has been an issue.
18	Promotion of www.westsussexcarshare.com and Bike Week events	Public Information	via radio	WSCC Funding: WSCC	Approach established	Ongoing	Number of registrants/take-up of initiatives	Ongoing	Ongoing - focus on promoting sustainable travel	Ongoing subject to future funding availability	Focus on promoting sustainable travel
19	Transport network infrastructure improvements for new development	Traffic Management	UTC, Congestion management, traffic reduction	WSCC Funding: WSCC/developer contributions	Approach established	Ongoing	Number of infrastructure improvements	<1%	Infrastructure initiatives continue to be developed	Ongoing	Focus on minimising traffic congestion. Funding issues.
20	Switch off engines signs	Traffic Management	Anti-idling enforcement	WSCC/Adur DC Funding: WSCC/LA	2007	Ongoing	Localised air quality monitoring	N/A	Advisory signs provided at level crossings in Shoreham. Checking that signs remain in-situ, bidding for replacements.	Ongoing	Focus on minimising localised air quality problems from stationary traffic. Some signs have gone missing.

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21	New infrastructure for cyclists and pedestrians	Transport Planning and Infrastructure	Cycle network	WSCC Funding: WSCC/developer contributions	Ongoing	Ongoing	Length of new cycle routes provided	<1%	Cycle route improvements across the District, mainly through contributions from developments.	Ongoing	Minimising the impacts of traffic on local streets
22	Improvements to access to Shoreham station (including new cycling facilities and routes, provision of real time passenger information for local bus services, and improved parking facilities)	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	WSCC Funding: WSCC/Southern Rail	Approach established	Ongoing	Number of projects delivered	1-5%	Station access improvements and real time bus information completed. Further improvements being explored through Shoreham Area Sustainable Transport Package Study	Ongoing	Focus on promoting rail and sustainable travel as an alternative to the car. Engagement with rail companies can be an issue.
23	Bus infrastructure and service improvements through Shoreham Area Sustainable Transport Package Study	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	WSCC Funding: WSCC	Ongoing	Ongoing	Number of projects delivered	1-5%	Real time information, apps/infrastructure/buses timetable performance. Moving existing bus stops in Shoreham High Street being reconsidered through Shoreham Area Sustainable Transport Package Study	Ongoing	Focus on promoting bus travel as an alternative to the car/smooth traffic flow and bus timetable reliability

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24	Shoreham Area Sustainable Transport Package	Transport Planning and Infrastructure	Other	WSCC Funding: WSCC/Local Enterprise Partnership	Ongoing	2015/16 is the first implementation year for Local Growth Funding	Public transport patronage, cycle counter flows, traffic counts, travel behaviour surveys		Study underway to inform potential future bid for Sustainable Transport Packages through the Local Enterprise Partnership Local Growth Fund.	Local Growth Funding covers period to 2021	Focus on promoting sustainable transport and minimising car use and vehicle congestion
25	Speed management initiatives such as 20mph zones where these are supported by the community.	Traffic Management	Reduction of speed limits, 20mph zones	WSCC Funding: WSCC	Approach established	Ongoing	Before and after travel behaviour surveys and traffic counts	N/A	Some 20mph streets implemented off the A259/AQMA	Ongoing	Focus on improving conditions for walking and cycling
26	Taxi Fleet Emission Improvements	Promoting Low Emission Transport	Taxi Licensing conditions	Adur DC Funding LA/OLEV grants	2017	2018	Number of taxi's replaced with better Euro standard models	1%	None so far. Work planned for 2017 on.		District wide improvement will have some limited effect in High Street, particularly at taxi rank
27	Business Travel Plan Networks to promote sustainable travel amongst employees and for business travel.	Promoting Travel Alternatives	Workplace Travel Planning	WSCC/Adur DC/Worthing BC Funding: LA/WSCC	2014	2016/17	Before and after surveys of sustainable mode use	1-5%	Initial discussions with WSCC Highways		If large employers can be engaged some potential big gains can be made

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.

Work carried out by Public Health England as part of the Public Health Outcomes Framework (PHOF) shows that the mortality associated with particulate air pollution within Adur District Council is 4.4 %. This information is available from the following web link:

<http://www.phoutcomes.info/search/air#page/1/gid/1/pat/6/par/E12000008/ati/101/are/E07000223/iid/30101/age/230/sex/4>

Figure 1 shows that the mortality calculated for Adur District Council is less than that calculated for south east England (4.9 %) and England (5.1 %) as a whole.

Figure 1: Fraction of mortality attributed to particulate air pollution in Adur District Council



Adur District Council is continuing to develop its approach to address PM_{2.5} in partnership with West Sussex Public Health and other local authority officers.

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.

Unfortunately the Council encountered a large number of faults with the automatic (continuous) NO₂ monitoring site operated in Adur (Shoreham High Street). This resulted in no reliable data being captured during 2016. As a result we took the decision to temporarily close the site during the summer of 2016. It is our intention to reinstate the monitoring site during the latter part of 2017.

Table A.1 in Appendix A shows the details of the 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.

Previous monitoring results are available at www.sussex-air.net/.

A map showing the location of the monitoring site is provided in Appendix D.

3.1.2 Non-Automatic Monitoring Sites

Adur District Council undertook non- automatic (passive) monitoring of NO₂ at 23 sites during 2016, using diffusion tubes. Table A.2 in Appendix A shows the details of the sites.

Three new monitoring sites were added in 2016.

- S27 West Street, Shoreham;
- S34 Winston Road, Lancing; and
- S35 Middle Road, Shoreham

to look at the influence of queuing traffic, HGV movements and bus movements respectively. No sites were closed.

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

Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes,

including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

As previously stated, the Council encountered a large number of faults with the automatic (continuous) monitoring site operated in Shoreham High Street. This resulted in no reliable NO₂ data being captured during the first half of 2016. As a result of this and numerous previous faults (reported in the 2016 ASR), the Council took the difficult decision to temporarily close the site during the summer of 2016.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B, Table B.1. This includes distance corrections for all monitoring sites.

All 23 NO₂ diffusion tube monitoring sites showed an increase in levels compared to 2015.

One monitoring site exceeded the annual mean air quality objective of 40µg/m³ – S19 at 40.9µg/m³. This is one of three co-located tubes attached to the dormant air quality monitoring station in Shoreham High Street, within AQMA 1. The other co-located tubes returned figures just below the objective. When the three are averaged the level for the site was 39.5µg/m³, virtually equal to the annual mean objective.

These tubes are classed as a kerbside location (within 1 metre of a busy road). The closest receptors (of relevant exposure) are just 5m away. When the average result is predicted back to the nearest receptor the levels reduce to 29.8µg/m³, below the annual mean objective. We wish to review the measured levels when the automatic monitor has been up and running again before making any decisions on the future of the AQMA. Furthermore, with the number and scale of developments earmarked in

and around the AQMA, we do not consider revocation of the Shoreham High Street AQMA to be an option at this moment in time.

The tubes located within the AQMA 2 in Southwick, S8 Underdown Road and S9 Old Shoreham Road, were well below the annual mean objective at $30.4\mu\text{g}/\text{m}^3$ and $34.5\mu\text{g}/\text{m}^3$ respectively. As the graph in Figure A.2 shows, levels have been consistently below the annual mean objective of $40\mu\text{g}/\text{m}^3$ since 2012, although the levels in 2016 showed a slight increase over 2015 levels. These sites are both roadside monitoring locations (a site sampling within one to five metres of the kerb of a busy road). When these results are predicted back to the nearest receptors the levels fall to $25.4\mu\text{g}/\text{m}^3$ at S8 and $32.8\mu\text{g}/\text{m}^3$ at S9, still well below the annual mean objective. It is thought optimisation of the traffic lights at the junction with Kingston Lane have had the most impact on NO_2 levels, although other air quality measures within the District may have helped.

This downward trend since 2012 means that Adur District Council will consider revoking Adur District Council AQMA 2.

Site S13, Upper Brighton Road Lancing, recorded a level of $38.3\mu\text{g}/\text{m}^3$. This site has been above or hovering around the annual mean objective for a number of years (see Figure A.3). As it is a roadside monitoring site, when projected back to the closest receptor the level reduces to $28.1\mu\text{g}/\text{m}^3$, below the objective.

Similarly site S11 at Lancing Manor has hovered just below the annual mean objective for a number of years, as Figure A.4 shows. In 2012 it was $38.2\mu\text{g}/\text{m}^3$, but reduced to $33\mu\text{g}/\text{m}^3$ in 2015. In 2016 the level rose again to $35.6\mu\text{g}/\text{m}^3$. This is a kerbside location and when projected back to the nearest receptor the level reduces to $23.4\mu\text{g}/\text{m}^3$, well below the annual mean objective. With a number of large developments planned in the area, we intend to keep this site under close scrutiny.

3.2.2 Particulate Matter (PM₁₀)

As previously mentioned the Council encountered a large number of faults with the automatic (continuous) monitoring site operated in Adur (Shoreham High Street). The

site housed a BAM 1020 monitor to record levels of PM₁₀. However due to the numerous and repeated faults with the site the monitoring station was temporarily closed in the summer of 2016. Therefore we have no reliable PM₁₀ data for 2016.

We plan to replace the monitoring site during late 2017.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
AD1	High Street Shoreham	Kerbside	521399	105040	NO ₂ ; PM ₁₀	YES	Chemiluminescent; BAM	5.0	1.0	1.7

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
S1	Albion Street Southwick	Kerbside	523773	104979	NO ₂	NO	5.0	1.0	N	3.0
S2	Old Mill Close Fishersgate	Roadside	525330	105085	NO ₂	NO	3.5	1.5	N	2.5
S3	St. Aubyns Crescent Fishersgate	Urban Background	525562	105313	NO ₂	NO	5.5	2.0	N	3.0
S7	Queens Road Southwick	Urban Background	524139	106320	NO ₂	NO	3.0	2.5	N	3.0
S8	Underdown Road Southwick	Roadside	524020	106070	NO ₂	YES	4.0	2.0	N	3.0
S9	Old Shoreham Road Southwick	Roadside	523785	106080	NO ₂	YES	2.0	3.0	N	2.5
S10	Holmbush Roundabout Shoreham	Roadside	522330	106113	NO ₂	NO	27.0	2.0	N	3.0
S11	Lancing Manor Lancing	Kerbside	518841	105592	NO ₂	NO	14.0	1.0	N	3.0
S12	Boundstone Lane Lancing	Kerbside	517732	105505	NO ₂	NO	N/A	1.0	N	3.0
S13	Upper Brighton Road Lancing	Kerbside	517290	105547	NO ₂	NO	12.0	1.0	N	2.5

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S14	West Street Sompting	Urban Background	516021	105203	NO ₂	NO	14.5	2.5	N	3.0
S15	Western Road Lancing	Roadside	517512	103367	NO ₂	NO	6.0	1.5	N	3.0
S16	Kings Road Lancing	Urban Background	518754	103971	NO ₂	NO	5.5	1.5	N	3.0
S17	High Street AQMS 1 Shoreham	Kerbside	521399	105040	NO ₂	YES	5.5	0.5	Y	3.0
S18	High Street AQMS 2 Shoreham	Kerbside	521399	105040	NO ₂	YES	5.5	0.5	Y	3.0
S19	High Street AQMS 3 Shoreham	Kerbside	521399	105040	NO ₂	YES	5.5	0.5	Y	3.0
S20	Pond Road Shoreham	Urban Background	521517	105261	NO ₂	NO	N/A	26.0	N	3.0
S25	Mash Barn Lane Lancing	Roadside	519117	105709	NO ₂	NO	N/A	6.0	N	2.5
S26	Loose Lane Sompting	Suburban	516537	104781	NO ₂	NO	12.0	0.5	N	2.5
S27	West Street Shoreham	Kerbside	521381	105119	NO ₂	NO	0.5	1.5	N	3.0
S28	South Street Lancing	Roadside	518127	103804	NO ₂	N	4.0	2.0	N	3.0
S34	Winston Road Lancing	Roadside	517511	103560	NO ₂	N	10.5	1.5	N	3.0
S35	Middle Road Shoreham	Roadside	522493	105537	NO ₂	N	5.0	1.5	N	3.0

Notes:

- (1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).
 (2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2016 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2012	2013	2014	2015	2016
AD1	Kerbside	Automatic	0	0	N/A	N/A	42.6	48.3 (45.2)	N/A
S1	Kerbside	Diffusion tube	92	92	35.8	34.5	32.6	30.9	32.2
S2	Roadside	Diffusion tube	100	100	25.5	26.6	26	23.9	24.9
S3	Urban Background	Diffusion tube	100	100	20	17	16.9	15.5	17.5
S7	Urban Background	Diffusion tube	100	100	19.4	16.7	15.3	12.9	14.8
S8	Roadside	Diffusion tube	100	100	35.9	32.3	31.7	27.8	30.4
S9	Kerbside	Diffusion tube	100	100	38.5	36.6	34.9	32.1	34.5
S10	Roadside	Diffusion tube	100	100	28.2	29.7	24.7	22.2	25.2
S11	Kerbside	Diffusion tube	100	100	38.2	37.8	34.4	33.0	35.6
S12	Kerbside	Diffusion tube	100	100	33.1	34.2	34.1	30.1	31.1
S13	Kerbside	Diffusion tube	100	100	42	38.1	40.5	35.5	38.3
S14	Urban Background	Diffusion tube	100	100	20.6	20.5	20.4	18.8	20.4
S15	Roadside	Diffusion tube	100	100	28.3	31	30	27.3	29.3
S16	Urban Background	Diffusion tube	100	100	19.8	18.4	15.8	14.3	16.0
S17	Kerbside	Diffusion tube	100	100	44.9	40.1	39	38.1	38.4
S18	Kerbside	Diffusion tube	100	100	45.9	40.6	38.7	38.0	39.1
S19	Kerbside	Diffusion tube	100	100	44.5	39.4	38.5	40.1	40.9
S20	Urban Background	Diffusion tube	100	100	19	19.1	17.1	15.7	17.1
S25	Kerbside	Diffusion tube	90	90	28.9	31.9	29.2	27.2	28.8

S26	Suburban	Diffusion tube	100	100	16.4	16.8	15.2	13.3	15.4
S27	Kerbside	Diffusion tube	100	100	N/A	N/A	N/A	N/A	33.5
S28	Roadside	Diffusion tube	66	66	N/A	N/A	N/A	22.9	26.0 ⁴
S34	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	21.7
S35	Roadside	Diffusion Tube	100	100	N/A	N/A	N/A	N/A	19.6

Diffusion tube data has been bias corrected

Annualisation has been conducted where data capture is <75%

If applicable, all data has been distance corrected for relevant exposure – See Appendix B

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) Annualised figure

Figure A.1 – Trends in measured NO₂ at sites within and adjacent to AQMA 1 Shoreham High Street, 2012 – 2016

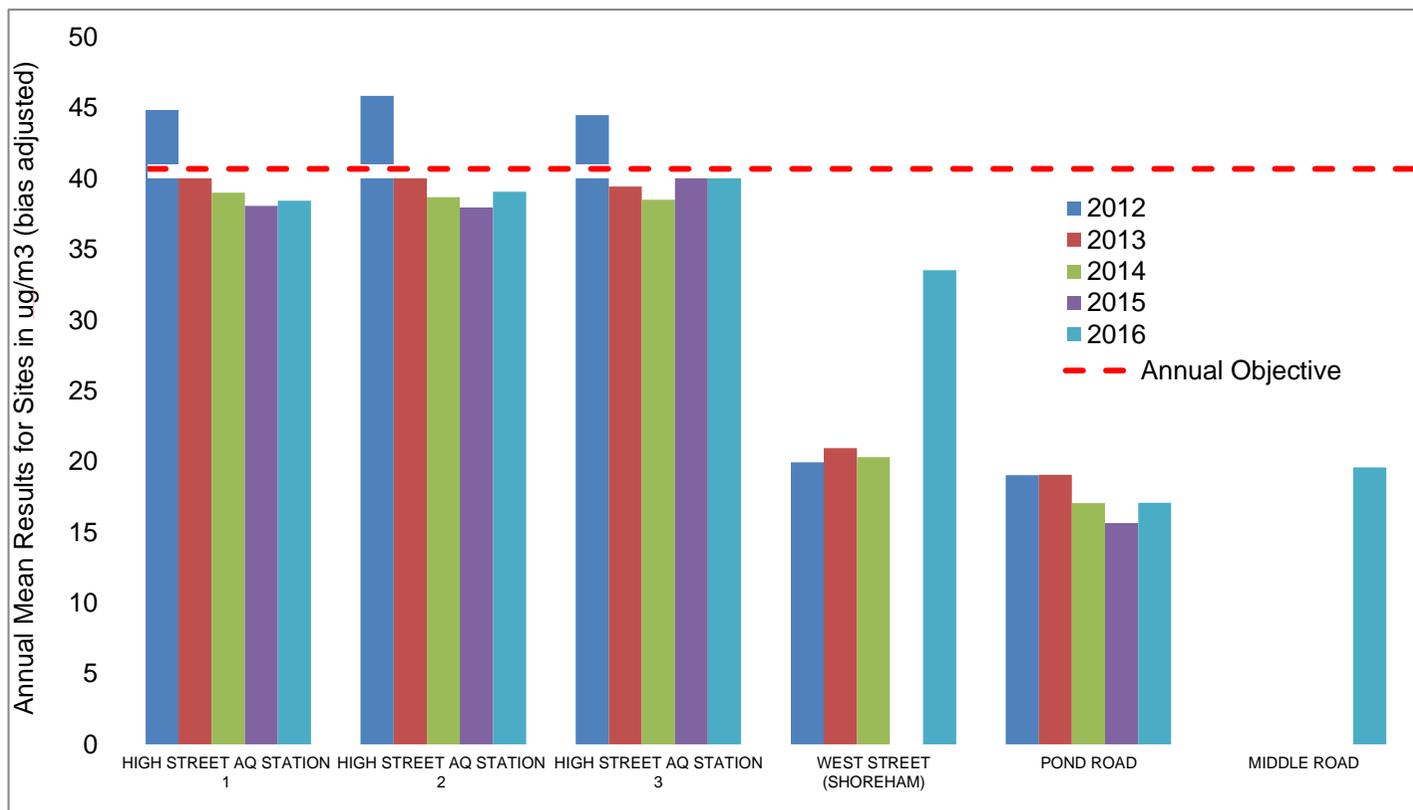


Figure A.2 – Trend in measured NO₂ at sites S8 and S9 within AQMA 2, 2012 - 2016

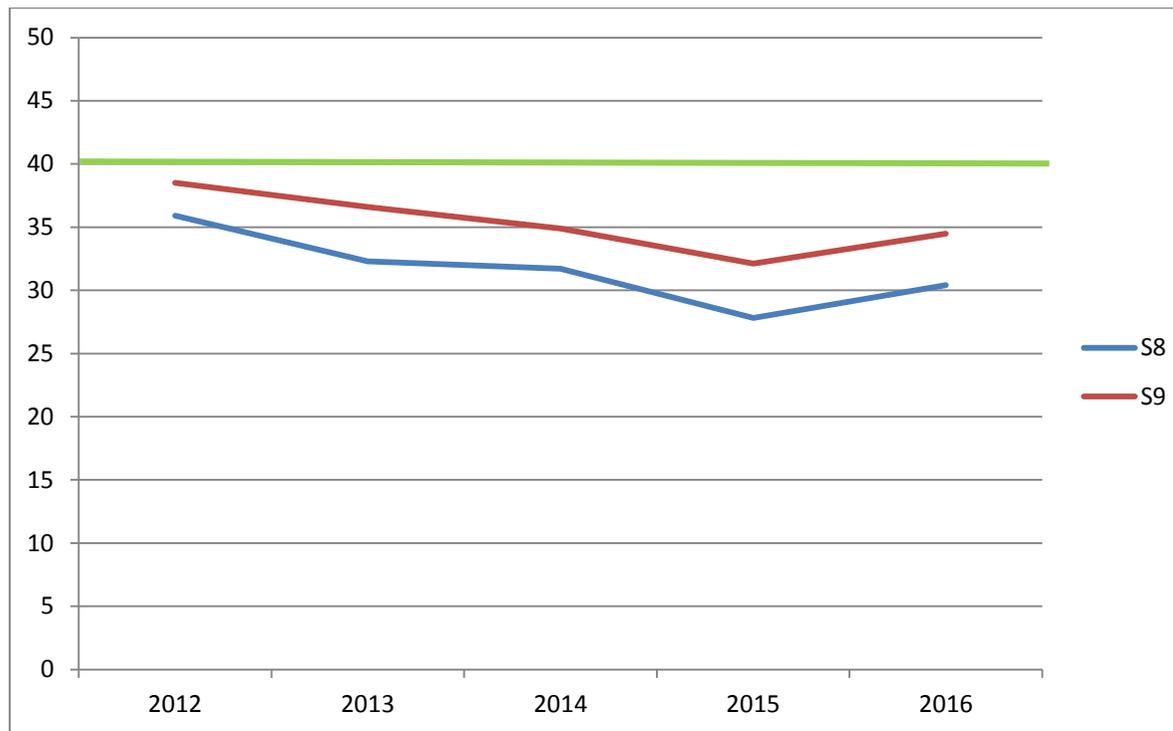


Figure A.3 – Trend in measured NO₂ at site S13 Upper Brighton Road Lancing, 2012 - 2016

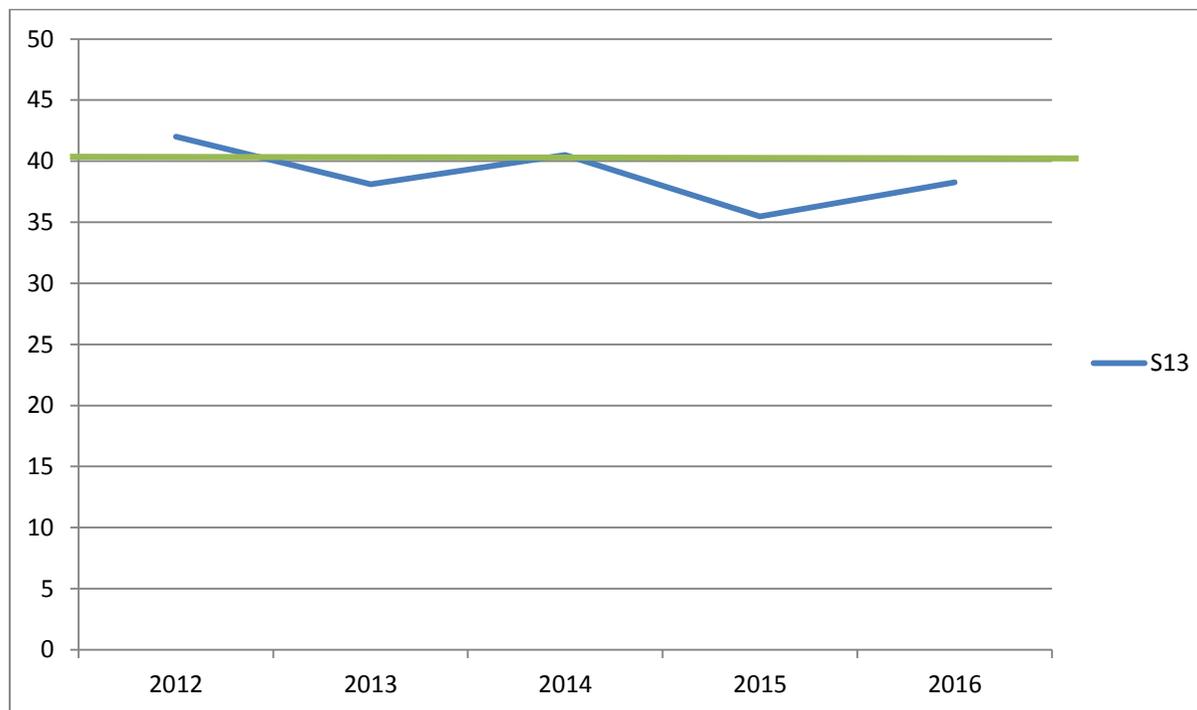
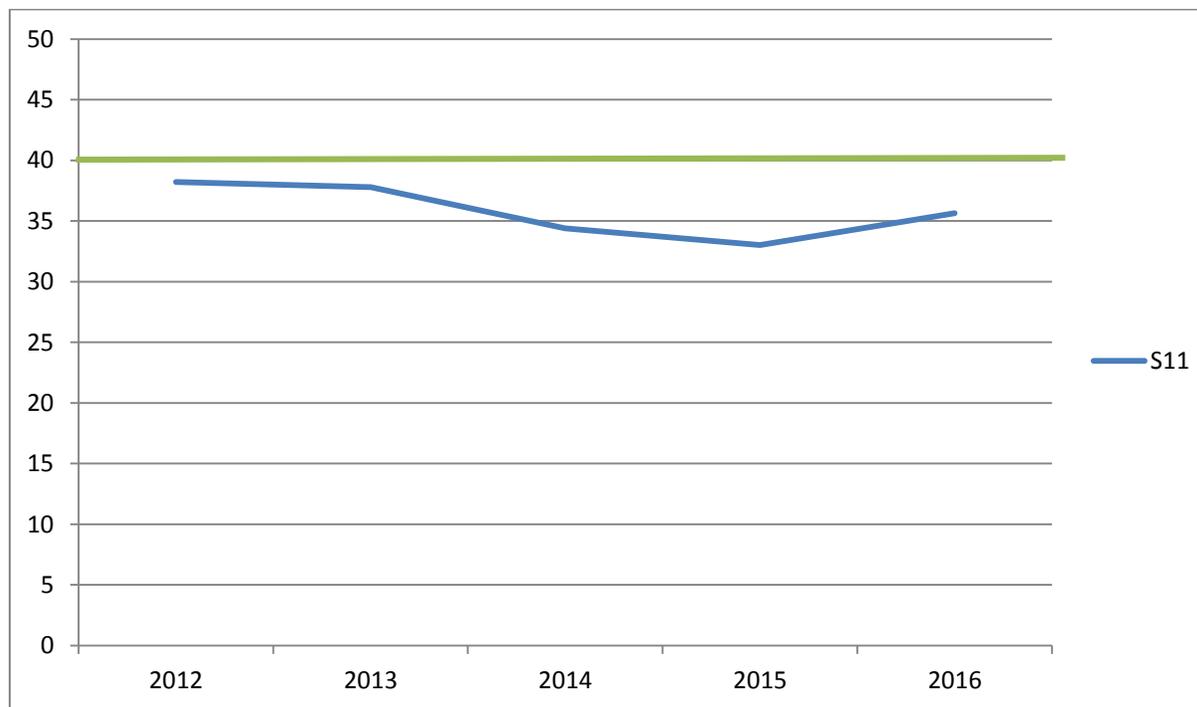


Figure A.4 – Trend in measured NO₂ at site S11 Lancing Manor, 2012 – 2016



Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2016

Site ID	NO ₂ Mean Concentrations (µg/m ³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (1.03) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
S1	31.0	31.1	25.3	26.4	28.9	27.1	31.2	34.0	-	34.7	34.6	39.9	31.3	32.2	24.6
S2	26.1	22.1	20.3	21.9	19.8	22.7	21.2	23.1	26.3	21.6	28.6	36.1	24.2	24.9	23.3
S3	17.8	18.1	15.9	15.6	13.6	12.7	10.2	15.9	20.1	14.4	23.5	26.5	17.0	17.5	17.5
S7	21.4	14.3	12.8	13.7	11.5	11.7	8.4	9.6	13.9	13.9	18.1	22.7	14.3	14.8	14.6
S8	40.9	31.8	23.1	28.1	24.5	24.8	22.4	26.7	28.3	25.8	35.3	42.6	29.5	30.4	25.4
S9	36.4	31.1	30.7	32.1	28.8	31.5	26.6	31.0	36.2	30.7	41.5	45.2	33.5	34.5	32.8
S10	24.0	20.5	25.3	22.4	20.6	19.5	14.8	23.0	24.1	29.4	33.5	36.6	24.5	25.2	18.2
S11	41.1	37.8	29.8	31.8	29.6	30.4	30.7	32.9	31.2	36.2	42.1	41.7	34.6	35.6	23.4
S12	23.7	29.8	26.5	24.7	33.9	25.8	21.0	29.7	27.6	35.4	42.5	41.3	30.1	31.1	22.4
S13	41.2	31.1	29.1	36.7	33.9	40.6	35.4	42.3	46.2	29.1	38.2	42.1	37.2	38.3	28.1
S14	22.1	21.1	16.8	16.5	17.5	16.8	13.9	21.5	20.3	19.6	23.2	28.1	19.8	20.4	18.0
S15	27.0	31.8	27.3	26.2	23.5	30.1	25.0	23.0	29.2	29.7	32.6	36.2	28.5	29.3	25.3
S16	17.0	16.7	13.8	14.0	11.0	12.3	9.7	12.1	16.7	14.9	21.2	26.5	15.5	16.0	14.6
S17	41.5	33.7	31.8	33.4	32.4	36.4	38.5	37.0	43.5	34.1	41.8	43.8	37.3	38.4	29.1
S18	39.8	36.9	33.2	36.2	38.1	37.4	35.9	37.1	43.5	34.1	40.3	43.2	38.0	39.1	29.6

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S19	40.9	37.8	32.7	35.0	36.5	41.1	37.2	44.1	47.9	35.2	42.3	45.4	39.7	40.9	30.7
S20	17.6	15.3	18.3	13.9	12.7	12.5	11.5	15.3	19.6	16.4	21.4	24.5	16.6	17.1	22.8
S25	30.2	30.6	26.0	23.3	24.7	24.3	24.4	29.2	27.0	34.7	33.1	-	28.0	28.8	26.9
S26	15.8	14.7	12.6	12.7	15.2	10.2	8.6	13.1	14.0	17.9	20.8	24.4	15.0	15.4	14.6
S27	33.3	30.6	29.8	29.3	25.4	28.3	26.5	33.4	37.8	33.2	37.4	45.8	32.6	33.5	33.2
S28	27.9	-	23.9	21.9	-	23.8	-	-	29.4	23.2	29.5	33.0	26.6	26.0 ³	23.8 ³
S34	21.2	20.4	19.3	19.7	17.7	18.1	16.3	18.5	23.1	22.5	27.8	28.2	21.1	21.7	18.8
S35	21.6	19.4	17.5	14.5	18.5	15.3	12.7	15.5	17.4	20.2	25.2	30.3	19.0	19.6	17.8

National bias adjustment factor used

Annualisation has been conducted where data capture is <75%

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.

(3) Annualised figure

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

Diffusion Tube Bias Adjustment Factors

NO₂ diffusion tubes are provided and analysed by Gradko laboratory. The NO₂ tube preparation method used is 50% triethanolamine (TEA) in Acetone.

Data from the NO₂ diffusion tubes has been compared and bias corrected to the factors produced from the UK co-location data-base available from Defra, <http://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html>

The bias adjustment factor used for 2016, obtained via tools at the aforementioned website, was **1.03**.

QA/QC of diffusion tube monitoring

All diffusion monitoring data has been ratified following the methods described in LAQM.TG(16). A quality assurance / quality control (QA/QC) programme including field duplicates and blanks, and instrument calibration with standard gases has been followed (AEAT, 2000).

Annualisation data for NO₂ at S28, South Street, Lancing

	Brighton Preston Park AURN	Eastbourne AURN	Portsmouth AURN	Average ratio
Annual mean 2016	17µg m ⁻³ (dc 89%)	12 µg m ⁻³ (dc 99%)	20 µg m ⁻³ (dc 94 %)	
Period mean	17.9 µg m ⁻³	13.8 µg m ⁻³	22.6 µg m ⁻³	
Ratio	0.95	0.87	0.88	0.90

Annual Mean at S28 = 28.84 µg m⁻³
 Annualised Mean = 28.84 x 0.90 = **26.0 µg m⁻³**

Fall off with Distance Calculations

A screen shot of the Falloff of NO₂ concentration with distance from kerb calculator spreadsheet (downloaded from the LAQM website) is shown overleaf, with the calculation for site S11.

The annual local mean background concentrations were derived from the background mapping data for Adur, produced by Defra for Local Authorities and available at <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2013>.

 		
Enter data into the red cells		
Step 1	How far from the KERB was your measurement made (in metres)?	1 metres
Step 2	How far from the KERB is your receptor (in metres)?	16.6 metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	13.99 µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	35.6 µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	23.4 µg/m ³

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

Maps showing Adur Diffusion Tube Monitoring Locations for 2016

1. Areas in purple are AQMA's.
2. The automatic monitor is collocated with the triplicate diffusion tubes (S17, S18 and S19) at High Street Shoreham.

Figure D.1 Adur District



Figure D.2 Adur West

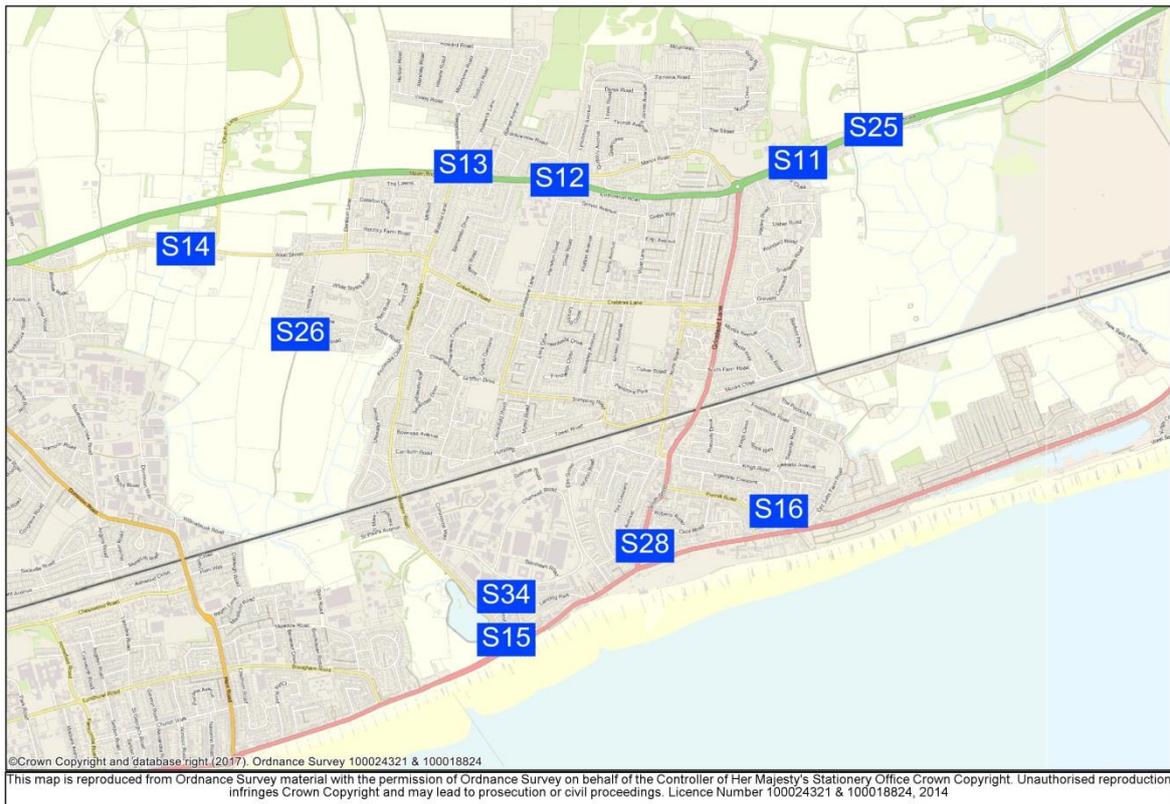
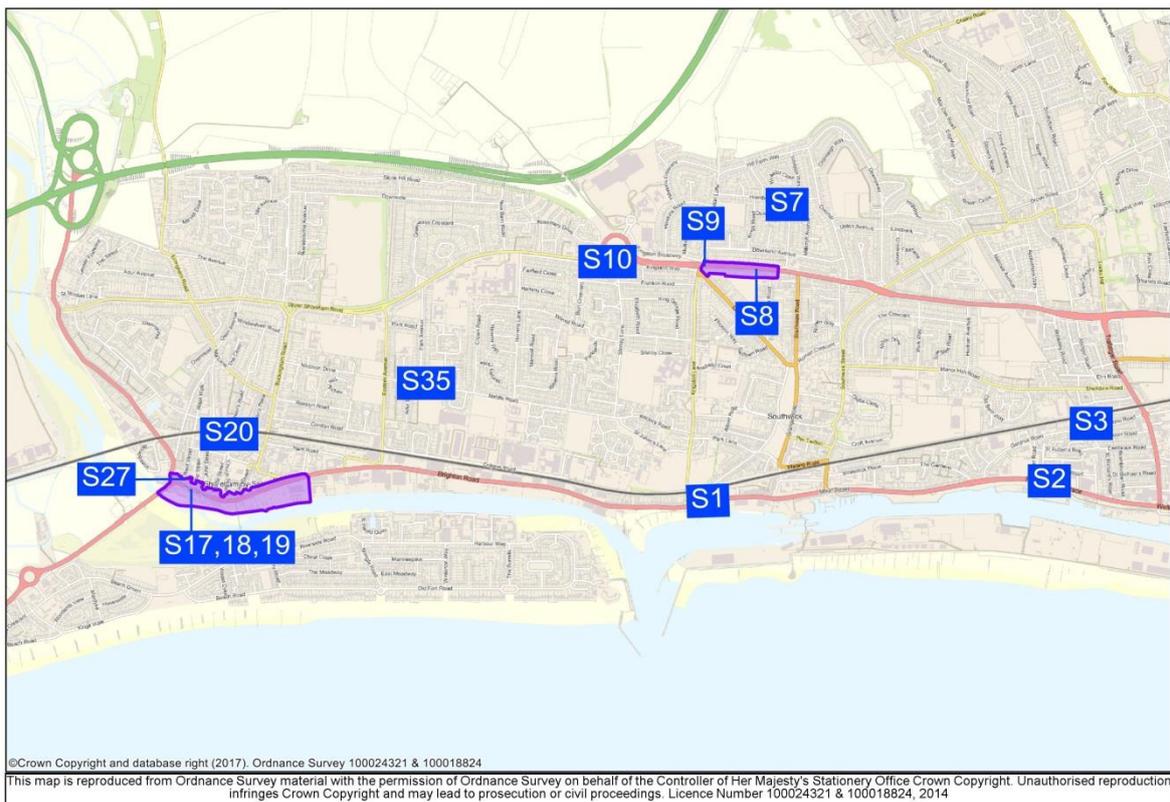


Figure D.3 Adur East



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁴	
	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

⁴ 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
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

References

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Local Air Quality Management Technical Guidance (TG16), Defra
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Local Air Quality Management Policy Guidance (PG16), Defra
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https://consult.defra.gov.uk/communications/laqm_changes/supporting_documents/LAQM%20Policy%20Guidance%202016.pdf

Air Quality and Emission Mitigation Guidance for Sussex (2013)
Available from <https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/air-quality-and-planning/>

NO₂ Fall-Off with Distance Calculator available from:
<http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html>

Defra Background Maps for Adur
<https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2013>