2016 Air Quality Annual Status Report (ASR)

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

January 2017

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Executive Summary: Air Quality in Our Area

Air Quality in Adur 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].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[2]. Improving air quality can benefit those who may find their conditions are made worse through exposure to air pollution, for example people with heart or lung conditions. More information about the health effects of air pollution can be found at:

https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/whats-the-problem/

This report covers monitoring and actions during 2015. There are two Air Quality Management Areas within the Adur District Council area: AQMA 1 – High Street, Shoreham-by-Sea and AQMA 2 – Old Shoreham Road, Southwick. Nitrogen Dioxide (NO_2) concentrations within AQMA 1 exceed the annual objective at the monitoring site, but concentrations decrease rapidly away from the road and are estimated to be below the annual objective at the nearest location with relevant for exposure. Within AQMA 2 concentrations have decreased significantly over recent years. Elsewhere within the District NO_2 concentrations remain below the annual objective.

Within AQMA 1 the 24 hour mean objective for PM_{10} remains close to exceedance.

The local authority has an air quality action plan in place which aims to reduce emissions from traffic and works closely with neighbouring councils and West Sussex County Council. The action plan was revised in 2015 in order to report an update to Defra. The aim is for the action plan to be revised thoroughly in 2016/17 as many of the listed measures are duplicated and can be grouped together.

[1] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[2] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Actions to Improve Air Quality

Measures to improve air quality relate primarily to reducing traffic emissions, these include:

- Targeting HGV's and LGV's as they account for a large proportion of movements within AQMA 1;
- Improve flow/decrease stop start driving;
- Identifying operator and Euro Class to better target fleets who regularly pass through the AQMA's, particularly AQMA 1;
- Working with developers to achieve improvements to infrastructure and traffic flow.

Local Priorities and Challenges

Priority areas for action are firstly increasing public awareness and involvement in the solution to air pollution, secondly increasing multi-agency involvement in the air pollution problem and thirdly to bring improvements through developments as sites are brought forward for redevelopment (e.g. Shoreham Harbour). Specific priority actions include the promotion and establishment of Travel Plans, discussions with developers to embed air quality mitigation within local development schemes and the establishment of new and improvement of existing walking and cycling schemes across the District. In addition through attempting to influence decisions made by members of the general public with regard to daily transport mode selection, significant reductions in emissions can be achieved, resulting in health benefits to all.

How to Get Involved

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

<u>Before using your car, ask yourself:</u>

• do I really need to make this journey?

• could I walk or cycle instead of taking the car?

• could I take a bus or train?

• are the levels of air pollution already too high today? (See our website for forecasts: https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/air-quality-monitoring/#airalert)

Plan your journey using the West Sussex Journey Planner, http://www.travelwestsussex.co.uk/

If you must drive:

• drive smoothly. You'll save fuel, and your engine will also pollute less;

• don't rev your engine unnecessarily;

• maintain your car. Keep the engine properly tuned and the tyres at the right pressure; and

• turn off the engine when your car is stationary.

At home

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

• Avoid burning solid fuels if possible. If you do burn please use special smokeless fuels.

• Avoid lighting bonfires, but if you must don't light them when pollution levels are high or while the weather is still and cold. Only burn dry material and never burn household waste, especially 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.

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1 Local Air Quality Management

This report provides an overview of air quality in Adur District Council during 2015. 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 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/

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	One Line Description	Action Plan
Adur District Council AQMA 1	• NO_2 annual mean • PM_{10} 24-hour mean	High Street Shoreham-by-Sea	Residential properties above commercial premises along congested section of A259. An area encompassing the High Street, Shoreham-by-Sea between the Ropetackle Roundabout and Surry Street. Declared 2005.	Adur Air Quality Action Plan 2007 https://www.adur-worthing.gov.uk/media/media,104971,en.pdf
Adur District Council AQMA 2	• NO_2 annual mean	Old Shoreham Road Southwick	Residential properties immediately bounding dual carriageway. An area encompassing the Old Shoreham Road, Southwick between Kinston Lane and Lower Drive Declared 2005.	Adur Air Quality Action Plan 2007 https://www.adur-worthing.gov.uk/media/media,104971,en.pdf

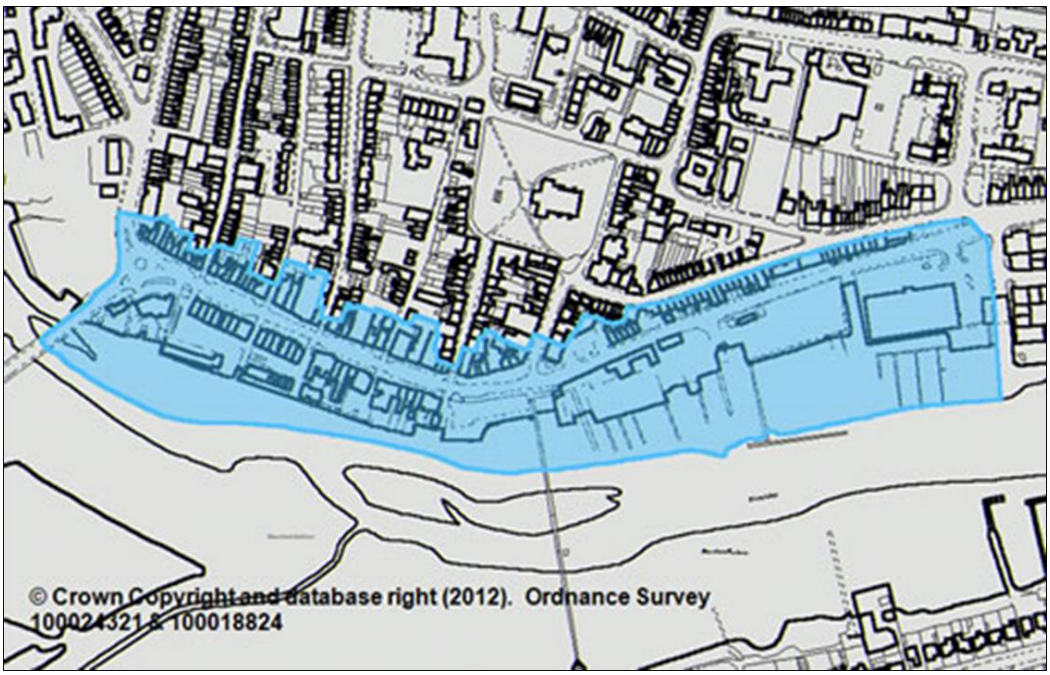
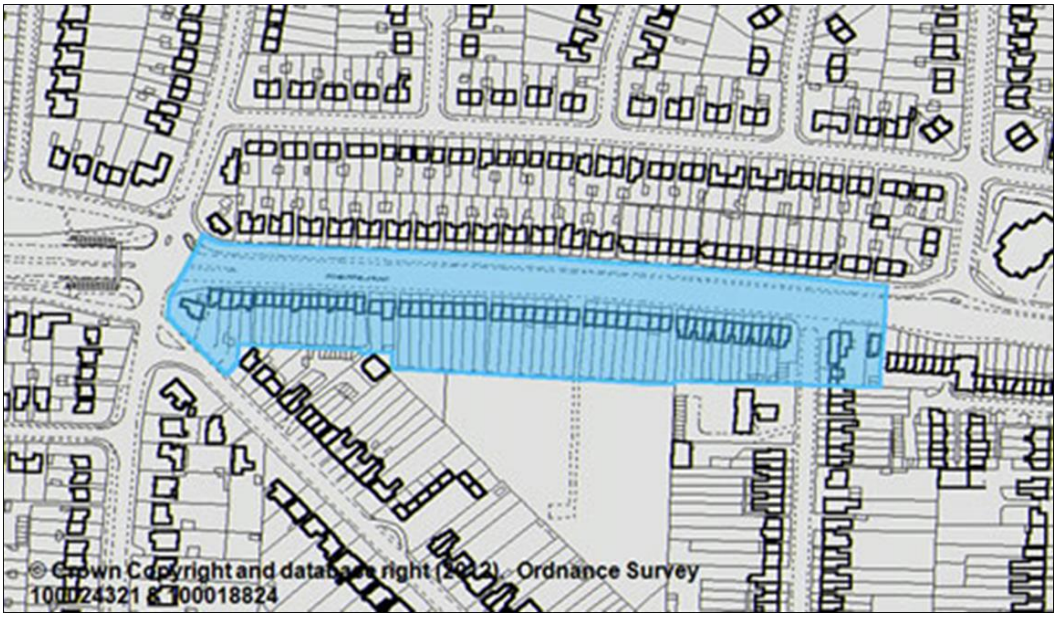
The AQMAs are also shown on the LAQM website:

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

and presented in Figure 2-1

Figure 2-1 Air Quality Management Areas in Adur District Council

Adur District Council AQMA 1 – High Street, Shoreham -by-Sea	
Adur District Council AQMA 2 – Old Shoreham Road, Southwick	

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

Adur District Council has taken forward a number of measures during the current reporting year of 2015 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 embedded the Air Quality Emissions Mitigation Planning Guidance for Sussex into the planning process. The guidance is signposted within the Adur Local Plan and also on our website (under air quality and planning).
- ✓ Working with our partners at West Sussex County Council, planning policy and development control e continue to seek air quality mitigation from development sites as and when schemes come forward. Travel plans, eV charging infrastructure, highway improvements and public transport improvements are sought in conjunction with West Sussex County Council. For example Ropetackle North and Morrison's in Shoreham, where an application for a major redevelopment of a site in Brighton Road Shoreham was submitted (Morrison's) and we successfully negotiated for improvements to walking and cycling routes and public transport improvements. However the scheme was subsequently shelved so we are awaiting new plans for the site.
- ✓ Improve emissions from the Council's vehicle fleet. A grant bid was submitted to OLEV (Office for Low Emission Vehicles). The bid consisted of funding for two electric vehicles to replace the mayoral car and our courier van (which operates between various Council sites). The bid was accepted and a fleet review was commenced by the Energy Saving Trust. Unfortunately the funding offer was subsequently withdrawn. The Council continues to review its fleet and consider cost effective alternatives to diesel vehicles. Pool cars (petrol) were provided for staff to use for work related journeys (through Enterprise Leasing). As the number of pool cars increases we hope to add electric or hybrid vehicles to the fleet.

- ✓ The Air Quality Action Plan was successfully embedded into the draft Public Health Plan in 2015, giving it more prominence and hopefully more teeth.
- ✓ Bus fleet improvements. Discussions with Brighton & Hove Buses and Brighton and Hove City Council resulted in a bid for improvements to bus vehicle technology for routes coming into Adur. We had partial success with this as some of the buses were replaced with newer Euro V models. We are still awaiting further improvements.
- ✓ Attempts were made to secure suitable sites for inclusion within the Energise EV charging network, through Sussex-air. The criteria was within a mile of the A27 and numerous local land owners were approached; however they were unable to commit within the required timeframe and at the time, suitable Council owned sites were not available for the period of ownership required.

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

- ✓ Investigations into the viability and affordability of an Adur (& Worthing) Car Club, in an attempt to reduce private car use.
- ✓ HGV/LGV fleet assessment – discussions on how to bring this work forward as such vehicles make up almost a third of movements within the AQMA's.
- ✓ Shoreham High Street highway improvements (following the WSCC Shoreham Town Centre Study 2013 - http://www2.westsussex.gov.uk/ds/clc/a/a211113i6c.pdf).
- ✓ Improvements to the Shoreham High Street Continuous AQ Monitoring system.

Adur District Council's priorities for the coming year are

- ✓ LEZ feasibility in Shoreham High Street. Consider how any restrictions may work and what impacts they may have.

- ✓ Continue to work with developers as and when sites come forward for development in order to minimise impacts on the existing AQMA's and avoid creating new AQMA's. Also to agree air quality mitigation (such as electric vehicle charge points, improvements to public transport, travel plans, etc.);
- ✓ Promote low emission vehicles, the government grants available and attempt to expand the eV charging network

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Engineering works to reduce stop start	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	WSCC	2009	On-going	Improve-ment in traffic flow	10%	Draft Shoreham Harbour Transport Strategy published 2014. The aim is to deliver a programme of transport infrastructure improvements, transport services and travel behaviour change initiatives; to minimise the impact on the existing network and quality of life while connecting the Harbour to its surroundings. Shoreham Town Centre Study published 2014 - identified various measures including rationalising and improving bus stops	2031	Measures yet to be implemented
2	Adur Car Club	Alternatives to private vehicle use	Car Clubs	Adur DC	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	Very small reduction, however principle of car sharing is key here
3	LEZ Feasibility	Promoting Low Emission Transport	Low Emission Zone (LEZ)	Adur DC	2015/16	2016/17	Reduction in older Euro class HGV's/LGV's and buses within the AQMA	10-20%	Initial feasibility study by Sussex air	On-going	Over a third of movements in AQMA are by HGV's and LGV's so targeting them is priority for emission reduction
4	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	2012	2014/15	LE mitigation secured in develop-ments	1-5%	Guidance signposted within the new draft Adur Local Plan	On-going	Focus on minimising number of trips made by cars, especially diesels

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5	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	2014/15	2015	No. of non-diesel vehicles procured	<1%	Funding streams identified. Bid submitted to OLEV for two eV vehicles to replace mayoral car and courier van	On-going	Bid successful, then OLEV withdrew funding offer.
6	ADC Staff Home Working	Promoting Travel Alternatives	Encourage / Facilitate home-working	Adur DC/Worthing BC	2012/13	2013/14	Staff travel surveys reduced commuting and business travel by car	<1%	Home and remote working actively encouraged. Implemented.	On-going	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work. New ways of working introduced
7	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	2016/17	By identifying operator and Euro Class we can better target fleets who regularly pass through the AQMA
8	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	On-going	On-going	Number of charge points provided	1%	Initial charge points installed in Council car parks through WSCC lighting contract. Discussions with developers as and when sites come forward for redevelopment.	On-going	Focus is to increase the number of eV's on the Borough's roads
9	Bus fleet improvements	Transport Planning and Infrastructure	Bus route improvements	Adur DC/WSCC	2009	2011 on-going	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. Discussions with B&H Buses on fleet improvements alongside Brighton & Hove CC LEZ.	On-going	Improvement in journey times points towards improved traffic flow. Retrofitting or fleet replacement targeted next and should bring reductions in emissions; small in AQMA
10	Traffic light and pelican crossing optimisation	Traffic Management	UTC, Congestion management, traffic reduction	WSCC	2009	On-going	Improve-ment in traffic flows	<5%	Signals optimised as far as reasonably practicable	On-going	Improved flow/decrease in stop start driving will have a significant beneficial impact on emissions

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
11	Travel Plans secured through the planning process for all significant development sites in West Sussex	Promoting Travel Alternatives	Other	WSCC	Process established	On-going	Number of plans delivered	1-5%	Plans continue to be secured as and when development sites come forward.	On-going	Focus on minimising number of trips made by car
12	Home working promoted through development of Travel Plans and the County Council's own Staff Travel Plan. All WSCC employees have laptops and home/flexible working is positively encouraged	Promoting Travel Alternatives	Encourage / Facilitate home-working	WSCC	2013/14	2014/15	Staff travel surveys reduced commuting and business travel by car	N/A	New ways of working implemented	On-going	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work. New ways of working intro-duced
13	Personalised journey plans to be provided to employees by Living Streets through the 'Walk To' LSTF project	Promoting Travel Alternatives	Personalised Travel Planning	WSCC	2014/15	2015/16	Surveys of employee sustainable transport use	1%	n/a	LSTF funds currently available until March 2016	Focus on reducing traffic congestion and promoting sustainable travel for trips to and from work
14	98% of schools in West Sussex have Travel Plans. We continue to roll out Safer Routes to School improvements through our annual capital programme	Promoting Travel Alternatives	School Travel Plans	WSCC	Approach established	On-going	Hands-up travel mode surveys in schools	1%	98% of schools in the county have travel plans	On-going	Focus on promoting sustainable travel amongst young people and reducing peak time car traffic

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
15	Cycling Promotion	Promoting Travel Alternatives	Promotion of cycling	WSCC	Various projects established	On-going	Automatic cycle counters and travel surveys	1-5%	Various projects implemented	On-going subject to future funding avail-ability	Focus on encouraging cycling as opposed to car use
16	Living Streets 'Walk To School' Outreach and 'Walk To' projects (LSTF)	Promoting Travel Alternatives	Promotion of walking	WSCC	2011/12	2012/13-2015/16	Number of people walking more	1%	60 schools engaged across WS	LSTF funds currently available until March 2016	Focus on promoting walking to school
17	Promotion of LEV's	Public Information	via the Internet	Adur DC	2015	On-going	Number of LEV's	1%	OLEV grant details added to website		
18	WSCC website (Travelwise pages) and new multi-modal journey planner (Travel West Sussex)	Public Information	via the Internet	WSCC	Travel-wise webpages established and continually reviewed. Travel West Sussex online journey planner developed during 2014/15	Travel West Sussex journey planner about to be launched	Website hits / journeys planned	1-5%	Travel West Sussex website launched.	On-going	Focus on promoting sustainable travel

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
19	Leaflets to promote sustainable/active travel modes (e.g. car sharing, cycling, public transport)	Public Information	via leaflets	WSCC/Adur DC	Approach established	On-going	Print runs / take up	<1%	A wide range of promotional information has been produced	On-going	Focus on promoting sustainable travel
20	MOVA or SCOOT traffic control	Traffic Management	UTC, Congestion management, traffic reduction	WSCC	2007	On-going	Improved traffic flow	<10%	MOVA installed on A270 10 years ago, on A259 High St 2011/12	On-going	High AQ impact/reduction in emissions possible by smoothing flow
21	Increase availability of AQ information	Public Information	via other mechanisms	Adur DC	On-going	On-going	Fewer car journeys	1%	Sussex air alert has been operating for a few years and is on council's website.	On-going	Aim is for a reduction in the number of car journeys, particularly on poor air quality days
22	Health & Wellbeing Promotion	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Adur DC	On-going	On-going	Fewer car journeys	<1%	Embedded air quality and action planning within the Draft Adur & Worthing Public Health Plan	On-going	Attempt to reduce car journeys, particularly through the AQMA
23	Reduce AQ impact of ADC staff travel	Promoting Travel Alternatives	Workplace Travel Planning	Adur DC	On-going	On-going	Fewer staff car journeys	<1%	Travel plan completed. Pool cars provided for causal car users. Remote working encouraged.	On-going	Council to demonstrate leadership. Low reduction within AQMA. Reduced journeys to work.
24	Air Quality Monitoring	Public Information	via the Internet	Adur DC	2006	On-going	Reduction in levels of NO2	N/A	Refurbished AQMS began gathering data in 2014. Unfortunately breakdowns have continued.	On-going	Measure success of AQAP
25	Promotion of www.westsussexcarshare.com and Bike Week events	Public Information	via radio	WSCC	Approach established	On-going	Number of registrants / take-up of initiatives	On-going	On-going	On-going subject to future funding availability	Focus on promoting sustainable travel

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
26	Transport network infrastructure improvements for new development	Traffic Management	UTC, Congestion management, traffic reduction	WSCC	Approach established	On-going	Number of infra-structure improve-ments	<1%	As and when new developments come forward.	On-going	Focus on minimising traffic congestion
27	Switch off engines whilst stationary at rail level crossing queues in Shoreham	Traffic Management	Anti-idling enforcement	WSCC	2007	On-going	Localised air quality monitoring	N/A	Advisory signs provided at level crossings in Shoreham	On-going	Focus on minimising localised air quality problems from stationary traffic
28	New infrastructure for cyclists and pedestrians	Transport Planning and Infrastructure	Cycle network	WSCC	On-going	On-going	Length of new cycle routes provided	<1%	Cycle route improvements across the District. Discussions ongoing, improvements likely as new developments come forward (s106).	On-going	Minimising the impacts of traffic on local streets
29	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	Approach established	On-going	Number of projects delivered	1-5%	Station access improvements completed	On-going	Focus on promoting rail and sustainable travel as an alternative to the car
30	Encouraging bus travel	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	WSCC	On-going	On-going	Number of projects delivered	1-5%	Real time information at bus stops.	On-going	Focus on promoting bus travel as an alternative to the car

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
31	Developing and promoting bids for Sustainable Transport Packages through the Local Enterprise Partnership Local Growth Fund	Transport Planning and Infrastructure	Other	WSCC	On-going	2015/16 is the first implementation year for Local Growth Funding	Public transport patronage, cycle counter flows, traffic counts, travel behaviour surveys		Conference on transport proposed for 2016. Work will emerge from this.	Local Growth Funding covers period to 2021	Focus on promoting sustainable transport and minimising car use and vehicle congestion
32	Speed management initiatives such as 20mph zones where these are supported by the community,	Traffic Management	Reduction of speed limits, 20mph zones	WSCC	Approach established	On-going	Before and after travel behaviour surveys and traffic counts	N/A	20mph streets implemented off the High Street AQMA.	On-going	Focus on improving conditions for walking and cycling
33	Taxi Fleet Emission Improvements	Promoting Low Emission Transport	Taxi Licensing conditions	Adur DC	2017	2018 on	Number of taxi's replaced with better Euro standard models/EV's	1%	Discussions to commence 2017		District wide improvement will have some limited effect in High Street, particularly at taxi rank
34	Business Travel Plan Networks to promote sustainable travel amongst employees and for business travel.	Promoting Travel Alternatives	Workplace Travel Planning	WSCC/Adur DC	2014	2016/17	Before and after surveys of sustainable mode use	1-5%			If large employers can be engaged some potential big gains can be made
35	Promotion of the West Sussex Advisory Lorry Route Network	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	WSCC	Routes established	On-going	Automatic traffic counters	1-5%	Routes identified and signposted	On-going	Focus on minimising inappropriate lorry routing, including ensuring routing is away from AQMAs

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
36	Speed limit changes	Traffic Management	Reduction of speed limits, 20mph zones	WSCC	2005	2011/12 (Shoreham Town Centre)	Speed data	<1%	Roads off A259 High Street are 20mph, A259 remains 30mph, A270 40mph	2012/13	Reduced speed can improve flow by reducing stop/start
37	Moving existing bus stops	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	WSCC	2007	On-going	Traffic data	1-5%	Following the Shoreham Town Centre Study 2013 WSCC are still awaiting funding for this in High Street AQMA	2020	Will improve traffic flow as buses will not block the highway, leading to lower emissions
38	Southlands Hospital travel Plan	Transport Planning and Infrastructure	Other	WSHPCT/ WSCC	2007	2012		<1%	Elderly care shifted to Worthing Hospital, now day surgery /out patients only	2012	Possible reductions in A270 AQMA
39	Controlled Parking Zones	Promoting Low Emission Transport	Priority parking for LEV's	WSCC	2007	2013		<1%	Controlled Parking Zone plans put on hold in 2013	On-going	Encourage LEV's in town centre

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 2-2 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 2-2 Fraction of mortality attributed to particulate air pollution in Adur District Council

Indicator	Period	Adur		Region	England	England		
		Count	Value	Value	Value	Worst/ Lowest	Range	Best/ Highest
3.01 - Fraction of mortality attributable to particulate air pollution	2014	-	4.4%	4.9%	5.1%	8.3%		2.6%

Adur District Council is currently developing its approach to address $PM_{2.5}$ in partnership with public health 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.

Adur District Council undertook automatic (continuous) monitoring at one site during 2015. 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.

Monitoring results are available at: http://www.sussex-air.net/

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

3.1.2 Non-Automatic Monitoring Sites

Adur District Council undertook non- automatic (passive) monitoring of NO_2 at eighteen sites during 2015. 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) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40 µg m^{-3}.

As reported in the Sussex Air Pollution Monitoring Network Annual Report for 2015[3], there were issues with a blown fuse which resulted in no sampling from November 2014 to February 2015. There were then further issues including a faulty air conditioning unit from April to September 2015 which impacted the analyser and resulted in a data capture of just 53 % for 2015.

Based on the 53 % data capture a ‘raw’ concentration of 48.3 µg m^{-3} was calculated, but this was reduced to 45.2 µg m^{-3} when the data was annualised and to 34.4 µg m^{-3} when distance to nearest receptor is taken into accout. Details of the annualisation process and fall-off of NO_2 concentration with distance from kerbside are described in Appendix C.

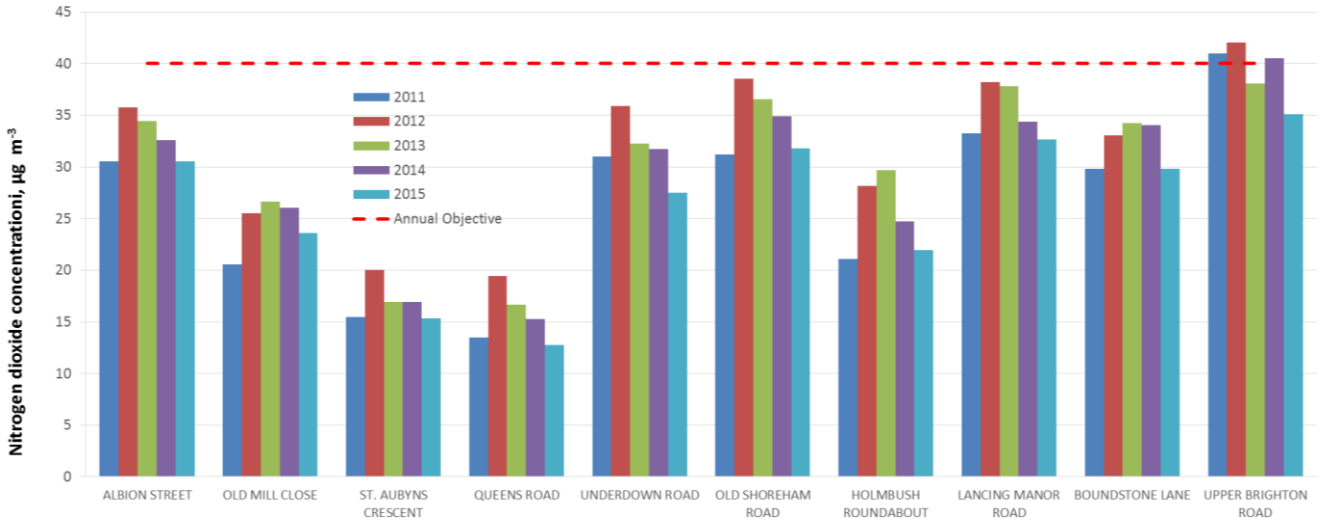
Figure 3-1 compares the 2015 annualised annual average NO_2 measured at the automatic monitoring site with the distance corrected annual mean concentration.

[3] Sussex Air Pollution Monitoring Network Annual Report, 2015, September 2016, Environmental Research Group, King’s College London

Figure 3-1 Annual average NO_2 concentrations measured at automatic monitoring sites in High Street Shoreham in 2015

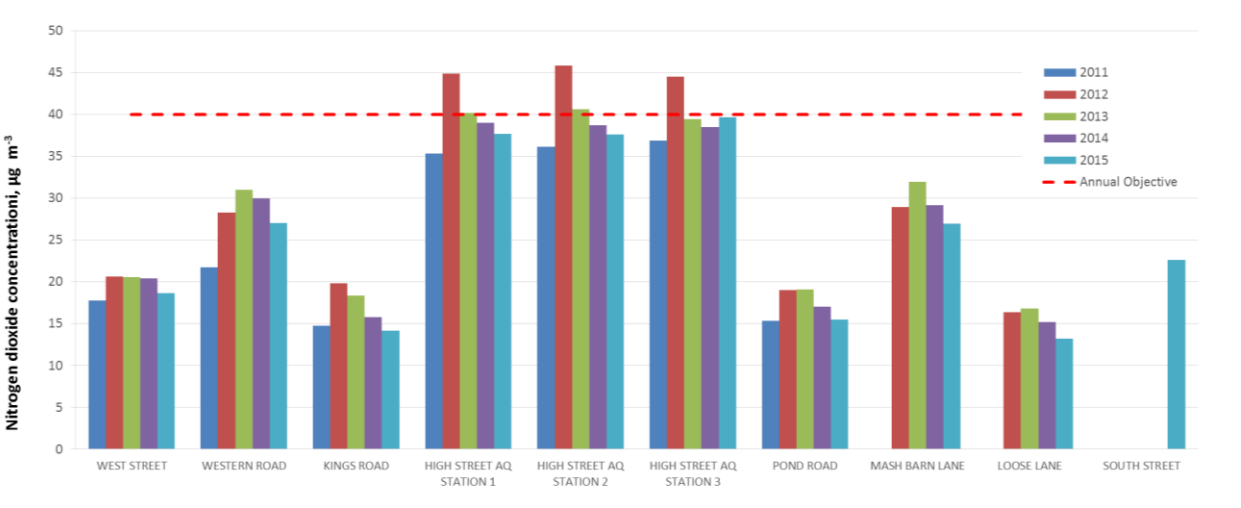
For diffusion tubes, the full 2015 dataset of monthly mean values is provided in Appendix B. Figures 3.2 to 3.3 shows the trends in nitrogen dioxide concentration measured by diffusion tubes from 2011 to 2015. The highest concentration (39.7 µg m^{-3}) was measured for one of the triplicate tubes measured at the High Street AQ monitoring station within the Shoreham AQMA.

Figure 3-2 Annual average NO_2 concentrations measured by diffusion tube in Adur District Council from 2011 to 2015 (first ten listed in Table A.3)



There are two diffusion tube sites within the Southwick AQMA - S8 (Underdown Road) and S9 (Old Shoreham Road). At both sites concentrations have decreased by more than 6 µg m^{-3} since peaking in 2012. It is not clear at this stage how much of these decrease can be attributed to AQ measures within the District, however the reductions are welcomed.

Figure 3-3 Annual average NO_2 concentrations measured by diffusion tube in Adur District Council from 2011 to 2015 (last ten listed in Table A.3; triplicate tubes at High Street)



Elsewhere concentrations have tended to decrease since the peak in concentrations in 2012.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for 2015 with the air quality objective of 200 µg m^{-3}, not to be exceeded more than 18 times per year. There were four exceedances of the 200 µg m^{-3} threshold in the year based on a 53 % data capture. However, it is not possible to annualise short term objective concentration, so it is not possible to say whether the the short term objective concentration was met.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for 2015 with the air quality objective of 40 µg m^{-3}. As reported in the Sussex Air Pollution Monitoring Network Annual Report for 2015[4], there were issues with a blown fuse which resulted in no sampling from November 2014 to

[4] Sussex Air Pollution Monitoring Network Annual Report, 2015, September 2016, Environmental Research Group, King's College London

February 2015. In addition, PM_{10} was described as being inexplicably high from November 2015 onwards. The data is still available on the Sussex-air website as 'Ratified'. Based on the 71.5 % data capture a 'raw' concentration of 32.6 µg m^{-3} was calculated, but this was increased to 33.0 µg m^{-3} when the data was annualised. Details of the annualisation process are described in Appendix C

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50 µg m^{-3}, not to be exceeded more than 35 times per year. There were 32 exceedances of the 50 µg 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..

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}	Y	Chemiluminescent; BAM	5	1	1.7

(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

(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.

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	N	5	1	N	3.0
S2	Old Mill Close Fishersgate	Roadside	525330	105085	NO_2	N	3.5	1.5	N	2.5
S3	St. Aubyns Crescent Fishersgate	Urban Background	525562	105313	NO_2	N	5.5	2	N	3.0
S7	Queens Road Southwick	Urban Background	524139	106320	NO_2	N	3	2.5	N	3.0
S8	Underdown Road Southwick	Roadside	524020	106070	NO_2	Y	4	2	N	3.0
S9	Old Shoreham Road Southwick	Kerbside	523785	106080	NO_2	Y	2	3	N	2.5
S10	Holmbush Roundabout Shoreham	Roadside	522330	106113	NO_2	N	27	2	N	3
S11	Lancing Manor Lancing	Kerbside	518841	105592	NO_2	N	14	1	N	3.0
S12	Boundstone Lane Lancing	Kerbside	517732	105505	NO_2	N	N/A	1	N	3.0

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)
S13	Upper Brighton Road Lancing	Kerbside	517290	105547	NO_2	N	12	1	N	2.5
S14	West Street Sompting	Urban Background	561021	105203	NO_2	N	14.5	2.5	N	3.0
S15	Western Road Lancing	Roadside	517512	103367	NO_2	N	6	1.5	N	3.0
S16	Kings Road Lancing	Urban Background	518754	103971	NO_2	N	5.5	1.5	N	3.0
S17	High Street AQMS 1 Shoreham	Kerbside	521399	105040	NO_2	Y	5.5	0.5	Y	3.0
S18	High Street AQMS 2 Shoreham	Kerbside	521399	105040	NO_2	Y	5.5	0.5	Y	3.0
S19	High Street AQMS 3 Shoreham	Kerbside	521399	105040	NO_2	Y	5.5	0.5	Y	3.0
S20	Pond Road Shoreham	Urban Background	521517	105261	NO_2	N	N/A	26	N	3.0
S25	Mash Barn Lane Lancing	Kerbside	519117	105709	NO_2	N	N/A	6	N	2.5
S26	Loose Lane Sompting	Suburban	516537	104781	NO_2	N	12	0.5	N	2.5
S27	West Street Shoreham (from Jan 2016)	Kerbside	521381	105119	NO_2	N	0.5	2	N	3.0

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)
S28	South Street Lancing	Roadside	518127	103804	NO_2	N	4	2	N	3.0
S34	Winston Road Lancing (from Jan 2016)	Roadside	517511	103560	NO_2	N	10.5	1.5	N	3.0
S35	Middle Road Shoreham (from Jan 2016)	Roadside	522493	105537	NO_2	N	5	1.5	N	3.0

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2011	2012	2013	2014	2015
AD1	High Street, Shoreham-by-Sea	Automatic	53	53	n/a*	n/a*	n/a*	42.6	48.3 (**45.2**)
S1	Albion Street	Diffusion tube	100	100	30.5	35.8	34.5	32.6	30.5
S2	Old Mill Close	Diffusion tube	100	100	20.6	25.5	26.6	26.0	23.6
S3	St. Aubyns Crescent	Diffusion tube	100	100	15.5	20.0	17.0	16.9	15.4
S7	Queens Road	Diffusion tube	100	100	13.5	19.4	16.7	15.3	12.8
S8	Underdown Road	Diffusion tube	92	92	31.0	35.9	32.3	31.7	27.5
S9	Old Shoreham Road	Diffusion tube	92	92	31.2	38.5	36.6	34.9	31.8
S10	Holmbush Roundabout	Diffusion tube	100	100	21.1	28.2	29.7	24.7	22.0
S11	Lancing Manor Road	Diffusion tube	100	100	33.2	38.2	37.8	34.4	32.7
S12	Boundstone Lane	Diffusion tube	100	100	29.8	33.1	34.2	34.1	29.8

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2011	2012	2013	2014	2015
S13	Upper Brighton Road	Diffusion tube	100	100	**41.0**	**42.0**	38.1	**40.5**	35.1
S14	West Street	Diffusion tube	100	100	17.8	20.6	20.5	20.4	18.6
S15	Western Road	Diffusion tube	100	100	21.7	28.3	31.0	30.0	27.0
S16	Kings Road	Diffusion tube	100	100	14.8	19.8	18.4	15.8	14.2
S17	High Street AQ Station 1	Diffusion tube	100	100	35.3	**44.9**	**40.1**	39.0	37.7
S18	High Street AQ Station 2	Diffusion tube	100	100	36.1	**45.9**	**40.6**	38.7	37.6
S19	High Street AQ Station 3	Diffusion tube	100	100	36.8	44.5	39.4	38.5	39.7
S20	Pond Road	Diffusion tube	100	100	15.4	19.0	19.1	17.1	15.5
S25	Mash Barn Lane	Diffusion tube	100	100	-	28.9	31.9	29.2	27.0
S26	Loose Lane	Diffusion tube	100	100	-	16.4	16.8	15.2	13.2
S28	South Street	Diffusion tube	83	83	-	-	-	-	22.6

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

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

(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 Technical Guidance LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

*Data for these years is not available due to poor capture rates as a result of breakdowns.

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2011	2012	2013	2014	2015
High Street, Shoreham-by-Sea	Kerbside	Automatic	53	53					4 (167.4)

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

(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 90%, the 99.8th percentile of 1-hour means is provided in brackets.

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	PM_{10} Annual Mean Concentration ($\mu g/m^3$) (3)				
				2011	2012	2013	2014	2015
High Street, Shoreham-by-Sea	Kerbside	72	72					32.6 (33.0)

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

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

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

(3) All means have been "annualised" as per Technical Guidance 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 PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2015 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2011	2012	2013	2014	2015
High Street, Shoreham	Kerbside	72	72					32

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

(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 90%, the 90.4th percentile of 24-hour means is provided in brackets.

Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2015

Site ID	Site Name	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)
S1	ALBION STREET	39.0	35.1	30.1	30.4	29.3	28.8	32.2	33.7	38.2	35.6	30.4	22.9	32.1	30.5
S2	OLD MILL CLOSE	30.0	26.1	25.9	30.0	23.5	20.2	21.8	23.0	20.0	27.8	28.3	22.0	24.9	23.6
S3	ST. AUBYNS CRESCENT	20.4	19.3	19.7	16.2	11.2	11.7	13.9	14.6	15.6	20.1	16.9	14.5	16.2	15.4
S7	QUEENS ROAD	20.4	16.3	15.7	14.4	10.5	10.0	11.7	8.6	12.3	15.5	15.4	10.7	13.4	12.8
S8	UNDERDOWN ROAD	-	35.4	30.7	27.6	24.1	23.6	26.4	29.0	29.4	31.2	34.2	27.2	29.0	27.5
S9	OLD SHOREHAM ROAD	-	38.4	34.9	36.9	28.5	29.7	31.0	32.1	34.4	40.3	33.0	29.0	33.5	31.8
S10	HOLMBUSH ROUNDABOUT	31.9	25.4	25.0	23.6	17.0	15.6	19.0	22.3	29.3	31.3	21.9	15.2	23.1	22.0
S11	LANCING MANOR ROAD	41.1	36.6	38.6	33.8	32.1	30.4	31.3	31.7	36.8	36.4	36.9	27.1	34.4	32.7
S12	BOUNDSTONE LANE	37.0	35.3	38.3	29.0	26.6	30.0	30.4	29.2	34.2	37.7	31.2	17.8	31.4	29.8
S13	UPPER BRIGHTON ROAD	37.2	34.3	32.3	44.1	37.6	37.8	45.2	35.3	36.2	35.0	27.6	40.9	37.0	35.1
S14	WEST STREET	24.5	20.4	20.6	16.4	14.5	15.5	17.3	19.5	19.3	31.3	18.7	17.4	19.6	18.6
S15	WESTERN ROAD	34.9	30.7	30.3	28.6	24.3	27.1	26.6	30.5	27.7	31.5	25.5	23.4	28.4	27.0
S16	KINGS ROAD	22.2	16.2	17.8	15.2	11.3	11.8	11.8	14.0	14.1	17.6	14.5	12.5	14.9	14.2
S17	HIGH STREET AQ STATION 1	42.7	37.2	42.5	42.6	35.8	40.0	42.8	41.1	40.5	39.7	37.8	33.5	39.7	37.7
S18	HIGH STREET AQ STATION 2	41.9	40.9	37.2	36.4	38.4	39.3	44.4	42.0	42.3	36.6	36.9	38.4	39.6	37.6
S19	HIGH STREET AQ STATION 3	40.8	40.6	41.1	45.6	39.2	39.3	43.3	45.5	46.9	39.7	39.0	40.4	41.8	39.7
S20	POND ROAD	23.9	18.6	17.6	17.4	12.5	13.4	13.9	13.3	15.3	21.0	16.1	12.8	16.3	15.5
S25	MASH BARN LANE	35.5	31.0	32.2	27.4	25.1	27.0	25.4	23.4	32.1	33.1	28.9	19.4	28.4	26.9
S26	LOOSE LANE	17.1	14.8	16.2	16.2	11.7	10.1	11.2	11.4	13.9	16.5	14.4	12.9	13.9	13.2
S28	SOUTH STREET	24.0	24.4	25.2	27.2	19.0	21.3	21.7	26.1	-	-	24.5	24.8	23.8	22.6

(1) See Appendix C for details on bias adjustment

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

Diffusion Tube Bias Adjustment Factors

NO_2 diffusion tubes are provided and analysed by Gradko laboratory. The NO_2 tube preparation method used is 50% triethanolamine (TEA) in Acetone**.**

Data from the NO_2 diffusion tubes gas 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 2015, obtained via tools at the aforementioned website, was **0.95**.

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).

QA/QC of automatic monitoring

The automatic monitoring station in Shoreham High Street consists of an ENVsa AC32M NOx Analyser and a Met One BAM 1020 PM10 Analyser, data logger and GSM modem. All automatic monitoring data is managed by Kings College London (KCL ERG) and validated against local site operator's (LSO) calibration results. The unit is calibrated fortnightly by an Officer of the Council (the LSO), the results of which are then sent directly to KCL for checking. Servicing and maintenance of the unit during 2015 was by ESU1 Ltd.

Annualisation data for NO_2 at High Street, Shoreham-by-Sea

	Brighton Preston Park	Eastbourne	Portsmouth	Average ratio
Annual mean 2015	14.62 µg m^{-3} (dc 98%)	10.59 µg m^{-3} (dc 99 %)	18.77 µg m^{-3} (dc 93 %)	
Period mean	15.44 µg m^{-3}	11.60 µg m^{-3}	19.85 µg m^{-3}	
Ratio	0.95	0.91	0.95	0.935
		Measured concentration based on 53 % data capture	48.3 µg m^{-3}	
		Annualised concentration:	45.2 µg m^{-3}	

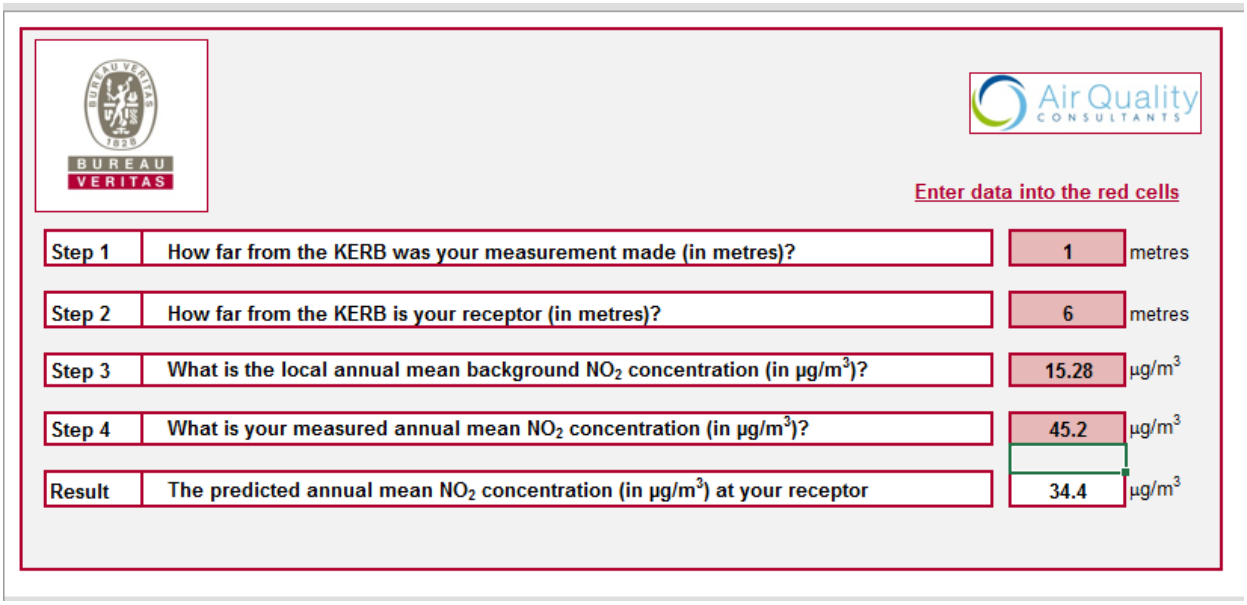
Annualisation data for PM_{10} at High Street, Shoreham-by-Sea

	Norwich Lakenfields	Rochester Stoke	Average ratio
Annual mean 2015	15.47 µg m^{-3} (dc 87 %)	14.60 µg m^{-3} (dc 82 %)	
Period mean	15.17 µg m^{-3}	14.51 µg m^{-3}	
Ratio	1.020	1.006	1.013
		Measured concentration based on 71.5 % data capture	32.6 µg m^{-3}
		Annualised concentration:	33.0 µg m^{-3}

Below is a screen shot falloff of NO_2 concentration with distance from kerb calculator spreadsheet (downloaded from LAQM website 20th January 2017)

The annual local mean background concentration was derived from values measured at the five urban background sites:

Site code	Site	NO_2 2015 µg m^{-3}
S3	ST. AUBYNS CRESCENT	15.4
S7	QUEENS ROAD	12.8
S14	WEST STREET	18.6
S16	KINGS ROAD	14.2
S20	POND ROAD	15.5



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)?	6	metres
Step 3	What is the local annual mean background NO_2 concentration (in $\mu g/m^3$)?	15.28	$\mu g/m^3$
Step 4	What is your measured annual mean NO_2 concentration (in $\mu g/m^3$)?	45.2	$\mu g/m^3$
Result	The predicted annual mean NO_2 concentration (in $\mu g/m^3$) at your receptor	34.4	$\mu g/m^3$

Appendix D: Map(s) of Monitoring Locations

The automatic monitor is collocated with the triplicate diffusion tubes (S17, S18 and S19) at High Street Shoreham.

Code	Site name	In AQMA?
S1	ALBION STREET	N
S2	OLD MILL CLOSE	N
S3	ST. AUBYNS CRESCENT	N
S7	QUEENS ROAD	N
S8	UNDERDOWN ROAD	Y
S9	OLD SHOREHAM ROAD	Y
S10	HOLMBUSH ROUNDABOUT	N
S11	LANCING MANOR ROAD	N
S12	BOUNDSTONE LANE	N
S13	UPPER BRIGHTON ROAD	N
S14	WEST STREET	N
S15	WESTERN ROAD	N
S16	KINGS ROAD	N
S17	HIGH STREET AQ STATION 1	Y
S18	HIGH STREET AQ STATION 2	Y
S19	HIGH STREET AQ STATION 3	Y
S20	POND ROAD	N
S25	MASH BARN LANE	N
S26	LOOSE LANE	N
S28	SOUTH STREET	N

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[5]	
	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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	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

Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006,
Department of Environment, Food and Rural Affairs, Report Number AEAT/ENV/R/2170. Available from UK-AIR https://uk-air.defra.gov.uk/assets/documents/reports/cat09/0701110944_AQinequalitiesFNL_AEAT_0506.pdf

Defra. Abatement cost guidance for valuing changes in air quality, May 2013. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/197898/pb13912-airquality-abatement-cost-guide.pdf

NO_2 Fall-Off with Distance Calculator available from: http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html