2017 Air Quality Annual Status Report (ASR)

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

ARUN DISTRICT COUNCIL

Local Authority Officer	Colin Giddings
Department	Environmental Health
Address	Arun Civic Centre Maltravers Road Littlehampton West Sussex BN17 5LF
Telephone	01903 737755
E-mail	pollution@arun.gov.uk
Report Reference number	ASR2017/ARUN
Date	June 2017

Executive Summary: Air Quality in Our Area

Air Quality in Arun

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 billion[3].

Sussex local authorities jointly review air quality across the region to identify any breaches of air quality standards (the Sussex Air Quality Partnership). This has resulted in the declaration of a number of Air Quality Management Areas (AQMAs) in other local authorities in Sussex.

Air quality monitoring carried out by the Council continues to indicate that there is good air quality within the District, and in particular the air quality objectives for Nitrogen Dioxide (NO_2) are being met. Thus it has not been necessary to declare an AQMA in Arun District.

Air quality is a material consideration when a development is planned. Using the Sussex Air Quality Partnership (SAQP) guidance, Arun District Council will require an air quality assessment where necessary. The Guidance is planned for review in 2017 and Arun District Council is actively engaged in the review process.

Despite pollution levels being generally low in the District, road traffic exhaust emissions are the major source and they have the potential to cause excessive levels of NO_2 when large volumes of road traffic are queuing. There were no new major sources of emissions in the District in 2016 and through joint-working, the draft Local Plan has paid specific attention to projected traffic loads and changes at high capacity junctions.

[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

Table 1 – Some of the Measures to Improve Air Quality that are recently completed, ongoing or planned

Project	Description	Benefits	Status
Felpham Relief Road	Diversion of longer distance traffic away from Bognor Regis and Felpham; cycle route improvements	Reduces traffic in potentially congested areas; supports cycling as a Travel Alternative	Opened February 2016. Various mitigation projects arising throughout Felpham to be funded by S106; £443k carried forward in 2017/18
NCN2 Cycle Route	Improvements to the cycle route between Bognor Regis and Littlehampton (4.4km)	Supports cycling as a Travel Alternative	Resurfacing started; due for completion 2017
Lyminster By-pass	New road construction with improved cycling and pedestrian facilities	Reduction of congestion at level crossing and in Lyminster village; additional capacity; supports cycling as a Travel Alternative	Planning application expected Autumn 2017;construction expected to commence late Spring 2018
A27 Arundel By-pass	New road to alleviate congestion, provide additional capacity and improve safety	Reduced congestion at Crossbush, The Causeway and Ford Road junctions; potential to improve flood management	Highways England to consult on options in summer 2017; construction commencing 2020
Arundel School / Jarvis Road	New pedestrian build out & associated pedestrian safety improvements	Travelwise & Behavioural Change scheme; supports walking as a Travel Alternative	WSCC designing and/or building in 2017/2018; £20k allocated
Fontwell to Arundel Road cycle scheme	Completion of final section of route at Walberton	Travelwise & Behavioural Change scheme; supports walking as a Travel Alternative	WSCC completing works in 2017-18; £200k capital funding allocated
Arundel 20mph zone	Implementation of 20mph zone throughout Arundel	Aims to reduce congestion in town centre and promote use of by-pass	WSCC designing and/or building in 2017/2018; £40k allocated

Findon Road cycling facilities	Feasibility study to consider cycling facilities in Findon	Possible Travelwise & Behavioural Change scheme; supports cycling as a Travel Alternative	£30k is allocated for 2017/18 study
Angmering – Station Road	Traffic signalling and junction refurbishment planned	Reduced congestion opposite war memorial	£20k has been approved for 2017/18
Bognor Regis – Worth Park Avenue	Traffic signalling upgrade	Reduced congestion in area of Station Hill to Worth Road	£75k has been approved for 2017/18

Actions to Improve Air Quality

Through the SAQP, Arun District Council continues to part fund both Air Alert and the Energise Network. General measures to limit NO_2 pollution from road traffic and prevent the exceedance of the Air Quality Objective include:

- Ensuring traffic light sequencing operates at optimum efficiency.
- Road traffic calming and routing away from residential and other areas where the public may suffer significant exposure.
- “Cut Engine – Cut Pollution” signs where there are periodic stationary traffic queues at level crossings.
- “Travelwise” schemes to promote sustainable transport - to include more car share schemes and alternatives to the car. Promotion of school and work travel plans. Development and promotion of cycle routes.
- Education and raising awareness - increasing the availability of air quality information and incentivising people to change their travel behaviour.
- Working closely with Planners and other agencies to ensure appropriate mitigation measures are implemented for new developments and due consideration is given to Air Quality issues.

Conclusions and Priorities

Air Quality in Arun continues to be good; there remains no apparent need for the declaration of any Air Quality Management Areas. However, local housing and other developments planned or likely to take place in the short- to medium-term, have the potential to increase traffic flows and, if not carefully managed, congestion.

An assessment of the areas for potential development will inform the collection of future air quality data; a review of the sites for diffusion tubes is being undertaken in 2017 in addition to the changes made at the end of 2016. Trends nationally are reassuring as awareness of NO2 pollution sources increases – low emission vehicle purchases are increasing in number and technology has seen strides taken in emission controls at source. Local trends do not raise concerns.

Although there may be additional traffic in Arun in the years ahead, as the improvements though reduced vehicle emissions become embedded, these may well offset any anticipated increases in pollution. Continued monitoring will provide data for assessment.

Local Engagement and How to Get Involved

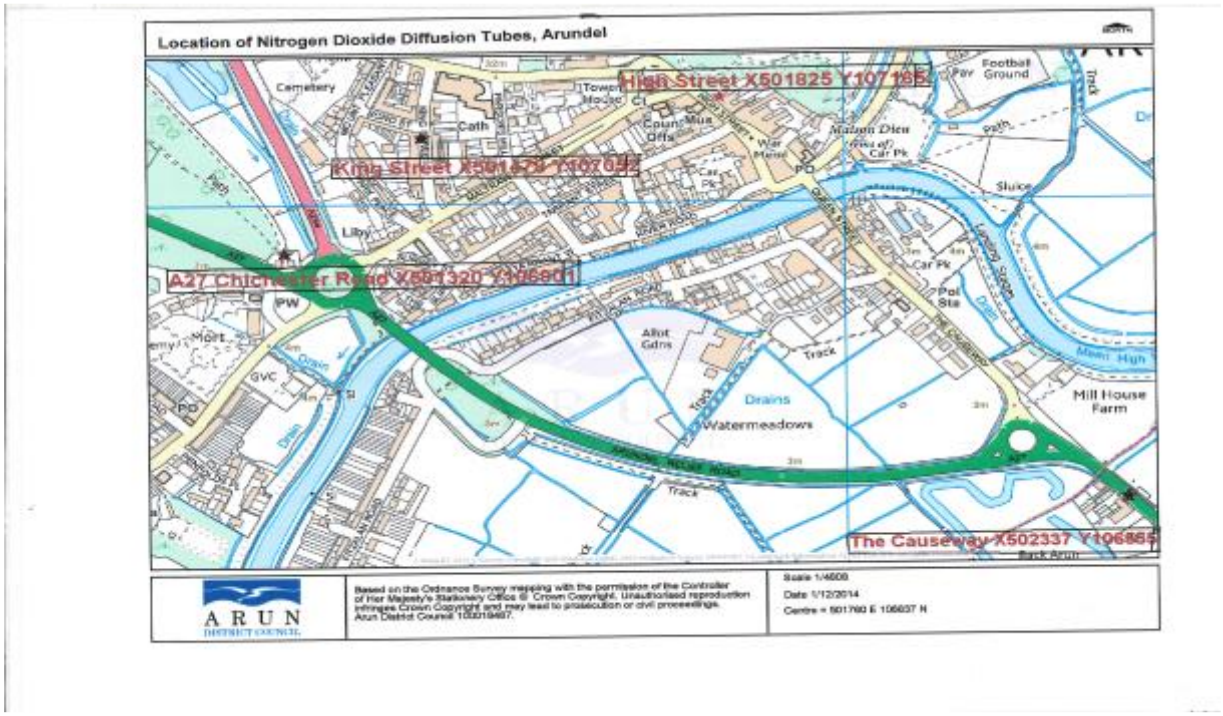
Arun District Council is a member of the Sussex Air Quality Partnership which benefits from the co-ordinated monitoring of air pollutants across the region, including the “airAlert” and “coldAlert” services. We all need to play a part in reducing air pollution. Please consider whether you can do any of the following:

- Walk or cycle on shorter journeys
- Join a car-sharing scheme – see https://westsussexcarshare.liftshare.com/
- Turn your engine off when you’re not moving
- If you know anyone with asthma or other breathing difficulties, let them know about “airAlert” http://www.airalert.info/Sussex/airAlertInformation.aspx
- Plan your route via Travel West Sussex at http://www.travelwestsussex.co.uk/
- Find out from your child’s school about available travel options for getting to school
- Consider switching to a less polluting vehicle next time you change your car. Make use of the Energise network’s electric vehicle charging points in the District http://www.energisenetwork.co.uk/charge-locations/

If you have any questions or want more information please see the Council's website at http://www.arun.gov.uk/air-quality-including-bonfires .

Table of Contents

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



List of Tables

1 Local Air Quality Management

This report provides an overview of air quality in Arun 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 Arun 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 are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an AQAP within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

Arun District Council currently does not have any AQMAs and currently has no Air Quality Strategy document. Air Quality is being addressed through Local Transport Plans:

- ADC (draft) Local Plan 2011-2031 – 'Connected Place, Chapter 15: Transport http://www.arun.gov.uk/emerging-local-plan
- Draft Walking and cycling Strategy 2016-2026 for West Sussex https://haveyoursay.westsussex.gov.uk/highways-and-transport/west-sussex-walking-and-cycling-strategy-2016-2026/
- West Sussex Transport Plan 2011-2026 https://www.westsussex.gov.uk/about-the-council/strategies-plans-and-policies/roads-and-travel-plans-and-policies/west-sussex-transport-plan-2011-26-ltp3/

For reference, maps of Arun District Council's monitoring locations are available in Appendix D.

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

Defra's appraisal of last year's ASR noted that monitoring results were significantly below objective levels and welcomed the significant projects in the local region which are expected to contribute to emissions reductions. Defra also acknowledged the contributions of SAQP in developing measures to improve local air quality.

Defra drew Arun District Council's attention to the following:

- That routine, passive diffusion tube monitoring for NO_2 has continued at sites significantly below objective levels. The Council may wish to consider reviewing the monitoring programme to determine if there are locations elsewhere, particularly in town centre locations close to areas of congested traffic
- Table A2 results had not been corrected for distance and therefore did not represent relevant exposure.

In response some locations have been changed and the monitoring programme is being further reviewed to determine whether diffusion tubes should be re-located or additional locations identified. Two potential sites have already been identified and others may be added when the review is complete. Arun District Council anticipates making any further changes in time for the 2018 round of data collection.

Table A2 in this Annual Status Report includes the corrected data for 2016 and earlier years.

Arun District Council and partners have taken forward a number of 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 2.1.

More detail on these measures can be found in their respective Action Plans and in:
the County's Annual Delivery Programme -
https://www.westsussex.gov.uk/roads-and-travel/roadworks-and-projects/road-projects/annual-delivery-programme/
the ADC (Draft) Local Plan 2011-2031, chapter on transport -
http://www.arun.gov.uk/emerging-local-plan,
the draft walking and cycling strategy -
https://haveyoursay.westsussex.gov.uk/highways-and-transport/west-sussex-

walking-and-cycling-strategy-2016-2026,
and the current West Sussex Transport Plan - https://www.westsussex.gov.uk/about-the-council/strategies-plans-and-policies/roads-and-travel-plans-and-policies/transport-plan/

Key completed measures are:

- Opening of the Felpham relief road – to assist in achieving reduced vehicle emissions
- Continued membership of SAQP with financial support for the airAlert and Energise schemes

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

- Completion of the NCN2 cycle route – to engender behavioural change and alternative transport methods
- Completion of the Fontwell/Arundel cycle scheme – promoting behavioural change and alternative transport
- Arundel School build-out – to promote walking to school
- Arundel 20mph zone – possible reduction in vehicle emissions
- Completion of the Findon cycling facilities feasibility study

Arun District Council's priorities for the coming year are:

- To participate in the review of SAQP's air quality assessment and mitigation guidance – to improve engagement with developers and increase / improve consistency of mitigation measures across Sussex
- To participate in the consultation for the A27 Arundel by-pass, in order to maximise the potential for pollution reduction measures
- To review the location of data gathering sites in order to better identify potential hotspots

Table 2.1 – Progress on Measures to Improve Air Quality

Meas-ure No.	Measure	EU Category	EU Classification	Organisa-tions involved and Funding Source	Planning Phase	Implement-ation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Congestion at Level Crossings - A284	Traffic Management	UTC, Congestion management, traffic reduction	WSCC & ADC. WSCC and Developers	Ongoing	Spring 2018	By-pass in use 2019	Reduced vehicle emissions	Planning application expected autumn 2017	2019	Partly dependent on S106 funding arising from new housing
2	Congestion at Level Crossings - A29	Traffic Management	UTC, Congestion management, traffic reduction	WSCC & ADC. WSCC and Developers	Ongoing	tbc	substitution for level crossing	Reduced vehicle emissions	In draft local plan/ transport plan	tbc	Partly dependent on S106 funding arising from new housing
3	Congestion at peak hours - A27, A29 and A259	Transport Planning and Infrastructure	Other	Highways England, WSCC, ADC & others. National funding and others.	Ongoing	2020	By-pass in use 2022	Reduced vehicle emissions	Consultation opens summer 2017	2022	Preferred route to be id'd in summer 2017 for further public consultation 2018
4	Felpham Relief Road	Transport Planning and Infrastructure	Other	WSCC & ADC. WSCC and Developers	Completed	Completed	Reduced congestion	Reduced vehicle emissions	Completed	Opened Feb 2016	None
5	NCN2 Cycle Route	Promoting Travel Alternatives	Promotion of cycling	ADC/NCN	Completed	2016-17	completion in 2017	Behavioural change	min 80% done	summer 2017	Route can be affected by littoral intrusion
6	Fontwell / Arundel cycle scheme	Promoting Travel Alternatives	Promotion of cycling	WSCC	Completed	2016-17	completion in 2017	Behavioural change	min 80% done	summer 2017	None known
7	Arundel School - pedestrian build out & safety steps	Promoting Travel Alternatives	Promotion of walking	WSCC	Completed	2017-18	completion in 2017-18	Behavioural change	£20k capital allocated	2017-18	None known

8	Arundel 20mph zone	Traffic Management	Reduction of speed limits, 20mph zones	WSCC	Completed	2017-18	completion of zone	Possible reduced emissions	£40k allocated	2017-18	None known
9	Findon cycling facilities	Promoting Travel Alternatives	Promotion of cycling	WSCC	2017-18	tbc	Provision of facilities on Findon Road	Behavioural change	£30k allocated	tbc	Feasibility study only at this stage
10	Traffic signalling - Angmering	Traffic Management	UTC, Congestion management, traffic reduction	WSCC	2017-18	Signalling and junction improvement planned	completion in 2017-18	Reduced congestion	£20k capital approved	2017-18	None known
11	Traffic signalling - Bognor Regis	Traffic Management	UTC, Congestion management, traffic reduction	WSCC	2017-18	Traffic signalling upgrade planned	completion in 2017-18	Reduced congestion	£75k approved	2017-18	None known
12	Membership of SAQP	Public Information	Via the Internet	Sussex LAs & WSCC	Completed	Completed	Delivery of data, Air Alert and other schemes	Behavioural change	Ongoing funding for alert schemes, data provision and guidance documents	ongoing	LA budget cuts

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.

Previous data monitoring decisions have ruled out current PM data collection in Arun. However, Arun District Council is taking the following measures to address $PM_{2.5}$:

- Requirement for dust control in Construction Management Plans for developments through the planning consultation process according to the merits of individual sites
- Responding to complaints of dust nuisance using investigation and enforcement powers through Environmental Protection and associated legislation
- Participation in the current review of the *Air Quality and Emissions Mitigation Guidance for Sussex Authorities (2013)* to further encourage lower-emissions developments
- Continuing participation in, and funding for, the Sussex Air Quality Network which includes seven permanent automatic particulate monitoring sites measuring both PM_{10} and $PM_{2.5}$. Currently, none of these sites are in the district.
- Arun District Council will work in partnership with Public Health to communicate the impacts of air pollution including $PM_{2.5}$. Additionally Arun District Council will utilise the “Air Quality and Emissions Mitigation Guidance for Sussex Authorities (2013)” to encourage lower emission developments with planning and transport authorities to assist in reducing $PM_{2.5}$ emissions.

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.

Arun District Council has no automatic (continuous) monitoring stations. However, the Council benefits from the co-ordinated monitoring of air pollutants across the region http://www.sussex-air.net/. The Sussex Air Quality Monitoring Network is managed and Co-ordinated by King's College London ERG, on behalf of the SAQP and they provide data calibration and ratification of results.

National monitoring results are available at https://uk-air.defra.gov.uk/networks/

Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Arun District Council undertook non- automatic (passive) monitoring of NO_2 at 15 sites during 2016. Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. "annualisation" and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Again there have been no exceedances of the air quality objectives for NO_2.

Table A.2 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 40µg/m^3.

Data trends are represented in Appendix A. Figures A1.1 -1.3; no concerns are raised and the general trend is for pollution levels is downward.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

Appendix A: Monitoring Results

Table A.1 – 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)
1	Litt 01	Roadside	502564	102149	NO_2	NO	5.0	2	NO	2.0
2	Litt 02	Roadside	503439	103364	NO_2	NO	8.95	2	NO	2.8
3	Litt 03	Urban Background	502559	102888	NO_2	NO	10.0	1.3	NO	2.0
4	Litt 04	Roadside	502730	101225	NO_2	NO	15.3	1.6	NO	2.6
5	Arun 05	Roadside	501825	107165	NO_2	NO	14.2	1.7	NO	2.1
6	Arun 06	Roadside	502337	106555	NO_2	NO	6.9	2	NO	2.5
7	Arun 07	Urban Background	501478	107052	NO_2	NO	1.8	1.5	NO	2.0
8	Arun 08	Roadside	500301	104374	NO_2	NO	9.9	1.45	NO	1.7
9	Bog 09	Roadside	493778	099135	NO_2	NO	3.6	2.3	NO	2.7
10	Bog 10	Roadside	496168	100384	NO_2	NO	15.4	1.8	NO	2.65
11	Bog 11	Urban Background	493429	100381	NO_2	NO	8.9	1.2	NO	2.0
12	Bog 12	Roadside	493361	101225	NO_2	NO	2.0	1.5	NO	2.8
13	Bog 13	Roadside	493417	104374	NO_2	NO	16.1	1.3	NO	2.3
14	Arun 14	Roadside	501320	106901	NO_2	NO	11.6	2	NO	3.35
16	Arun 16	Roadside	502337	106555	NO_2	NO	0	8.1	NO	2.5

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.2 – Annual Mean NO_2 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
Litt01	Roadside	Diffusion Tube		100	20.2	21.0	16.7	20.6	20.8
Litt02	Roadside	Diffusion Tube		100	21.8	22.9	17.2	21.7	20.8
Litt03	Urban Background	Diffusion Tube		100	12.7	12.2	10.3	12.9	12.9
Litt04	Roadside	Diffusion Tube		100		19.5	14.8	15.9	18.5
Arun05	Roadside	Diffusion Tube		100	15.5	16.1	13.2	15.7	15.2
Arun06	Roadside	Diffusion Tube		92	24.6	27.3	21.2	26.4	23.7
Arun07	Urban Background	Diffusion Tube		100	15.6	15.7	11.9	12.7	13.7
Arun08	Roadside	Diffusion Tube		100		16.9	14.3	15.9	15.6
Bog09	Roadside	Diffusion Tube		83	24.2	23.7	21.5	22.6	18.8
Bog10	Roadside	Diffusion Tube		100	21.0	22.1	18.8	22.2	20.1
Bog11	Urban Background	Diffusion Tube		100	14.0	15.1	15.3	15.4	15.1
Bog12	Roadside	Diffusion Tube		100		28.6	25.1	28.6	24.9
Bog13	Roadside	Diffusion Tube		100		17.9	12.6	17.3	19.6
Arun14	Roadside	Diffusion Tube		92		20.7	18.7	22.4	22.0
Arun16	Roadside	Diffusion Tube		100	20.2	18.2	15.0	18.1	17.0

☒ **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**

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 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.

Figure A.1.1 – Trends in Annual Mean NO_2 Concentrations: Arundel

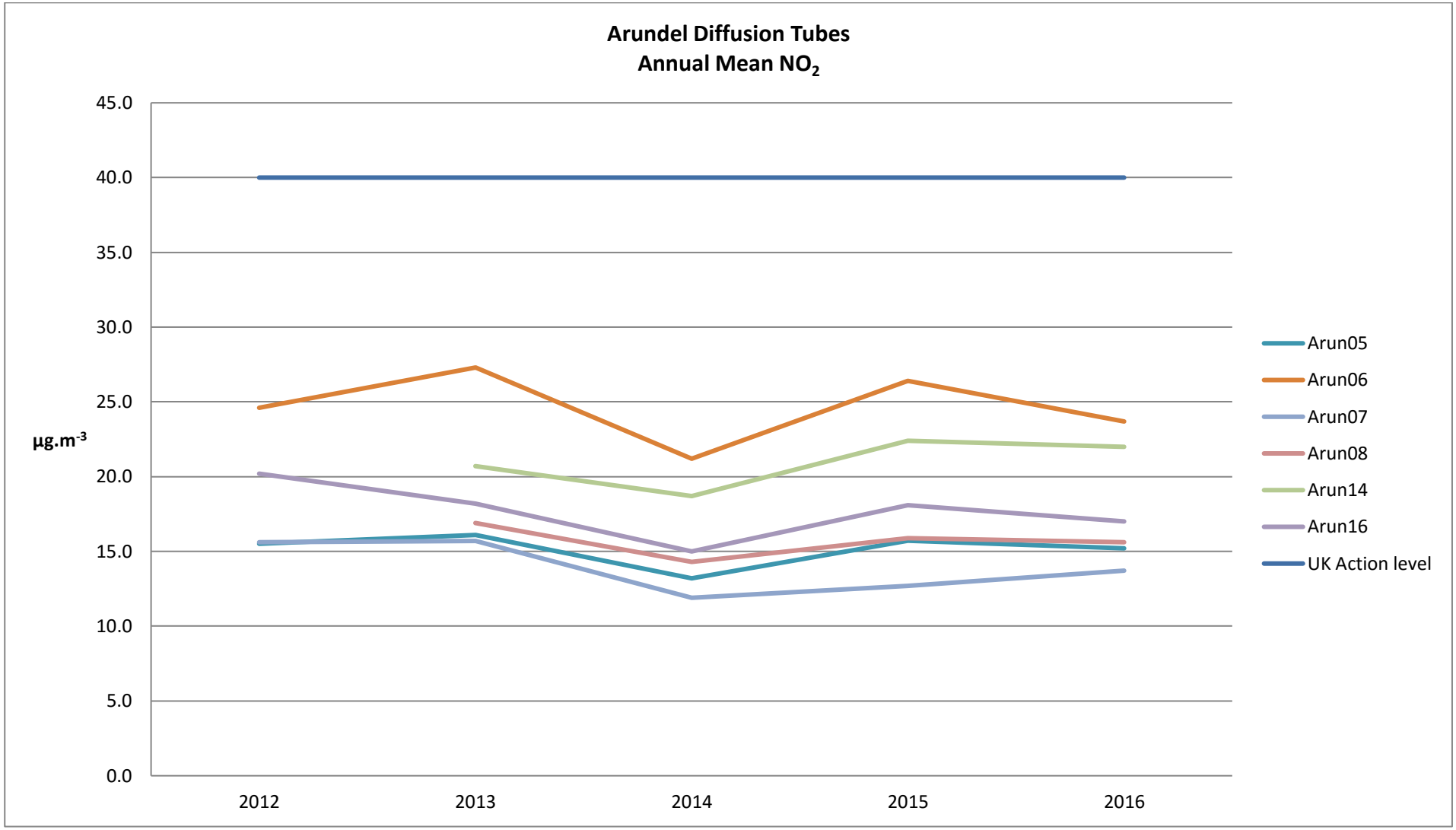


Figure A.2.2 – Trends in Annual Mean NO_2 Concentrations: Bognor Regis

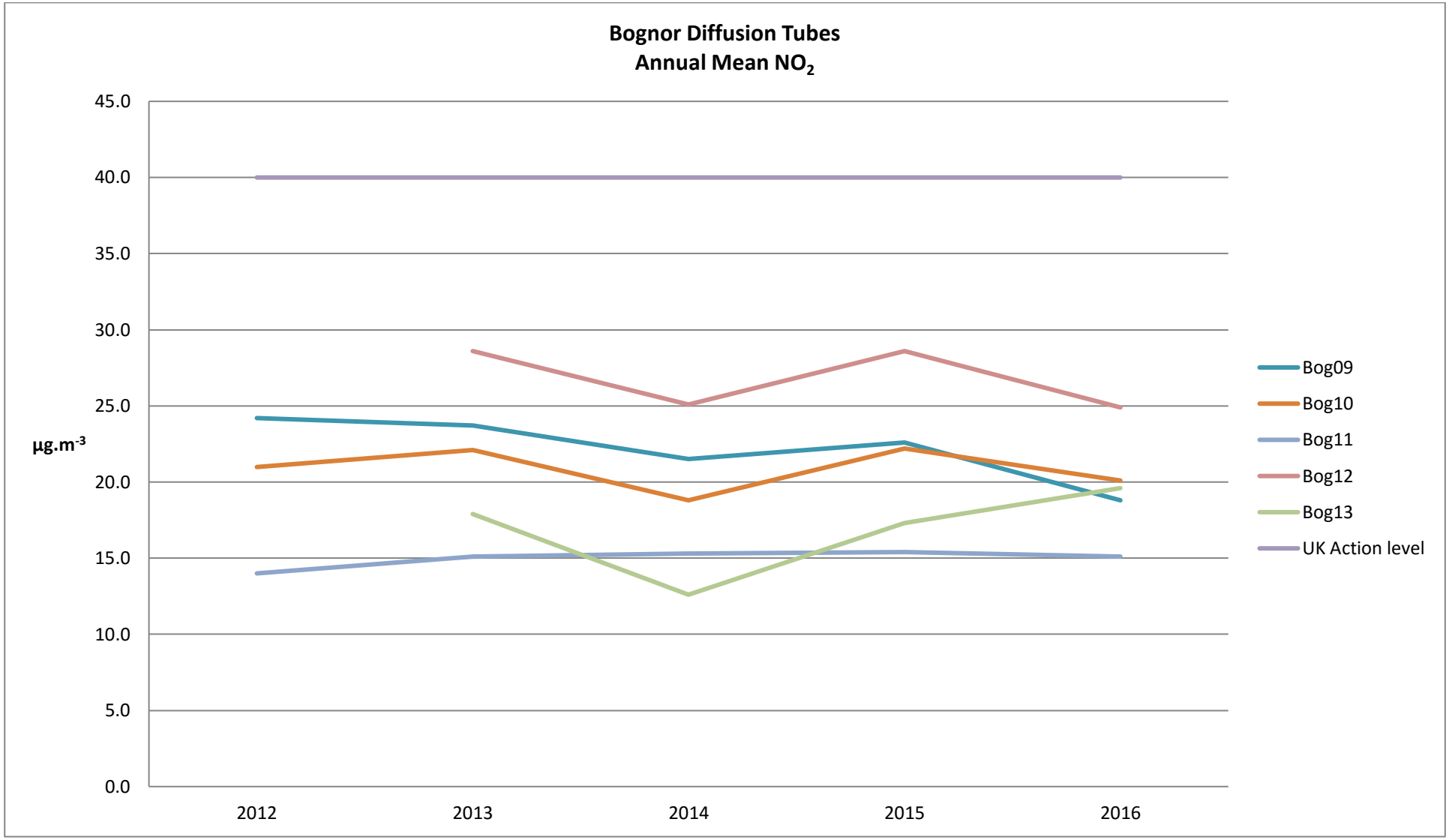
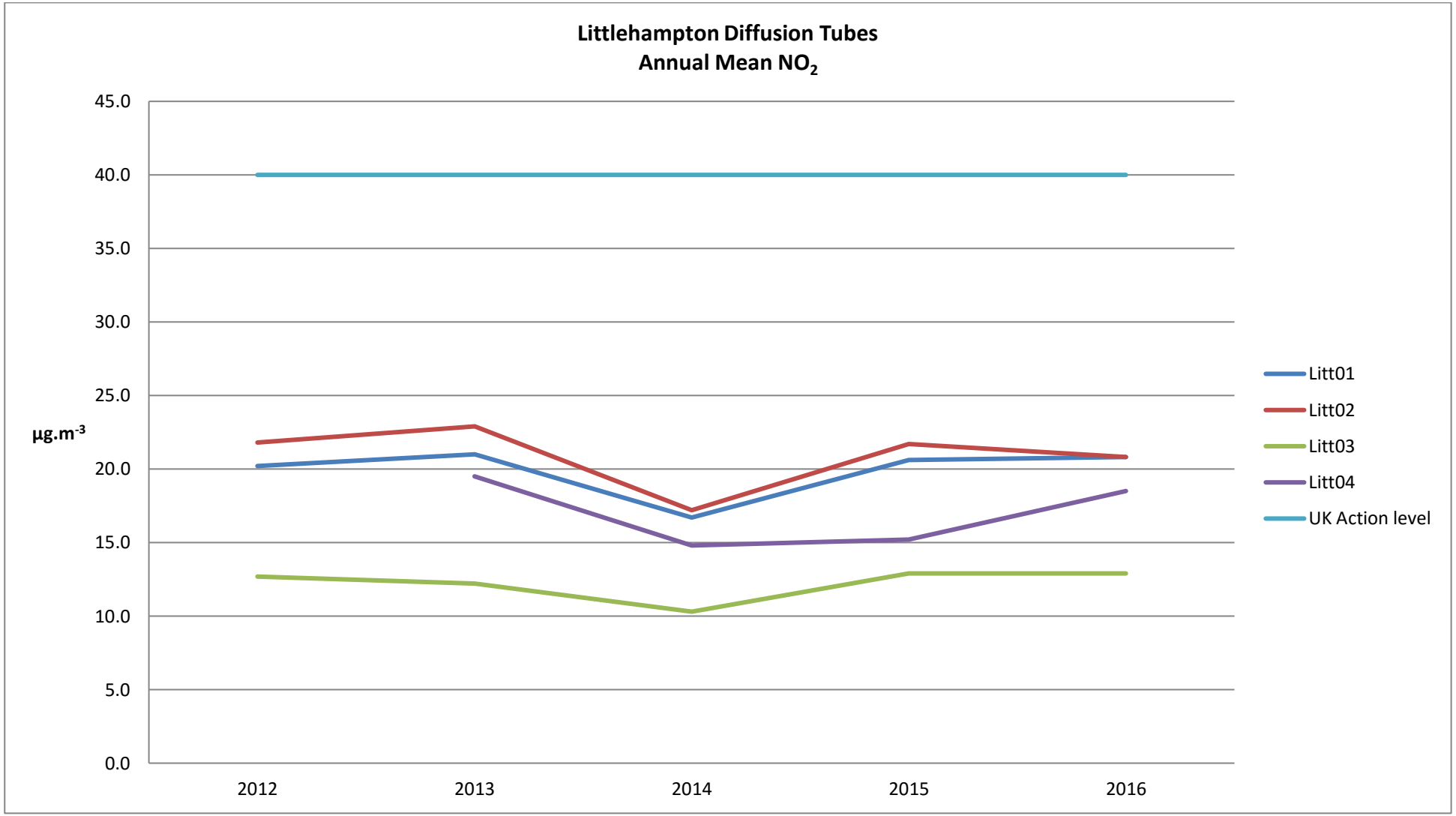


Figure A.3.3 – Trends in Annual Mean NO_2 Concentrations: Littlehampton



Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2016

Site ID	NO_2 Mean Concentrations ($\mu g/m^3$)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.83) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
1	25.7	34.1	30.6	21.6	22.1	28.2	18.9	17.0	29.1	25.6	36.5	37.4	27.2	22.61	20.8
2	28.8	34.7	35.9	25.2	29.5	22.3	21.9	15.0	28.3	37.5	33.8	40.0	29.4	24.4	20.8
3	14.4	19.3	19.6	9.4	14.6	10.1	9.9	7.2	14.1	17.5	24.5	25.6	15.5	12.9	12.9
4	28	32.6	32	16.9	28.6	24.5	21.5	15.6	30	25	34.6	41.1	27.5	22.9	18.5
5	22	20.9	22.1	14.1	18.7	17.5	16.1	10.5	20.7	18.8	23.7	29.4	19.5	16.2	15.3
6	34	37.7	32.3	28.3	3.4	28.5	25.8	25	38.6	NR	39.5	41.5	33.1	27.6	23.7
7	16	22.4	21.7	11.6	14.3	12.7	14.4	806	16.2	17.3	19.3	23.1	16.5	13.7	13.7
8	18.2	24.1	20.6	14.7	18.5	17.9	19.6	12.6	19.2	22.3	23.7	28.2	20.0	16.6	15.6
9	31.2	25.9	19.3	14.7	25.5	18.7	18.5	NR	2(NE?)	7.4	32.5	39.7	23.3	19.4	18.8
10	40.2	41.6	30.8	21.8	39.1	19.2	23.6	16.7	29.7	33.3	35	41.2	31.0	25.8	20.1
11	18.7	23.4	25.9	18.1	16.7	13.4	13.4	9.3	17.8	18	23	31.4	19.1	15.9	15.9
12	31	35.3	37.5	26.3	23.9	27.6	21	15.1	33.4	38.8	36.7	43.3	30.8	25.6	24.9
13	30.6	30.9	34.6	25.2	32.6	26.3	22	18.2	32.1	43.3	38.4	39.3	31.1	25.8	14.0
14	32.2	NR	39.4	26.3	38.2	35	34.3	23	37.6	27.9	30.4	39.7	33.1	27.5	22.0
16	16.3	23.6	27.3	16.3	20	19.7	13.4	10.6	19.3	23.7	28	28	20.5	17.0	17.0

NR – Not Returned
NE – Not Exposed

☒ **Local bias adjustment factor used**
☒ **National bias adjustment factor used**
☒ **Annualisation has been conducted where data capture is <75%**

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) See Appendix C for details on bias adjustment and annualisation.
(2) Distance corrected to nearest relevant public exposure.

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

Arun District Council undertakes monitoring with non-automatic methods using nitrogen dioxide (NO2) diffusion tubes in various locations across the district. There are no Air Quality Management Area's in Arun District.

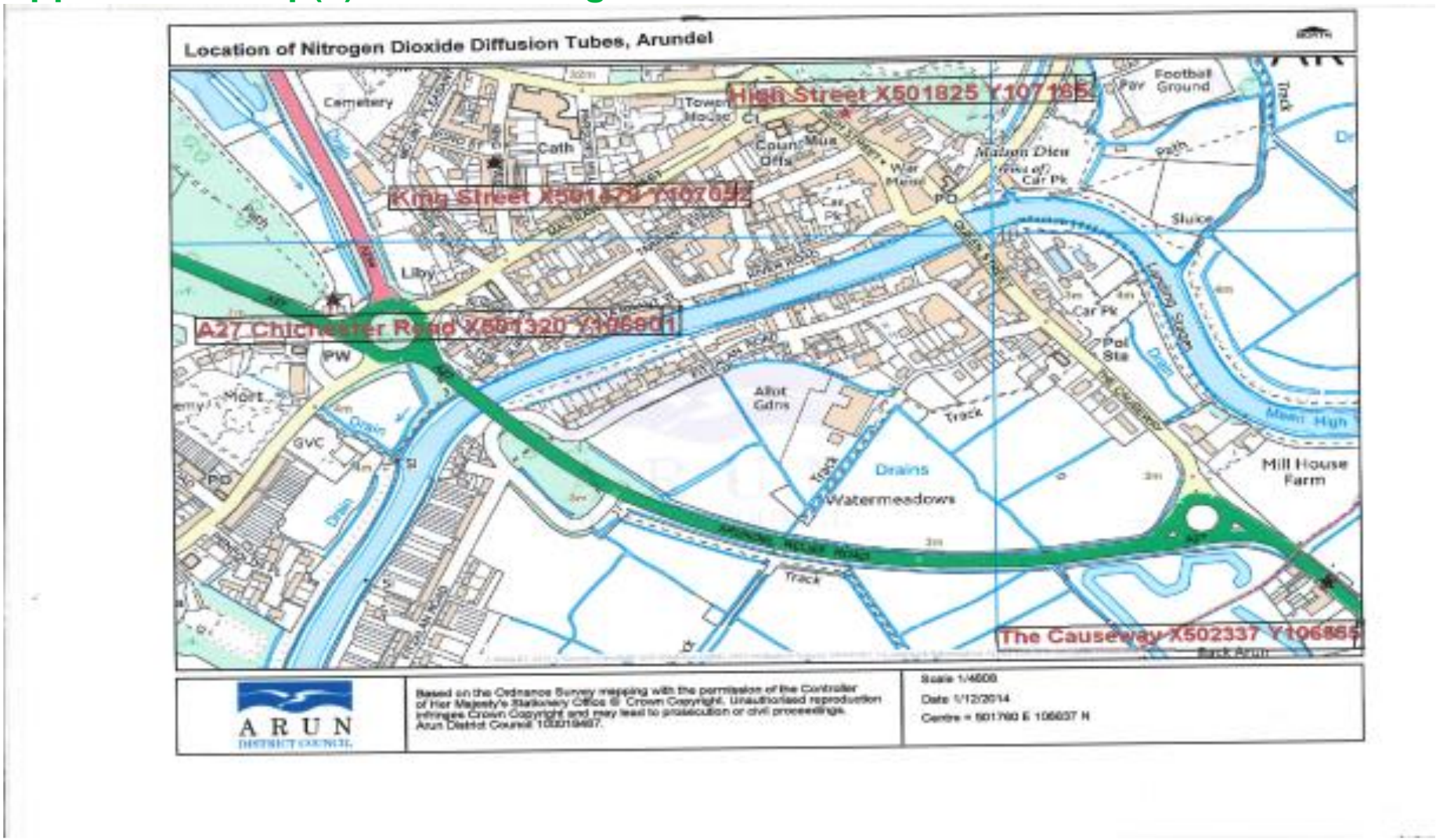
Arun District Council sub-contracts the supply and analysis of the NO_2 diffusion tubes with South Yorkshire Air Quality Samplers (SYAQS) – previously South Yorkshire Laboratory. The NO_2 tube preparation method used is 50% triethanolamine (TEA) in acetone. The South Yorkshire Laboratory was on the working group and follows the procedures set out in the Harmonisation Practical Guidance.

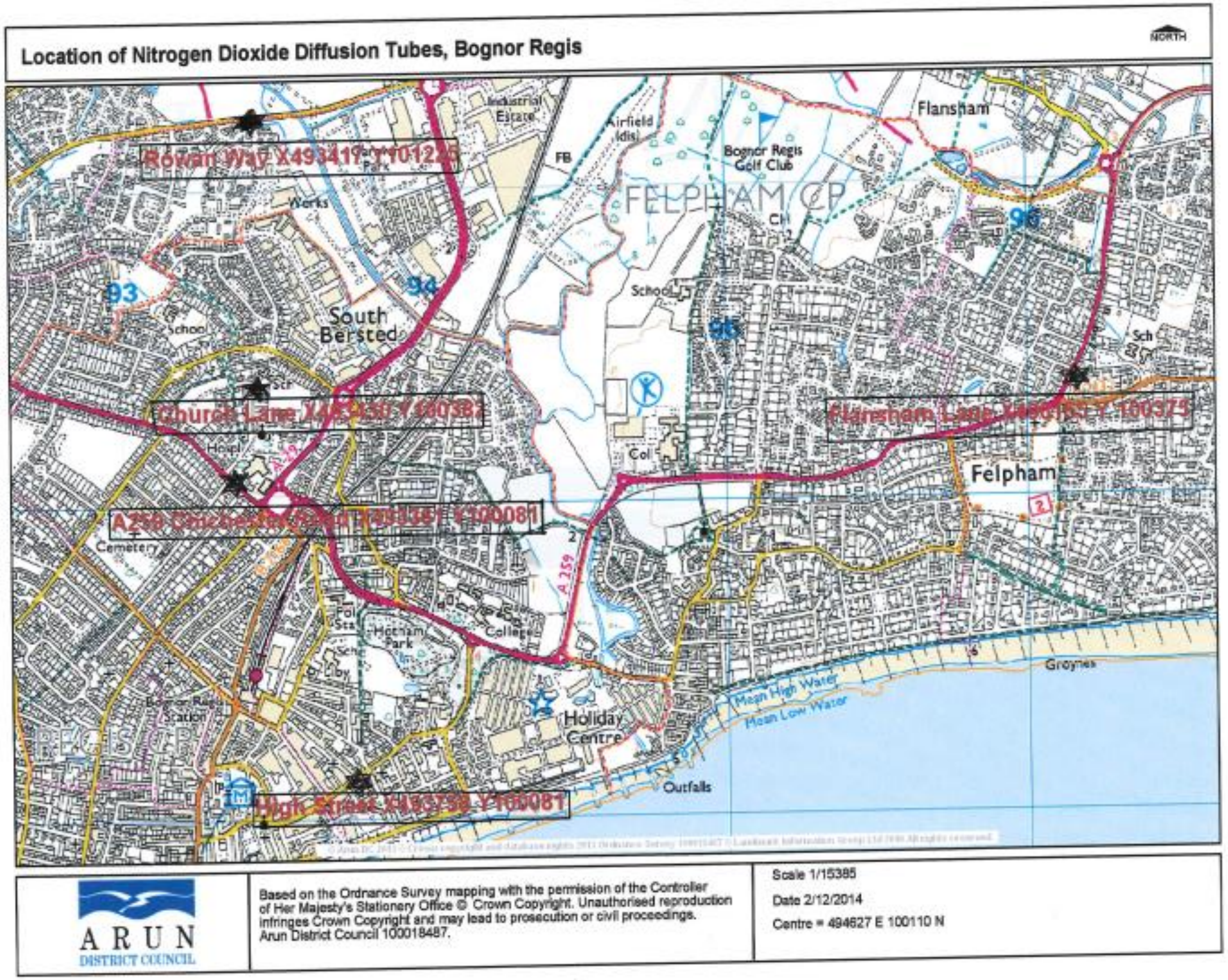
No co-location study has been undertaken in the district. Arun District Council utilises the national bias adjustment figures for SYAQS in 2016 of 0.83. Data from NO_2 diffusion tubes has been compared and bias corrected to the factors produced from the UK co-location data-base as collated by DEFRA Local Air Quality Management Helpdesk.

http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v06_15-Final.xls

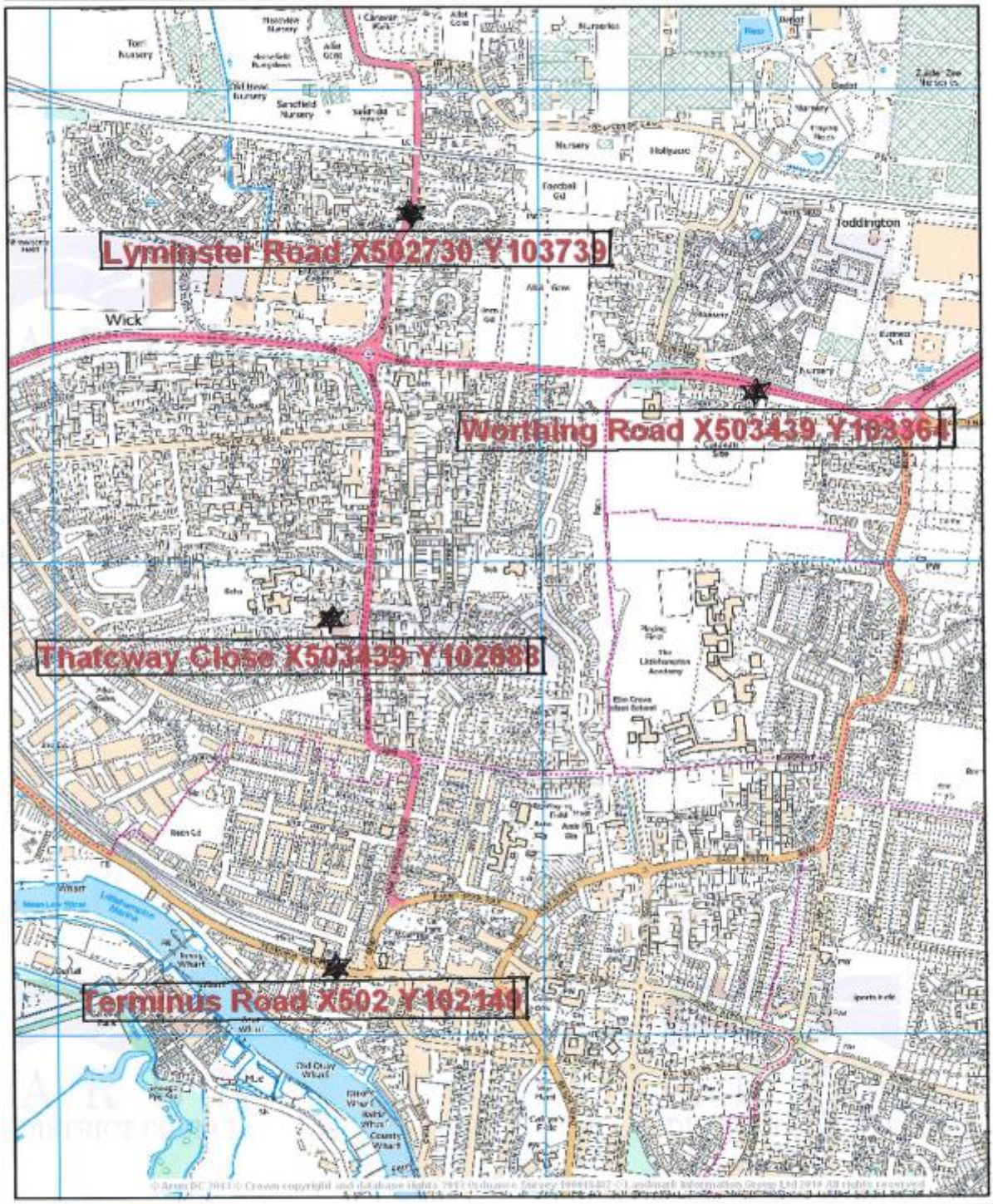
SYAQS participate in the AIR-PT scheme (formerly Workplace Analysis Scheme for Proficiency - WASP). The distance corrected results shown in table A.2 are achieved using the Defra tool: *NO_2 fall off with distance calculator*.

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




Location of Nitrogen Dioxide Diffusion Tubes, Bognor Regis
NORTH
Rowan Way X493417 Y1012
Church Lane
A259 Chichester Road
Flansham Lane
High Street
Industrial Estate
Airfield (dis)
Bognor Regis Golf Club
Flansham
FELPHAM CP
South Bersted
School
Works
FB
Felpham
Col
Cemetery
Hospl
Holiday Centre
Outfalls
Groynes
Mean High Water
Mean Low Water
Hotham Park
College
93
94
95
96
A 259
ARUN DISTRICT COUNCIL
Based on the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Arun District Council 100018487.
Scale 1/15385
Date 2/12/2014
Centre = 494627 E 100110 N

Location of Nitrogen Dioxide Diffusion Tubes, Littlehampton



ARUN DISTRICT COUNCIL

Based on the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Arun District Council 100018487.

Scale 1/11111
Date 1/12/2014
Centre = 502910 E 102911 N

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/m^3).

Glossary of Terms

Abbreviation	Description
ADC	Arun District Council
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
LAQM	Local Air Quality Management
NCN2	National Cycle Network (Route 2)
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
SAQP	Sussex Air Quality Partnership
SO_2	Sulphur Dioxide
SYAQS	South Yorkshire Air Quality Samplers
WSCC	West Sussex County Council

References

1. AQEG Fine Particulate Matter (PM2.5) in the United Kingdom. Air Quality Expert Group (AQEG). Report. 2012 – https://www.gov.uk/government/publications/fine-particulate-matter-pm2-5-in-the-uk .
2. DEFRA (2002) The Air Quality (England) (Amendment) Regulations, HMSO.
3. DEFRA (2003) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Addendum, HMSO.
4. DETR (2000) The Air Quality (England) Regulations, HMSO.
5. DETR (2000) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, HMSO.
6. DEFRA (April 2016) Local Air Quality Management Policy Guidance, LAQM.PG(16).
7. DEFRA (April 2016) Local Air Quality Management Technical Guidance, LAQM.TG(16).
8. The Environment Act 1995
9. The Environmental Protection Act 1990