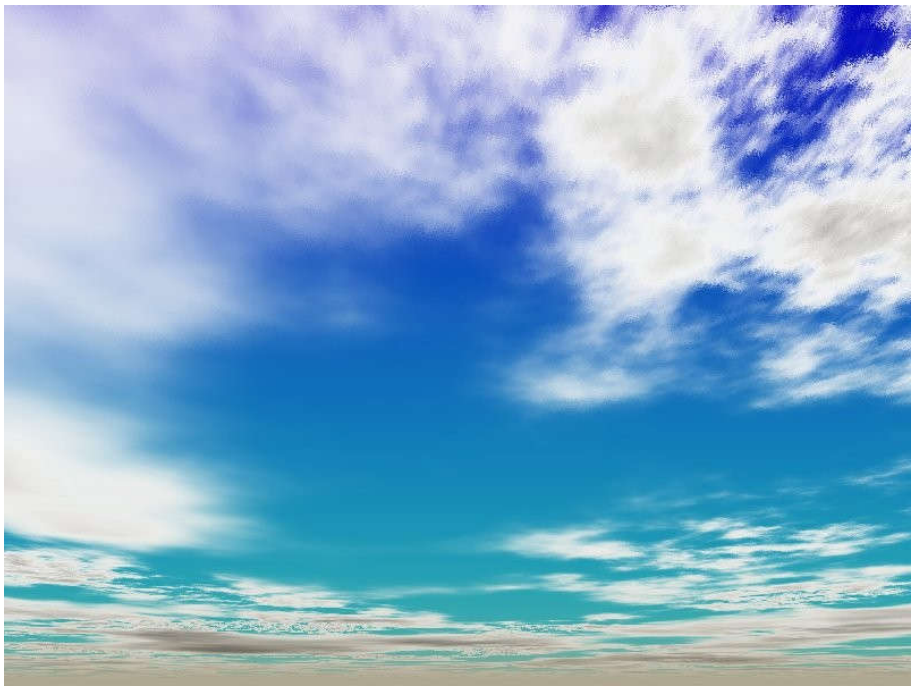
South Oxford District Council

2017 Air Quality Annual Status Report (ASR)



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

April, 2017

Local Authority Officer	Claire Spendley
Department	Environmental Protection
Address	135 Eastern Avenue, Milton Park, Abingdon, OX14 4SB
Telephone	01235 422129
E-mail	Claire.spendley@southandvale.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in South Oxfordshire

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].

If there is a risk of the public being significantly exposed to a pollutant then the local authority is required to designate an appropriate Air Quality Management Area or AQMA.
South Oxford District council declared AQMA's in three towns within the District, Henley, Wallingford and Watlington all as a result of high levels of NO_2 from traffic fumes.
These can be viewed at the following link:
https://oxfordshire.air-quality.info/

The air pollution results from 2016 show a marked increase in pollution levels on 2015. As 2015 was a year with unusually low pollution levels, when compared to the 5 year trend, 2016 fits in with the general downward trend of pollution in most of the monitored areas.

[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

Actions to Improve Air Quality

In order to improve air quality within the district the council have undertaken a number of initiatives over the past year:

Low Emission Strategy

One of the actions within our air quality action plan was the production of a low emission strategy which would be underpinned by low emission zone modelling.

As a result of a further successful DEFRA bid in 2014 the creation of a low emission strategy and associated modelling was completed in 2015. The results of this strategy highlighted that if all the measures are implemented then the improvements to air quality would mean the AQMA's in Wallingford and Watlington could be revoked and the nitrogen dioxide levels in these towns would be within the national objective levels. The main actions of the strategy were; the removal of some of the on street parking bays in Wallington which act as obstacles holding up traffic at various points in the town causing the stop start nature of driving through the town, their removal would serve to prevent hold ups and allow smoothing of the traffic flow. The second key action of the strategy was the traffic management measure on Wallingford bridge which proposes to restrict the use of the bridge for a few hours a day at the peak rush hours to a bus only crossing.

This Strategy underwent public consultation in 2016 which was largely in support of the strategy, these results along with the strategy were taken to cabinet for approval to be taken to the licencing committee for formal adoption. Cabinet members requested a further public consultation to be carried out by independent consultants to address the concerns over the two controversial actions outlined above. The consultation was completed by MEL, who have produced a second consultation report which is due to be taken to Licensing Committee in 2017 for approval.

Joint Working:

In order to tackle air pollution SODC have to work in partnership with a number of other bodies including Oxfordshire County Council (OCC) and other local authorities within Oxfordshire, regular meetings are held to enable aid joint working. Our joint website continues to be a hit: https://oxfordshire.air-quality.info/

Our group meetings now include representatives from public health as well as OCC to further work towards a joint approach.

Local Priorities and Challenges

The main air quality measures South Oxfordshire would like to progress during 2017 are the same as they were in 2016, this is due to delays as a result of politicians requesting a second consultation on the LES and technical issues holding up the installation of the EV points;

- The adoption of south Oxfordshire's low emission strategy
- The installation of electric vehicle (EV) charging points within some of the council owned car parks as the start of the EV infrastructure programme
- Work towards some community engagement projects

The main challenge we envisage concerning these actions are that some of the measures in the low emissions strategy are controversial and therefore may not gain political support.

How to Get Involved

There are many ways in which the public can get involved in helping to improve air quality in their area, from using your car less, driving more efficiently when you do have to drive or considering a cleaner vehicle when you choose to upgrade your car.

Many smart travel choices and other tips to reduce air pollution can be found in the links below:

https://www.oxfordshire.gov.uk/cms/public-site/travel-choices

http://www.traveline.info/

https://oxfordshire.air-quality.info/what-can-you-do-to-improve-air-quality

Table of Contents

Executive Summary: Air Quality in Our Area i

Air Quality in South Oxfordshire i

Actions to Improve Air Quality i

Local Priorities and Challenges iii

How to Get Involved iii

1 Local Air Quality Management 1

2 Actions to Improve Air Quality 2

2.1 Air Quality Management Areas 2

2.2 Progress and Impact of Measures to address Air Quality in South Oxfordshire 3

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and or Concentrations 8

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance 10

3.1 Summary of Monitoring Undertaken 10

3.1.1 Automatic Monitoring Sites 10

3.1.2 Non-Automatic Monitoring Sites 11

3.2 Individual Pollutants 11

3.2.1 Nitrogen Dioxide (NO_2) 11

Appendix A: Monitoring Results 15

Appendix B: Full Monthly Diffusion Tube Results for 2015 28

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC 31

Appendix D: Summary of Air Quality Objectives in England 33

Glossary of Terms 34

References 35

List of Tables

Table 2.1 – Declared Air Quality Management Areas 2

Table 2.2 – Progress on Measures to Improve Air Quality 4

1 Local Air Quality Management

This report provides an overview of air quality in South Oxfordshire during 2017. 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 South Oxford 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 South Oxford 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://oxfordshire.air-quality.info/ and at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=246

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	One Line Description	Action Plan
Henley	NO_2 annual mean	Henley	An area encompassing Duke Street and Bell Street in 2002 and was further extended in 2004 to include the Market Place, Hart street and Reading Road.	https://oxfordshire.air-quality.info/loal-air-quality-management/south-oxfordshire
Wallingford	NO_2 annual mean	Wallingford	An area encompassing the High Street and part of Castle Street, St Marys Street and St Martins Street	https://oxfordshire.air-quality.info/loal-air-quality-management/south-oxfordshire
Watlington	NO_2 annual mean	Watlington	An area encompassing Shirburn Street, Couching Street and Brook street	https://oxfordshire.air-quality.info/loal-air-quality-management/south-oxfordshire

2.2 Progress and Impact of Measures to address Air Quality in South Oxfordshire

South Oxford District Council has 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 2.2. More detail on these measures can be found in South Oxford District Councils air quality action plan at https://oxfordshire.air-quality.info/local-air-quality-management/south-oxfordshire.

Table 2.2 – Progress on Measures to Improve Air Quality

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
1	Creation of a low emission strategy and low emission zone feasibility studies	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	SODC	Complete	Draft plan for cabinet approval	New policies in place, NO2 levels reduced	If fully implemented a reduction of 16% NO2 would be seen in Wallingford, 35% in Watlington (enabling us to revoke these 2 AQMAs) and an overall 5% reduction districtwide.	Action underway	October 2017
2	Installation of EV charging points	Transport Planning and Infrastructure	Other	SODC	Ongoing 2 committed to be installed currently	2016 onwards	New policies in place, EV infrastructure in place	not quantified	Policy discussions taking place	Unknown
3	Parking permit incentives for green vehicles	Promoting Low Emission Transport	Priority parking for LEV's	SODC	Dependant on changing internal policies	Not yet started	Discounted permits for greener vehicles	not quantified	Not yet started	Unknown

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
4	Feasibility study for freight consolidation centre / freight quality partnerships	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	OCC	Talks underway	Not yet started	feasibility study complete	not quantified but likely to be high if implemented	Funding not yet secured	Unknown
5	Taxi incentives for green vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	SODC	Policy changed slightly, we would like to improve on this	Partially complete, small changes made we would like to go further	Full sliding scale for fees	not quantified	Policy needs to be looked at again	Unknown
6	Improved use and enforcement of traffic regulation orders	Traffic Management	Other	OCC	not yet underway	Not yet started	Further checks / monitoring underway	not quantified	Talks in progress	Unknown
7	Review of council and contractors fleet	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	SODC	not yet underway (need to await contracting out of services before we can review this)	Not yet started	new policies in place, greener vehicles procured	not quantified	Not yet started	Unknown
8	Eco driver training	Vehicle Fleet Efficiency	Driver training and ECO driving aids	SODC	not yet underway (resource dependant)	Not yet started	training complete	not quantified	Not yet started	Unknown

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
9	Air quality planning guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	SODC	Guidance complete and part of action plan which has been formally adopted	guidance complete, working with planning dept to ensure delivery	All developments adhering to guidance	not quantified	Action complete	Complete
10	Awareness, behavioural change and community projects	Promoting Travel Alternatives	Other	SODC	ongoing	Oxfordshire Website complete No other measures started	projects completed	not quantified	Oxfordshire Website complete Support & finances given to Wallingford festival of cycling	Unknown
11	Park and stride campaign	Alternatives to private vehicle use	Other	SODC	not yet underway	Not yet started (resource dependant)	projects completed	not quantified	Not yet started	Unknown
12	Cut your engine campaign	Vehicle Fleet Efficiency	Other	SODC	not yet underway	Not yet started (resource dependant)	projects completed	not quantified	Not yet started	Unknown
13	Increased use of the ring road	Traffic Management	Other	SODC	not yet underway	Not yet started (resource dependant)	projects completed	not quantified	Not yet started	Unknown

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
15	Smoothing traffic flow	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, inc Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	OCC	not yet underway	not yet underway	projects completed	not quantified	Not yet started	Unknown

Key completed measures are:

- The consultation on SODC's Low emission strategy
- The commissioning of two electric vehicle charging points in council owned car parks.
- Works on community engagement projects this year focused on the Wallingford festival of cycling

Low Emission Strategy

The strategy has now undergone two public consultations and is due to go to licensing committee for approval in October. The strategy included both the modelling of low emission zone measures in each of our three AQMA's alongside a series of other low emission measures involving planning and procurement. The low emission zone measures highlighted transport solutions for both Wallingford and Watlington that would have significant impacts on reducing air pollution levels and allow both of the AQMAs to be revoked if introduced. The modelling of low emission measures for Henley however yielded different results, as the air pollution problem in Henley is mainly car based rather than HGV or bus related therefore the introduction of any HGV or bus related low emission measures would not yield a significant impact in the air pollution of Henley and therefore not deemed feasible.

The whole of the district is shown to benefit from the general low emission measures laid out in the strategy. We are therefore very keen to get the strategy adopted in 2017 pending licensing committee approval.

This measure fulfils action 1 of the air quality action plan.

Actions for 2017

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

- The adoption of south Oxfordshire's low emission strategy and the next steps in implementing this
- The roll installation of some electric vehicle charging points within Council owned car parks as the start of the EV infrastructure programme

- Work towards some community engagement projects

These measures will serve to reduce vehicle emissions, help accelerate the uptake of low emissions vehicles and to help with community awareness and engagement.

South Oxford District Council's priorities for the coming year are the strengthening of the partnership working we have with other authorities and bodies. To continue to deliver some of the actions laid out in our action plan as laid out above and to get the low emission strategy formally adopted to enable us to deliver upon this. All of these measures will serve to improve the air quality within the district as well as ensuring more sustainable development within the district as well as increasing community awareness.

There are two main challenges we envisage in 2017 are firstly the adoption of the low emission strategy. Some of the measures within this are controversial and therefore may not gain the support of all.

The second is the continuation of the issue that South Oxfordshire lost its five year land supply in 2015. This has meant a number of planning decisions have been lost at appeal and the planning department are struggling to uphold many of the planning conditions recommended. This has meant air quality conditions have in some cases been deemed too onerous and not included or simply not upheld at appeal.

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.

South Oxford District Council is taking the following measures to address $PM_{2.5}$: All of the actions in our action plan serve not only to help reduce NO_2 emissions but also those of $PM_{2.5}$, the council are also engaging with the local health and well being board to help raise the profile of air quality with a view to link in more closely with the health agenda in the future.

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.

South Oxford District Council undertook automatic (continuous) monitoring at 3 sites during 2016. Table A.1 in Appendix A shows the details of the sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. National monitoring results are available at https://uk-air.defra.gov.uk/interactive-map.

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Maps showing the location of the monitoring sites are provided at https://oxfordshire.air-quality.info/. Further details on how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

South Oxford District Council undertook non- automatic (passive) monitoring of NO_2 at 62 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 at https://oxfordshire.air-quality.info/ . 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.

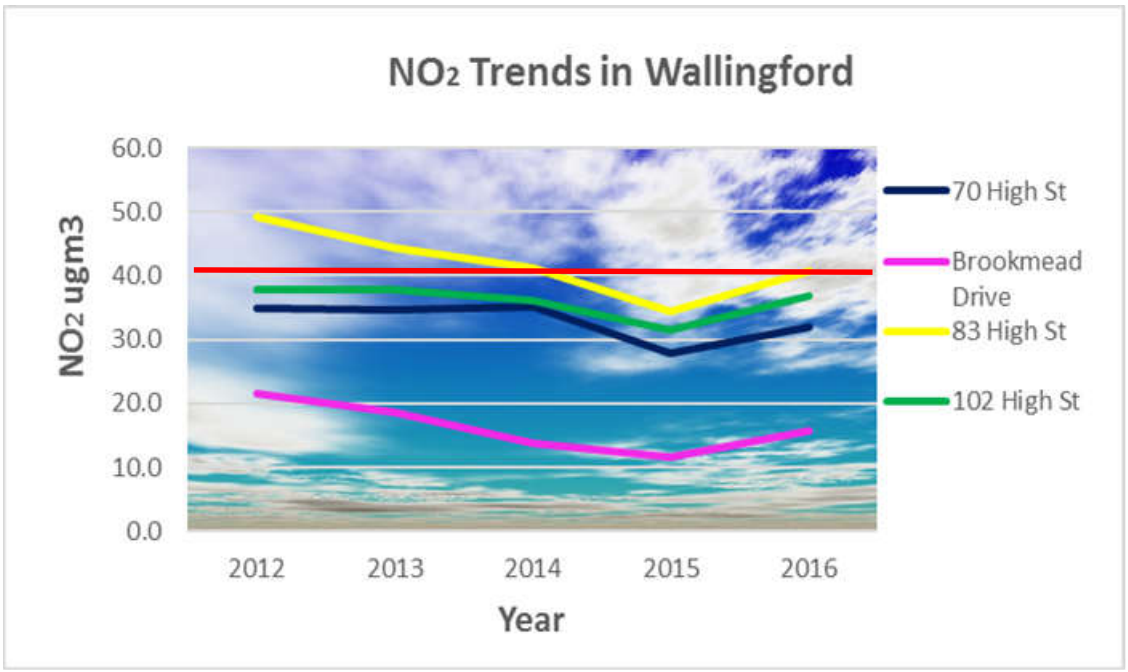
3.2.1 Nitrogen Dioxide (NO_2)

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 40µg/m^3.

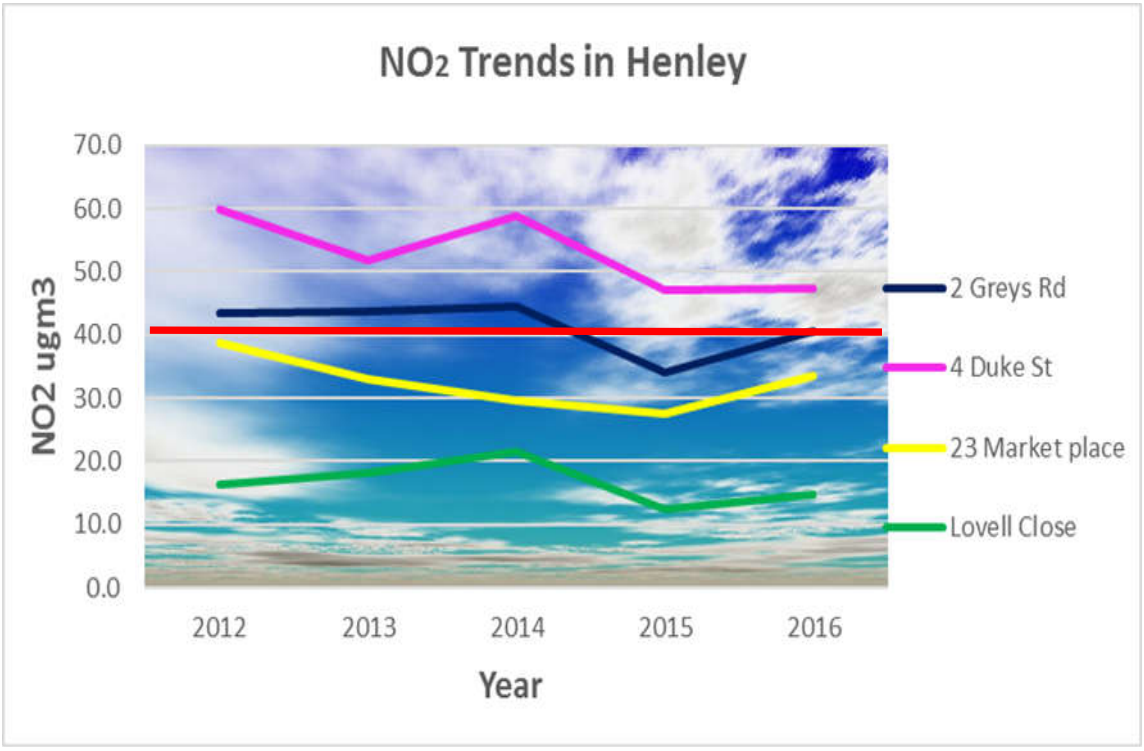
For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

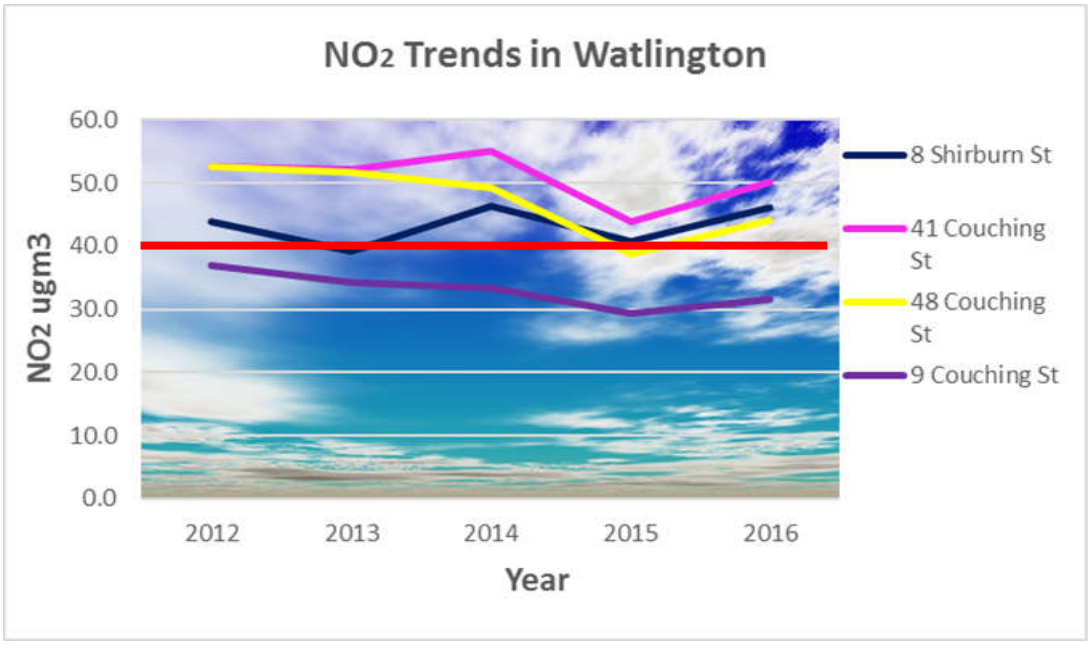
Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

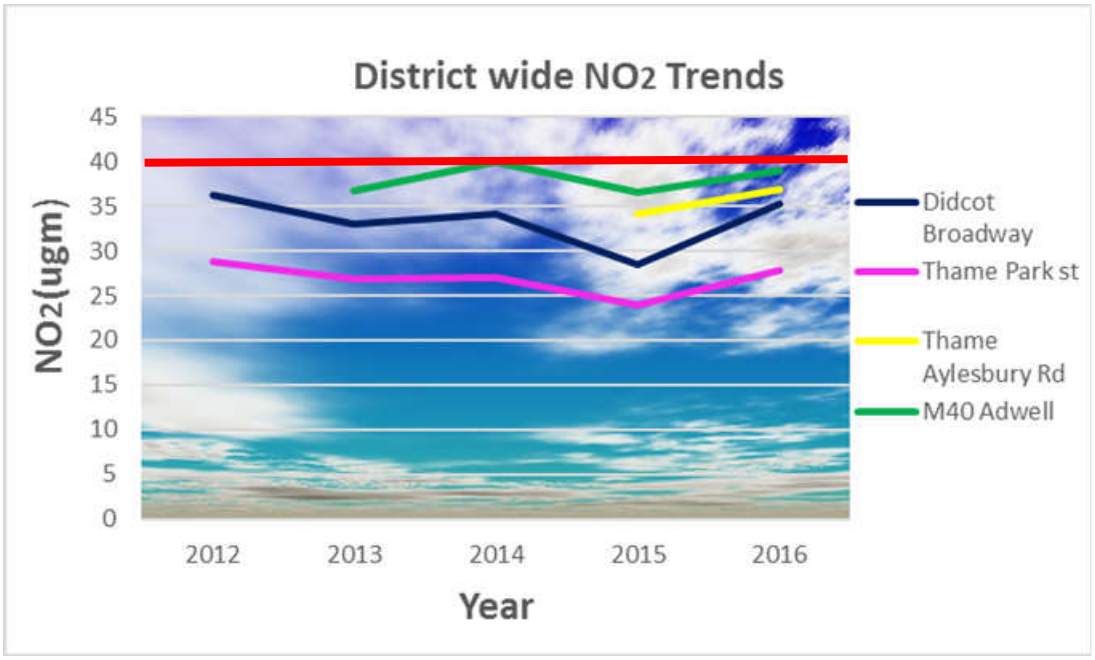
A visual summary of the results are highlighted in the graphs below:



= National objective level




NO2 Trends in Watlington
60.0
50.0
40.0
30.0
20.0
10.0
0.0
NO2 ugm3
2012
2013
2014
2015
2016
Year
8 Shirburn St
41 Couching St
48 Couching St
9 Couching St


District wide NO2 Trends
45
40
35
30
25
20
15
10
5
0
NO2(ugm)
2012
2013
2014
2015
2016
Year
Didcot Broadway
Thame Park st
Thame Aylesbury Rd
M40 Adwell

Increases in NO_2 were evident throughout the district, mainly owing to unusually low levels recorded in 2015. The 2016 data is in line with the general 5 year downward trend (excluding 2015).

Out of the 52 monitoring locations 7 exceedances of the annual mean were recorded. Exceedances were seen in each of the 3 AQMA's highlighting the requirement to keep the AQMA's in place. An exceedance was also notes in Didcot however this particular location is a roadside receptor with no relevant public exposure. Didcot is however the one location in the district that does not follow the 5 year downward trend and instead shows an increase in pollution levels when compared to the 2014 levels, this is likely to be a result of the significant levels of development within the area leading to an increase in vehicle numbers.

No exceedances of the hourly objectives were recorded by the continuous monitors.

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)
Wallingford	Wallingford 83 High St	Urban Kerbside	460 800	189 500	NO_2	Y	Chemiluminescent	0m	1.2	1.5
Henley	Henley 45 Duke St	Urban Roadside	476 116	182 531	NO_2	Y	Chemiluminescent	0m	3.5m	1.5
Watlington	Watlington Town hall	Urban Kerbside	468973	194487	NO_2	Y	Chemiluminescent	0m	0.2m	1.5

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

(2) N/A if not applicable.

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

Site ID	Site Name	Site Type	X OS Grid Ref	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)
S40	Henley - 82 Bell Street	Urban Roadside	476088	182894	NO_2	N	Y (1m)	2m	N	2.5m
S41	Henley – 33 New Street	Urban Roadside	476221	182829	NO_2	N	Y (1m)	2m	N	2.5m
S42	Henley – Northfield End	Urban Roadside	475870	183217	NO_2	N	Y (3m)	2m	N	2.5m
S43	Henley – Station Road	Urban Roadside	476287	182288	NO2	N	Y (6m)	2m	N	2.5m
S44	Henley – 178 Reading Road	Urban Roadside	476549	181734	NO_2	N	Y (1m)	3m	N	2.5m
S45	Henley – Reading Rd / St Andrews Rd	Urban Kerbside	476266	182097	NO_2	N	Y (9m)	1m	N	2.5m
S46	Henley – 35 Reading Road	Urban Roadside	476175	182397	NO_2	Y	Y (3m)	2m	N	2.5m
S47	Henley – 2 Greys Road	Urban Kerbside	476113	182508	NO_2	Y	Y (1m)	1m	N	2.5m
S48-50	Henley – 45 Duke Street (Co-location)	Urban Roadside	476116	182531	NO_2	Y	Y (2m)	4m	Y	1.5m

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)
S51	Henley – 4 Duke Street	Urban Kerbside	476075	182614	NO_2	Y	Y (1m)	2m	N	2.5m
S52	Henley – Café Uno, Hart Street	Urban Roadside	476224	82651	NO_2	Y	Y (0m)	2m	N	2.5m
S53	Henley – 23 Market Place	Urban Roadside	475999	182615	NO_2	Y	Y (0m)	3m	N	2.5m
S65	Henley – 23 Thameside	Urban Roadside	476305	182 764	NO_2	Y	Y (0m)	2m	N	2.5m
S66	Henley –17 York Road	Urban Roadside	475891	182 782	NO_2	Y	Y (0m)	2m	N	2.5m
S54	Henley – 15 Lovell Close	Urban Background	475110	181508	NO_2	N	Y (0m)	2m	N	2.5m
S12	Wallingford – 2 Station Road	Urban Roadside	460313	189535	NO_2	N	Y (0m)	3m	N	2.5m
S13	Wallingford – 70 High Street	Urban Roadside	X 460642	Y 189482	NO_2	Y	Y (0m)	2m	N	2.5m
S15	Wallingford – 33 Castle Street	Urban Roadside	X 460737	Y 189 567	NO_2	Y	Y (0m)	2m	N	2.5m

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)
S16	Wallingford – 52 St Mary's Street	Urban Roadside	460713	189 280	NO_2	N	Y (0m)	2m	N	2.5m
S17	Wallingford – 59 Brookmead Drive	Urban Roadside	460276	188 806	NO_2	N	Y (14m)	2m	N	2.5m
19-21	Wallingford – 83 High Street	Urban Roadside	460799	189 500	NO_2	Y	Y (0m)	2m	Y	1.5m
S23	Wallingford – The Town Arms, 102 High Street	Urban Roadside	460906	189 502	NO_2	N	Y (0m)	1m	N	2.5m
S68	Wallingford – New The Street, Crowmarsh	Urban Roadside	461303	189 368	NO_2	N	Y (1m)	2m	N	2.5m
S63	Wallingford-Hithercorft	Urban Roadside	460152	189 132	NO_2	N	Y (5m)	2m	N	2.5m
S69	Wallingford – Reading Road	Urban Roadside	460468	188 220	NO_2	N	Y (14m)	2m	N	2.5m
S70	Wallingford – A4074	Urban Roadside	461913	188 416	NO_2	N	N	2m	N	1.5m
S30	Watlington – 8 Shirburn St	Urban Roadside	469 013	194 509	NO_2	Y	Y(0m)	2m	N	2.5m

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)
S31	Watlington – 23 Shirburn St	Urban Roadside	469 060	194 590	NO_2	Y	Y(0m)	2m	N	2.5m
S33	Watlington – 41 Couching Street (Co-location)	Urban Roadside	468951	194457	NO_2	Y	Y(0m)	2m	N	2.5m
S32	Watlington – Co-op, 48 Couching Street	Urban Roadside	468962	194458	NO_2	Y	Y (0m)	2m	N	2.5m
S36	Watlington – 9 Couching Street	Urban Roadside	468849	194340	NO_2	Y	Y (3m)	2m	N	2.5m
S37	Watlington –27 Brook St	Urban Roadside	462131	191 828	NO_2	Y	Y (2m)	2m	N	2.5m
S38	Watlington –57 Brook St	Urban Roadside	462267	191 901	NO_2	Y	Y (5m)	2m	N	2.5m
S39	Watlington – St Leonards Church	Urban Background	459649	196482	NO_2	N	Y (10m)	15m	N	2.5m
S1	Didcot – 20 Wantage Road	Urban Roadside	451780	189920	NO_2	N	Y (9m)	1m	N	2.5m
S2	Didcot – 100 Park Road	Urban Roadside	451653	189384	NO_2	N	Y (15m)	1m	N	2.5m
S4	Didcot – 55 Broadway	Urban Roadside	453099	190031	NO_2	N	Y (0m)	3m	N	2.5m

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)
S5	Didcot – Lune Close	Urban Background	453500	190384	NO_2	N	Y(1m)	2m	N	2.5m
S6	Didcot – Marsh Cottages	Urban Roadside	453533	190002	NO_2	N	Y (1m)	1m	N	2.5m
S10	Didcot 35/37 Broadway	Urban Roadside	453202	190047	NO_2	N	Y (1m)	2m	N	2.5m
S7-9	Didcot – 77 Broadway	Urban Roadside	453020	190002	NO_2	N	Y (0m)	2m	N	2.5m
S11	Didcot – 110 Broadway	Urban Roadside	452866	189981	NO_2	N	Y (0m)	2m	N	2.5m
S71	Didcot – Station Road 1	Urban Roadside	452114	190 682	NO_2	N	N (12m)	2m	N	2.5m
S72	Didcot – Station Road 2	Urban Roadside	451387	190 974	NO_2	N	N (30m)	2m	N	2.0m
S28	Thame – 16 Ludlow Drive	Urban Background	471283	205978	NO_2	N	Y (6m)	2m	N	2.5m
S29	Thame – 16 Park Street	Urban Roadside	471010	205598	NO_2	N	Y (4m)	2m	N	2.5m
S73	Thame – 41 Aylesbury Rd	Urban Roadside	470603	206 546	NO_2	N	Y (16m)	2m	N	2.5m
S74	Thame – Kingsey Rd	Urban Roadside	471700	205 809	NO_2	N	Y(0m)	2m	N	2.5m

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)
S27	Wheatley – 50 High St	Urban Roadside	459533	205740	NO_2	N	Y (0m)	1m	N	2.5m
S57	M40 – 9 Adwell Cottages	Urban Roadside	470200	200197	NO_2	N	Y (0m)	15m Motorway	N	2.5m
S61	M40 – 10 Adwell Cottages	Urban Roadside	470200	200197	NO_2	N	Y (0m)	15m Motorway	N	2.5m
S75	Little Milton – A329	Urban Roadside	461902	200 992	NO_2	N	Y(0m)	1m	N	2.5m
S76	Stadhampton – A329 pub	Urban Background	460279	198622	NO_2	N	Y (1m)	1m	N	2.5m
S77	Stadhampton – A329 Newington Rd	Urban Roadside	460158	198 407	NO_2	N	Y (0m)	1m	N	2.5m
S26	Chinnor 3 Lower Rd	Urban Roadside	475218	201213	NO_2	N	Y (0m)	1m	N	2.5m

(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 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
Henley	Roadside	Automatic	88.91	88.91	33*	35	37	27	31
Wallingford	Roadside	Automatic	77.4	77.4	48	42	40	33	37
Watlington	Roadside	Automatic	90.1	90.1	39.1 **	39	38	35	37
S40	Urban Roadside	Diffusion tubes	100	100	43.9	40.9	39.7	32.5	33.2
S41	Urban Roadside	Diffusion tubes	100	100	33.6	35.3	32.7	28.1	31.5
S42	Urban Roadside	Diffusion tubes	100	100	34.8	34.5	34.1	28.1	31.9
S43	Urban Roadside	Diffusion tubes	100	100	35.9	36.4	40.9	29.2	33.1
S44	Urban Roadside	Diffusion tubes	91.6	91.6	39.7	34.5	35.1	31	38
S45	Urban Kerbside	Diffusion tubes	100	100	33.1	34.7	36.3	26.3	30.6
S46	Urban Roadside	Diffusion tubes	91.6	91.6	40.1	39.7	38.7	31.2	37
S47	Urban Kerbside	Diffusion tubes	91.6	91.6	43.5	43.7	44.5	34	**40.5**
S48-50	Urban Roadside	Diffusion tubes	91.6	91.6	36.6	37.5	39.5	30.2	36.5

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
S51	Urban Kerbside	Diffusion tubes	100	100	59.8	**51.8**	**58.8**	**47.1**	**47.4**
S52	Urban Roadside	Diffusion tubes	83.3	83.3	39.6	38	**43.3**	36.5	38
S53	Urban Roadside	Diffusion tubes	91.6	91.6	38.7	33	29.5	27.5	33.5
S65	Urban Roadside	Diffusion tubes	91.6	91.6		38.1	33.9	39.3	39.3
S66	Urban Roadside	Diffusion tubes	100	100		27.6	25.7	22.7	26.4
S54	Urban Background	Diffusion tubes	83.3	83.3	16.3	18	21.5	12.4	14.7
S12	Urban Roadside	Diffusion tubes	100	100	35.2	31.9	33.1	27.8	32
S13	Urban Roadside	Diffusion tubes	100	100	**62.6**	34.6	35.1	28.2	32.6
S15	Urban Roadside	Diffusion tubes	100	100	**44.7**	38.6	36.8	29.9	33.5
S16	Urban Roadside	Diffusion tubes	75	75	**47**	25.3	29.5	24.5	24.7
S17	Urban Roadside	Diffusion tubes	100	100	21.6	18.7	13.7	11.5	15.8
19-21	Urban Roadside	Diffusion tubes	100	100	**49.1**	**44.3**	**41.1**	34.4	**40.7**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
S23	Urban Roadside	Diffusion tubes	100	100	37.7	37.9	36.2	31.6	36.9
S68	Urban Roadside	Diffusion tubes	100	100	22.3	23.2	25.6	19.2	22.2
S63	Urban Roadside	Diffusion tubes	100	100		21.2	24.2	20.3	25.1
S69	Urban Roadside	Diffusion tubes	91.6	91.6		25.7	22.1	19.5	22.2
S70	Urban Roadside	Diffusion tubes	91.6	91.6		39.4	**43.6**	33.6	39.8
S30	Urban Roadside	Diffusion tubes	100	100	**43.8**	39.1	**46.4**	**40.8**	**46.2**
S31	Urban Roadside	Diffusion tubes	100	100	**53.4**	**51.3**	**45.1**	34.7	37.5
S33	Urban Roadside	Diffusion tubes	100	100	**52.7**	**52.2**	**55**	**43.9**	**50.2**
S32	Urban Roadside	Diffusion tubes	100	100	**52.5**	**51.7**	**49.3**	38.7	**44.2**
S36	Urban Roadside	Diffusion tubes	100	100	36.9	34.3	33.4	29.3	31.6
S37	Urban Roadside	Diffusion tubes	100	100	30.3	34.2	28.3	25.3	36.5
S38	Urban Roadside	Diffusion tubes	91.6	91.6	31.7	33	35	26.2	27.9

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
S1	Urban Roadside	Diffusion tubes	100	100	29.1	28.7	29.3	25.8	30.8
S2	Urban Roadside	Diffusion tubes	75	75	23.7	23.2	25.8	29.5	27.9
S4	Urban Roadside	Diffusion tubes	100	100	33.5	36.9	37	30.7	36.3
S5	Urban Background	Diffusion tubes	100	100	23.3	21.8	21	18.6	20.4
S7-9	Urban Roadside	Diffusion tubes	100	100	30.9	33.3	35.2	29.8	33.9
S11	Urban Roadside	Diffusion tubes	83	83	33.6	33	34.2	29.5	35.2
S71	Urban Roadside	Diffusion tubes	91.6	91.6		**43.1**	37.5	32.5	39.8
S72	Urban Roadside	Diffusion tubes	83.3	83.3		**60.1**	**66**	**53.2**	**56.9**
S28	Urban Background	Diffusion tubes	100	100	18.2	20.7	17.2	14.4	17.7
S29	Urban Roadside	Diffusion tubes	100	100	28.8	26.9	27.1	24.4	27.9
S73	Urban Roadside	Diffusion tubes	91.6	91.6		**44.2**	**40.5**	34.1	36.9
S74	Urban Roadside	Diffusion tubes	100	100		25.8	21.4	19.5	23.6

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2012	2013	2014	2015	2016
S27	Urban Roadside	Diffusion tubes	100	100	29.8	29.6	28	23.8	26.8
S57	Urban Roadside	Diffusion tubes	100	100	**42.7**	38	37.9	35.6	33.6
S61	Urban Roadside	Diffusion tubes	100	100		36.7	**40**	36.5	39
S75	Urban Roadside	Diffusion tubes	100	100		34.8	37.7	32.3	36
S76	Urban Background	Diffusion tubes	100	100		27.8	27.1	21.4	24
S77	Urban Roadside	Diffusion tubes	100	100		30.7	29	23.3	30.1
S26	Urban Roadside	Diffusion tubes	100	100	30	37.2	35.1	30.1	32

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

NO_2 annual means exceeding $60\mu g/m^3$, 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.

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)				
					2012	2013	2014	2015	2016
Henley	Roadside	Automatic	88.9	88.9	0	0	0	0	0
Wallingford	Roadside	Automatic	77.4	77.4	0	4	0	0	0
Watlington	Roadside	Automatic	90.1	90.1	0	0	1	0	1

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 85%, the 99.8th percentile of 1-hour means is provided in brackets.

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	Dec	Jan	Annual Mean	
													Raw Data	Bias Adjusted (1)
42	29.9	37.7	29.1	27.8	30.2	28.3	20.4	24.4	27.7	30.7	33.8	45.2	30.4	**31.9**
40	32.8	37.7	36.9	32.1	32.3	30.6	22.0	28.0	32.1				31.6	**33.2**
41	26.0	35.1	30.0	28.1	29.9	25.0	21.9	26.1	22.3	34.0	35.0	46.8	30.0	**31.5**
65	39.6	43.4	36.3	33.5		32.3	36.3	34.8	33.4	31.9	45.3	45.4	37.4	**39.3**
47	38.9		34.8	33.5	36.8	33.8	32.0	45.1	33.9	36.6	47.0	52.0	38.6	**40.5**
46		40.4	34.8		28.9	32.3	21.7	25.4	29.7	38.3	49.5	51.1	35.2	**37.0**
43	26.8	37.4	27.9	29.1	27.9	27.1	23.2	23.9	30.7	32.2	39.9	51.3	31.5	**33.1**
45	32.3	36.3	27.5	27.7	31.3	20.2	21.1	22.9	25.1	26.6	35.0	43.6	29.1	**30.6**
48	32.2	41.6	30.6	31.5	33.7			34.0	28.9	35.8	35.7	52.9	35.7	**37.5**
49	31.2	35.7	29.9	30.4	31.0	30.1		26.6	28.8	36.2	38.0	49.3	33.4	**35.1**
50	29.8	36.8	31.0	28.9	32.1		22.5		48.0		35.7	50.8	35.1	**36.9**
51	55.5	36.8	40.2	39.0	50.7	41.2	42.9	37.7	33.0	39.1	62.8	62.5	45.1	**47.4**
52	41.9	43.9	32.4	33.2		32.7	36.2	27.1	26.8		37.4	50.4	36.2	**38.0**
53	33.3	54.0	26.7	25.7	25.4	24.1	22.8	27.4		30.9	34.3	46.6	31.9	**33.5**
44	31.3	40.7	32.8	30.2		22.1	25.5	27.2	31.0	35.3	38.3	48.2	36.2	**38.0**
54	14.7		14.7	12.4	11.2	8.1	6.9	8.6	11.4		21.9	30.5	14.0	**14.7**
66	31.0	29.7	23.9	22.8	20.5	18.2	14.9	17.2	21.6	25.4	32.8	42.9	25.1	**26.4**
67	16.86	22.3	21.3	17.2	18.6	17.1	1.68	17.85	18.04				16.8	**17.6**
68	17.3	22.5	20.8	19.5	17.3	18.2	14.05	19.1	20.31	23.9	26.4	33.5	21.1	**22.2**
23	30.0	46.5	33.4	32.5	34.3	31.35	26.34	33.45	30.5	38.25	37.1	47.0	35.1	**36.9**
19			35.7	36.4	38.4	39.57	30.47	36.67	34.31	44.25	43.5	52.4	39.2	**41.2**
20	31.9	41.2	36.4	36.6	40.6	37.03	32.67	29.8	36.71	45.23	42.8	52.8	38.6	**40.5**
21	33.4	43.4	33.5	34.6	40.8	37.53	30.34	33.42	36.09	42.77	43.5	52.3	38.5	**40.4**

Site ID	NO_2 Mean Concentrations (µg/m^3)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Jan	Annual Mean	
													Raw Data	Bias Adjusted (1)
15	33.3	38.1	28.3	30.6	27.9	26.99	19.36	24.83	28.7	34.4	37.9	52.5	31.9	**33.5**
13	32.0	36.3	29.5	29.4	29.2	22.63	24.31	28.05	28.8	31.05	34.8	45.7	31.0	**32.6**
12	32.6	32.0	25.3	27.5	28.4	23.53	24.93	27.72	29.7	30.28	44.1	39.3	30.5	**32.0**
18	25.5	35.1	28.3	28.8	27.8	25.7	21.2	23.9	27.2	30.43	35.8	44.6	29.5	**31.0**
16	27.2	28.4	26.2	24.6	26.8	24.5	2.3	23.9	27.4				23.5	**24.7**
17	14.4	18.6	15.3	13.3	11.3	8.8	7.0	9.5	11.5	17.5	21.9	30.5	15.0	**15.8**
69		24.1	21.4	18.5	17.4	15.8	13.0	16.0	18.7	20.4	27.9	39.0	21.1	**22.2**
70	37.0	44.4	35.8	31.0	37.1		32.2	32.4	36.1	40.4	37.8	53.0	37.9	**39.8**
63	21.6	27.4	22.4	21.7	18.0	17.8	13.3	17.0	18.2	23.3	26.7	35.4	23.9	**25.1**
38	19.06	33.9	27.1	24.9	28.2	25.1	18.41	24.45	26.69	32.35	31.9		26.6	**27.9**
36	29.4	36.1	29.8	25.5	28.3	26.91	24.61	24.47	27.77	31.81	34.9	41.4	30.1	**31.6**
33	41.3	45.2	43.6	42.9	49.7	53.45	39.88	40.73	50.74	51.58	49.6	65.6	47.8	**50.2**
32	39.8	44.7	34.3	37.0	43.9	40.53	31.62	32.91	42.4	45.11	49.6	63.5	42.1	**44.2**
30	38.5	44.6	40.4	40.0	43.0	41.57	34.19	39.73	50.95	48.54	46.9	60.3	44.0	**46.2**
31	34.0	38.62	37.14	33.34	32.0	36.3	30.9	32.2	36.7	37.9	38.0	41.8	35.7	**37.5**
37	28.3	39.3	32.5	27.0	29.7	24.4	22.0	27.1	32.5	37.7	50.2	66.4	34.8	**36.5**
4	33.97	40.26	30.37	32.83	32.12	26.31	25.96	25.69	28.59	37.95	40.39	60.6	34.6	**36.3**
7	32.22	37.58	27.32	27.04	36.95	25.51	25.3	26.79	25.73	33.26	34.68	54.02	32.2	**33.8**
8	34.26	34.95	28.39		31.08	25.26	24.54	26.45	25.28	32.96	38.38	55.85	32.5	**34.1**
9	30.69	36.92	28.65	30.58	32.47	25.54	26.71	26.24	24.94	33.93	35.59	54.01	32.2	**33.8**
11	27.3	41.76	33.2	33.4	34.12	30.87	20.42	27.65			37.69	48.93	33.5	**35.2**
1	27.63	36.38	25.55	28.32	27.85	23.94	17.53	18.97	23.73	32.06	32.19	57	29.3	**30.8**
2	18.54	28.22	24.94	20.19	23.27	19.04	12.06	34.24	20.44	28.22	38.6	51.53	26.6	**27.9**
71	28.18	40.67	35.78	35.28	38.23	33.9	26.07		35.31	40.26	41.54	61.64	37.9	**39.8**
72	50.43	63.97	52.09	45.39	62.57	53.75	47.94	59.26	52.96	53.89			54.2	**56.9**
5	17.05	26.54	19.45	19.3	16.93	13.47	13.29	17.85			30.55		19.4	**20.4**

Site ID	NO_2 Mean Concentrations ($\mu g/m^3$)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec	Jan	Annual Mean	
													Raw Data	Bias Adjusted (1)
50														
57	32.1	33.0	27.2	31.4	13.8	27.3	39.7	39.8	40.8	25.7	31.0	41.9	32.0	**33.6**
61	34.8	36.9	29.3	32.6	39.2	30.0	42.1	41.3	41.0	27.9	37.1	53.1	37.1	**39.0**
26	28.68/11	34.96	32.23		33.1	27.37	24.02	26.89	34.24	33.19	37.56	53.35	30.6	**32.1**
73	41.54	38.5	34.52	30.2	33.17	27.91	30.93	31.63	37.39	35.92	44.46		35.1	**36.9**
29	19.27	30.54	27.6	23.36	24.12	25.12	15.3	20.26	24.56	33.56	31.34	43.63	26.6	**27.9**
74	24.85	28.4	19.9	21.0	17.27	14.38	13.16	16.31	17.75	22.67	33.22	40.8	22.5	**23.6**
28	16.86	22.96	16.92	15.05	11.76	10.63	8.19	9.66	14.16	17.57	25.98	33	16.9	**17.7**
75	32.12	41.3	28.6	30.1	30.5	30.38	22.11	27.26	31.18	40.86	42.21	55	34.3	**36.0**
76	22.61	27.6	19.7	22.1	20.1	17.51	15.43	17.09	20.7	24.13	30.03	37.95	22.9	**24.0**
77	23.67	34.6	28.2	27.0	26.6	25.78	16.94	21.77	25.56	37.69	30.38	46.41	28.7	**30.1**

(1) See Appendix C for details on bias adjustment

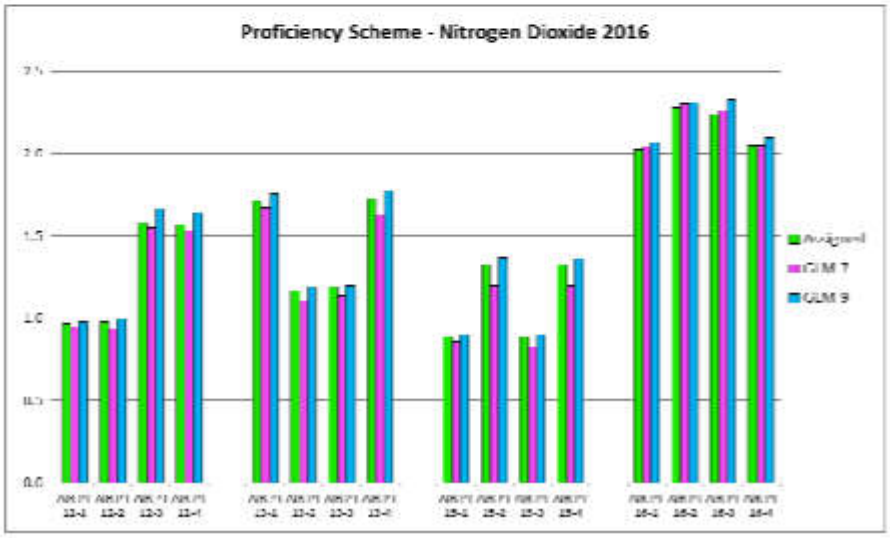
Please note the Novembers diffusion tubes were ;lost in the post and not received by the lab so to get a full spectrum we have added in Januarys tubes from 2017

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

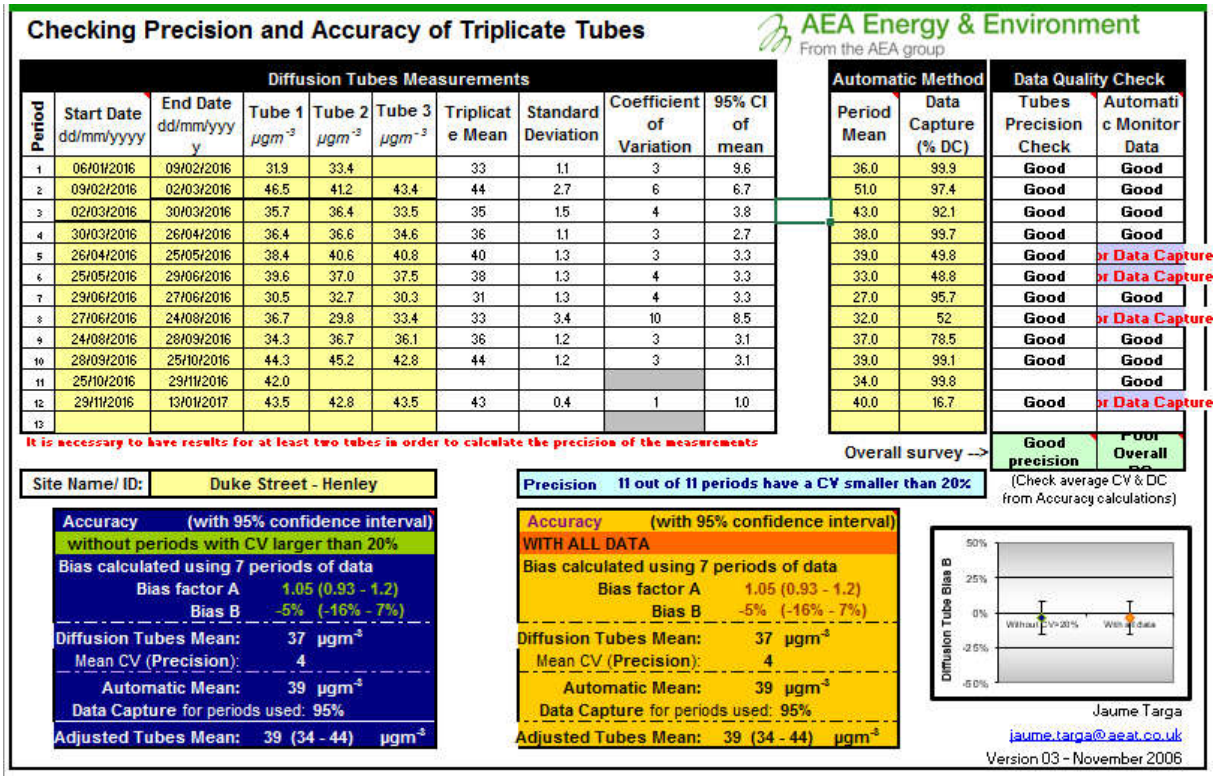
Gradko QC Data:

AIR PT Proficiency Scheme - Nitrogen Dioxide 2016

Date	Round	Assigned value	Camspec M550 - GLM 7			QuAAtro - GLM 9		
			Measured concentration	z-Score	% Bias	Measured concentration	z-Score	% Bias
Feb-16	AIR PT 12-1	0.97	0.95	-0.28	-2.1%	0.98	0.14	1.0%
Feb-16	AIR PT 12-2	0.98	0.94	-0.54	-4.1%	1.00	0.27	2.0%
Feb-16	AIR PT 12-3	1.58	1.55	-0.25	-1.9%	1.66	0.67	5.1%
Feb-16	AIR PT 12-4	1.57	1.53	-0.34	-2.5%	1.64	0.60	4.5%
May-16	AIR PT 13-1	1.72	1.67	-0.39	-2.9%	1.76	0.31	2.3%
May-16	AIR PT 13-2	1.17	1.11	-0.68	-5.1%	1.19	0.23	1.7%
May-16	AIR PT 13-3	1.19	1.14	-0.56	-4.2%	1.2	0.11	0.8%
May-16	AIR PT 13-4	1.73	1.63	-0.74	-5.8%	1.78	0.37	2.9%
Aug-16	AIR PT 15-1	0.89	0.86	-0.45	-3.4%	0.90	0.15	1.1%
Aug-16	AIR PT 15-2	1.32	1.20	-1.16	-9.1%	1.37	0.48	3.8%
Aug-16	AIR PT 15-3	0.89	0.83	-0.90	-6.7%	0.90	0.15	1.1%
Aug-16	AIR PT 15-4	1.32	1.20	-1.21	-9.1%	1.36	0.40	3.0%
Oct-16	AIR PT 16-1	2.03	2.04	0.07	0.5%	2.07	0.26	2.0%
Oct-16	AIR PT 16-2	2.28	2.3	0.12	0.9%	2.31	0.18	1.3%
Oct-16	AIR PT 16-3	2.24	2.26	0.12	0.9%	2.33	0.54	4.0%
Oct-16	AIR PT 16-4	2.05	2.05	0.0	0.0%	2.1	0.31	2.4%



Diffusion Tube Bias Adjustment:



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation	95% CI of mean	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	06/01/2016	09/02/2016	31.9	33.4		33	1.1	3	9.6	36.0	99.9	Good	Good
2	09/02/2016	02/03/2016	46.5	41.2	43.4	44	2.7	6	6.7	51.0	97.4	Good	Good
3	02/03/2016	30/03/2016	35.7	36.4	33.5	35	1.5	4	3.8	43.0	92.1	Good	Good
4	30/03/2016	26/04/2016	36.4	36.6	34.6	36	1.1	3	2.7	38.0	99.7	Good	Good
5	26/04/2016	25/05/2016	38.4	40.6	40.8	40	1.3	3	3.3	39.0	49.8	Good	or Data Capture
6	25/05/2016	29/06/2016	39.6	37.0	37.5	38	1.3	4	3.3	33.0	48.8	Good	or Data Capture
7	29/06/2016	27/06/2016	30.5	32.7	30.3	31	1.3	4	3.3	27.0	95.7	Good	Good
8	27/06/2016	24/08/2016	36.7	29.8	33.4	33	3.4	10	8.5	32.0	52	Good	or Data Capture
9	24/08/2016	28/09/2016	34.3	36.7	36.1	36	1.2	3	3.1	37.0	78.5	Good	Good
10	28/09/2016	25/10/2016	44.3	45.2	42.8	44	1.2	3	3.1	39.0	99.1	Good	Good
11	25/10/2016	29/11/2016	42.0							34.0	99.8		Good
12	29/11/2016	13/01/2017	43.5	42.8	43.5	43	0.4	1	1.0	40.0	16.7	Good	or Data Capture
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision | Poor Overall

Site Name/ ID: Duke Street - Henley

Precision: 11 out of 11 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%

Bias calculated using 7 periods of data
Bias factor A: 1.05 (0.93 - 1.2)
Bias B: -5% (-16% - 7%)
Diffusion Tubes Mean: 37 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 39 µgm^{-3}
Data Capture for periods used: 95%
Adjusted Tubes Mean: 39 (34 - 44) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA

Bias calculated using 7 periods of data
Bias factor A: 1.05 (0.93 - 1.2)
Bias B: -5% (-16% - 7%)
Diffusion Tubes Mean: 37 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 39 µgm^{-3}
Data Capture for periods used: 95%
Adjusted Tubes Mean: 39 (34 - 44) µgm^{-3}

Jaume Targa
jaume.targa@aeat.co.uk

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Appendix D: 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
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
EU	European Union
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

[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

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