



2019 Air Quality Annual Status Report (ASR)

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

June 2019

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Executive Summary: Air Quality in Our Area

Air Quality in West Berkshire

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

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

The major source of air quality pollutants in West Berkshire is road transport, and in particular the contribution from the A339 and A4 has been identified as significant. The main pollutant of concern is nitrogen dioxide (NO₂) and two Air Quality Management Areas (AQMAs) have been declared. The Newbury AQMA was declared for exceedances of both the one-hour and annual mean NO₂ objective. The Thatcham AQMA was declared for the annual mean NO₂ objective. Details can be found at: <https://uk-air.defra.gov.uk/aqma/list?view=W> and maps are in Appendix D.

Nitrogen dioxide (NO₂) is the main pollutant of concern. The levels in 2018 have shown general decrease on 2017 levels, however a number of sites within and close to the Newbury AQMA showed an increase. However overall the levels have been reducing over the last 5 years to 2018.

No extensions or amendments to the AQMAs were required nor any new AQMAs to be declared.

As a unitary authority Environmental Health has continued to work in conjunction with the Transport Policy Team with the implementation of Local Transport Plan 3 (2011 – 2026). The Plan includes a Transport Vision setting out the long-term transport strategy for each of the 4 main geographical areas of the District as identified in the

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

Local Development Framework Core Strategy. These Visions have been prepared taking into account a “Mixed Strategy” approach of looking to provide people in the District with more sustainable travel choices. The Plan acknowledges the link with the existing AQAP and any future AQAP’s and there is a specific Policy on Air Quality (Policy LTP K6) which states that:

The Council will fulfil its responsibilities for Local Air Quality Management and focus on the following:

- i. Highlighting ways in which air quality can be protected through the development management process
- ii. Identifying areas where the Air Quality limit values are being or are likely to be exceeded
- iii. Establishing a framework for air quality improvements
- iv. Investigating the feasibility of using mobile alerts to highlight periods of higher pollution levels

LTP Strategies continue to be reviewed; no new strategies were implemented in 2018.

Working on the link between air quality, particularly from PM2.5 and public health in West Berkshire continues. There has been closer working with the Berkshire Strategic Public Health Team and Public Health England.

Actions to Improve Air Quality

Work through development control applications were reviewed for the air quality impact. Air quality assessments have been provided where necessary for a variety of applications and appropriate mitigation requested. Applications included significant housing development sites, STOR power generation plant, traffic flow changes to a road scheme, and any applications which may have an impact to the AQMAs and other hotspot locations.

West Berkshire Council has completed all Pollution Prevention and Control inspections as required for the control of emission to air from industrial processes.

A new intersection on the A339 just north of the AQMA has been approved with changes to access into Newbury town centre. This is to reroute traffic and improve flow with works due to commence in January 2019.

A joint application with Bracknell Forest and Wokingham Councils to the Air Quality Grant Scheme 2017-18 was made but unfortunately not successful in securing grant funding for the project of involving the purchase of monitoring equipment which children/adults can wear to monitor their personal exposure to air pollution on the way to and from school against routes they have taken. It is hoped information collected can be used to help inform and review school travel plans to encourage changes in behaviour to support their plans, and long term improvements in local air quality and public health outcomes.

Due to lack of funds we were unable to spend on projects directly however staff resources and external contacts were used to work on developing actions.

A contract has been let to install up to 40 electric car charge points on the highway in and around Newbury with funding from an OLEV grant. This will assist in the promotion of low emission transport in the third LA in the south east for new ultra-low emission vehicle purchase.

Cycle facilities have been improved on the A4 between Newbury and Thatcham, with further improvements planned during 2019-20.

The development of our Policy Guidance Planning for Air Quality document, the joint Public Health and Air Quality website and the Public Protection Partnership website has information available to residents, businesses and consultants regarding air quality and air pollution matters.

The new Newbury bus station opened on 7th December 2018 at The Wharf, which is the start of the Market Street redevelopment, which is a key part of the Newbury Vision 2026. In addition to 232 new homes the scheme will deliver additional parking capacity in the town centre, a new station plaza, new landscaped step free pedestrian routes through the site and a new bus station.

Looking ahead to 2019 a major road improvement project for Newbury is due to start on 7th January 2019. The £1.8 million project, funded by developer's contributions from the Newbury Racecourse development and Local Transport Plan capital grant funding, recognises the need to create more capacity on the busy town centre network.

Conclusions and Priorities

There was an exceedance of the ratified continuous monitored NO₂ annual mean in 2018, the level being was 36.4 µg/m³ so did not exceed the Air Quality objective level of 40 µg/m³. There was 1 exceedance of the 1-hour objective, which did not exceeded the objective permitted level of 18 exceedances.

There were no exceedances of the ratified, adjusted and distance corrected diffusion tubes within the Newbury AQMA and within the Thatcham AQMA. There were no locations greater than 60µg/m³ which therefore does not indicate any exceedance of the 1-hour Objective. 10 sites showed an increase in levels compared to 2017 (9 of which were in Newbury), with 25 decreased, and none remained the same.

Overall the concentrations were more in line with the expected concentrations following a decrease in 2015.

The areas of concern continue to be:

- Newbury AQMA - A339 / Greenham Road / A343 St Johns Road
- Thatcham AQMA – A4 Chapel Street Thatcham

The following local priorities continue to be:

- Exploring the link between public health and PM_{2.5}
- Joint working between Public Health and Environmental Health teams and links within the Berkshire Public Health Shared Team
- Continuing to work within the unitary authority with Transport Policy and Highways Teams - There are some localised areas of congestion at peak times which require managing and investment where improvements are needed to increase capacity at key junctions or effectively manage traffic flow. New development is planned through the Local Development Framework Core Strategy and additional transport and highway measures are planned alongside these new developments which will assist in addressing the impact and manage the additional trips associated with new developments.
- Continue the continuous and passive air quality monitoring programmes in 2019

The following challenges have been identified:

- Budget allocation for progressing measures and actions however funding applications will be applied for where possible/appropriate
- Linking of Public Health Outcome Framework and health profiles to air quality to show any causal relationship.

Local Engagement and How to get Involved

For further details on air quality in West Berkshire please refer to our website at <http://info.westberks.gov.uk/index.aspx?articleid=27513> .

Individuals or members of local groups are invited to share any ideas they have to cut nitrogen dioxide levels in West Berkshire by emailing ehadvice@westberkshire.gov.uk

Other useful websites are:

<https://uk-air.defra.gov.uk/>

<https://www.gov.uk/government/publications/2010-to-2015-government-policy-environmental-quality/2010-to-2015-government-policy-environmental-quality#appendix-5-international-european-and-national-standards-for-air-quality>

There are a number of ways members of the public can help to improve local air quality:

- Walk or cycle short distances of less than one or two miles rather than driving (see <http://info.westberks.gov.uk/index.aspx?articleid=27868> for routes in West Berkshire).
- Search for car sharing opportunities using Lift share (see <https://liftshare.com/uk>) or Faxi (<https://faxi.co.uk/>) to share journeys with work colleagues
- Newbury Car Club (see <http://www.co-wheels.org.uk/newbury>)
- Use the bus or train regularly and keep up-to-date with the latest bus routes timetables (see <http://info.westberks.gov.uk/index.aspx?articleid=27888>)

Table of Contents

Executive Summary: Air Quality in Our Area	1
Air Quality in West Berkshire	1
Actions to Improve Air Quality	2
Conclusions and Priorities	4
Local Engagement and How to get Involved	5
1 Local Air Quality Management	8
2 Actions to Improve Air Quality	9
2.1 Air Quality Management Areas	9
2.2 Progress and Impact of Measures to address Air Quality in West Berkshire	11
2.3 PM _{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations	22
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	24
3.1 Summary of Monitoring Undertaken	24
3.1.1 Automatic Monitoring Sites	24
3.1.2 Non-Automatic Monitoring Sites	24
3.2 Individual Pollutants	24
3.2.1 Nitrogen Dioxide (NO ₂)	24
3.2.2 Particulate Matter (PM ₁₀)	27
3.2.3 Particulate Matter (PM _{2.5})	27
3.2.4 Sulphur Dioxide (SO ₂)	27
Appendix A: Monitoring Results	28
Appendix B: Full Monthly Diffusion Tube Results for 2018	39
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	44
Appendix D: Map(s) of Monitoring Locations and AQMAs	52
Appendix E: Summary of Air Quality Objectives in England	60
Glossary of Terms	61

List of Tables

Table 2.1 – Declared Air Quality Management Areas	10
Table 2.2 – Progress on Measures to Improve Air Quality	14
Table A.1 – Details of Automatic Monitoring Sites	28
Table A.2 – Details of Non-Automatic Monitoring Sites	29
Table A.3 – Annual Mean NO ₂ Monitoring Results	34

Table A.4 – 1-Hour Mean NO₂ Monitoring Results38

Table B.1 – NO₂ Monthly Diffusion Tube Results - 201839

Table E.1 – Air Quality Objectives in England60

List of Figures

Figure 1 Quarterly mean NO₂ concentration and trendline**Error! Bookmark not defined.**

Figure 2 1 hour NO₂ results **Error! Bookmark not defined.**

1 Local Air Quality Management

This report provides an overview of air quality in West Berkshire during 2018. 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 West Berkshire 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 **Error! Reference source not found.** in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMA declared by West Berkshire can be found in Table 2.1. Further information related to declared or revoked AQMA, including maps of AQMA boundaries are available online at:

https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=304 .

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

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration	Now			Name	Date of Publication	Link
Newbury AQMA 1	Declared 12/05/2009	NO2 1 Hour Mean	Newbury	Newbury A339, A343 and Greenham Road junction	NO	61	hours	8	hours	Newbury AQAP	Nov-11	http://info.westberks.gov.uk/CHttpHandler.ashx?id=36580&p=0
Newbury AQMA 2	Declared 12/05/2009	NO2 Annual Mean	Newbury	Newbury A339, A343 and Greenham Road junction	NO	54.4	µg/m3	40.3	µg/m3	Newbury AQAP	Nov-11	http://info.westberks.gov.uk/CHttpHandler.ashx?id=36580&p=0

☒ West Berkshire Council confirm the information on UK-Air regarding their AQMA(s) is up to date

2.2 Progress and Impact of Measures to address Air Quality in West Berkshire

Defra's appraisal of last year's ASR concluded: that approach regarding the Thatcham AQMA AQAP development status was considered appropriate and as the 2018 data do not show any exceedances no progress of an Action Plan is required; the update on the Newbury AQAP welcomed and more updates are included in this report; and the addition of maps welcomed.

West Berkshire has taken forward a number of direct measures during the current reporting year of 2018 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:

- Further A339 Bear Lane (Sainsbury's roundabout) improvements works commencing to enable improved traffic flow
- Further walking and cycling events such Let's Ride group, Run Together beginners groups including a new mental health group and Walking for Health led walks across West Berkshire
- OLEV funding approved and contract let to install up to 40 electric vehicle charge points on the highway in some residential areas of Newbury
- A339/A343/Greenham Road roundabout – the centre of the Newbury AQMA with traffic modelling regarding potential changes to layout and crossings and concluded that there would be some benefit to replacing the roundabout with a traffic signal controlled crossroads, but any implementation requires budget allocation.
- National Cycle Network 422 expansion – A4 Newbury to Thatcham and on to Calcot has been agreed with work commenced in 2018. This provision of improved cycle ways goes through the Thatcham AQMA
- Pedestrian and cyclist directional signage – this project commenced in 2018/19 to improve walking and cycling facilities and promotion
- Cycle parking – improvements to existing facilities and introduction of new was commenced

- Traffic signal improvements to A4 Thatcham – this project commenced in 2018/19 to improve SCOOT and smoothing the traffic flow through the Thatcham AQMA
- Relocation of Bus station in Newbury, which opened on 7th December 2018
- Approval for Sainsbury's roundabout, Cheap Street and Market Street redesign with new intersection from the A339, to reroute traffic and improve flow

West Berkshire expects the following measures to be completed over the course of the next reporting year:

- Works to commence in the development of the new multi-storey carpark for Newbury railway station
- Completion of the Sainsbury's roundabout, Cheap Street and Market Street redesign with new intersection from the A339, to reroute traffic and improve flow
- Consider further traffic management at Robin Hood roundabout Newbury
- Take part in Clean Air Day in June 2019 to increase awareness and health promotion

West Berkshire's priorities for the coming year are Implementation of air quality guidance note for planning applications

- Exploring the link between public health and PM2.5
- Joint working between Public Health and Public Protection Partnership and links within the Berkshire Public Health Shared Team
- Continuing to work within the unitary authority with Transport Policy and Highways Teams as well as Development Control
- Continue the continuous and passive air quality monitoring programmes.

The principal challenges and barriers to implementation that West Berkshire anticipates facing are related to resources and lack of funding to implement more actions.

Progress on the following measures has been slower than expected due to: resources and lack of funding to implement more actions.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, West Berkshire anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Newbury and Thatcham AQMAs.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Variable message Signing (VMS) linked to Newbury car Park System	Traffic Management	UTC, Congestion management, traffic reduction	WBC	2010-11	2011-14	Car park usage	Negligible	Installed as part of Parkway opening spring 2012	Spring 2012	No monitoring currently taking place, the amount of roadwork's in and around the Newbury area could skew the results. Car Parks team feedback that the signs are invaluable at directing traffic to available parking especially at busy times. Queuing has reduced at entrances. They also note that there are an increased number of parking spaces available so this may have helped reduce queuing also.
2	Study into signalising junction at Burger King Roundabout	Traffic Management	UTC, Congestion management, traffic reduction	WBC	2012-16	2017-2018	Reduction in queuing time and congestion within AQMA and reduction in NO2 and emission levels	15 ug/m3(based on 2008 data)	Surveys ordered March 2017 and model to be completed late 2017. Model indicates some benefit to replacing the roundabout with a traffic signal controlled crossroads. No budget is currently in place to deliver such a project, but could be delivered in conjunction with the Sandleford development if	2018	Await findings of model to assess impact on any proposed scheme

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									funding becomes available.		
3	Amendments to Bear Lane (Sainsbury's) Junction of A339, as this junction can impact on A343 Greenham Road Junction	Traffic Management	UTC, Congestion management, traffic reduction	WBC	2010-11	2012	Queuing time and congestion close to AQMA and reduction in NO2 levels	15 ug/m3(based on 2008 data)	Complete. Changes to roundabout being looked at along with Bear Lane by WBC consultants - see new action. Sainsbury's roundabout, Cheap Street and Market Street have been redesigned to re-route traffic and improve flow. Work to begin January 2019.	completed 2012	Further proposed changes with consultation May 2017 for new intersection on A339 southbound and changes to Bear Lane and Cheap Street
4	Improved local bus services to reduce short car journeys	Transport Planning and Infrastructure	Bus route improvements	WBC	2011	2015-16	Increase in no. Of passenger journeys	Negligible	Capital works - Complete. New developer-funded bus service - starting May 2016	2016	Ongoing monitoring of passenger journeys. Also improvements to Reading Buses fleet to alternative fuels(gas).
5	Smarter Choices(1) Investigate the feasibility of a district wide car share scheme	Alternatives to private vehicle use	Car Clubs	WBC	2012-13	2012-2014	No. of car share cars and their usage	Negligible	works commenced	2014	Complete: District wide car sharing isn't feasible - a focus on location journeys instead- see (3).
6	Smarter Choices(2) Investigate the feasibility of a car club for Newbury and Thatcham area	Alternatives to private vehicle use	Car Clubs	WBC	2012-13	2012-2014	No. of car share cars and their usage	Negligible	5 Car Newbury scheme being introduced with Co-wheels. 3 non-electric vehicles in use, sited at Oddfellows Rd, Eight Bells car park and West Street. One electric vehicle to be delivered April 16. An additional hybrid vehicle for Boundary Rd can also be	2016	2016/17 Public launch, promoting & monitoring uptake. Data will be available on number of members, vehicle usage, number of miles, trips etc. More promotion in 2017 onwards planned

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	(Racecourse)								utilised. All town centre locations. Public launch of scheme April 2016		
7	Smarter Choices(3) Promote Car sharing opportunities within the district	Alternatives to private vehicle use	Car Clubs	WBC	2012-13	2012-2016	No. of car share cars and their usage	Negligible	West Berkshire Council FAXI car share/cycling & walking partner website being promoted (44 registered as of 9/3/16) and dedicated Council Car share bays (24 registered users).Car sharing within locally situated schools had been explored but wasn't a great deal of interest. AWE had invested heavily in car sharing and have their own internal system.	ongoing	Number of people registered and their locations and journey type.
8	Electrification of Newbury to Reading railway line	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	Network Rail	2011	2012-2015	Increased reliability of services and increase passenger usage	Negligible. Some air pollution reductions in and around major urban train stations along route as diesel trains are replaced.	Boundary Road bridge over railway line due be carried out in 13/14, NR required to raise bridge due to electrification but there are issues resighting. Worked have completed on many bridges. Boundary Road Bridge work begun in 2015, due for completion Jan 17.). Electric trains started running on Newbury to Reading local services in Jan 2019. London to Bedwyn and London to West Country Services will run on electric power as far as Newbury	Revised timescales: End of 2018 before any passenger services are likely running, track may be completed 2017.	Hendy Review is likely to result in any decision to electrify the Berks and Hants line to the west of Newbury being delayed beyond the end of Network Rail Control Period 6 (2019-2024)

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									and then switch to diesel.		
9	Supplementary Planning Document for AQ	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	WBC	2012	2013/14	Reduce reliance of car in new development. Use of s106 funds	negligible	Planning and Air quality document drafted and due to be launched in 2019. No current Supplementary Planning Document.	2019 revised document to be launched	Proposed emissions from large scale developments more quantifiable than from small scale.
10	Reduction of HDVs using A339 through Newbury	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	WBC	2013-2016	2013-2016	Reduction in HDV journeys along this section of road network and decrease in NO2 levels measured.	links with 15 ug/m3(based on 2008 data)	Freight Strategy review commenced 2013. Discussions by WBC with HCC held. Options paper to TPTG Jan 15, recommending positive signage at a cost of £15-20k on the local network and £20-30k per sign on the A34. WBC can only really influence northbound traffic from the Swan Roundabout. Freight Route Network Maps had recently been updated- purely advisory. Direction signs now in place northbound to encourage greater use of the bypass by HGVs.	signage now installed on A339 in 2017/2018	16/17 Look for opportunities-replacement/funding for signage in West Berks controlled areas.
11	Electric charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel	WBC	2012	2012-2014	Use of charging points. Increase in EV ownership and use of/demand for (public) chargepoints	negligible	(1) Successful OLEV grant to install chargepoints on WBC land 2013-15. (2) Ecotricity Rapid chargepoints installed at motorway service stations. (3) Agreement by FGW to install at Aldermaston and	(1) March 2015 (2) 2015 (3) Unknown (4) Complete Oct 2015 (5) April 2016 (6) 2016 (7) ongoing	(1) Council chargepoints installed for WBC use at Kennet Centre (Mar 13) and Ampere Road, Newbury (Mar 14) under OLEV public Sector charging scheme. (2) Ran by Ecotricity, data on use not readily

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									<p>Theale stations.</p> <p>(4) EV Residential Guidance included in the WBC Residential Parking Guidance</p> <p>(5) ULEV Readiness Programme</p> <p>(6) ULEV Strategy proposed</p> <p>(7) Promoting EV Vehicles A contract has been let to install charge points on the highway in residential areas. Funded by OLEV grant.</p>		<p>available.</p> <p>(3) Once installed, unlikely to have readily available data on use.</p> <p>(4). EVCP to be considered at all residential developments, as a minimum infrastructure enabling installation of EVCP at a later date.</p> <p>(5) Successful Bid for OLEV funding (Aug 15). For 2 further chargepoints, installed at Kennet Centre Newbury and 1 at Wokingham for the Joint EH&L Service use (Mar 16). 3 EV vans and 2 EV Cars have been procured, awaiting delivery Mar 16.</p> <p>(6) ULEV Strategy began by TP, for Transport Vision and revised LTP.</p> <p>(7) Support of EV-ENT held by WB Green Exchange in May 2016.</p> <p>2 electric cars provided with Public Protection Service for work use.</p>
12	Health Education	Public Information	Other	2012-2016	2016/17	<p>Decrease in hospital admissions from asthma. Increase in walking and cycling.</p>		<p>Priorities with PCT did not previously relate to improving health due to poor air quality. Improved links with Public Health now within WBC, including joint working. Permanent</p>		<p>Air Quality and health impact link not a priority but seen as a definite link. PH are funding a Schools Active Travel Officer post encouraging walking and cycling to school &</p>	

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								<p>Healthy Lifestyles Officer post promoting active travel and physical activity in schools.</p> <p>Cycling, running and walking groups across the district.</p> <p>Promotion of physical activity and active travel.</p> <p>Community Physical Activity fund to be launched March 2019.</p>		<p>previously part funded the personal travel plan project. PH were focussed on active travel i.e. walking and cycling. Cycling promotion- setting up cycling sessions for beginners, getting adults back into cycling. A bike shed would be installed at Northcroft so those that didn't have a cycle could loan one to take part in the sessions. In 2016 closer links with Director of PH for Berkshire, Strategic Berkshire PH Team and PHE developed. Joint AQ and PH website development created with launch in late 2017.</p>	
13	National Cycle Route (Newbury to Legoland)	Promoting Travel Alternatives	Promotion of cycling	Wokingham BC	2016-2017	2017-2019	cycleway usage	negligible	WSP commissioned to undertake a wider feasibility into the proposal. Business Case submitted to the TV LEP.. The LEP awarded the funds to the scheme in December 2015. The proposed funding for the scheme is £5.5million, with	2019	2016/17 Survey & Planning, 2017/18 & 2018/19 .On-site works NCN Route 422 is the indicative route title for a National Cycle Route potentially linking Newbury through to Ascot and Windsor

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									£4.2m from the LEP. West Berkshire has committed a further £100,000 via funds from the annual Capital budget. Other funds and monies will be combined to further support the route, such as developer contributions. Cycle facilities have been improved on the A4 between Newbury and Thatcham. Further improvements planned during 2019-20.		
14	Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	WBC	2011	Not to be implemented	Reduce emissions within the town centre by reducing the number of cars and congestion.		P&R proposal rejected by TPTG July 2011 due to cost and unsuitability of Newbury.	N/A	
15	Cycle lane on A343 St Johns Road between Burger King Roundabout and St Johns Roundabout	Transport Planning and Infrastructure	Cycle network	WBC	2011	2012	Reduction in car journeys along this section of road network and decrease in NO2 levels measured	negligible	implemented	2012	Part of Cycle way improvement programme for 2011/12. Approx £100k per annum (£50k capital grant & £50k Developer Contributions (S106))
16	Travel Planning	Promoting Travel Alternatives	Personalised Travel Planning	WBC	2011	2013-2014	No. Of businesses and householders engaged in the Network, with focus on	negligible	Completed: Project ran June 14-Sep 14. Targeting nearly 5000 homes. 39% had consented to participating in the programme. Also resulted in	2014	Completed: The survey indicated a shift towards more sustainable travel journeys, with 24% of respondents walking more often, and 10% using the bus more

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							Newbury and Thatcham		improvements in bus routes in the Wash Common area.		regularly, and an 8% increase in cycling. More importantly, 15% of respondents stated that they now made fewer single occupancy car journeys. Business and school travel planning. LSTF bid for personalised travel planning and personalised travel training unsuccessful summer 2012, but plan to do a Business Travel Plan Network. AQ grant Dec 13 successful for PTP and marketing joint project EH, TP and PH. Contractor appointed and project commenced autumn 2013. Walking reward scheme at preschool near AQMA Bike ability training at 2 schools close to AQMA. AQ grant application in 2014/15 unsuccessful.
17	Low Emission Zone	Promoting Low Emission Transport	Low Emission Zone (LEZ)	WBC	2012	Not to be implemented	Reduction in polluting vehicles	15 ug/m3(based on 2008 data)	Initial scope report for LEZ. Report by TP taken to TPTG agreed not to proceed as not suitable for Newbury	N/A	

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.

West Berkshire is taking the following measures to address PM_{2.5}:

- The link of the Health and Wellbeing Strategy, Public Health Service Plan and the Public Health Action Plan include many actions to increase walking and cycling in order to encourage and to increase active travel, to reduce obesity and inactivity.
- Joint working between Public Health and Environmental Health teams for air quality will consider in detail how West Berkshire will be considering the impact on PM_{2.5} throughout the district and its reduction. This will be linked to the Public Health Outcomes Framework. It is likely that a marketing plan will be set up to raise awareness of how air quality (which includes PM_{2.5}) can be improved such as active travel and the uptake of electric vehicles.
- As part of the Heat wave Plan for England and the heat-health watch system Public Health will send messages to at-risk groups to provide advance warnings for hot weather and severe heat waves along with the associated harm to health (including poorer air quality) and relevant public health protection plans.
- Work in implementing the actions in the Local Transport Plan and the Local Development Framework Core Strategy. For example, a new housing development might contribute to alterations to nearby junctions to increase capacity whilst also improving cycle and pedestrian links, provision of electric vehicle charging infrastructure, contributing to bus services so that the site is served by public transport and linking many other measures together in a site travel plan to encourage people to choose sustainable travel.
- Work in implementing the actions in the Local Transport Plan and the Local Development Framework Core Strategy. For example, a new housing

development might contribute to alterations to nearby junctions to increase capacity whilst also improving cycle and pedestrian links, provision of electric vehicle charging infrastructure, contributing to bus services so that the site is served by public transport and linking many other measures together in a site travel plan to encourage people to choose sustainable travel.

- A new policy is being used to assess residential developments in West Berkshire. The policy has been used during 2016 as it was at an advanced stage of development and it has now been formally adopted (9th May 2017) so will continue to be used into the future. The new policy 'Policy P1: Residential Parking for New Development' has the following advantages for addressing PM2.5 :

It brings down the threshold for when residential travel plans will be required to 50 dwellings for more urban areas and 80 dwellings for areas with more rural characteristics. This means there is more emphasis on encouraging walking, cycling, public transport and car sharing / car clubs for more developments than there was previously across the District.

There is a requirement for new residential developments to install electric charging points or at least the basic infrastructure to enable them to be retrofitted at a later date. Before this was just encouraged by officers on larger developments but it is now part of the policy against which applications are assessed.

The Council's 'Cycling and Motorcycling Advice and Standards for New Development' is also now embedded within the policy so that appropriate cycle parking provision is included in the plans for new residential developments. This will support the encouragement of greater cycling across the district

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.

West Berkshire undertook automatic (continuous) monitoring at one site during 2018. 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/data/>

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

3.1.2 Non-Automatic Monitoring Sites

West Berkshire undertook non- automatic (passive) monitoring of NO₂ at 36 sites during 2018. Table A.2 in Appendix A shows the details of the sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

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

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

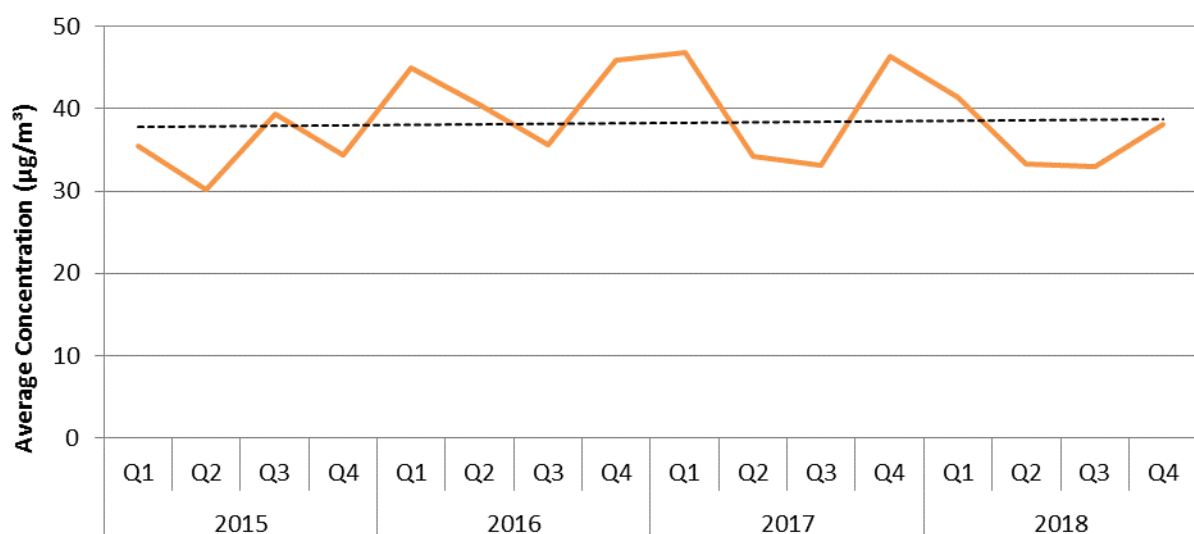
Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

Newbury

The data capture was a rate of 93.4 % which is good. For 2018 there was 1 exceedances of the 1-hour objective (207.6 µg/m³), therefore the 1 hour objective was not exceeded.

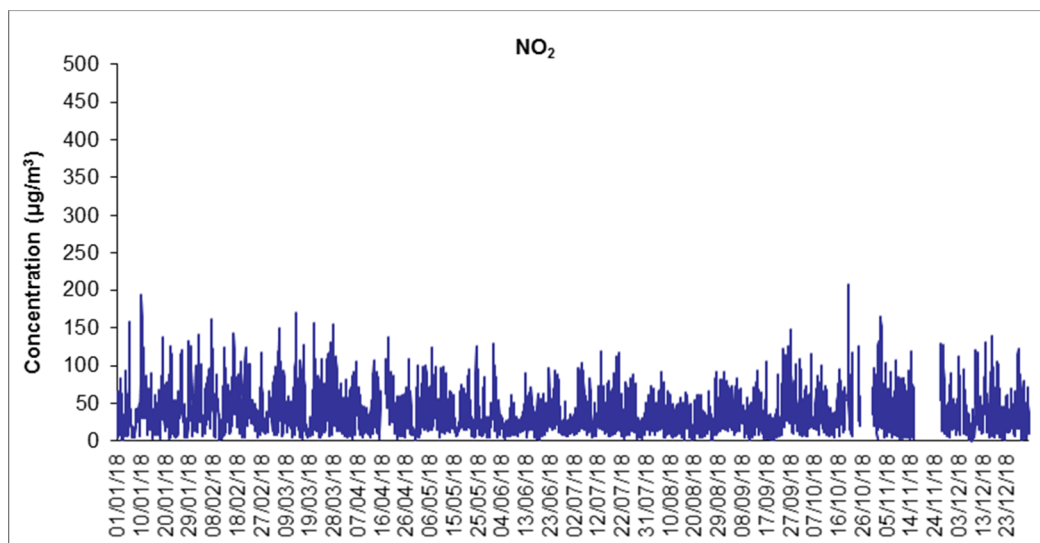
The ratified continuous monitored NO₂ annual mean did not exceeded the objective with reduction to 36.4 µg/m³ compared to 40.3 µg/m³ in 2017 and 41.7µg/m³ in 2016. This is not exceedance within the AQMA. The concentrations were more in line with the expected concentrations and is the lowest level since 2015. The monthly average concentrations have been compared to the co-location diffusion tube results and they are generally consistent. The hourly results have been compared to the nearby monitoring stations in Wokingham, Oxford St Ebbs, Reading New Town and Horley, and the data generally compares well demonstrating similar peaks and troughs, at slightly higher concentrations. Figure 1 below shows the quarterly trends from 2015-2018.

Figure 1 Quarterly mean NO₂ concentration and trendline



A review of when the 1 hour exceedance on 20th October between 17:00-18:00. This date does not relate to a specific event in Newbury such as a racing meet nor during exceptional cold weather episode at the end of February or warm weather in May or when Boundary Road was closed between 18-25/11/18. This exceedance occurred during the early evening on a Saturday. Figure 2 below shows the 1 hour NO₂ results.

Figure 2 1 hour NO₂ results



Diffusion tube data

Newbury AQMA

There are 5 diffusion tubes within the Newbury AQMA and 3 within close proximity. There were no exceedances of diffusion tubes within the AQMA however 4 showed an increase on 2017 levels, at 64 Greenham Road, 3 Howard Road, 1 and 63 St Johns Road. The highest levels in this AQMA was recorded at the continuous monitor, the annual mean objective was met measuring 36.3 µg/m³. For the last 5 years at the results have shown an overall decrease in levels compared to 2013 levels.

Monitoring continues in 2019 for the 5 sites.

Thatcham AQMA

There are 4 diffusion tube sites within the Thatcham AQMA and 2 within close proximity. For the last 5 years the results have shown a decrease in levels.

Although there were no current exceedances in the AQMA the AQMA will not be revoked in for the time being. The expansion to triplicate co-location studies at 17 and

40 Chapel Street with commence in January 2018. The highest levels in this AQMA was recorded at 17 Chapel Street, the annual mean objective was met in 2018 measuring 36.4 µg/m³, a decrease of 40 µg/m³ in 2017 and 43.1 µg/m³ in 2016.

Monitoring continues in 2019 for the 6 sites.

Outside the AQMAs

Overall 25 of the sites showed a decrease in levels compared to 2017, and 10 increased.

The 5 of 6 sites outside of the AQMAs which showed an increase in levels compared to 2017 were in Newbury at: A336 Newbury Central, Abbeydale Monks Lane, A343 Andover Road, 6 Market Place, and 43 Hawthorne Road. The 6th increase was recorded at Elizabeth Court Theale.

There were no results greater than 60µg/m³, which therefore does not indicate that any exceedance of the 1-hour mean objective.

The areas of concern continue to be:

- Newbury AQMA - A339 / Greenham Road / A343 St Johns Road
- Thatcham AQMA - Chapel Street Thatcham

No monitoring were ceased at the end of 2018. One new site commenced in 2019 at Newbury Gardens Nursery within the in north-west part of the Newbury AQMA, located to represent relevant exposure.

3.2.2 Particulate Matter (PM₁₀)

No particulate matter (PM₁₀) monitoring is undertaken.

3.2.3 Particulate Matter (PM_{2.5})

No particulate matter (PM_{2.5}) monitoring is undertaken.

3.2.4 Sulphur Dioxide (SO₂)

No sulphur dioxide monitoring is undertaken.

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)
CM1 Newbury	Newbury A339, A343 and Greenham Road junction	Roadside	477407	166560	NO2	YES	Chemiluminescent	1	4.7	1.8

Notes:

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

(2) N/A if not applicable.

Table A.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)
A339 Newbury Central	A339 Newbury Central	Kerbside	447463	167318	NO ₂	NO	10	1.9	NO	2.3
7a Bridge Street Hungerford	7a Bridge Street Hungerford	Roadside	433909	168815	NO ₂	NO	0	1.5	NO	2.7
132 London Road Newbury	132 London Road Newbury	Roadside	447720	167678	NO ₂	NO	0	3	NO	2.6
Flat 1, Southview Gardens Newbury	Flat 1, Southview Gardens Newbury	Urban Background	447752	167667	NO ₂	NO	0	5	NO	1.5
374 London Road Newbury	374 London Road Newbury	Urban Background	449034	167520	NO ₂	NO	0	12.5	NO	2.05
17 Chapel Street Thatcham (1, 2, 3)	17 Chapel Street Thatcham	Roadside	451870	167438	NO ₂	YES	0	1.5	NO	2.4
40 Chapel Street Thatcham (1, 2, 3)	40 Chapel Street Thatcham	Kerbside	451926	167460	NO ₂	YES	0	3.5	NO	2.2
75 Chapel Street Thatcham	75 Chapel Street Thatcham	Roadside	452288	167445	NO ₂	NO	0	3.4	NO	2.2
82/78A Chapel	82/78A Chapel	Roadside	452071	167468	NO ₂	YES	0	1.8	NO	2

Street Thatcham	Street Thatcham									
Old Bakery Tidmarsh	Old Bakery Tidmarsh	Roadside	463504	174864	NO ₂	NO	0	2.2	NO	1.9
4 Willows Court Pangbourne	4 Willows Court Pangbourne	Roadside	463224	176523	NO ₂	NO	0	3	NO	2.3
The Cross Key Inn Pangbourne	The Cross Key Inn Pangbourne	Roadside	463468	176433	NO ₂	NO	0	4	NO	2.6
Calcot Hotel, A4 Bath Road Calcot	Calcot Hotel, a4 Bath Road, Calcot	Kerbside	466302	171865	NO ₂	NO	16	2	NO	2.3
Elizabeth Court Theale	Elizabeth Court Theale	Urban Background	464574	171294	NO ₂	NO	0	32	NO	2
44 Hambridge Road Newbury	44 Hambridge Road Newbury	Urban Background	448129	166909	NO ₂	NO	0	4.3	NO	2.45
42 Kings Road Newbury	42 Kings Road Newbury	Roadside	447433	166994	NO ₂	NO	0	11.3	NO	1.85
1 Winchester Court Newbury	1 Winchester Court Newbury	Roadside	447409	166559	NO ₂	YES	0	4.95	NO	3
Continuous monitor 1, A343, A339 and Greenham Road Newbury	Continuous monitor 1, A343, A339 and Greenham Road Newbury	Roadside	447379	166557	NO ₂	YES	1	4.7	YES	1.8
Continuous monitor 2, A343, A339 and Greenham	Continuous monitor 2, A343, A339 and Greenham	Roadside	447379	166557	NO ₂	YES	1	4.7	YES	1.8

Road Newbury	Road Newbury									
Continuous monitor 3, A343, A339 and Greenham Road Newbury	Continuous monitor 3, A343, A339 and Greenham Road Newbury	Roadside	447379	166557	NO ₂	YES	1	4.7	YES	1.8
64 Greenham Road Newbury	64 Greenham Road Newbury	Roadside	447448	166454	NO ₂	NO	12	2	NO	2.2
20 Deadmans Lane Greenham	20 Deadmans Lane Greenham	Suburban	447508	164725	NO ₂	NO	0	10.5	NO	2.1
A339 New Greenham Park Greenham	A339 New Greenham Park Greenham	Kerbside	449805	163882	NO ₂	NO	204	4	NO	2.1
3 Howard Road Newbury	3 Howard Road Newbury	Roadside	447402	166449	NO ₂	NO	0	11	NO	2.6
1 St John's Road Newbury	1 St John's Road Newbury	Roadside	447036	166436	NO ₂	NO	0	4.8	NO	2.25
63 St John's Road Newbury	63 St John's Road Newbury	Urban Background	447377	166533	NO ₂	YES	0	6.2	NO	2.2
40 Bartholomew Street Newbury	40 Bartholomew Street Newbury	Roadside	446939	166848	NO ₂	NO	0	2.7	NO	2.2
6 Market Street Newbury	6 Market Street Newbury	Urban Centre	447211	167020	NO ₂	NO	9.5	1.3	NO	2.1

105 London Road Newbury	105 London Road Newbury	Urban Background	447528	167708	NO2	NO	0	24	NO	2.6
43 Hawthorn Road Newbury	43 Hawthorn Road Newbury	Urban Background	447487	167870	NO2	NO	0	13	NO	2.15
Willows Edge Nursing Home Newbury	Willows Edge Nursing Home Newbury	Urban Background	447540	167970	NO2	NO	0	20	NO	2
31 Shaw Road Newbury	31 Shaw Road Newbury	Kerbside	447688	167820	NO2	NO	0	0.6	NO	1.7
Abbeydale Monks Lane Newbury	Abbeydale Monks Lane Newbury	Kerbside	446922	163030	NO2	NO	21	2	NO	2.5
A343 Andover Road Wash Common	A343 Andover Road Wash Common	Kerbside	445899	164705	NO2	NO	18.1	0.75	NO	2.25
130 Park Avenue Thatcham	130 Park Avenue Thatcham	Roadside	451965	167498	NO2	NO	7	2	NO	2.1
31 Chapel Street Thatcham	31 Chapel Street Thatcham	Roadside	451906	167441	NO2	YES	0	1.6	NO	2.05
St James Church Pangbourne Hill	St James Church Pangbourne Hill	Roadside	463418	176405	NO2	NO	6.5	1	NO	2
13 Shaw Road Newbury	13 Shaw Road Newbury	Urban Background	447630	167770	NO2	NO	0	7	NO	2.4

Notes:

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

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
CM1	Roadside	Automatic	100	93.4	45.5	34.8	41.7	40.3	36
A339 Newbury Central	Kerbside	Diffusion Tube	100	91.7	37.2	37.8	30.9	28.1	29.4
7a Bridge Street Hungerford	Roadside	Diffusion Tube	100	100	27.9	22.6	29.4	28.8	26.0
132 London Road Newbury	Roadside	Diffusion Tube	100	100	39	33.7	41.8	35.4	32.0
Flat 1, Southview Gardens Newbury	Urban Background	Diffusion Tube	100	91.7	33.1	27.2	31.5	28.6	25.0
374 London Road Newbury	Urban Background	Diffusion Tube	100	91.7	24.1	19.2	25.7	23.4	23.0
17 Chapel Street Thatcham (1,2, 3)	Roadside	Diffusion Tube	100	100	43.2	36.3	43.1	40.0	36.4
40 Chapel Street Thatcham (1,2,3)	Kerbside	Diffusion Tube	100	83.3	35.8	30.7	39.9	34.8	31.8
75 Chapel Street Thatcham	Roadside	Diffusion Tube	100	100	31	26.7	31.7	29.6	27.0
82/78A Chapel Street Thatcham	Roadside	Diffusion Tube	100	100	31.1	25.6	33.8	31.1	28.0

West Berkshire Council

Old Bakery Tidmarsh	Roadside	Diffusion Tube	100	100	34.6	28.7	35.9	31.8	29.0
4 Willows Court Pangbourne	Roadside	Diffusion Tube	100	100	33.4	25.4	32.2	29.3	28.0
The Cross Key Inn Pangbourne	Roadside	Diffusion Tube	100	75	40.6	32.6	40.2	34.2	34.0
Calcot Hotel, A4 Bath Road Calcot	Kerbside	Diffusion Tube	100	100	34.6	25.3	23.1	23.1	19.3
Elizabeth Court Theale	Urban Background	Diffusion Tube	100	100	23.7	19	24.3	21.6	22.0
44 Hambridge Road Newbury	Urban Background	Diffusion Tube	100	100	29.4	22.7	27	27.3	26.0
42 Kings Road Newbury	Roadside	Diffusion Tube	100	100	25.8	22.1	26.1	23.4	23.0
1 Winchester Court Newbury	Roadside	Diffusion Tube	100	91.7	39.2	34.2	43	38.0	36.0
Continuous monitor 1, A343, A339 and Greenham Road Newbury	Roadside	Diffusion Tube	100	100	43.3	35.2	40	38.3	36.3
Continuous monitor 2, A343, A339 and Greenham Road Newbury	Roadside	Diffusion Tube	100	100	41.5	35	40.6	38.3	36.3
Continuous monitor 3, A343, A339 and	Roadside	Diffusion Tube	100	100	41.4	34.7	39.8	38.3	36.3

Greenham Road Newbury									
64 Greenham Road Newbury	Roadside	Diffusion Tube			37	29.1	27.3	23.4	26.2
20 Deadmans Lane Greenham	Suburban	Diffusion Tube	100	100	25.7	22.2	27.8	24.0	23
A339 New Greenham Park Greenham	Roadside	Diffusion Tube	100	91.7	39.7	29.4	39.3	33.8	18.5
3 Howard Road Newbury	Roadside	Diffusion Tube	100	100	21.5	17.2	22.9	17.7	22.0
1 St John's Road Newbury	Roadside	Diffusion Tube	100	100	29.9	25.2	32.6	28.4	31.0
63 St John's Road Newbury	Urban Background	Diffusion Tube	100	91.7	25.3	20.1	26.5	21.8	25.0
40 Bartholomew Street Newbury	Roadside	Diffusion Tube	100	91.7	35.8	29.3	36	31.7	29.0
6 Market Street Newbury	Urban Centre	Diffusion Tube	100	91.7	34	28.1	25.7	22.4	24.9
43 Hawthorn Road Newbury	Urban Background	Diffusion Tube	100	91.7	23.5	18.7	23.5	20.5	21.0
Willows Edge Nursing Home Newbury	Urban Background	Diffusion Tube	100	100	25.5	20.7	22.9	23.8	23.0
31 Shaw Road Newbury	Kerbside	Diffusion Tube	100	100	35.4	37.2	30.5	28.7	28.0
13 Shaw Road Newbury	Urban Background	Diffusion Tube	100	100	42.6	33	37.8	33.2	30.0
Abbeydale Monks Lane Newbury	Kerbside	Diffusion Tube	100	100	20.1	16.5	15.2	13.2	15.4

A343 Andover Road Wash Common	Kerbside	Diffusion Tube	100	91.7	42.6	15.6	15	11.4	14.2
130 Park Avenue Thatcham	Roadside	Diffusion Tube	100	91.7	25.3	17.3	19.2	21.7	18.3
31 Chapel Street Thatcham	Roadside	Diffusion Tube	100	91.7	45.1	37.2	43.1	39.5	36
St James Church Pangbourne Hill	Roadside	Diffusion Tube	100	100	<u>N/A</u>	<u>N/A</u>	24.3	21.3	18.7

☒ Diffusion tube data has been bias corrected

☒ Annualisation has been conducted where data capture is <75%

Notes:

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

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

(1) 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.

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

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2014	2015	2016	2017	2018
CM1 Newbury	Roadside	Automatic	100	93.4	6	3	21	8	1

Notes:

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

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO ₂ Mean Concentrations (µg/m³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.91) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
A339 Newbury Central	45.5	missing	41.4	36.7	41.5	36.4	53.8	47.8	49.0	45.5	40.9	36.2	43.2	39	29.4
7a Bridge Street Hungerford	31.2	30.4	30.4	27.1	29.1	28.7	28.6	26.7	27.2	30.7	28.1	24.7	28.6	26.0	
132 London Road Newbury	37.4	33.3	39.5	34.4	34.4	30.4	37.0	32.7	28.2	39.7	37.6	31.3	34.6	32.0	
Flat 1, Southview Gardens Newbury	31.5	28.6	31.1	25.0	23.3	17.8	32.2	20.0	35.0	29.4	missing	26.9	27.3	25.0	
374 London Road Newbury	24.9	23.0	28.8	18.9	21.7	20.5	25.0	22.0	missing	44.8	28.8	23.3	25.6	23.0	
17 Chapel Street Thatcham 1	41.6	40.2	47.4	30.4	37.8	37.5	39.5	36.3	38.4	44.6	47.1	42.2	40.2	36.4	
17 Chapel Street Thatcham 2	38.6	35.7	39.8	37.4	38.6	34.0	42.2	38.3	79.4	41.3	43.7	36.4	42.1		

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17 Chapel Street Thatcham 3	42.0	40.0	46.0	missing	40.0	37.3	44.9	0.7	39.1	42.0	43.4	37.8	37.6		
40 Chapel Street Thatcham 1	39.0	37.9	37.3	33.0	37.2	38.1	missing	missing	29.6	36.1	36.4	34.5	35.9	31.8	
40 Chapel Street Thatcham 2	37.9	36.5	35.4	34.8	39.1	33.3	missing	missing	32.1	34.7	41.6	34.0	35.9		
40 Chapel Street Thatcham 3	missing	34.1	0.9	49.3	35.4	34.9	missing	missing	31.8	36.6	40.6	33.6	33.0		
75 Chapel Street Thatcham	36.8	30.8	32.8	28.6	24.8	24.5	29.0	26.6	28.0	29.7	30.8	33.0	29.6	27.0	
82/78A Chapel Street Thatcham	35.1	33.4	35.6	27.9	32.0	29.2	29.8	27.4	24.5	30.3	32.7	31.8	30.8	28.0	
Old Bakery Tidmarsh	29.2	35.3	35.8	32.1	30.9	25.6	34.1	30.8	31.8	32.1	34.4	32.3	30.2	29.0	
4 Willows Court Pangbourne	27.9	34.1	35.4	33.1	32.4	30.8	32.5	26.8	24.8	29.1	36.9	29.2	31.1	28.0	
The Cross Key Inn Pangbourne	33.0	38.7	43.4	21.0	missing	44.1	38.5	34.2	missing	missing	49.0	30.8	37.0	34.0	
Calcot Hotel, A4 Bath Road Calcot	33.9	34.7	40.2	32.9	29.6	31.2	30.3	29.4	24.4	34.6	49.4	31.6	33.5	30.0	19.3
Elizabeth Court Theale	27.5	24.2	30.0	22.6	21.4	19.0	21.9	19.1	20.8	25.3	32.3	21.5	23.8	22.0	
44 Hambridge Road Newbury	33.4	33.4	32.3	26.2	31.1	21.8	29.0	26.5	26.5	29.9	30.3	28.1	29.0	26.0	

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42 Kings Road Newbury	27.6	26.5	27.4	23.5	21.6	17.7	23.3	23.8	24.7	28.2	28.5	24.3	24.8	23.0	
1 Winchester Court Newbury	missing	34.9	43.6	43.9	37.4	32.1	40.6	37.3	38.5	45.9	45.8	38.5	39.9	36.0	
Continuous monitor 1, A343, A339 and Greenham Road Newbury	41.2	40.8	43.1	42.0	39.2	32.7	43.8	38.5	43.1	48.2	43.0	36.8	41.0	37.5	36.3
Continuous monitor 2, A343, A339 and Greenham Road Newbury	43.2	34.3	45.5	44.8	39.0	32.3	47.4	39.9	39.7	48.4	44.3	40.2	41.6		
Continuous monitor 3, A343, A339 and Greenham Road Newbury	40.0	40.1	42.9	44.5	38.2	31.3	44.1	40.5	40.9	44.7	42.8	40.6	40.9		
64 Greenham Road Newbury	34.9	41.5	38.3	39.3	41.8	40.1	44.4	35.1	39.1	44.2	32.0	36.6	38.9	35.0	26.2
20 Deadmans Lane Greenham	29.6	24.5	26.1	23.1	21.0	18.4	29.1	25.1	24.5	27.2	26.4	25.1	25.0	23.0	
A339 New Greenham	39.8	38.7	47.6	41.1	missing	49.5	43.0	31.1	28.7	40.2	33.8	36.1	39.1	36.0	18.5

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Park Greenham															
3 Howard Road Newbury	23.7	29.1	26.1	24.8	23.7	22.2	18.7	17.9	17.7	31.8	27.7	22.7	23.8	22.0	
1 St John's Road Newbury	39.3	33.5	39.8	32.8	34.0	32.2	31.0	24.7	29.2	35.2	38.3	33.6	33.6	31.0	
63 St John's Road Newbury	27.6	26.8	30.4	25.1	28.7	25.2	24.0	20.0	missing	44.7	27.3	25.9	27.8	25.0	
40 Bartholomew Street Newbury	36.1	32.7	35.6	31.1	missing	26.5	32.8	28.8	28.4	36.5	34.2	30.6	32.1	29.0	
6 Market Street Newbury	36.2	33.4	38.2	28.6	31.8	66.4	29.7	23.1	missing	30.4	35.7	28.6	34.7	32.0	24.9
43 Hawthorn Road Newbury	25.2	26.3	29.4	22.3	27.0	26.3	20.0	17.9	17.9	21.9	missing	22.7	23.4	21.0	
Willows Edge Nursing Home Newbury	32.4	24.2	30.6	23.6	18.9	17.5	24.0	21.3	24.9	24.7	29.7	27.9	25.0	23.0	
31 Shaw Road Newbury	33.4	29.0	35.3	29.8	25.7	24.4	32.7	27.1	30.5	32.3	37.2	25.5	30.2	28.0	
13 Shaw Road Newbury	37.2	33.0	37.9	32.9	29.6	27.0	35.3	29.1	33.0	32.7	35.0	30.7	32.8	30.0	
Abbeydale Monks Lane Newbury	29.9	23.8	28.6	22.3	21.6	16.7	19.6	18.1	19.7	27.2	25.4	24.4	23.1	21.0	15.4
A343 Andover	25.8	24.2	21.5	16.5	19.3	missing	17.6	14.0	14.6	24.4	18.9	18.3	19.6	18.0	14.2

West Berkshire Council

Road Wash Common															
130 Park Avenue Thatcham	30.2	27.1	28.7	missing	17.5	14.3	18.7	17.1	18.5	23.6	34.3	23.2	23.0	21.0	18.3
31 Chapel Street Thatcham	41.8	33.9	45.2	35.4	38.6	38.1	missing	40.5	37.3	41.6	49.3	37.7	39.9	36.0	
St James Church Pangbourne Hill	31.0	28.1	27.2	23.3	25.3	24.5	24.1	23.3	22.3	28.7	31.7	23.7	26.1	24.0	18.7

☒ Local bias adjustment factor used

☐ National bias adjustment factor used

☐ Annualisation has been conducted where data capture is <75%

☒ Where applicable, data has been distance corrected for relevant exposure

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

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

QA/QC of Continuous Monitoring Stations

TRL carry out the QA/QC on behalf of West Berkshire Council.

Site operation

Routine instrument calibrations are conducted approximately once per fortnight, which involve zero and span checks, a written record of the gas analyser diagnostics and a general visual inspection of all equipment is undertaken. There is a written operating procedure and a calibration record sheet is completed at every site visit.

Data retrieval and daily data checking

Data from the monitoring station is retrieved and processed on a Campbell CR10x data logger as 15-minute mean data. The logger was interrogated via a Siemens TC35i GSM modem at 8-hourly intervals by the ENVIEW 2000 software hosted at TRL. This was used to retrieve, check and archive data. TRL's internal QA/QC procedures require all data to be backed up on a secure server and all documentation associated with each site to be uniquely identified and securely stored to provide an audit trail. Daily data inspections are undertaken during office hours using the facilities of the Data Management System. Initial observations of the Management System indicate whether the site has been contacted during its nominated 'poll time' overnight. If this has not been successful a manual poll of the site may be required. If this is not successful further investigation of the communications integrity will be required to establish contact with the site modem and data logger. Three day plots of recorded data are viewed for the requested site, and these are inspected and assessed for continuity, validity, minimum and maximum values, date and time, power failures and general integrity. All anomalies are recorded on the Daily Check sheet, as required. Any anomalies or queries arising from daily inspection of data, or system operation, are brought to the attention of the Project Manager who will evaluate the situation, and initialise any necessary action. In the event that the PM is not available, contact will be made with the next available senior person within the monitoring team. Any issues identified with equipment operation will be referred to the client for attention within 24 hours (excluding weekends). On a weekly basis, data are examined using summary

statistics and outlier analysis to establish data validity. In the event that unusual data episodes are recorded, these would be routinely examined over longer data periods to establish their impact on trends, but would also be cross referenced with data peaks and troughs recorded at other national monitoring stations. In addition, integrity and validity of data logger clock times are checked, and any significant errors recorded in the Data Management System logbook. All site data recorded through the Data Management System is archived on TRL's Network. The data is backed up daily, and the TRL IT Department maintains these data within their long-term and secure archives. This secures all data in the event of any system failure.

Data calibration and ratification

Data is ratified as per AURN recommended procedures. The calibration and ratification process for automatic gas analysers corrects the raw dataset for any drift in the zero baseline and the upper range of the instrument. This is done using a Microsoft Excel-based calibration and ratification file which incorporates the zero and span check information from the calibration visits. The zero reading recorded during the calibration visits is used to adjust any offset of the baseline of the data. The difference between the span value obtained between one calibration visit and the next visit is used to calculate a factor. This change is assumed to occur at the same rate over the period between calibrations and as such the factor is used as a linear data scaler. This effectively results in the start of the period having no factor applied and the end of the period being scaled with the full factor with a sliding scale of the factor in-between. After applying the calibration factors, it is essential to screen the data, by visual examination, to see if they contain any unusual measurements or outliers. Errors in the data may occur as a result of equipment failure, human error, power failures, interference or other disturbances. Data validation and ratification is an important step in the monitoring process. Ratification involves considerable knowledge of pollutant behaviour and dispersion, instrumentation characteristics, field experience and judgement. On completion of this data correction procedure, these data were converted to hourly means and a summary of these data were provided to West Berkshire Council at quarterly intervals and a calendar year annual report is prepared.

Independent Site Audits

In addition to these checks an independent site audit is carried out every 12 months to ensure the nitrogen dioxide analyser is operating correctly. The audits that are carried

out utilise procedures that are applied within DEFRA's National Automatic Air Monitoring Networks Quality Control Programme. The efficiency of the analyser's convertor is checked and the analyser is also leak tested. The gas bottle used for calibrations on site is also checked against the auditor's gas bottle to ensure the stability of the gas concentration.

The site audit for the Newbury automatic monitoring unit was carried out on 19th October 2018. A major factor governing the analyser's performance is the NO_x analyser's converter and its ability to reduce the nitrogen dioxide to nitric oxide. Our tests show the converters in these analysers to be 95.6% efficient with NO₂ concentrations of 245 ppb. The recommended range for instrumentation in the national automatic air monitoring network is in the range of 98% - 102% efficient. The second test to be 94.2% efficient at an NO₂ concentration of 129 ppb. This is outside the recommended range and a poor result.

In order for data to be BS EN14211 compliant this result should be considered within the data management process for this pollutant. If a NO_x converter is between 95-98% efficient we recommend the dataset be rescaled. NO_x converter results below 95% efficient should be investigated and the data rejected as being unrepresentative of ambient concentrations where appropriate. It is the responsibility of the data ratification team to critically assess all evidence including calibrations, audits and equipment support unit reports to quantify the impact of this result. This instrument was recommended as requiring immediate attention from your equipment support unit. To ensure that the analysers are sampling only ambient air the instruments were leak checked. The results were satisfactory, indicating that the analyser sampling systems were free of significant leaks. The analysers exhibited good steady state responses to both zero and span (calibration) gases with acceptable levels of variation (noise).

The NO_x analyser flow rate was measured using a calibrated flow meter and compared against the analyser's flow rate sensor to evaluate its accuracy. The measured flow rate result was slightly outside the ($\pm 10\%$) recommended limit and it was advised the underlying reason be investigated at the next service.

Based on the NO_x analyser's response to the audit standard and audit zero, the concentrations of the stations NO cylinder have been reassessed. This provides an indication of the site standards stability. For the purpose of these stability checks, the criteria adopted within the national network, and used here, is that the recalculated

concentration should lie within 10% of the stated concentrations. The recalculated results for the TRL West Berkshire, Newbury NO cylinder were stable, within the definition adopted above, and can therefore reliably be used to scale ambient data.

The following recommendations and comments can be made as a result of these audits:

Compare the TRL database scaling factors for the day of the audit with the factors and zeros on the Certificate of Calibration. If a deviation greater than the uncertainty associated with the calibration factor on the certificate is found, investigate the underlying reason and implement suitable data management actions, and the NO_x analyser converter efficiency was measured at the time of audit as 95.6% at a NO₂ conc. of 245 ppb. As this is below the national automatic air monitoring network criteria of 98% efficiency but above 95% you will need to review all the evidence and take appropriate action during the ratification process for this pollutant, considering all the evidence.

QA/QC of Diffusion Tube Monitoring

The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL). WASP formed a key part of the former UK NO₂ Network's QA/QC, and remains an important QA/QC exercise for laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management. The laboratory participants analyse four spiked tubes, and report the results to HSL. HSL assign a performance score to each laboratory's result, based on their deviation from the known mass of nitrite in the analyte. The Performance criteria are due to be changed, at present the criteria are based on the z-score method, and equates to the following:

GOOD: Results obtained by the participating laboratory are on average within 13% of the assigned value. This equates to a Rolling Performance Index (RPI) of 169 or less.

ACCEPTABLE: Results obtained by the participating laboratory are on average within 13- 26% of the assigned value. This equates to an RPI of 169 - 676.

WARNING: Results obtained by the participating laboratory are on average within 26 – 39% of the assigned value. This equates to an RPI of 676 - 1521.

FAILURE: Results obtained by the participating laboratory differ by more than 39% of the assigned value. This equates to an RPI of greater than 1521.

However from April 2009, the criteria has been based upon the Rolling Performance Index (RPI) statistic and will be tightened to the following:

GOOD: Results obtained by the participating laboratory are on average within 7.5% of the assigned value. This equates to an RPI of 56.25 or less.

ACCEPTABLE: Results obtained by the participating laboratory are on average within 15% of the assigned value. This equates to an RPI of 225 or less.

UNACCEPTABLE: Results obtained by the participating laboratory differ by more than 15% of the assigned value. This equates to an RPI of greater than 225.

Wokingham Borough Council use Gradko International for the supply and analysis of the nitrogen dioxide diffusion tubes for their non-automatic monitoring programme. Gradko's performance for AIR PT AR024 (Jan 2018 – Feb 2018) = 100%, AR025 (Apr 2018- May 2018) = 100%, AR027 (July 2018 – Aug 2018) = 100%, and AR028 (Sept 2018 – Oct 2018) = 100%, (which relates to the % of results which are satisfactory.

Diffusion Tube Bias Adjustment Factors

Gradko International Ltd of St Martin's House 77 Wales Street Winchester Hampshire is the supplier and analyst of the nitrogen dioxide diffusion tubes. The tubes are analysed by U.V. spectrophotometry. The limit of detection is 50% TEA /Acetone.

Factor from Local Co-location Studies and Discussion of Choice of Factor to Use

The national study of bias adjustment factors spreadsheet (ref. 03/19 update) suggested a bias adjustment factor of **0.91** be applied. A copy of the co-location spreadsheet used is provided below.

In determining the bias adjustment factor for the 2018 data the following was taken into consideration:

Cases where the locally obtained bias adjustment factor may be more representative:

- Where the diffusion tube exposure periods are weekly or fortnightly – the Wokingham town centre co-location study is monthly.

- If the co-location site is unusual in some way: for example, affected by specific large nitrogen oxides (NO_x) sources other than road traffic, such as local industrial installations –the Newbury co-location study is predominantly influenced by road traffic.
- For tubes exposed in a similar setting to the co-location site – the Newbury co-location study site is a roadside location, as are over 95% of the diffusion tubes located in West Berkshire. Therefore the bias adjustment factor determined from either of these locations may not be deemed appropriate to apply to the West Berkshire non-roadside sites.
- Where the duration of the whole diffusion tube study is less than one year, especially if it is less than nine months – the Newbury co-location study and diffusion tube surveys are all for a full calendar year.
- Where the Review and Assessment Helpdesk spreadsheet (national database) contains data from fewer than five other studies using the same laboratory and preparation. – The national database contains 18 studies therefore it would be better to use the Newbury co-location study factor.
- For co-location sites with “good” precision for the diffusion tubes and with high quality chemiluminescence results – It can be seen from the table below that the Wokingham town centre co-location study achieved “good” precision and the Wokingham town centre chemiluminescence results (automatic monitoring) are high quality (see the QA/QC of Automatic Monitoring section above).

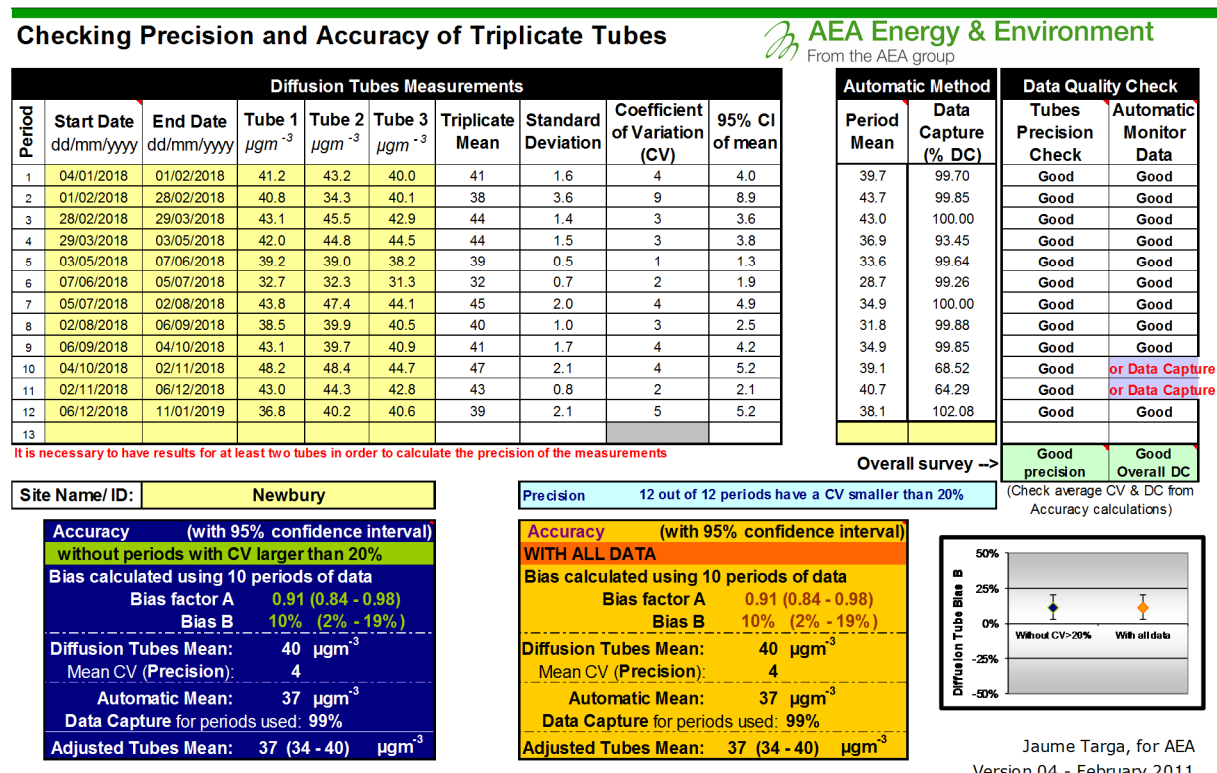
Cases where the combined (national) bias adjustment factor may be more representative:

- Where the survey consists of tubes exposed over a range of settings, which differ from the co-location site – this is not the case for West Berkshire
- Where the co-location study is for less than nine months, although the diffusion tube monitoring is for a longer period - The West Berkshire co-location study and diffusion tube surveys are for a full calendar year (2018).

- Where the automatic analyser has been operated using local, rather than national, QA/QC procedures - The West Berkshire chemiluminescence results (automatic monitoring) are high quality, see the QA/QC of Automatic Monitoring section above.
- Where data capture from the automatic analyser is less than 90%, or there have been problems with data quality – Data capture from the Wokingham town centre automatic monitor was 93.4% in 2018.
- For co-location sites with “poor” precision or laboratories with predominately “poor” precision, as set out on the Review & Assessment Helpdesk website - It can be seen from the table below that the Wokingham town centre co-location study achieved “good” precision and the laboratory precision was “good”. See the QA/QC of Diffusion Tube Monitoring section above.

In conclusion it can be seen from the discussion above that the local (Wokingham Town Centre) bias adjustment factor of 0.91 should be used to adjust the 2018 data.

Precision and Accuracy




Annualisation

None was required for the 2018 data.

Distance correction

The Bureau Veritas NO₂ fall off distance calculation version 4.2 release March 2018 was used for the following sites: Calcot Hotel, Continuous Monitor Newbury, 64 Greenham Road, A339 New Greenham Park, 6 Market Street, Abbeydale , A343 Andover Road, 130 Park Avenue and St James Church Pangbourne.

The example below shows the calculation for site A339 Newbury Central.



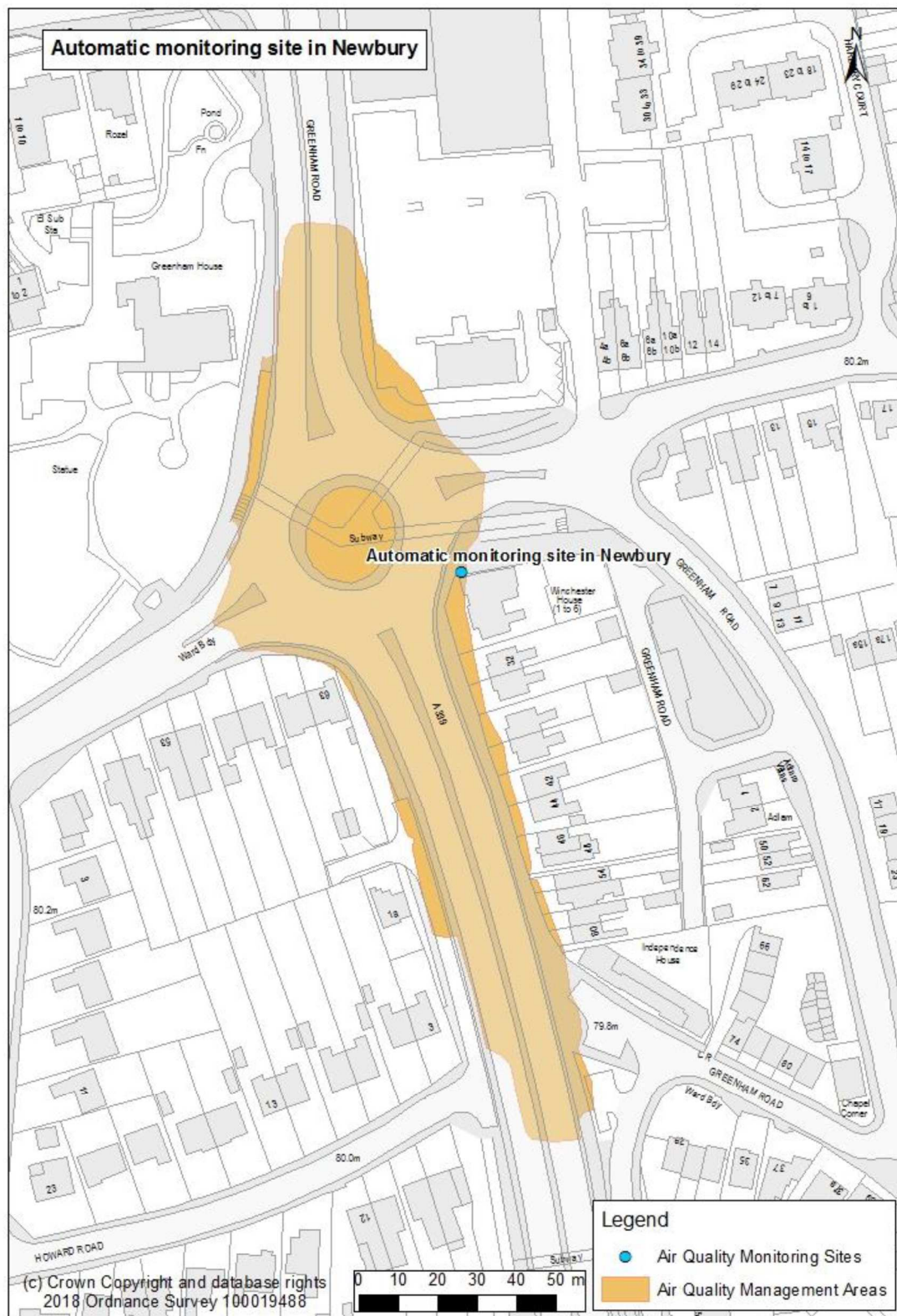
Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?		1.9 metres
Step 2	How far from the KERB is your receptor (in metres)?		11.9 metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?		16.3 µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?		39 µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor		29.4 µg/m ³

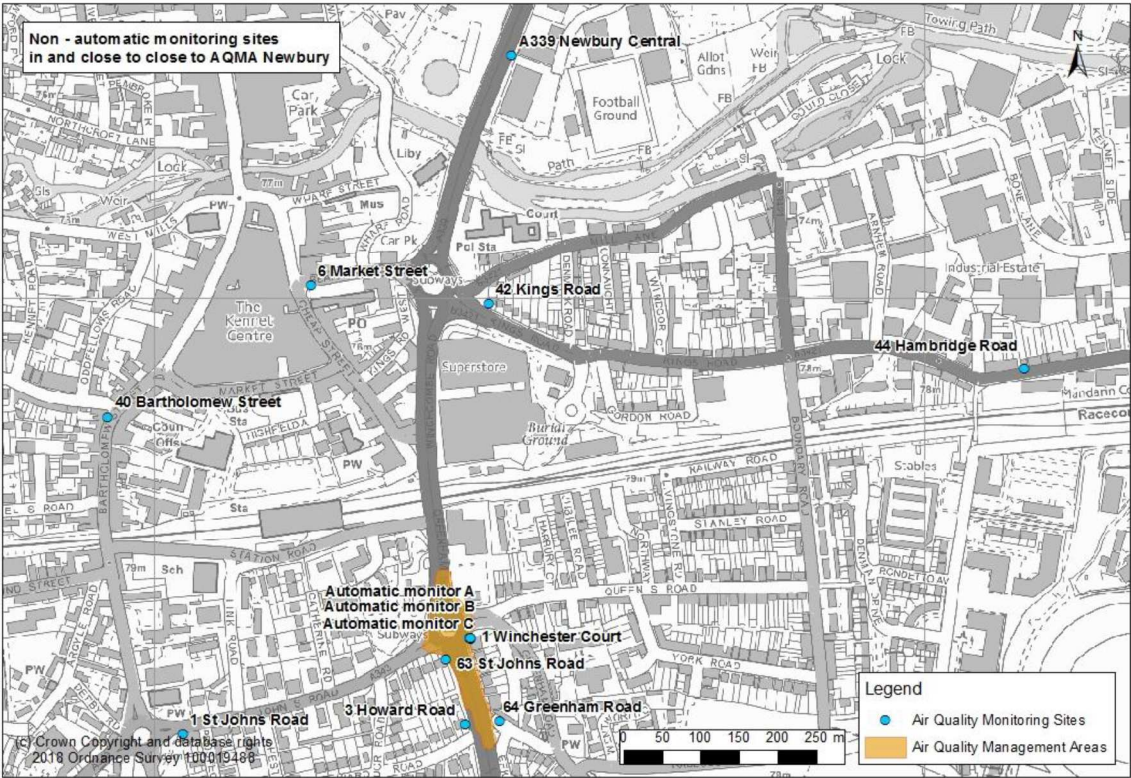
Appendix D: Map(s) of Monitoring Locations and AQMAs



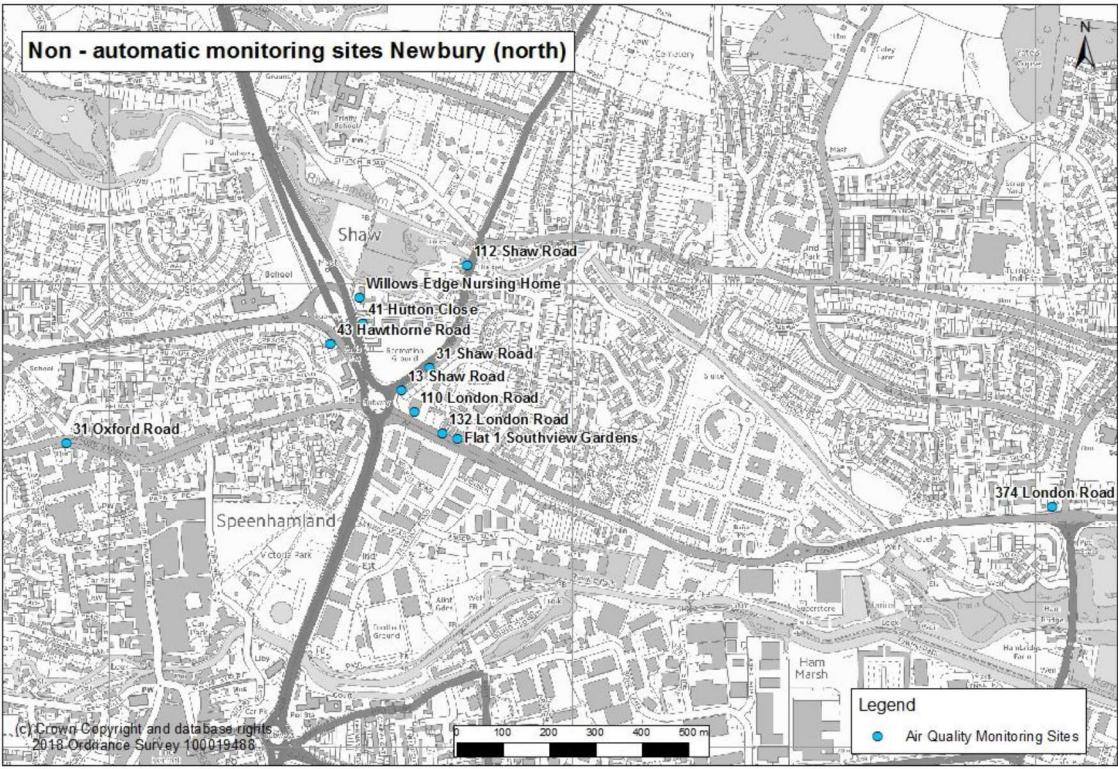




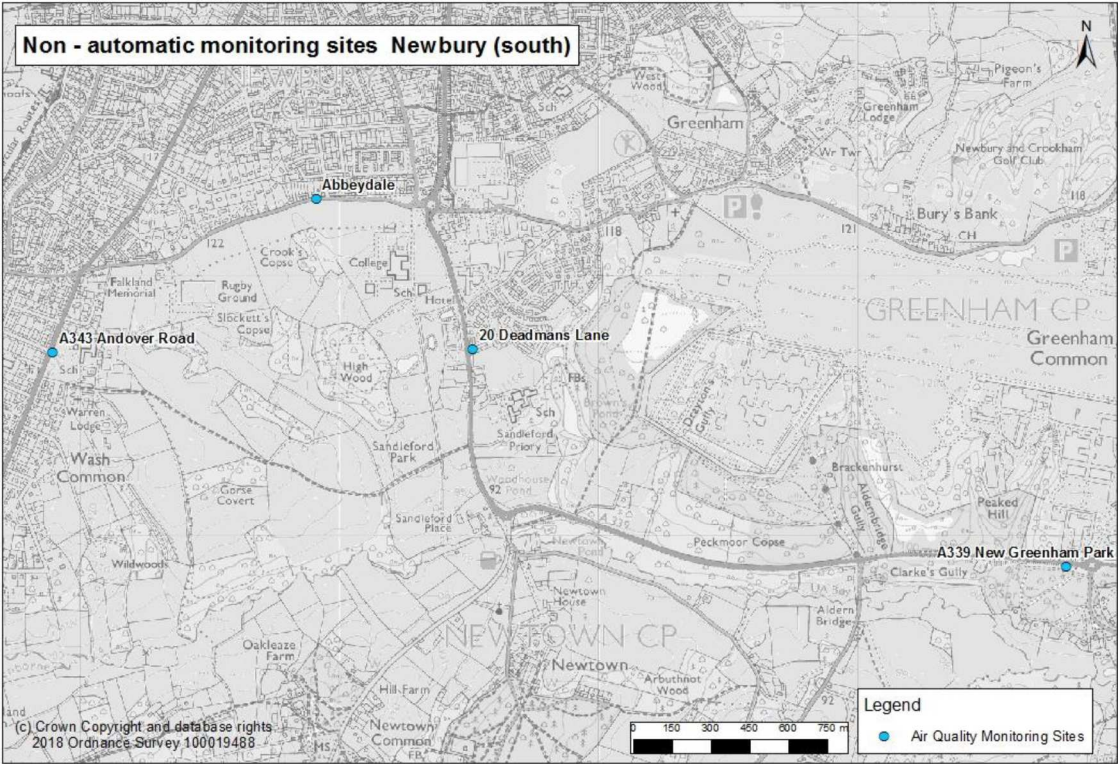
In / Near Newbury AQMA



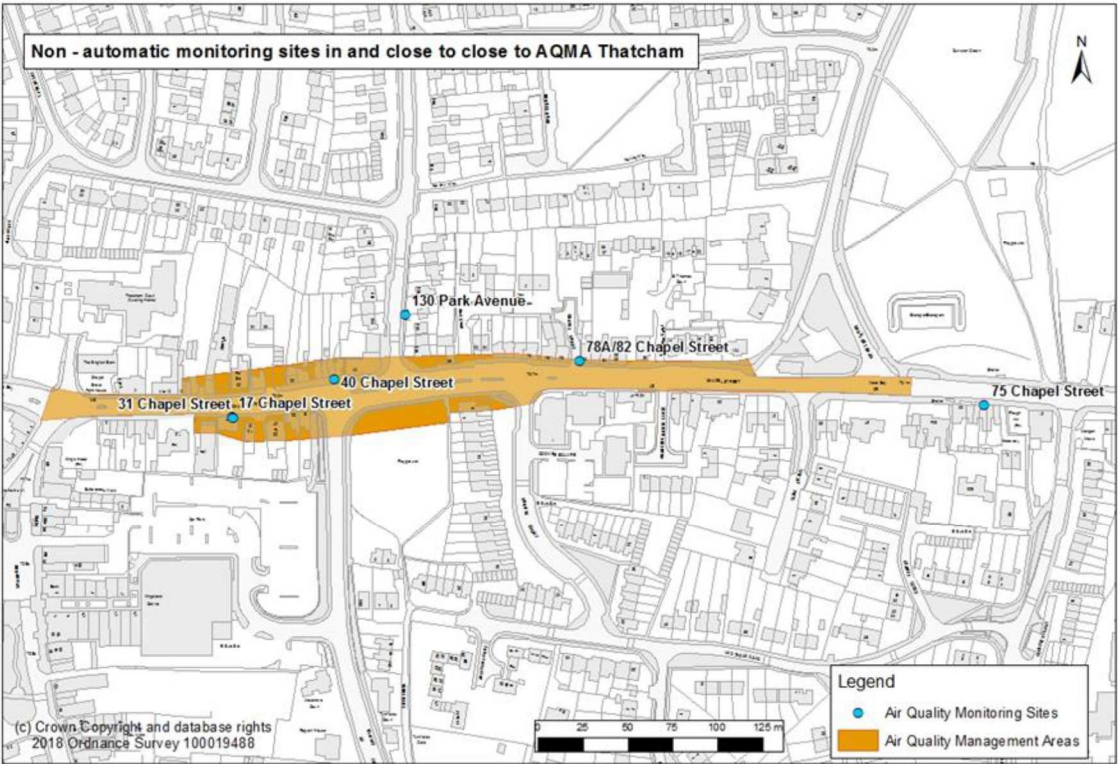
Newbury North



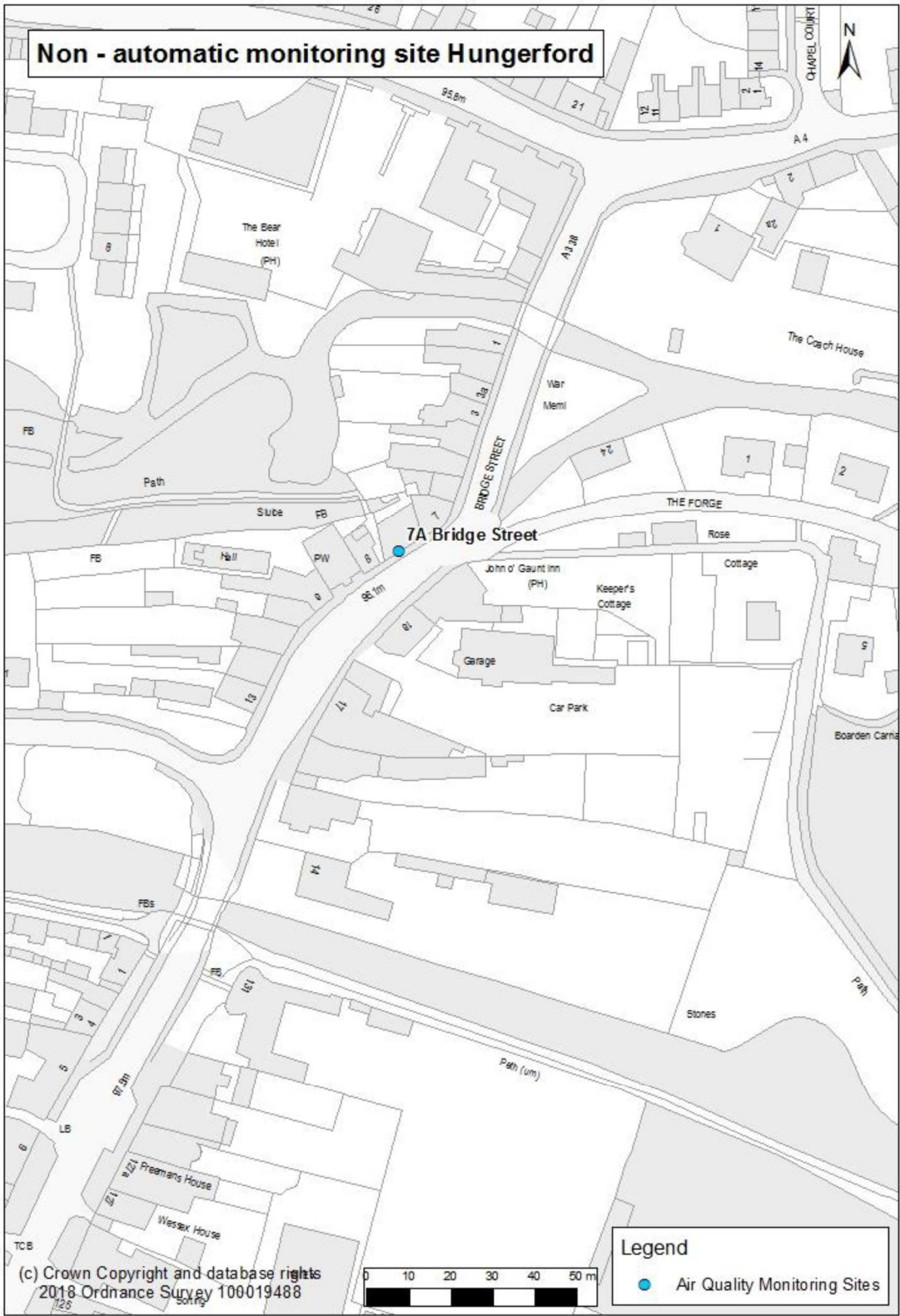
Newbury South



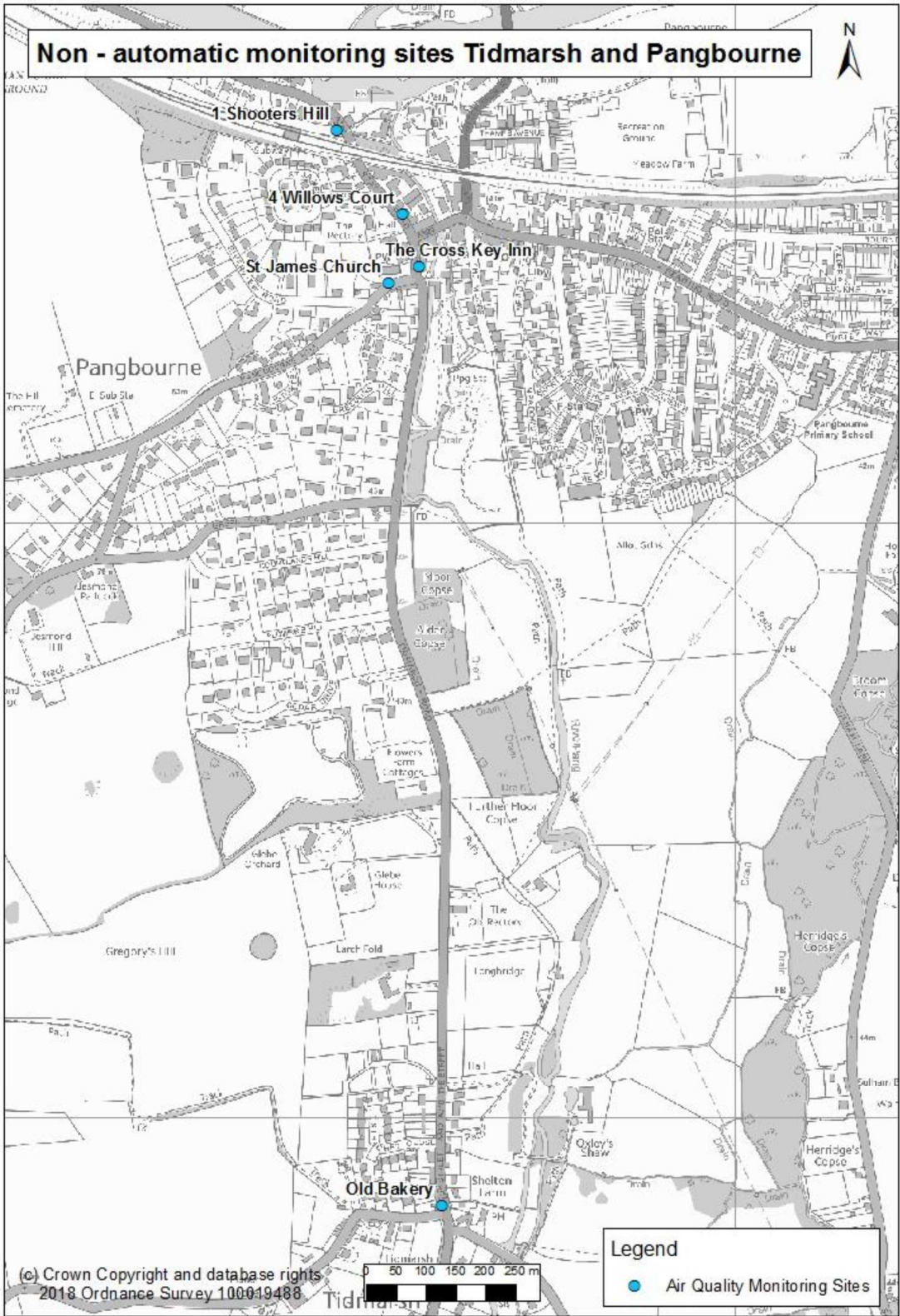
In / Near Thatcham AQMA



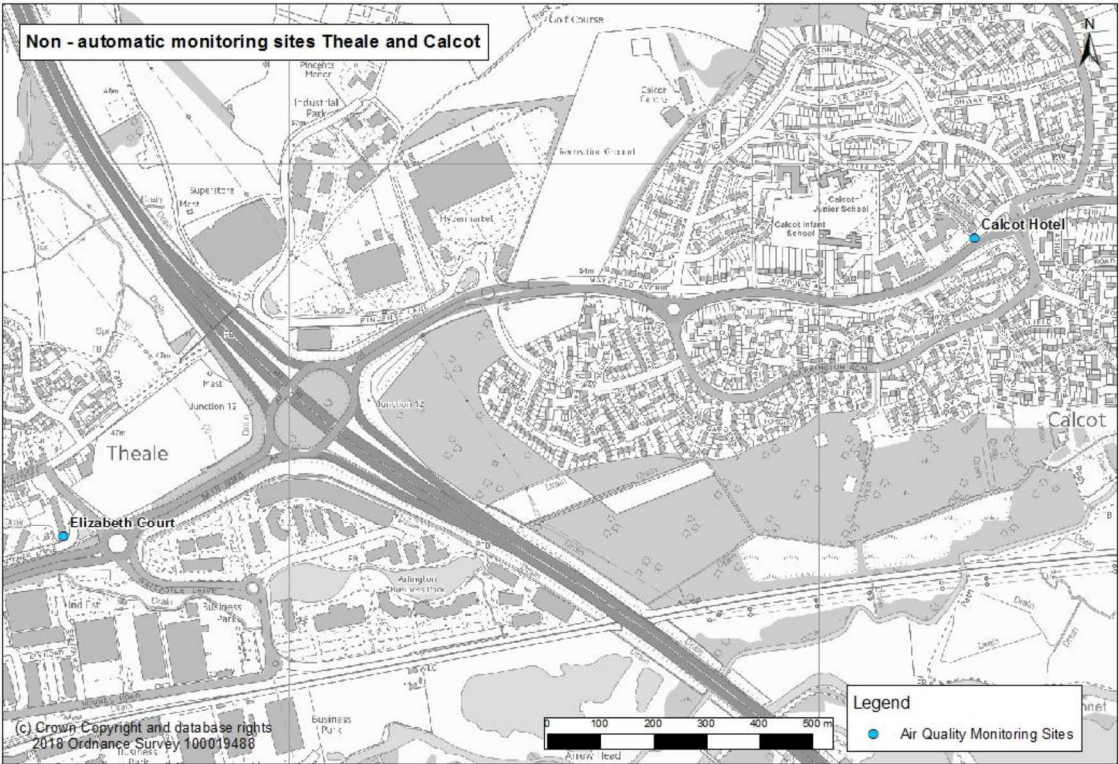
Hungerford



Tidmarsh and Pangbourne



Theale and Calcot



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁴	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁴ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

