



# 2017 Air Quality Annual Status Report (ASR)

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

August 2017

**West Berkshire Council**

Local Authority Officer	Suzanne McLaughlin
Department	Public Protection Partnership (Environmental Quality Team)
Address	West Berkshire Council, Market Street, Newbury, Berkshire, RG14 5LD
Telephone	01635 503242
E-mail	ehadvice@westberks.gov.uk
Report Reference number	WBASR 2017
Date	August 2017

## 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<sup>1,2</sup>.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>3</sup>.

Nitrogen dioxide (NO<sub>2</sub>) is the main pollutant of concern. The levels in 2016 have shown general increase on 2015 levels. There was an exceedance of the ratified continuous monitored NO<sub>2</sub> annual mean in 2016. The level was 41.7 µg/m<sup>3</sup> so did exceed the Air Quality objective level of 40 µg/m<sup>3</sup>. There were 21 exceedances of the 1-hour objective. This exceeded the objective permitted level of 18 exceedances.

For 2016 the ratified and adjusted diffusion tubes annual mean levels did show levels above the objective at 6 locations (7 tubes). There were no locations greater than 60µg/m<sup>3</sup> which therefore does not indicate any exceedance of the 1-hour Objective. 41 sites showed a increase in levels compared to 2015, with 7 decreased, there was 1 new site introduced during 2016. Overall the levels have been reducing over the last 5 years to 2015 but show an increase in 2016.

There were 4 locations (5 tubes) where there were exceedances within the Air quality Management Areas (AQMA's) ([https://uk-air.defra.gov.uk/aqma/local-authorities?la\\_id=304](https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=304)), 2 within the Newbury AQMA and 2 within the Thatcham AQMA.

There was one exceedance within and one exceedance close to the 2 locations where Detailed Assessments for 2 locations, Shaw Road Newbury and Church Road Pangbourne were carried out in 2016 and the outcome will was no additional AQMA's were required to be declared.

<sup>1</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

<sup>2</sup> Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

<sup>3</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

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 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 2016.

Working on the link between air quality, particularly from PM<sub>2.5</sub> and public health in West Berkshire continues. There has been closer working with the Berkshire Strategic Public Health Team and Public Health England. In addition a specific meeting has been held with the Director of Public Health for Berkshire.

## **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.

An application to the Air Quality Grant Scheme 2016-17 was made but unfortunately not successful in securing a grant funding for the project for upgrading the Newbury VISSIM model which would then be used to assess the air quality impact of potential highway improvements to review the roundabout at the centre of Newbury AQMA.

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. Budget has been spent on the Detailed Assessments for Shaw Road Newbury and Church Road Pangbourne.

## **Conclusions and Priorities**

For 2016 there were 21 exceedances of the 1-hour objective, therefore the 1 hour objective was exceeded. This is the first time since 2012 that the hourly mean has been exceeded at this site. This is an exceedance within the Newbury AQMA. The ratified continuous monitored NO<sub>2</sub> annual mean exceeded the objective in 2016. The level was a large increase at 41.7 µg/m<sup>3</sup> compared to 34.8 µg/m<sup>3</sup> in 2015. This is an exceedance within the Newbury AQMA. The concentrations were more in line with the expected concentrations following a decrease in 2015.

The results of the diffusion tube survey showed no results greater than 60µg/m<sup>3</sup>, which therefore does not indicate that any exceedance of the 1-hour mean objective. There were 41 of the sites which showed an increase and 7 sites showed a decrease in levels compared to 2015. The levels tend to be back up to the higher levels monitored in 2012 and/or 2013.

The areas of concern continue to be:

- Newbury AQMA - A339 / Greenham Road / A343 St Johns Road
- Thatcham AQMA – Chapel Street Thatcham
- Church Road Pangbourne
- London Road Newbury

The following local priorities have been set:

- Exploring the link between public health and PM2.5
- 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.
- Review the Thatcham AQMA and consider the development of an AQAP
- Continue the continuous and passive air quality monitoring programmes
- Impact of National Air Quality Plan

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](mailto: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>

# Table of Contents

<b>Executive Summary: Air Quality in Our Area</b>	<b>i</b>
Air Quality in <b>West Berkshire</b>	i
Actions to Improve Air Quality	ii
Conclusions and Priorities	iii
Local Engagement and How to get Involved	iv
<b>1 Local Air Quality Management</b>	<b>1</b>
<b>2 Actions to Improve Air Quality</b>	<b>2</b>
2.1 Air Quality Management Areas	2
2.2 Progress and Impact of Measures to address Air Quality in <b>West Berkshire</b>	5
2.3 PM <sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations	18
<b>3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance</b>	<b>20</b>
3.1 Summary of Monitoring Undertaken	20
3.1.1 Automatic Monitoring Sites	20
3.1.2 Non-Automatic Monitoring Sites	20
3.2 Individual Pollutants	20
3.2.1 Nitrogen Dioxide (NO <sub>2</sub> )	21
3.2.2 Particulate Matter (PM <sub>10</sub> )	25
3.2.3 Particulate Matter (PM <sub>2.5</sub> )	25
3.2.4 Sulphur Dioxide (SO <sub>2</sub> )	25
<b>Appendix A: Monitoring Results</b>	<b>26</b>
<b>Appendix B: Full Monthly Diffusion Tube Results for 2016</b>	<b>39</b>
<b>Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC</b>	<b>45</b>
<b>Appendix D: Map(s) of Monitoring Locations and AQMAs</b>	<b>52</b>
<b>Appendix E: Summary of Air Quality Objectives in England</b>	<b>80</b>
<b>Glossary of Terms</b>	<b>81</b>
<b>References</b>	<b>82</b>

## List of Tables

Table 2.1 – Declared Air Quality Management Areas	4
Table 2.2 – Progress on Measures to Improve Air Quality	9
Table 3.2.1 – 1 hour exceedances	22



## **1 Local Air Quality Management**

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

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by 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 Table E.1 in Appendix E.

## **2 Actions to Improve Air Quality**

### **2.1 Air Quality Management Areas**

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

A summary of AQMAs declared by West Berkshire can be found in

. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at

[https://uk-air.defra.gov.uk/aqma/local-authorities?la\\_id=304](https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=304). See also Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

There are no proposals to amend the Newbury AQMA.

We propose to review the Thatcham AQMA (see monitoring section). It was considered to revoking of the AQMA for Thatcham in 2016, as for the last 3 years the results have shown a decrease in levels and no exceedances of the annual mean in 2015, however there were 2 exceedances in 2016. Monitoring continues in 2017 for 6 of the sites.

In 2016 two Detailed Assessments for Shaw Road Newbury and The Cross Key Church Road Pangbourne, as recommended in the Updating and Screening Assessment 2015, were carried out. The outcome being that the modelling, verified with 2015 monitoring data, confirms that the nitrogen dioxide annual mean objective is not exceeded at the residential properties within the identified areas, in Pangbourne and Newbury. The contour plot confirmed that the exceedances were mainly contained within the road and kerbside of the busiest roads modelled. The properties along these roads do not represent relevant exposure (commercial properties) and there is no evidence that residential properties are located within the exceedance contour. Source apportionment showed that the most significant component in Pangbourne and Newbury, at all receptors, is from the background followed by emissions from passenger cars. However, given the unusual lower annual mean concentrations measured in 2015, it was recommended that the Council continues to monitor the areas of concern to confirm the decreasing NO<sub>2</sub> concentrations trend. The precautionary approach should cover, as a minimum, the areas where locations with relevant exposure lie close to the 40µg/m<sup>3</sup> contour.

Therefore a no new AQMAs are required to be declared.

.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan (inc. date of publication)
						At Declaration	Now	
Newbury AQMA 1	Declared 12/05/2009	Nitrogen Dioxide 1 hour	Newbury	Newbury A339, A343 and Greenham Road junction	NO	61 hours	21 hours	Newbury AQAP <a href="http://info.westberks.gov.uk/CHttpHandler.ashx?id=36580&amp;p=0">http://info.westberks.gov.uk/CHttpHandler.ashx?id=36580&amp;p=0</a>
Newbury AQMA 2	Declared 12/05/2009	Nitrogen Dioxide Annual Mean	Newbury	Newbury A339, A343 and Greenham Road junction	NO	54.4 µg/m <sup>3</sup>	41.7 µg/m <sup>3</sup>	Newbury AQAP <a href="http://info.westberks.gov.uk/CHttpHandler.ashx?id=36580&amp;p=0">http://info.westberks.gov.uk/CHttpHandler.ashx?id=36580&amp;p=0</a>
Thatcham AQMA1	Declared 25/11/2009	Nitrogen Dioxide Annual Mean	Thatcham	Residential properties along the A4 Chapel Street	NO	53.3 µg/m <sup>3</sup>	43.1 µg/m <sup>3</sup>	

☐ 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 the conclusions reached were acceptable for all sources and pollutants. The next step was to provide the Detailed Assessment s for Shaw Road Newbury and Church Road Pangbourne. The outcome of these has been described in Section 2.1 above. The commentary stated that for monitoring results, where they are not located to represent relevant exposure, there should be consideration for distance correction. It has not been possible to relocate the tubes in order to achieve this and all of the locations which require to be distance corrected to nearest exposure have been calculated in accordance with TG16 using the fall off with distance calculator.

West Berkshire has taken forward a number of direct measures during the current reporting year of 2016 in pursuit of improving local air quality and reducing car trips and congestion as part of the Local Transport Plan 3(2011-2026). Details of all measures completed, in progress or planned are set out in Table 2.2. Many of these measures will also have contributed to air quality improvements. Progress on key measures identified in the 2016 report are:

- Provision of traffic data to support modelling work.

An extensive programme of data collection took place and was used to update the transport VISSIM model that covers the Newbury AQMA area. This model was then linked with another transport VISSIM model to the south of the AQMA (covering the area around a strategic housing site allocation) so that modelling over a wider area could be improved.

- Increased awareness campaign of electric vehicles.

A public event took place showcasing a range of electric and low emission vehicles in Newbury Town Centre. This included promoting the Car Club for Newbury which has an electric car within its fleet.

- Reduction of HDVs through Newbury through provision of signage.

The provision of signage to help direct traffic away from the AQMA and use the Newbury bypass (A34) for through journeys rather than the A339 has been the subject of discussions with Hampshire County Council. Although

these discussions have not enabled an agreed position to be reached, signage will be erected in 2017 to help encourage traffic away from the AQMA.

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

- Car club

The Car Club in Newbury was publicly launched in April 2016. The scheme consists of 5 vehicles, one of which is an electric vehicle (Renault Zoe). The vehicles are located in Newbury and are strategically positioned to cover the town centre and some residential areas immediately adjacent to the town centre including one adjacent to the Newbury AQMA. The Car Club is set up to help support work journeys (being available to Council staff during the day) and also to be available to the public for shopping and leisure trips. Some cars in the central part of the town have been set up to have this dual use.

- Car sharing

The Council has a licence with FAXI which is an organisation that encourages journey sharing through an online platform which helps to match people who are travelling to the same areas by any means - either by car, cycling, walking etc. The licence covers a number groups and the Council is planning to trial a Newbury Town Centre group to help reduce the number of cars coming into the town centre and travelling through the AQMA on a daily basis.

- Reduction of HDVs using A339 through Newbury

The provision of signage to help direct traffic away from the AQMA and use the Newbury bypass (A34) for through journeys rather than the A339 has been the subject of discussions with Hampshire County Council. Although these discussions have not enabled an agreed position to be reached, signage will be erected in 2017 to help encourage traffic away from the AQMA.

- Travel planning

A number of travel plans for large residential sites have been secured over the past year. The Council's requirements in terms of residential travel plans have become more robust as experience is gained in this area. The Council also now requests funding to help with the monitoring, development and ongoing liaison of these travel plans. Liaison with regards to existing travel plans – both residential and workplace – continues with the Newbury Racecourse site (residential) and AWE and Vodafone (workplace) being examples.

- Buses

2016 saw a comprehensive review of the bus services in West Berkshire. Against a backdrop of making savings the Council has been able to continue to serve key areas of the District with appropriate bus services and has been innovative in the ways in which this has been achieved. The main corridor of travel between Thatcham and Newbury has received significant investment from the bus operator and there has been an increase in bus passengers in this area. This is particularly beneficial for assisting with the impacts on the AQMA along the A4 in Thatcham.

- Funding bids

The Council has had over £6million allocated to a project which looks at improving Newbury Railway Station and the interchange facilities on the south side of the station which is immediately adjacent to the Newbury AQMA. This funding has been allocated by Thames Valley Berkshire Local Enterprise Partnership (TVB LEP) and will be focused on increasing the use of public transport and improving the links to the railway station by all sustainable modes – walking, cycling and bus travel. This project has also enabled a further £450k to be awarded to improve the provision for cyclists at the station and to develop cycle hub facilities including an additional 300 cycle spaces. A full business case for this project will be developed in 2017 with a view to the full £6million being awarded to the scheme in March 2018.

The Council has submitted a bid to DfT in relation to the development of a Local Cycling and Walking Infrastructure Plan (LCWIP). Should the Council be successful they should have this developed in 2017/18 and it will then form

a useful framework for securing additional funding and directing investment in these sustainable modes of travel.

Further bids to the GWR Customer and Communities Infrastructure Fund (CCIF) will be developed this year. One will focus around improvements to Newbury Racecourse Station which will help to encourage and support sustainable journeys from this residential area in close proximity to the AQMA.

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 AQMA and Thatcham AQMA.

West Berkshire Council's local priorities which have been set for the coming year are:

- Implementation of air quality guidance note for planning applications
- Reduction of HDVs through Newbury through provision of signage
- Exploring the link between public health and PM<sub>2.5</sub>
- 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 as well as Development Control
- Development of Thatcham AQAP
- Continue the continuous and passive air quality monitoring programmes.



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 signalling 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	15 ug/m3(based on 2008 data)	Surveys ordered March 2017 and model to be completed late 2017.	2018	Await findings of model to assess impact on any proposed scheme.

## West Berkshire Council

							in NO2 and emission levels				
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	2010-2011	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.	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	2015-2016	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	2012-2013	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).

## West Berkshire Council

6	Smarter Choices (2) Investigate the feasibility of a car club for Newbury and Thatcham area (Racecourse)	Alternatives to private vehicle use	Car Clubs	WBC	2012-2013	2012-2014	No. of car share cars and their useage	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 utilised. All town centre locations. Public launch of scheme April 16.	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 planned
7	Smarter Choices (3) Promote Car sharing opportunities within the district	Alternatives to private vehicle use	Car Clubs	WBC	2012-2013	2012-2016	No. of car share cars and their useage	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	ongoing	Number of people registered and their locations and journey type.

## West Berkshire Council

									heavily in car sharing and have their own internal system.		
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.).	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)
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 . Us of s106 funds	negligible	Planning and Air quality document drafted	2017	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-	Reduction in HDV journeys along this section of road network and decrease in NO2 levels measured.	Links with 15 µg/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-	ongoing	16/17 Look for opportunities-replacement/funding for signage in West Berks controlled areas.

## West Berkshire Council

									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.		
11	Electric Charging Points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	WBC	2012	2012-2014	Use of charging points Increase in EV ownership and use of/demand for (public) chargepoints	Negligible	<p>(1) Successful OLEV grant to install chargepoints on WBC land 2013-15.</p> <p>(2) Ecotricity Rapid chargepoints installed at motorway service stations.</p> <p>(3) Agreement by FGW to install at Aldermaston and 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</p>	<p>(1) March 2015</p> <p>(2) 2015</p> <p>(3) Unknown</p> <p>(4) Complete Oct 2015</p> <p>(5) April 2016</p> <p>(6) 2016</p> <p>(7) ongoing</p>	<p>(1) Council chargepoints installed for WBC use at Kennet Centre (Mar 13) and Ampere Road, Newbury (Mar 14) under OLEV public Sector charging scheme.</p> <p>(2) Ran by Ecotricity, data on use not readily 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&amp;L Service use (Mar 16). 3 EV vans and 2 EV Cars have been procured, awaiting delivery Mar</p>

## West Berkshire Council

											<p>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	WBC/ PCT	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.</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 &amp; 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.</p>

## West Berkshire Council

											In 206 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.
13	National Cycle Route (Newbury to Legoland)	Promoting Travel Alternatives	Promotion of cycling	Wokingham BC	2016-2017	2017- 2019	Cycle way usage	negligible	<p>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 £4.2m from the LEP.</p> <p>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.</p>	2019	<p>2016/17 Survey &amp; Planning, 2017/18 &amp; 2018/19 On-site works</p> <p>NCN Route 422 is the indicative route title for a National Cycle Route potentially linking Newbury through to Ascot and Windsor.</p>

## West Berkshire Council

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 Newbury and Thatcham	negligible	Completed: Project ran June 14-Sep 14. Targeting nearly 5000 homes. 39% had consented to participating in the programme. Also resulted in improvements in bus routes in the Wash Common area.	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 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



## West Berkshire Council

											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<sub>2.5</sub> – 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<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

West Berkshire Council is taking the following measures to address PM<sub>2.5</sub>:

- 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.
- For 2017 the joint action plan between Public Health and Environmental Health for air quality will consider in detail how West Berkshire will be considering the impact on PM<sub>2.5</sub> 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<sub>2.5</sub>) 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 (9<sup>th</sup> 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 PM<sub>2.5</sub> :
  - 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 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/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 NO<sub>2</sub> at 49 sites during 2016. 1 of the locations was a co-location study for the whole year on the continuous monitoring station within the Newbury AQMA. 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 (NO<sub>2</sub>)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

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<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

#### **Newbury AQMA**

The data capture was a rate of 97.0% which is very good. For 2016 there were 21 exceedances of the 1-hour objective, therefore the 1 hour objective was exceeded. This is the first time since 2012 that the hourly mean has been exceeded at this site. This is an exceedance within the AQMA. The range was from 0.6 µg/m<sup>3</sup> to a maximum of 297µg/m<sup>3</sup> recorded.

The ratified continuous monitored NO<sub>2</sub> annual mean exceeded the objective in 2016. The level was a large increase at 41.7 µg/m<sup>3</sup> compared to 34.8 µg/m<sup>3</sup> in 2015. This is an exceedance within the AQMA. The concentrations were more in line with the expected concentrations and show a slight decrease on 2013 levels (42.2 µg/m<sup>3</sup>). The monthly average concentrations have been compared to the co-location diffusion tube results. The results compare very well. The hourly results have been compared to the AURN monitoring stations in Oxford Roadside and Reading New Town. The data trends experienced and concentrations are of a similar level to the Oxford Roadside site.

The exceedances are detailed in Table 3.2.1 below. This is the highest number in the last 5 years. These dates/times do not relate to a specific event in Newbury such as a racing meet. It should be noted however that from 11/01/16 to 31/01/17 nearby Boundary Road bridge was closed for repairs / preparation of the railway bridge for electrification and hence increased traffic passed through this location as the diversion. The exceedances on 30/11/16, 01/12/16 and 5/12/16 were observed during a period of cold weather. 20 of the 21 exceedances occurred during the morning or evening rush hour periods of weekdays.

Table 3.2.1 1 hour exceedances

Excedance number	Day	Date	Time	Level $\mu\text{g}/\text{m}^3$
1	Tuesday	19/01/16	16:00-17:00	246
2	Tuesday	19/01/16	17:00-18:00	274
3	Tuesday	19/01/16	18:00-19:00	228
4	Tuesday	19/01/16	19:00-20:00	200
5	Wednesday	20/01/16	17:00-18:00	233
6	Wednesday	20/01/16	18:00-19:00	217
7	Wednesday	20/01/16	19:00-20:00	263
8	Wednesday	20/01/16	20:00-21:00	227
9	Friday	24/06/16	13:00-14:00	297
10	Friday	24/06/16	16:00-17:00	240
11	Friday	24/06/16	17:00-18:00	209
12	Tuesday	28/06/16	06:00-07:00	239
13	Wednesday	30/11/16	15:00-16:00	203
14	Wednesday	30/11/16	16:00-17:00	229
15	Wednesday	30/11/16	17:00-18:00	203
16	Wednesday	30/11/16	18:00-19:00	217
17	Thursday	01/12/16	16:00-17:00	204
18	Monday	05/12/16	08:00-09:00	200
19	Monday	05/12/16	17:00-18:00	237
20	Monday	05/12/16	19:00-20:00	204
21	Thursday	29/12/16	17:00-18:00	227

## **Diffusion Tube Data**

For 2016 the ratified and adjusted diffusion tubes annual mean levels there were 7 exceedances of the air quality objective. These were at:

- 132 London Road Newbury, which was an increase in level on 2014 and 2015 but not as high as 2012 and 2013
- 1 Winchester Court Newbury, which is located within the Newbury AQMA which was an increase in 2014 and 2015 levels, but lower than exceedances in 2012 and 2013
- 2 of the 3 triplicate tubes on the continuous monitor at Winchester Court Newbury, located within the Newbury AQMA which was an increase in 2015 levels
- 17 Chapel Street Thatcham, which is located within the Thatcham AQMA which was an increase in 2015 level but lower than 2012, 2013 and 2014
- 31 Chapel Street Thatcham, which is located within the Thatcham AQMA which was an increase in 2015 level but lower than 2012, 2013 and 2014
- The Cross Key Inn Pangbourne, which was an increase in level from 2015, but a reduction from 2012 and 2013 levels.

There were no results greater than  $60\mu\text{g}/\text{m}^3$ , which therefore does not indicate that any exceedance of the 1-hour mean objective.

41 of the sites showed an increase in levels compared to 2015, as did the continuous monitor. 7 sites showed a decrease in levels compared to 2015. The levels tend to be back up to the higher levels monitored in 2012 and/or 2013.

The areas of concern continue to be:

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

There are 5 diffusion tubes within the Newbury AQMA and 3 within close proximity. The 3 exceedances were within the AQMA. For the last 5 years the results have shown a decrease in levels until this year and are at or less than the 2012/2013 levels. Monitoring continues in 2016 for the 5 sites.

There are 3 diffusion tube sites within the Thatcham AQMA and 4 within close proximity. For the last 5 years the results have shown a decrease in levels until this year. Exceedances of the annual mean objective has been seen at nos. 17(2013, 2014, 2015 and 2016), 31 (2013 and 2014 and 2016) and 40(2013 only) Chapel Street. Monitoring continues in 2016 for 7 of the sites. Due to exceedance at 2 sites the AQMA will not be revoked for the time being.

There was 1 exceedance at Church Road Pangbourne. A Detailed Assessment of this area was carried out and completed in November 2016. This concluded that the modelling, verified with 2015 monitoring data, confirmed that the nitrogen dioxide annual mean objective was not exceeded at the residential properties within the identified areas in Pangbourne. The contour plot confirmed that the exceedances are mainly contained within the road and kerbside of the busiest roads modelled. The properties along these roads do not represent relevant exposure (commercial properties) and there is no evidence that residential properties are located within the exceedance contour. Source apportionment shows that the most significant component in Pangbourne, at all receptors, is from the background followed by emissions from passenger cars. It was recommended that monitoring continued in this area, however an increase in 2016 does not confirm the decreasing trend in NO<sub>2</sub>. 1 new site was set up in 2016 (Pangbourne Hill) close to the area of concern and this did not exceed.

One site in London Road Newbury (132) exceeded in 2016. This location has not shown an exceedance since 2012 and 2013. Other sites in the area also showed an increase on 2015 levels. This location will continue to be monitored in 2017. In March 2017 a new intersection onto the A339 (known as the London Road Industrial Estate intersection) will be opening which will have a positive impact on this location by providing an alternative access/egress and so diverting some of the traffic away from this location. A deferral on a decision on this location is recommended for once the 2017 data has been collated.



Following the exceedance at 13 Shaw Road Newbury a Detailed Assessment was carried out and completed in November 2016. The modelling, verified with 2015 monitoring data, confirmed that the NO<sub>2</sub> annual mean objective was not exceeded at the residential properties within the identified areas in Newbury. The contour plot confirms that the exceedances are mainly contained within the road and kerbside of the busiest roads modelled. The properties along these roads do not represent relevant exposure (commercial properties) and there is no evidence that residential properties are located within the exceedance contour. Source apportionment shows that the most significant component in Newbury, at all receptors, is from the background followed by emissions from passenger cars. It was recommended that monitoring continued in this area; however an increase in 2016 does not confirm the decreasing trend in NO<sub>2</sub>.

Monitoring at 12 sites were ceased at the end of 2015 due to levels well below the annual mean. They were: 10 Prancing Horse Close Thatcham, 29 Bath Road Thatcham, 159 Station Road Thatcham, 8A Craven Road Newbury, St John's PO 1 St John's Road Newbury, 39 Newtown Road Newbury, 1 Iden Court Newport Road Newbury, 37 The Street Aldermaston, 1 Avenall's Cottage Crookham Hill, 20-24 Saunders Court Purley, The Greyhound PH Tidmarsh and 49 St James' Close Pangbourne.

### **3.2.2 Particulate Matter (PM<sub>10</sub>)**

No particulate matter (PM<sub>10</sub>) monitoring is undertaken.

### **3.2.3 Particulate Matter (PM<sub>2.5</sub>)**

No particulate matter (PM<sub>2.5</sub>) monitoring is undertaken.

### **3.2.4 Sulphur Dioxide (SO<sub>2</sub>)**

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
CM1 Newbury	Newbury A339, A343 and Greenham Road junction	Roadside	477407	166560	NO <sub>2</sub>	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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
A339 Newbury Central	A339 Newbury Central	Kerbside	447463	167318	NO <sub>2</sub>	NO	10	1.9	NO	2.3
7a Bridge Street Hungerford	7a Bridge Street Hungerford	Roadside	433909	168815	NO <sub>2</sub>	NO	0	1.5	NO	2.7
Chaddleworth Primary School	Chaddleworth Primary School	Rural	441669	177306	NO <sub>2</sub>	NO	57	10	NO	1.9
118A London Road Newbury	118A London Road Newbury	Urban Background	447693	167764	NO <sub>2</sub>	NO	0	33	NO	2
132 London Road Newbury	132 London Road Newbury	Roadside	447720	167678	NO <sub>2</sub>	NO	0	3	NO	2.6
Flat 1, Southview Gardens Newbury	Flat 1, Southview Gardens Newbury	Urban Background	447752	167667	NO <sub>2</sub>	NO	0	5	NO	1.5
374 London Road Newbury	374 London Road Newbury	Urban Background	449034	167520	NO <sub>2</sub>	NO	0	12.5	NO	2.05
17 Chapel Street Thatcham	17 Chapel Street Thatcham	Roadside	451870	167438	NO <sub>2</sub>	YES	0	1.5	NO	2.4
40 Chapel Street Thatcham	40 Chapel Street Thatcham	Kerbside	451926	167460	NO <sub>2</sub>	YES	0	3.5	NO	2.2
Flat 1, 47 Chapel Street	Flat 1, 47 Chapel Street	Roadside	452100	167452	NO <sub>2</sub>	NO	0	1.8	NO	2

# West Berkshire Council

Thatcham	Street, Thatcham									
75 Chapel Street Thatcham	75 Chapel Street Thatcham	Roadside	452288	167445	NO <sub>2</sub>	NO	0	3.4	NO	2.2
82/78A Chapel Street Thatcham	82/78A Chapel Street Thatcham	Roadside	452071	167468	NO <sub>2</sub>	YES	0	1.8	NO	2
Old Bakery Tidmarsh	Old Bakery Tidmarsh	Roadside	463504	174864	NO <sub>2</sub>	NO	0	2.2	NO	1.9
4 Willows Court Pangbourne	4 Willows Court Pangbourne	Roadside	463224	176523	NO <sub>2</sub>	NO	0	3	NO	2.3
49 St James Close Pangbourne	49 St James Close Pangbourne	Urban Background	463370	176563	NO <sub>2</sub>	NO	0	9	NO	2
1 Shooters Hill Pangbourne	1 Shooters Hill Pangbourne	Roadside	463331	176664	NO <sub>2</sub>	NO	0	2.5	NO	2.1
The Cross Key Inn Pangbourne	The Cross Key Inn Pangbourne	Roadside	463468	176433	NO <sub>2</sub>	NO	0	4	NO	2.6
14 High Street Pangbourne	14 High Street Pangbourne	Urban Background	463494	176485	NO <sub>2</sub>	NO	0	5.5	NO	2.2
102 Langley Hill Tilehurst	102 Langley Hill Tilehurst	Urban Background	466321	172747	NO <sub>2</sub>	NO	3.5	13	NO	2.5
Calcot Hotel, A4 Bath Road Calcot	Calcot Hotel, A4 Bath Road, Calcot	Kerbside	466302	171865	NO <sub>2</sub>	NO	16	2	NO	2.3
Elizabeth Court Theale	Elizabeth Court Theale	Urban Background	464574	171294	NO <sub>2</sub>	NO	0	32	NO	2
44 Hambridge Road	44 Hambridge Rd Newbury	Urban Background	448129	166909	NO <sub>2</sub>	NO	0	4.3	NO	2.45

Newbury										
42 Kings Road Newbury	42 Kings Road Newbury	Roadside	447433	166994	NO <sub>2</sub>	NO	0	11.3	NO	1.85
1 Winchester Court Newbury	1 Winchester Court Newbury	Roadside	447409	166559	NO <sub>2</sub>	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 <sub>2</sub>	YES	1	4.7	YES	1.8
Continuous monitor 2, A343, A339 and Greenham Road Newbury	Continuous monitor 2, A343, A339 and Greenham Road Newbury	Roadside	447379	166557	NO <sub>2</sub>	YES	1	4.7	YES	1.8
Continuous monitor 3, A343, A339 and Greenham Road Newbury	Continuous monitor 3, A343, A339 and Greenham Road Newbury	Roadside	447379	166557	NO <sub>2</sub>	YES	1	4.7	YES	1.8
64 Greenham Road Newbury	64 Greenham Road Newbury	Roadside	447448	166454	NO <sub>2</sub>	NO	12	2	NO	2.2
20 Deadmans Lane Greenham	20 Deadmans Lane Greenham	Suburban	447508	164725	NO <sub>2</sub>	NO	0	10.5	NO	2.1
A339 New Greenham	A339 New Greenham	Kerbside	449805	163882	NO <sub>2</sub>	NO	204	4	NO	2.1

# West Berkshire Council

Park Greenham	Park Greenham									
3 Howard Road Newbury	3 Howard Road Newbury	Roadside	447402	166449	NO <sub>2</sub>	NO	0	11	NO	2.6
1 St John's Road Newbury	1 St John's Road Newbury	Roadside	447036	166436	NO <sub>2</sub>	NO	0	4.8	NO	2.25
63 St John's Road Newbury	63 St John's Road Newbury	Urban Background	447377	166533	NO <sub>2</sub>	YES	0	6.2	NO	2.2
40 Bartholomew Street Newbury	40 Bartholomew Street Newbury	Roadside	446939	166848	NO <sub>2</sub>	NO	0	2.7	NO	2.2
6 Market Street Newbury	6 Market Street Newbury	Urban Centre	447211	167020	NO <sub>2</sub>	NO	9.5	1.3	NO	2.1
105 London Road Newbury	105 London Road Newbury	Urban Background	447528	167708	NO <sub>2</sub>	NO	0	24	NO	2.6
31 Oxford Road Newbury	31 Oxford Road Newbury	Kerbside	446908	167657	NO <sub>2</sub>	NO	1.5	1	NO	2.5
1 Dolman Road Newbury	1 Dolman Road Newbury	Urban Background	447157	167909	NO <sub>2</sub>	NO	0	8.3	NO	2.4
43 Hawthorn Road Newbury	43 Hawthorn Road Newbury	Urban Background	447487	167870	NO <sub>2</sub>	NO	0	13	NO	2.15
41 Hutton Close Newbury	41 Hutton Close Newbury	Urban Background	447546	167916	NO <sub>2</sub>	NO	0	12.4	NO	2.1
Willows Edge Nursing Home Newbury	Willows Edge Nursing Home Newbury	Urban Background	447540	167970	NO <sub>2</sub>	NO	0	20	NO	2

112 Shaw Road Newbury	112 Shaw Road Newbury	Roadside	447773	168041	NO2	NO	0	4.9	NO	2
31 Shaw Road Newbury	31 Shaw Road Newbury	Kerbside	447688	167820	NO2	NO	3.6	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
Bus Stop Racecourse Road Newbury	Bus Stop Racecourse Road Newbury	Kerbside	447727	166392	NO2	NO	58	1.4	NO	2.2
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
110 London Road Newbury	110 London Road Newbury	Urban Background	447657	167724	NO2	NO	0	15	NO	2
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 NO<sub>2</sub> Monitoring Results**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2016 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2012	2013	2014	2015	2016
CM1 Newbury	Kerbside	Automatic	100	97	<b>44.9</b>	<b>42.2</b>	<b>45.5</b>	34.8	<b>41.7</b>
A339 Newbury Central	Kerbside	Diffusion Tube	100	91.7	<b>55.9</b>	<b>53.7</b>	37.2	37.8	30.9
7a Bridge Street Hungerford	Roadside	Diffusion Tube	100	100	29.9	32.2	27.9	22.6	29.4
Chaddleworth Primary School	Rural	Diffusion Tube	100	66.7	8.8	9.6	7.5	6.6	8.4
118A London Road Newbury	Urban Background	Diffusion Tube	100	100	25.7	23.8	24.8	19.5	24.3
132 London Road Newbury	Roadside	Diffusion Tube	100	100	<b>42.8</b>	<b>42.7</b>	39	33.7	<b>41.8</b>
Flat 1, Southview Gardens Newbury	Urban Background	Diffusion Tube	100	83.3	<b>45.9</b>	32.8	33.1	27.2	31.5
374 London Road Newbury	Urban Background	Diffusion Tube	100	100	26.4	24.9	24.1	19.2	25.7
17 Chapel Street	Roadside	Diffusion Tube	100	100	<b>45</b>	<b>45.3</b>	<b>43.2</b>	36.3	<b>43.1</b>



Thatcham									
40 Chapel Street Thatcham	Kerbside	Diffusion Tube	100	91.7	<b>40.6</b>	<b>41</b>	35.8	30.7	39.9
Flat 1, 47 Chapel Street Thatcham	Roadside	Diffusion Tube	100	91.7	<b>44.8</b>	30.5	30.2	22	30.8
75 Chapel Street Thatcham	Roadside	Diffusion Tube	100	100	35.4	31.6	31	26.7	31.7
82/78A Chapel Street Thatcham	Roadside	Diffusion Tube	100	91.7	37.9	31.2	31.1	25.6	33.8
Old Bakery Tidmarsh	Roadside	Diffusion Tube	100	100	33	35.6	34.6	28.7	35.9
4 Willows Court Pangbourne	Roadside	Diffusion Tube	100	100	33.3	35.7	33.4	25.4	32.2
1 Shooters Hill Pangbourne	Roadside	Diffusion Tube	100	100	29.1	29.3	28.2	24	27.9
The Cross Key Inn Pangbourne	Roadside	Diffusion Tube	100	100	39.4	<b>40.3</b>	<b>40.6</b>	32.6	<b>40.2</b>
14 High Street Pangbourne	Urban Background	Diffusion Tube	100	100	26.9	26	23.4	21.7	25.3
102 Langley Hill Tilehurst	Urban Background	Diffusion Tube	100	83.3	27.5	28.1	25.9	21.7	26.2
Calcot Hotel, A4 Bath Road Calcot	Kerbside	Diffusion Tube	100	83.3	36.7	36.9	34.6	25.3	23.1
Elizabeth Court Theale	Urban Background	Diffusion Tube	100	100	25.7	24.4	23.7	19	24.3
44 Hambridge		Diffusion	100	100	31.6	31.6	29.4	22.7	27

Road Newbury	Urban Background	Tube							
42 Kings Road Newbury	Roadside	Diffusion Tube	100	100	28.5	26.6	25.8	22.1	26.1
1 Winchester Court Newbury	Roadside	Diffusion Tube	100	100	<b>44.2</b>	<b>43.8</b>	39.2	34.2	<b>43</b>
Continuous monitor 1, A343, A339 and Greenham Road Newbury	Roadside	Diffusion Tube	100	100	<b>44.6</b>	<b>42.5</b>	<b>43.3</b>	35.2	<b>40</b>
Continuous monitor 2, A343, A339 and Greenham Road Newbury	Roadside	Diffusion Tube	100	100	<b>45.3</b>	<b>42.5</b>	<b>41.5</b>	35	<b>40.6</b>
Continuous monitor 3, A343, A339 and Greenham Road Newbury	Roadside	Diffusion Tube	100	100	<b>45.8</b>	<b>41.5</b>	<b>41.4</b>	34.7	39.8
64 Greenham Road Newbury	Roadside	Diffusion Tube	100	83.3	38.7	36.9	37	29.1	27.3
20 Deadmans Lane Greenham	Suburban	Diffusion Tube	100	91.7	28.8	28.4	25.7	22.2	27.8
A339 New Greenham Park	Roadside	Diffusion Tube	100	91.7	36.7	<b>41</b>	39.7	29.4	39.3

Greenham									
3 Howard Road Newbury	Roadside	Diffusion Tube	100	100	23.9	23.7	21.5	17.2	22.9
1 St John's Road Newbury	Roadside	Diffusion Tube	100	100	30.4	36.6	29.9	25.2	32.6
63 St John's Road Newbury	Urban Background	Diffusion Tube	100	100	26.3	27.3	25.3	20.1	26.5
40 Bartholomew Street Newbury	Roadside	Diffusion Tube	100	100	37.8	39.8	35.8	29.3	36
6 Market Street Newbury	Urban Centre	Diffusion Tube	100	100	35.5	36.7	34	28.1	25.7
105 London Road Newbury	Urban Background	Diffusion Tube	100	100	24.1	26.1	23.3	18.5	23.8
31 Oxford Road Newbury	Kerbside	Diffusion Tube	100	100	35.2	34.8	34	27.1	30.6
1 Dolman Road Newbury	Urban Background	Diffusion Tube	100	100	23.7	22.4	21.8	19.2	21.3
43 Hawthorn Road Newbury	Urban Background	Diffusion Tube	100	100	25.7	25.7	23.5	18.7	23.5
41 Hutton		Diffusion	100	100	<b>40.5</b>	38.4	34.3	30.2	35.1

# West Berkshire Council

Close Newbury	Urban Background	Tube							
Willows Edge Nursing Home Newbury	Urban Background	Diffusion Tube	100	100	27.3	24.4	25.5	20.7	22.9
112 Shaw Road Newbury	Roadside	Diffusion Tube	100	100	27.6	27.4	25.3	21.4	25.2
31 Shaw Road Newbury	Kerbside	Diffusion Tube	100	83.3	<b>40.7</b>	<b>41.9</b>	35.4	37.2	30.5
13 Shaw Road Newbury	Urban Background	Diffusion Tube	100	91.7	<b>40.4</b>	36.4	<b>42.6</b>	33	37.8
Abbeydale Monks Lane Newbury	Kerbside	Diffusion Tube	100	91.7	21.5	22.8	20.1	16.5	15.2
A343 Andover Road Wash Common	Kerbside	Diffusion Tube	100	91.7	<b>40.4</b>	36.4	<b>42.6</b>	15.6	15
Bus Stop Racecourse Road Newbury	Roadside	Diffusion Tube	100	100	29.5	21.2	18.5	16.6	19.4
130 Park Avenue Thatcham	Roadside	Diffusion Tube	100	91.7	30.3	26	25.3	17.3	19.2
31 Chapel Street Thatcham	Roadside	Diffusion Tube	100	100	<b>51.9</b>	<b>54.5</b>	<b>45.1</b>	37.2	<b>43.1</b>
110 London Road Newbury	Urban Background	Diffusion Tube	100	91.7	33.9	30.2	29.5	24.5	28.3
St James Church Pangbourne Hill	Roadside	Diffusion Tube	83.3	100	<u><b>N/A</b></u>	<u><b>N/A</b></u>	<u><b>N/A</b></u>	<u><b>N/A</b></u>	24.3

- ☐ Diffusion tube data has been bias corrected
- ☐ Annualisation has been conducted where data capture is <75%
- ☐ If applicable, all data has been distance corrected for relevant exposure

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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 NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2016 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2012	2013	2014	2015	2016
CM1 Newbury	Roadside	Automatic	100	97	<b>19</b>	3	6	3	<b>21</b>

**Notes:**

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> 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 99.8<sup>th</sup> percentile of 1-hour means is provided in brackets.

## Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results - 2016

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (factor) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
A339 Newbury Central	41.48	39.7	38.21	32.92	34.7	38.59	36.9	38.63	30.06		43.75	47.91	38.4	42.2	30.9
7a Bridge Street Hungerford	27.37	28.09	25.6	25.54	26.46	23.74	22.27	24.7	23.89	29.45	28.95	34.48	26.7	29.4	29.4
Chaddleworth Primary School	10.11	7.93	7.62	6.28	–	–	–	6.04	7.03	–	10.53	16.15	9.0	8.4	8.4
118A London Road Newbury	24.82	22.97	19.44	19.02	15.6	18.42	19.34	25.36	21.86	23.31	24.19	31.44	22.1	24.3	24.3
132 London Road Newbury	37.75	31.12	32.87	35.44	37.43	35.71	32.05	46.97	37.61	40.15	40.93	47.62	38.0	41.8	41.8
Flat 1, Southview Gardens Newbury		27.12		25.51	20.22	22.62	28.93	33.05	30.45	28.32	29.83	39.45	28.6	31.5	31.5
374 London Road	27.14	21.16	19.66	19.57	22.42	18.65	19.44	27.19	24.3	24.16	26.73	30.93	23.4	25.7	25.7

## West Berkshire Council

Newbury															
17 Chapel Street Thatcham	43.07	35.62	31.95	31.3	38.13	34.93	32.44	43.36	42.49	42.59	41.94	52.26	39.2	<b>43.1</b>	<b>43.1</b>
40 Chapel Street Thatcham	38.66	39.26	29.14	31.61	36.17		26.06	37.35	34.88	39.42	40.44	46.19	36.3	39.9	39.9
Flat 1, 47 Chapel Street Thatcham	31.19		22.5	25.16	29.47	27.38	20.21	27.28	16.8	32.52	37.23	38.73	28.0	30.8	30.8
75 Chapel Street Thatcham	36.39	29.15	25.36	26.44	25.24	22.83	24.35	27.18	30.92	28.5	29.78	39.45	28.8	31.7	31.7
82/78A Chapel Street Thatcham	32.54	28.51	28.02	26.98	28.62	27.42	22.72	31.35	30.28	32.93	35.76	43.05	30.7	33.8	33.8
Old Bakery Tidmarsh	34.12	34.22	27	29.81	34.79	26.71	27.63	33.38	33.55	34.19	34.77	41.4	32.6	35.9	35.9
4 Willows Court Pangbourne	28.29	23.5	28.39	26.09	31.71	24.39	19.94	30.5	30.69	34.32	33.25	39.94	29.3	32.2	32.2
1 Shooters Hill Pangbourne	28.13	22.5	20.51	23.14	23.55	22.71	21.21	27.67	29.98	26.87	25.16	33.72	25.4	27.9	27.9
The Cross Key Inn Pangbourne	36.31	37.69	36.88	36.7	49.81	13.27	24.58	38.55	31.95	45.03	40.66	46.89	36.5	<b>40.2</b>	<b>40.2</b>
14 High Street Pangbourne	25.25	25.49	21.13	21.16	21.19	17.85	18.85	24.64	20.31	26.05	25.31	29.16	23.0	25.3	25.3
102 Langley Hill Tilehurst	30.33	–	–	22.75	21.98	19.7	16.73	22.42	24.03	29.19	29.26	34.08	25.0	27.5	26.2
Calcot Hotel, A4 Bath Road Calcot	34.46	24.37	23.34	25.02	28.76	21.22	20.31	–	35.92	–	32.29	47.99	29.4	32.3	23.1



# West Berkshire Council

Elizabeth Court Theale	23.26	20.41	18.25	19.08	23.54	16.33	15.47	19.67	24.12	25.78	25.07	33.63	22.1	24.3	24.3
44 Hambridge Road Newbury	23.51	25.84	21.03	22.27	24.47	19.57	14.62	22.91	23.3	30.8	30.31	35.3	24.5	27.0	27.0
42 Kings Road Newbury	28.44	23.29	20.95	21.05	18.32	20.08	20.48	21.83	24.14	25.31	27.07	33.94	23.7	26.1	26.1
1 Winchester Court Newbury	40.32	33.99	35.24	33.4	38.39	33.93	35.36	38.97	42.55	37.42	44.37	54.83	39.1	<b>43.0</b>	<b>43.0</b>
Continuous monitor 1, A343, A339 and Greenham Road Newbury	42.58	34.25	36	31.5	32.16	32.85	32.49	37.16	38.56	40.25	45.93	48.8	37.7	<b>41.5</b>	<b>40.0</b>
Continuous monitor 2, A343, A339 and Greenham Road Newbury	40.15	35.28	35.99	33.22	31.55	33.38	32.56	36.39	44.6	40.78	46.97	48.14	38.3	<b>42.1</b>	<b>40.6</b>
Continuous monitor 3, A343, A339 and Greenham Road Newbury	36.45	34.41	30.29	36.71	34.34	33.14	32.31	40.7	41.6	39.5	42.87	47.38	37.5	<b>41.3</b>	39.8
64 Greenham Road Newbury	29.72	35.39	–	30.59	35.38	22.04	28.47	–	30.02	37.6	38.56	39	32.7	36.0	27.3

## West Berkshire Council

20 Deadmans Lane Greenham	23.55	25.45	–	22.91	20.72	24.06	23.88	26.62	23.74	25.98	30.22	31.19	25.3	27.8	27.8
A339 New Greenham Park Greenham	37.13	40.15	39.45	36.33	45.83	29.14	23.5	36.23	28.14	–	33.84	42.58	35.7	39.3	39.3
3 Howard Road Newbury	19.66	19.71	21.39	21.09	26.69	13.85	9.14	15.14	19	27.34	26.19	30.07	20.8	22.9	22.9
1 St John's Road Newbury	28.58	26.54	24.12	35.98	31.94	23.18	22.58	28.24	27.31	31.24	35.01	39.9	29.6	32.6	32.6
63 St John's Road Newbury	21.59	24.67	22.43	22.81	30.51	18.16	14.08	23.53	22.6	29.39	27.89	31.01	24.0	26.5	26.5
40 Bartholomew Street Newbury	34.32	34.75	27.36	35.7	31.05	27.9	25.52	31.6	31.09	35.11	36.64	40.78	32.7	36.0	36.0
6 Market Street Newbury	31.75	28.38	26.94	28.45	30.64	23.52	22.48	29.9	30.38	36.99	32.32	39.44	30.1	33.1	25.7
105 London Road Newbury	19.59	22.42	18.82	19.63	28.12	16.6	10.73	20.39	20.58	27.09	24.8	30.18	21.6	23.8	23.8
31 Oxford Road Newbury	38.27	27.91	25.14	27.48	27.14	26.26	23.41	34.58	32.2	31.85	32.25	43.94	30.9	34.0	30.6
1 Dolman Road Newbury	23.4	20.06	15.87	16.94	16.42	14.04	13.76	19.73	18.51	21.41	22.78	30.47	19.4	21.3	21.3
43 Hawthorn Road Newbury	20.53	19	19.54	17.98	28.29	18.24	11.49	22.5	18.25	26.01	24.55	30.49	21.4	23.5	23.5
41 Hutton	39.1	29.96	25.82	28.11	26.3	31.27	29.8	27.77	38.15	31	35.72	39.8	31.9	35.1	35.1

## West Berkshire Council

Close Newbury															
Willows Edge Nursing Home Newbury	28.88	25.28	19.22	17.62	13.39	15.72	17.03	17.91	21.66	20.3	23.5	29.67	20.8	22.9	22.9
112 Shaw Road Newbury	26.14	26.15	17.43	21.43	21.61	15.91	15.22	19.36	24.26	24.68	27.69	35.14	22.9	25.2	25.2
31 Shaw Road Newbury	47.22	34.7	–	27.61	28.32	–	30.5	31.27	37.62	34.49	34.72	45.79	35.2	38.7	30.5
13 Shaw Road Newbury	39.88	33	29.34	32.9	28.7	–	30.98	36.89	36.59	32.53	37.91	40.08	34.4	37.8	37.8
Abbeydale Monks Lane Newbury	22.26	19.05	17.25	15.06	19.34	14.72	12.19	–	18.73	28.43	24.27	32.97	20.4	22.4	15.2
A343 Andover Road Wash Common	20.14	22.49	19.13	16.46	17.1	14.3	–	14.11	14.8	22.75	23.87	28.13	19.4	21.3	15.0
Bus Stop Racecourse Road Newbury	17.72	18.77	17.09	15.59	14.85	12.07	10.35	16.38	14.99	22.37	23.26	28.31	17.6	19.4	19.4
130 Park Avenue Thatcham	25.47	–	19.74	16.06	16	15.35	12.44	17.09	21.13	23	27.29	34.5	20.7	22.8	19.2
31 Chapel Street Thatcham	41.55	33.68	29.48	32.17	38.07	37.46	34.2	40.96	42.17	41.86	42.75	55.62	39.1	<b>43.1</b>	<b>43.1</b>
110 London Road Newbury	29.01	24.82	23.04	21.64	20.1	23.39		27.52	27.56	25.87	27.84	32.19	25.7	28.3	28.3
St James Church	N/A	N/A	24.39	24.79	25.76	20.53	16.4	21.2	24.07	27.12	31.55	29.31	24.5	27.0	24.3

Pangbourne Hill															
-----------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

☐ Local bias adjustment factor used

☐ National bias adjustment factor used

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

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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 for continuous monitoring

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 to ensure the nitrogen dioxide analyser is operating correctly. The audit that is carried out utilises procedures that are applied within DEFRA's National Automatic Air Monitoring Networks Quality Control Programme. The efficiency of the analyser's converter 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 was carried out at the Newbury site on 30<sup>th</sup> June 2016.

The converter in the NO<sub>x</sub> analyser was tested and found to be 99.4% efficient with NO<sub>2</sub> concentrations of 215 ppb. The recommended range for instrumentation in the national automatic air monitoring network is in the range of 98% to 102% efficient. This was a good result. To ensure that the analyser is sampling only ambient air the instrument was leak checked. The result was satisfactory, indicating that the analyser sampling systems were free of significant leaks.

During the audit the analyser exhibited poor responses to both zero and span (calibration) gases with unacceptable levels of variation (noise). The noise appeared to worse when recorded from the mV logger compared to the ppb analyser front panel. The equipment was checked and the results considered in the data management process for this pollutant.

The NO<sub>x</sub> 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 ( $\pm 10\%$ ) and was advised the underlying reason be investigated at the next service, by your Equipment Support Unit. Based on the NO<sub>x</sub> analyser's response to the audit standard and audit zero, the concentrations of the stations NO cylinders 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 and the result was an increase of 2.3%.

## **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 NO<sub>2</sub> 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 will be 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.

West Berkshire 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 AR012 (Jan 2016 – Feb 2016) = 100%, which relates to the % of results which are satisfactory.

## **Diffusion Tube Bias Adjustment Factors**

### **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. 06/17 update) suggested a bias adjustment factor of **1.01** be applied. A copy of the co-location spreadsheet used is provided below. Using Newbury co-location study a local bias adjustment factor has been calculated as **1.10**. The national bias adjustment factor has not been used due to the availability of a local bias adjustment factor.

For the purposes of the ASR 2017 for the 2016 data the bias adjustment factor is derived from the Newbury co-location study.

In determining the bias adjustment factor for the 2016 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 Newbury co-location study is monthly.
- If the co-location site is unusual in some way: for example, affected by specific large nitrogen oxides (NO<sub>x</sub>) 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 30 of 64 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.
- Where the co-location study is spread across more than one calendar year – The Newbury co-location study and diffusion tube surveys are for a full calendar year (2016).
- 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 Newbury co-location study achieved “good” precision and the Newbury 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 – Approximately half of our diffusion tube monitoring sites are roadside sites as is the Newbury co-location study site
- Where the co-location study is for less than nine months, although the diffusion tube monitoring is for a longer period - The Newbury co-location study and diffusion tube surveys are for a full calendar year (2016).



- Where the automatic analyser has been operated using local, rather than national, QA/QC procedures - The Newbury 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 Newbury automatic monitor was 97.0 % in 2016.
- 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 Newbury 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 (Newbury) bias adjustment factor should be used to adjust the 2016 data.

## Checking Precision and Accuracy of Triplicate Tubes



Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 $\mu\text{gm}^{-3}$	Tube 2 $\mu\text{gm}^{-3}$	Tube 3 $\mu\text{gm}^{-3}$	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	07/01/2016	05/02/2016	42.58	40.15	36.45	40	3.1	8	7.7
2	05/02/2016	03/03/2016	34.25	35.28	34.41	35	0.6	2	1.4
3	03/03/2016	08/04/2016	36	35.99	30.29	34	3.3	10	8.2
4	08/04/2016	05/05/2016	31.5	33.22	36.71	34	2.7	8	6.6
5	05/05/2016	02/06/2016	32.16	31.55	34.34	33	1.5	4	3.6
6	02/06/2016	06/07/2016	32.85	33.38	33.14	33	0.3	1	0.7
7	06/07/2016	04/08/2016	32.49	32.56	32.31	32	0.1	0	0.3
8	04/08/2016	01/09/2016	37.16	36.39	40.7	38	2.3	6	5.7
9	01/09/2016	29/09/2016	38.56	44.6	41.6	42	3.0	7	7.5
10	29/09/2016	03/11/2016	40.52	40.78	39.5	40	0.7	2	1.7
11	03/11/2016	01/12/2016	45.93	46.97	42.87	45	2.1	5	5.3
12	01/12/2016	05/01/2017	48.8	48.1	47.4	48	0.7	1	1.8
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
47.98	99.86	Good	Good
45.22	99.85	Good	Good
41.39	96.3	Good	Good
39	98.15	Good	Good
34.66	96.73	Good	Good
45.84	95.46	Good	Good
33.08	93.97	Good	Good
34.8	99.85	Good	Good
38.58	83.48	Good	Good
36.66	99.76	Good	Good
48.73	100.00	Good	Good
52.09	99.88	Good	Good
		Good precision	Good Overall DC

Overall survey -->

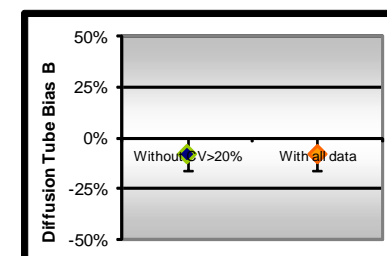
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Newbury
----------------	---------

Precision	12 out of 12 periods have a CV smaller than 20%
-----------	---

Accuracy (with 95% confidence interval)	
without periods with CV larger than 20%	
Bias calculated using 12 periods of data	
Bias factor A	1.1 (1.01 - 1.2)
Bias B	-9% (-17% - -1%)
Diffusion Tubes Mean:	38 $\mu\text{gm}^{-3}$
Mean CV (Precision):	4
Automatic Mean:	42 $\mu\text{gm}^{-3}$
Data Capture for periods used:	97%
Adjusted Tubes Mean:	42 (38 - 45) $\mu\text{gm}^{-3}$

Accuracy (with 95% confidence interval)	
WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	1.1 (1.01 - 1.2)
Bias B	-9% (-17% - -1%)
Diffusion Tubes Mean:	38 $\mu\text{gm}^{-3}$
Mean CV (Precision):	4
Automatic Mean:	42 $\mu\text{gm}^{-3}$
Data Capture for periods used:	97%
Adjusted Tubes Mean:	42 (38 - 45) $\mu\text{gm}^{-3}$



Jaume Targa, for AEA  
Version 04 - February 2011

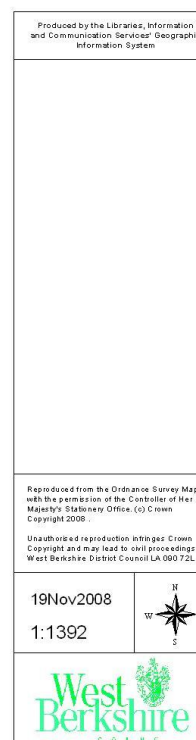
As required distance corrected for nearest public exposure was carried out for 1 site. As required annualisation of data was carried out (referring to Box 7.9 of TG(16) ) for one site, Chaddleworth Primary School, has been possible using 2016 data as recommended in this guidance and detailed below.

<b>Site</b>	<b>Site Type</b>	<b>Annual Mean 2016 (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Period Mean 2016 (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Ratio(A/P)</b>
<i>Reading</i>	<i>Background</i>	33.4	36.14	0.92
<i>Canterbury</i>	<i>Background</i>	15	15.88	0.94
<i>Average</i>				0.93
<i>Measured mean concentration (9) x average</i>				<b>8.37</b>

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

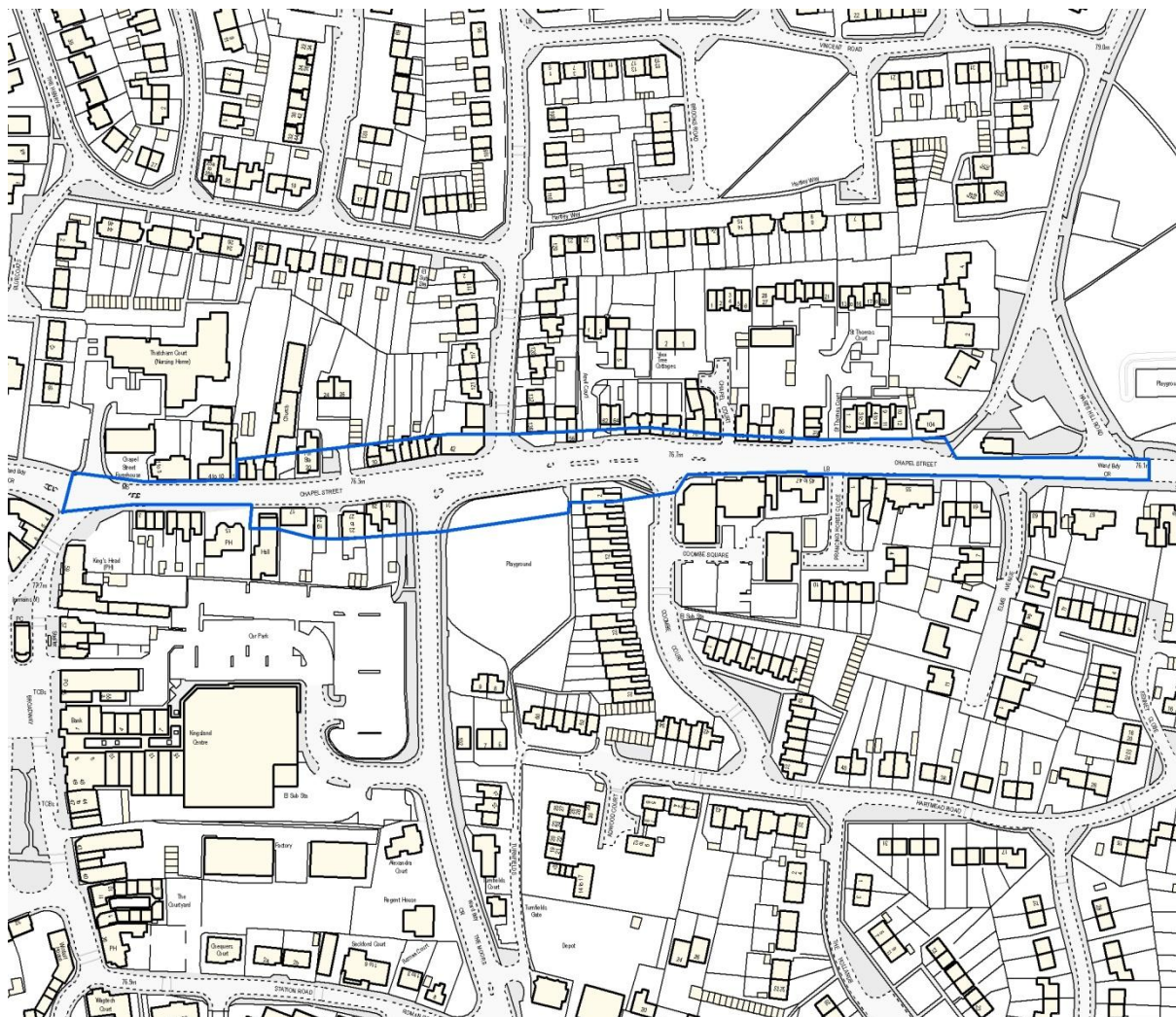
### Newbury AQMA

**AQMA Boundary**  
Based on NO<sub>2</sub> Annual Mean

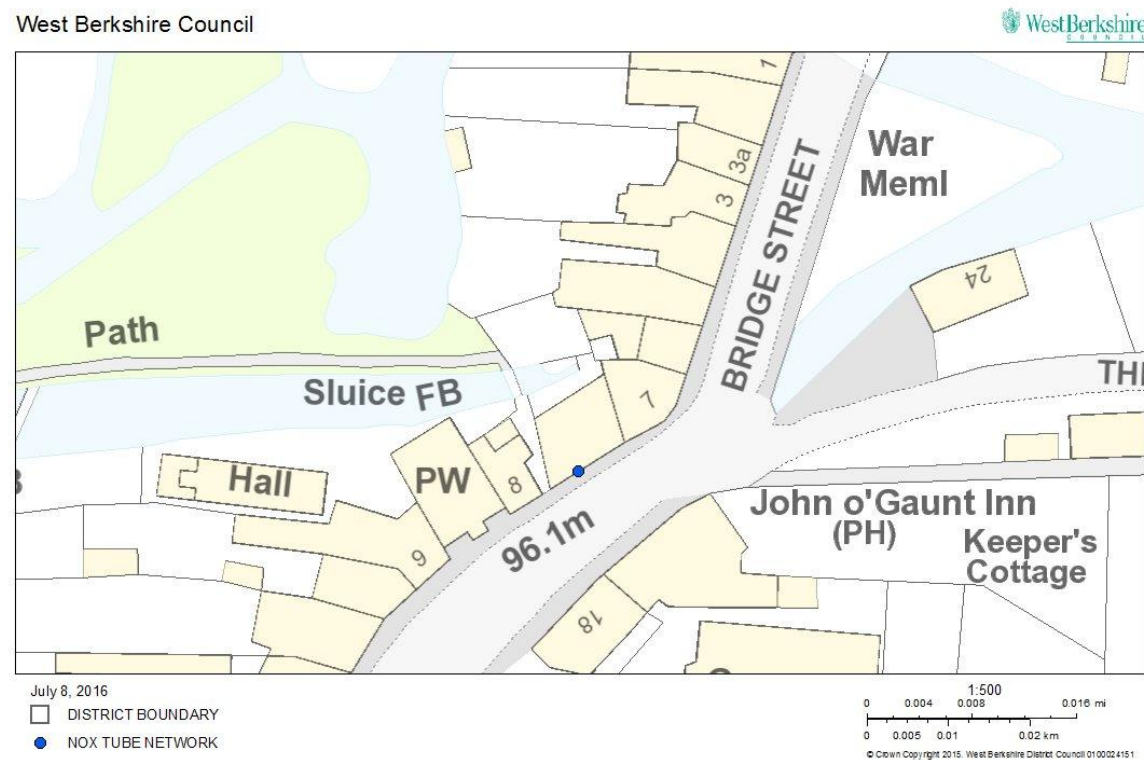


Reproduced from the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office. (c) Crown Copyright 2008. West Berkshire District Council 199924151

Thatcham AQMA



## 7A Bridge Street Hungerford

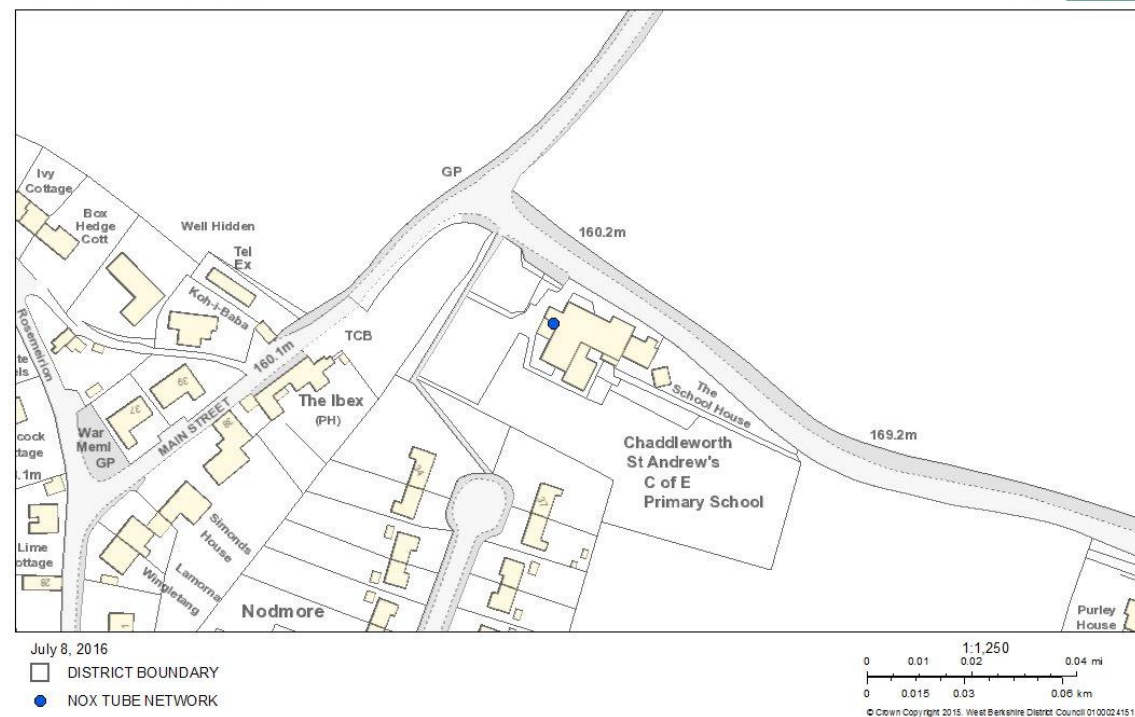


Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151



# Chaddleworth Primary School

West Berkshire Council



West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

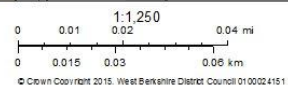
**Newbury**  
**105,110, 118A and 132 London Road**  
**13 and 31 Shaw Road**  
**Flat 1 Southview Gardens**

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOx TUBE NETWORK



West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151



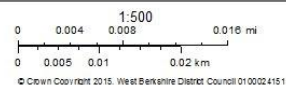
# 374 London Road Newbury

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOX TUBE NETWORK



© Crown Copyright 2015. West Berkshire District Council 0100024151

West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

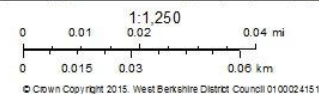
**Thatcham**  
**17, 31, 40, Flat1 47, and 78A Chapel Street**  
**130 Park Avenue**

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOX TUBE NETWORK



West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

## 75 Chapel Street Thatcham

West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK

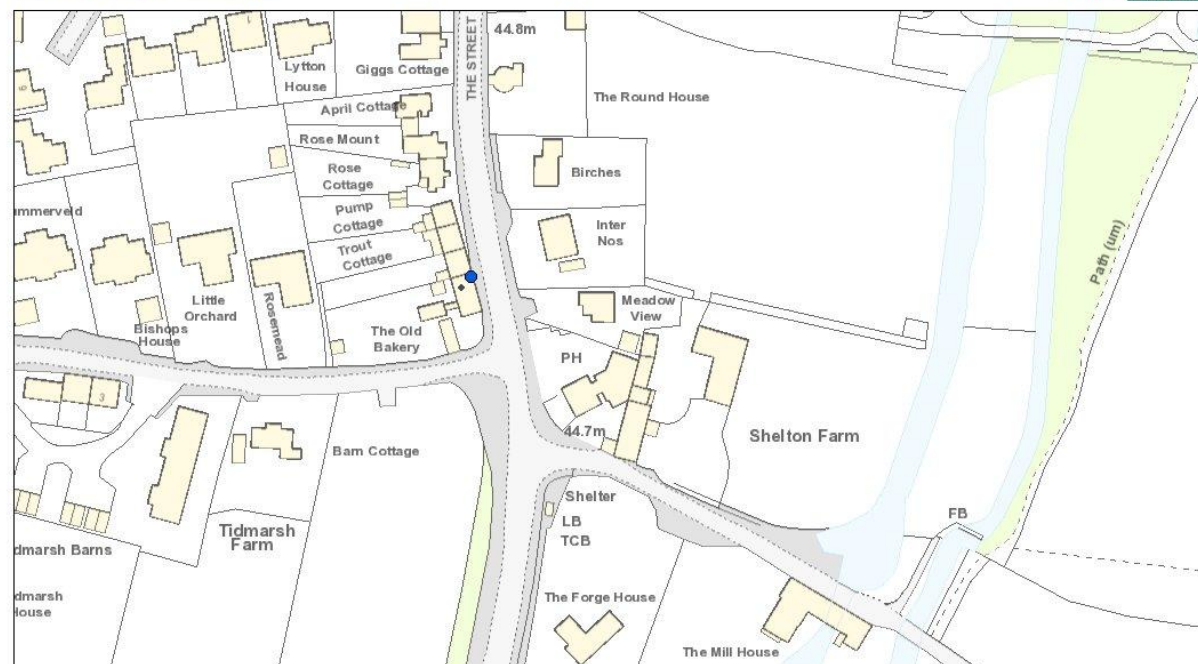
0 0.01 0.02 0.04 mi  
0 0.015 0.03 0.06 km

© Crown Copyright 2015. West Berkshire District Council 0100024151

West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationary Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

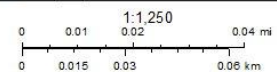
# Old Bakery Tidmarsh

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOX TUBE NETWORK



© Crown Copyright 2015. West Berkshire District Council 0100024151

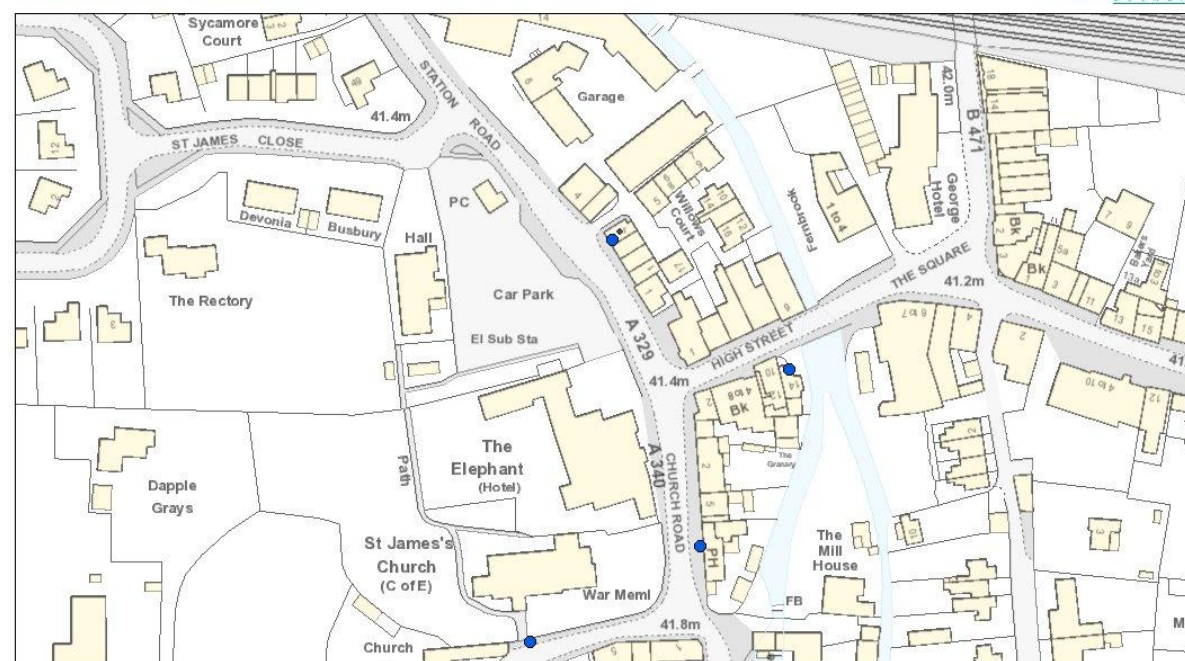
West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151



# Pangbourne

4 Willows Court, Cross Keys Inn Church Street, 14 High Street , St James Church Pangbourne Hill

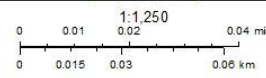
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK

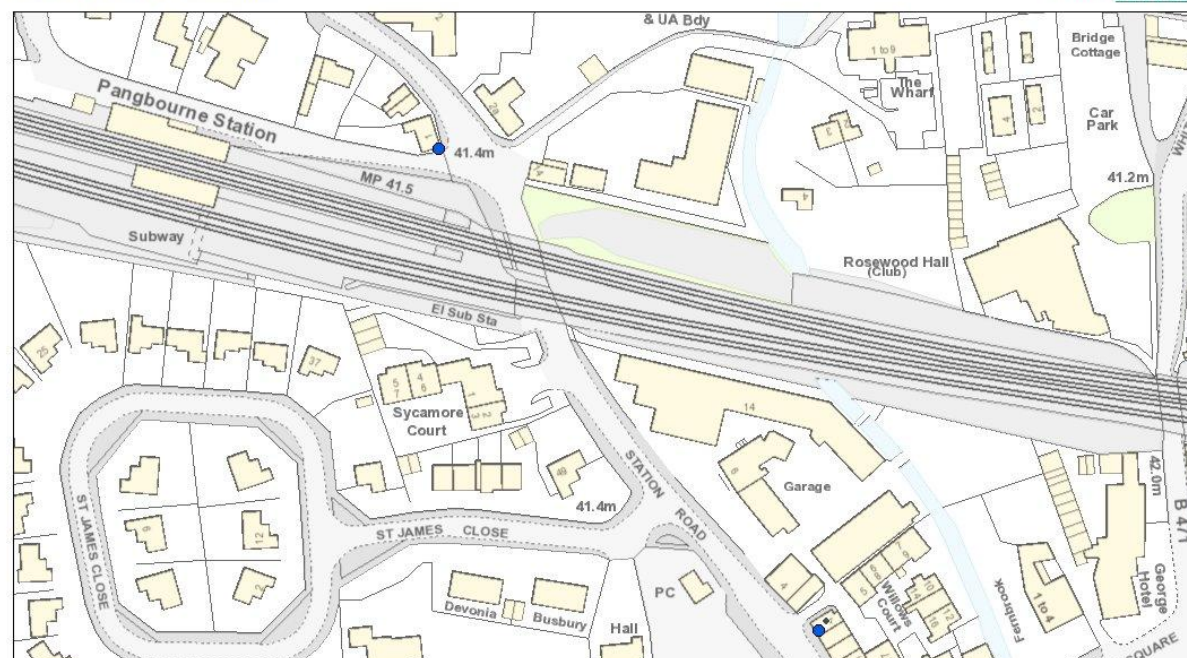


© Crown Copyright 2015. West Berkshire District Council 0100024151

West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

# 1 Shooters Hill Pangbourne

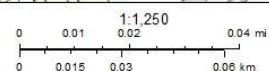
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK

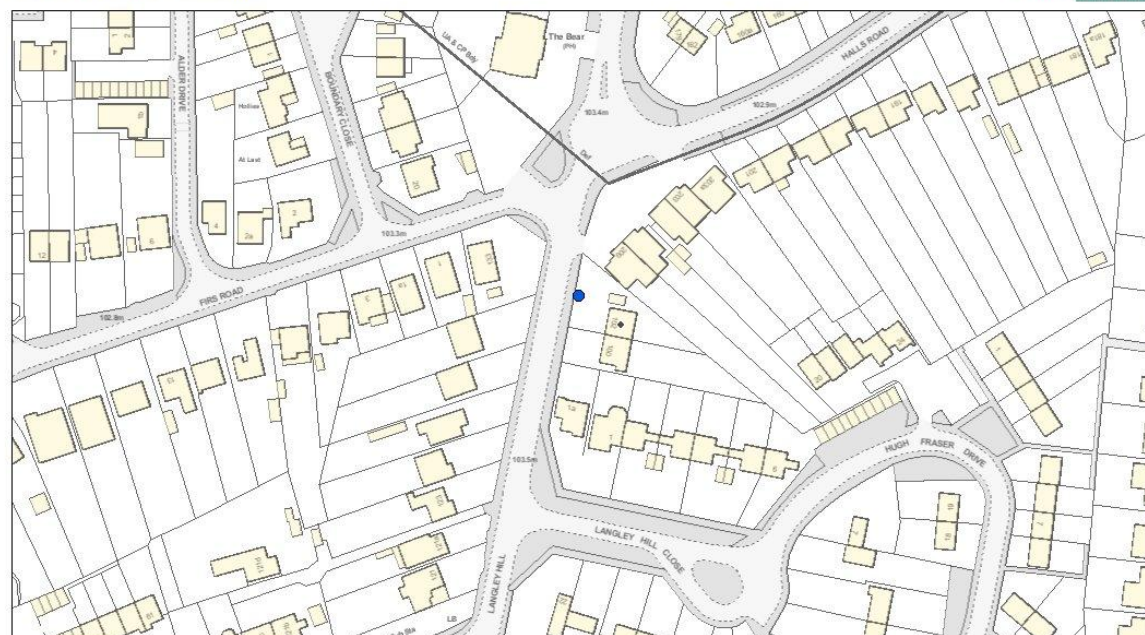


© Crown Copyright 2015. West Berkshire District Council 0100024151

West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

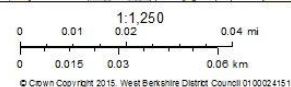
# 102 Langley Hill Tilehurst

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOx TUBE NETWORK

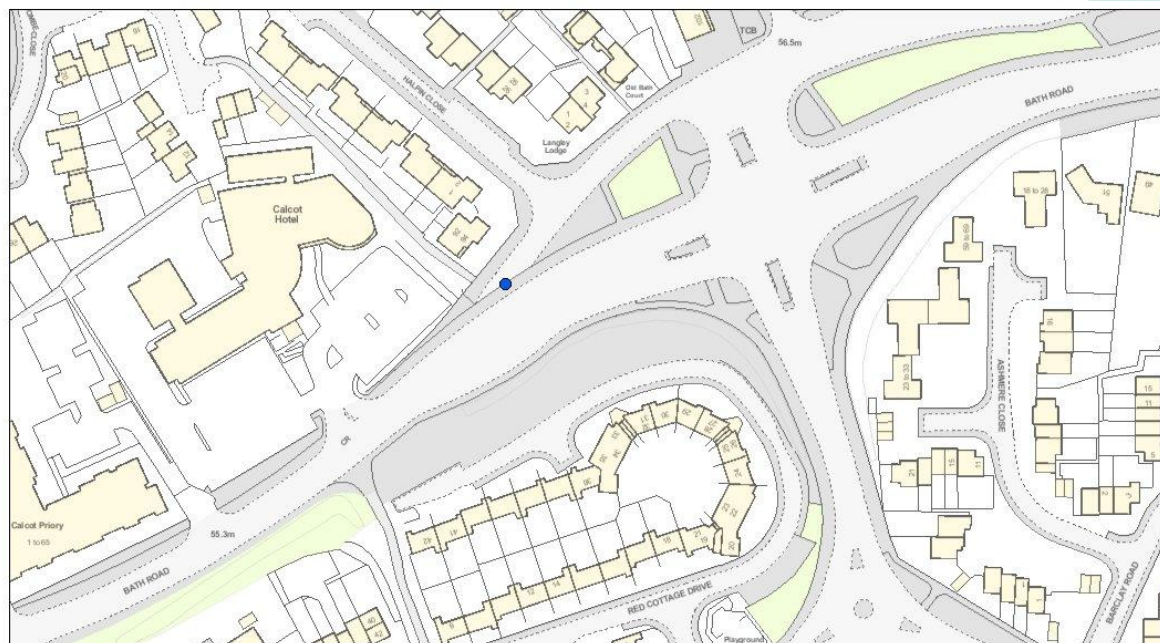


West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 01/00024151



# Calcot Hotel A4 Bath Road Calcot

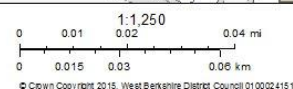
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK

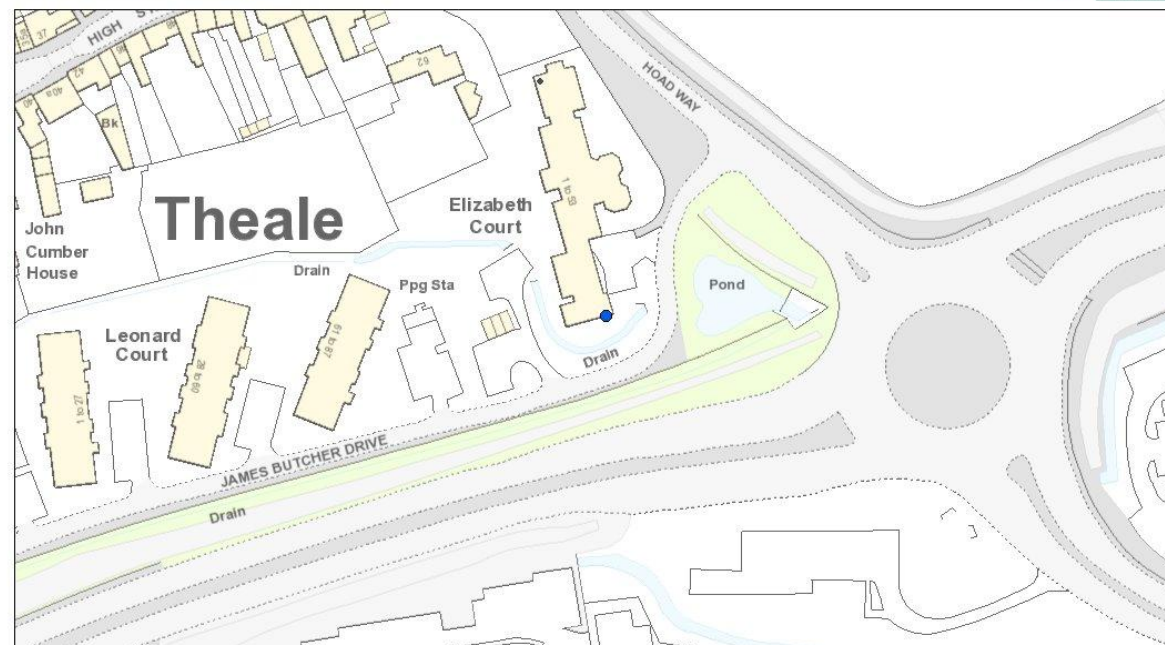


West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151



# Elizabeth Court Theale

West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK

Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 01 00024151

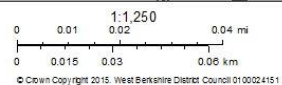
## 44 Hambridge Road Newbury

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOx TUBE NETWORK

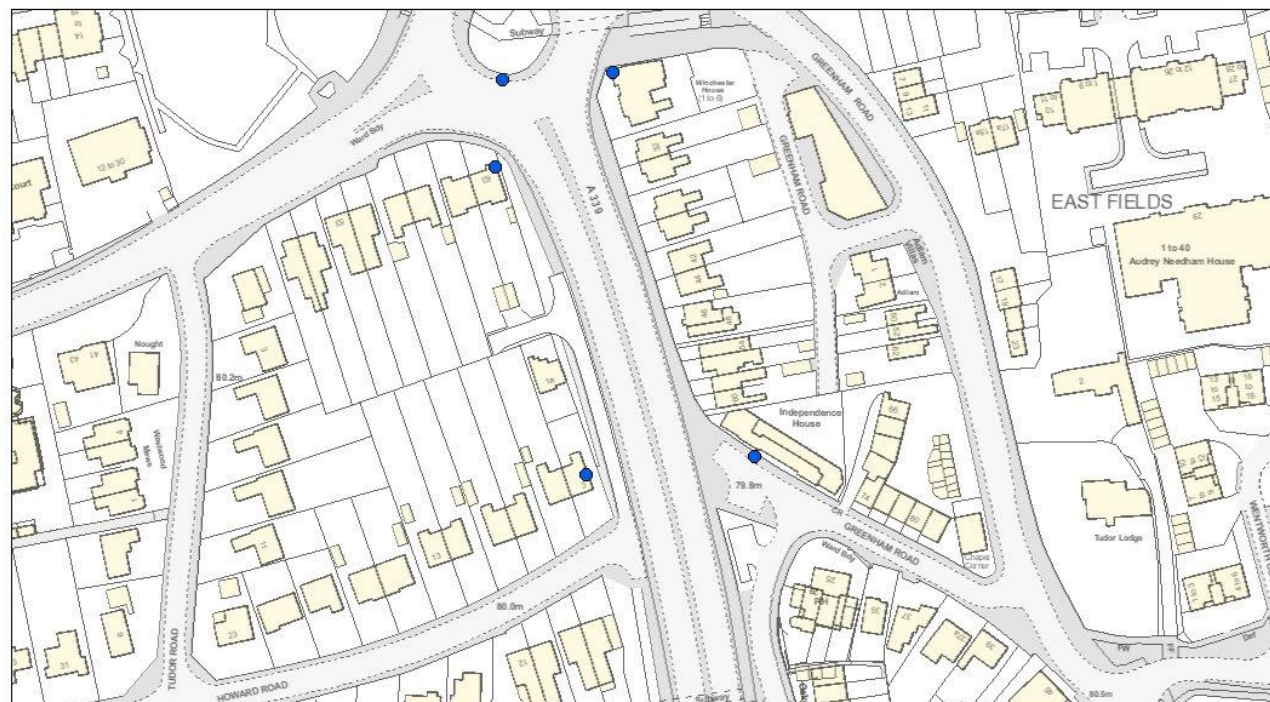


West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

# Newbury

1 Winchester Court, continuous monitor, 64 Greenham Road, 3 Howard Road, 63 St John's Road

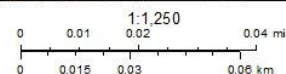
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK



© Crown Copyright 2015. West Berkshire District Council 0100024151

West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

## 20 Deadmans Lane Greenham

West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK

1:1,250  
0 0.01 0.02 0.04 mi  
0 0.015 0.03 0.06 km  
© Crown Copyright 2015. West Berkshire District Council 0100024151

West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151



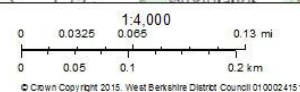
# A339 New Greenham Park Greenham

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOX TUBE NETWORK



West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

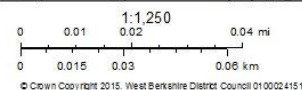
# 1 St John's Road Newbury

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOx TUBE NETWORK



West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationary Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

# 40 Bartholomew Street Newbury

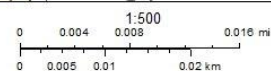
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK



© Crown Copyright 2015. West Berkshire District Council 0100024151

West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151



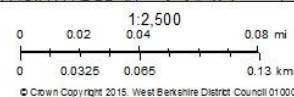
**Newbury**  
**6 Market Place, 42 Kings Road, A339 Newbury Central**

West Berkshire Council



July 8, 2016

- DISTRICT BOUNDARY
- NOX TUBE NETWORK



West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151



# 31 Oxford Road Newbury

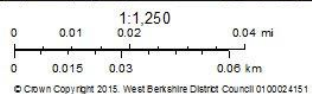
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK



West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 01 0002 4151

# 1 Dolman Close Newbury

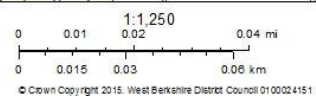
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK



West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 01 0002 4151

**Newbury**  
**43 Hawthorn Road, 41 Hutton Close, Willows Edge Nursing Home**

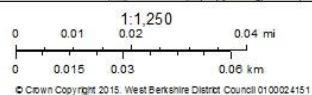
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOx TUBE NETWORK



West Berkshire Council  
 Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151



# 112 Shaw Road Newbury

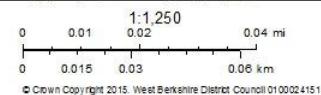
West Berkshire Council



July 8, 2016

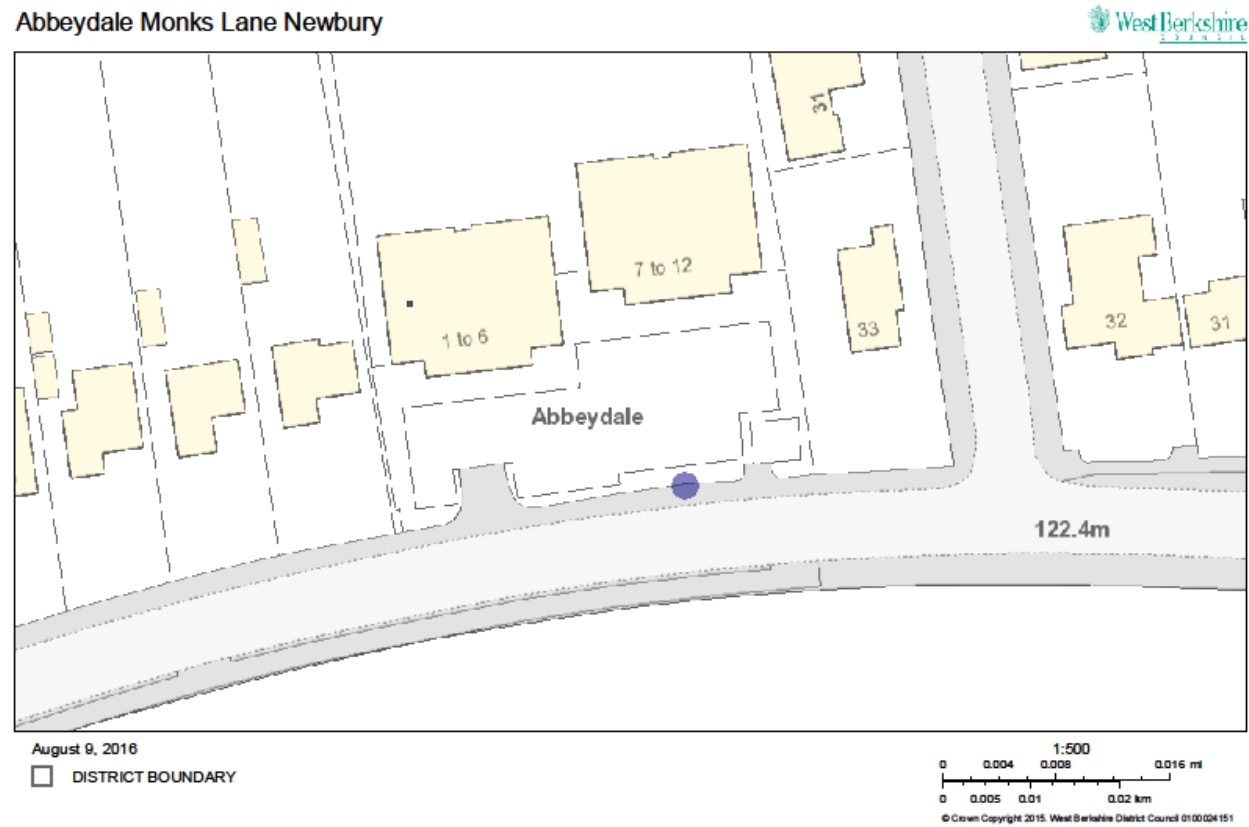
□ DISTRICT BOUNDARY

● NOX TUBE NETWORK



West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationary Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

Abbeydale Monks Lane Newbury



West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationary Office (c) Crown Copyright 2015. West Berkshire District Council 0100024151

## A343 Andover Road Wash Common

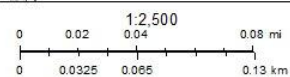
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOx TUBE NETWORK

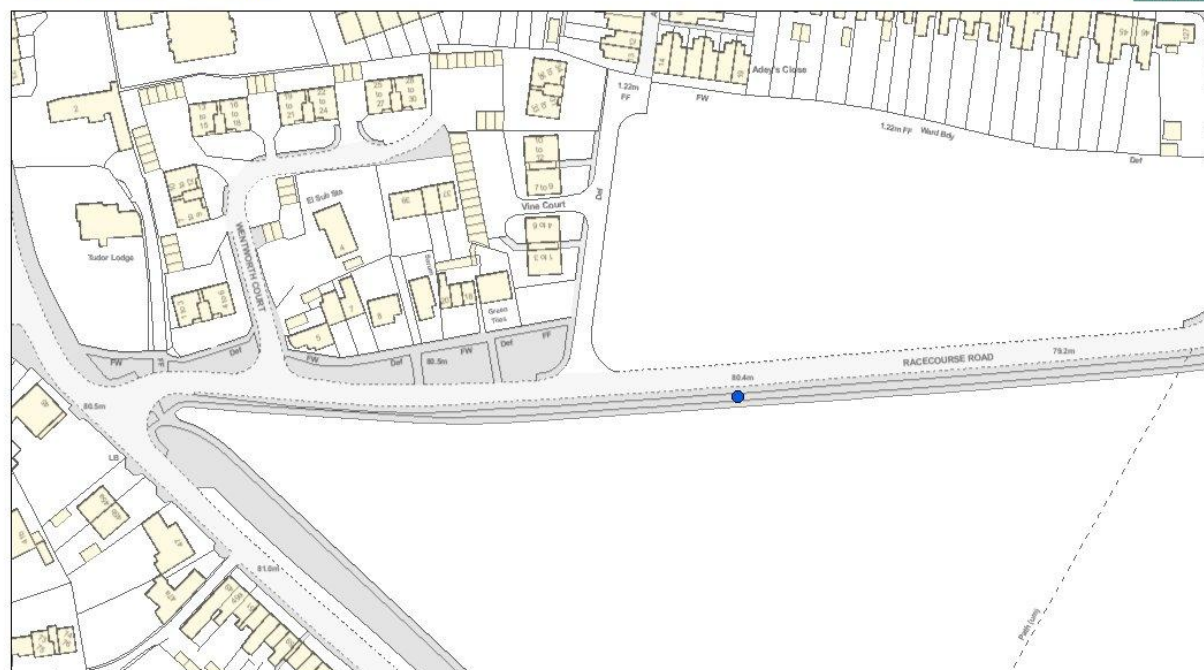


© Crown Copyright 2015. West Berkshire District Council 01 00024151

West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 01 00024151

# Bus stop Racecourse Road Newbury

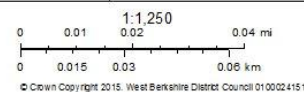
West Berkshire Council



July 8, 2016

□ DISTRICT BOUNDARY

● NOX TUBE NETWORK



West Berkshire Council  
Reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (c) Crown Copyright 2015. West Berkshire District Council 01 0002 4151

## Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

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

<sup>4</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).



## 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 <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## **References**

ASR 2016 WBC

DEFRA appraisal of ASR 2016

PBA Detailed Assessment Pangbourne and Newbury (Nov 2016)