2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2022

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Executive Summary: Air Quality in Our Area

Air Quality in West Berkshire Council

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

The major source of air quality pollutants in West Berkshire are road transport and in particular the contribution from the A339 and A4 has been identified. The main pollutant is nitrogen dioxide (NO_2) in Newbury & Thatcham and as a consequence, two Air Quality Management Areas (AQMAs) have been declared. The Newbury AQMA was declared for exceedances of both the one-hour and Annual Mean NO_2 objective. The Thatcham AQMA was declared for the Annual Mean NO_2 Objective. Details can be found at: https://uk-air.defra.gov.uk/aqma/list?view=W and maps are in Appendix D.

The Nitrogen dioxide (NO_2) levels in 2021 have showed a decrease on the pre pandemic levels of 2019 and 15 of the 36 sites have increased since 2020, and 18 have decreased, 5 are new for 2021 and none of the monitoring locations within West Berkshire exceeded the Annual Objective (40µg/m^3). The 1 Hourly objective NO_2 was not exceeded in 2021

1 Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

2 Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

3 Defra. Air quality appraisal: damage cost guidance, July 2021

4 Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

(permitted level of 18 exceedances of 200µg/m^3 per year). This decrease is due to the reduction of traffic during the pandemic lock downs in 2020 and 2021.

The two AQMA's within the District are showing that they are maintaining a NO_2 level well below the AQB for the past 5 years, and if this trend continues then we may be asking DEFRA to revoke them. The continuous monitor located in the Newbury AQMA showed that the Annual Mean Objective was met, measuring 27.5 µg/m^3 of NO_2 in 2021 which has decreased from 29.2 µg/m^3 in 2020. The decrease may be due to change in people's behaviour and working from home more, the upgrading to new greener cars and perhaps the realisation the cars are detrimental to the environment.

Over the past 5 years there has been a general decrease of NO_2, at a number of sites both within, close too and away from the existing AQMA's.

No extensions or amendments to the AQMAs are required and no new AQMAs need to be declared**.**

During the Pandemic in both 2020 and 2021 we have seen a greater reduction in NO_2 during the year, and there was an even greater reduction during the national lock downs. Regardless of the lock down the overall the average levels in West Berkshire have been reducing over the 5 years up to 2021.

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 Objective 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

v. LTP Strategies continue to be reviewed; no new strategies were implemented in 2020

vi. Working on the link between air quality, particularly from $PM_{2.5}$ and public health in West Berkshire continues. There has been closer working with the Public Health Portal.

The major source of air quality pollutants in West Berkshire is road transport and in particular the contribution from the A339 and A4 has been identified. The main pollutant is nitrogen dioxide (NO_2) in Newbury & Thatcham and as a consequence, two Air Quality Management Areas (AQMAs) have been declared.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[5] sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero6 sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

- West Berkshires Environmental Health is working with the development control applications to review 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.

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5 Defra. Clean Air Strategy, 2019

6 DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

- West Berkshire Council has completed all Pollution Prevention and Control inspections as required for the control of emission to air from industrial processes.
- In 2019 the Bear Lane, A339 (Sainsbury's roundabout) improvements works to enable improved traffic flow were completed, and traffic lights were decided against following the modelling impact results. The true impact of these works will not been seen until we have a pandemic free year, so 2023.
- In 2021, 36 Electric vehicle (EV) charging points were available in West Berkshire, the EV chargers are all plotted on the council's web page https://info.westberks.gov.uk/onstreetev
- Our Policy Guidance Planning for Air Quality document, the joint Public Health and Air Quality website and the Public Protection Partnership website (https://publicprotectionpartnership.org.uk/results/?query=air+quality) all contain information for residents, businesses and consultants regarding air quality and air pollution matters, which is reviewed regularly and updated as necessary.
- This bus station is having Bio-Gas Buses pass through as they run into Reading which has strict AQ standards and West Berkshire benefits from these.
- Looking ahead there are a considerable number of road initiatives to be carried out, electric vehicle charging points to be installed, further developments to be made to cycle routes, improvements to the cycle lesson and bike storage facilities at schools.
- West Berkshire Council also continues to support and recognises the softer Education, Training and Publicity (ETP) elements provided by the Road Safety Team as well as being active members of the Cycle Forum and wider Berkshire Safer Roads group (other partners include Wokingham, Bracknell, Slough and Windsor and Maidenhead). The collaborative work under Berkshire Safer Roads ensures we maintain a wider and more consistent message across borders.
- The Road Safety team aims and objectives are to find opportunities to change behaviour in relation to Active Travel and break down the barriers to encourage more walking and cycling.
- For Clean Air Day in 2021 all the schools in West Berkshire were asked to sign up to the "Clean Air Pledge". By doing this they were agreeing to send out our literature to all the parents about the air quality and anti-idling. Also actively joining in our competitions as well. Unfortunately not many schools signed up to the pledge.

- In 2021 through our DEFRA funding an Air Quality Officer was appointed and successfully ran the “Bumper Stickers Competition”, (Figure S.4), where children were asked to create a sticker to put in the rear of a car to remind the people behind to switch off their engines. (https://publicprotectionpartnership.org.uk/environmental-health/air-quality/anti-idling-bumper-sticker-schools-competition/)

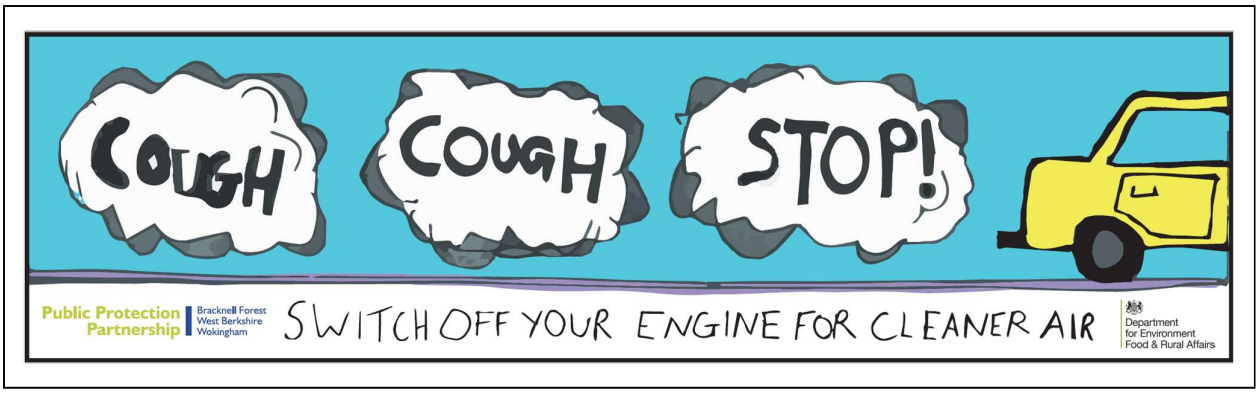


Figure S.1-The Bumper Sticker

- PPP also started the procurement process for the $PM_{2.5}$ School monitoring and Behaviour Change Specialists, both who were appointed in early 2022.
- The Traffic Safety Team run grant funded Cycle Training though Bikeablity from beginner child & adults to advance cycling (Cycle Training - West Berkshire Council). In 2021 Family courses were offered for the first time and 80 families took part.. As you can see from Figure S.2. The none Covid years have been successful with 2696 people using the Bikeability programme.

Risk Assessments			DELIVERY YEAR							
School	Postcod	LEVE	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Level 1			17	0	163	0	33	863		
Level 1&2			1311	1284	1170	1120	982	823		
Level 2			0	0	0	0	0	800		
Level 3			53	71	81	67	65	90		
Balance			65	0	145	153	75	120		
Bikeability Fix			33	0	43	0	45	0		
Learn to ride			0	0	25	55	25	0		
TOTAL			1479	1355	1627	1395	1225	2696	0	0

Figure S.2 Show the amount of people using the Bikeability programme

- West Berkshire Council are encouraging children under 11 to walk to school is through two reward schemes, **Go Kinetic**, designed for children aged 5 to 11, and **Steposaurus**,

for children at nursery. Both of the schemes encourage children to walk, scoot or cycle to school on a regular basis, by offering a range of rewards. The schemes can also help to encourage those who live further away from the school, by walking the final few hundred metres to the school gates. There are a range of rewards available, including reflective bands and the chance to join in with half and full-day activity sessions, such as swimming.

- In the West Berkshire our **schools** play an active part in encouraging children to walk and cycle to school, through School Travel Plans (STP). Every school in our district has an STP which they use to set targets to encourage greater walking, cycling and scooting to school. The STP also states how they will try to reduce the number of children arriving by car. Within the plan, the schools identify schemes that will help them to achieve these goals. To help encourage schools to continue their efforts, we are changing the way we monitor STPs. Using an interactive website from **Modeshift**, we are helping schools to monitor and update their STP continually, and we reward those schools who achieve excellence in school travel.

- A School Street have been set up at Calcot Infant & Junior School by the Traffic Safety Team under the Road Traffic Regulation Act 1984 (Figure S.3). This prohibits the driving from Monday to Friday 08:15 to 09:15 & 14:30 to 15:30 on Royal Avenue, Curtis Road and Gatcombe Close. Only those with permits (residents) will have access. In the 2023 report we should be able to report the results.

Figure S.3 The School Street Sign

Conclusions and Priorities

There was no exceedance of the monitored NO_2 Annual Mean Objective (40µg/$m^{3)}$ in 2021, the level was 27.5µg/m^3 at the continuous monitor located in Newbury. The hourly objective (permitted level of 18 exceedances of 200µg/m^3 per year) was also met as there no exceedances.

There were no exceedances of the Annual Air Quality Objective level of 40µg/m^3 from the ratified and bias adjusted diffusion tubes within the Newbury AQMA or the Thatcham AQMA. There were no locations greater than 60µg/m^3 which indicates no exceedance of the 1-hour Objective. This year (2021) showed that 19 sites have decreased since 2020, and 15 have increased. In 2020 of the sites decreased from 2019. In 2021 five new sites were erected at Calcot School, Westwood Farm, Streatley, 55 Station Road and 1 Kingfisher Court in Pangbourne.

Overall, the concentrations have been showing a trend of decreasing NO_2 since 2017.

The following local priorities continue to be:

- Nationally exploring the link between public health and $PM_{2.5}$
- Joint working between Public Health and Environmental Health teams and links within the Berkshire Public Health Shared Team and Traffic Safety.
- 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.
- Carry on with the continuous and passive air quality monitoring programmes in 2022.
- The EV chargers continue to be plotted on the interactive map on the intranet, or the council's web page https://info.westberks.gov.uk/onstreetev to help promote the use of the vehicles in the borough.
- Continue the School Streets projects and the promotion of alternative travel to school

The following challenges have been identified:

- Budget allocation for progressing measures and actions. 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.
- Burning of fuels as some areas of West Berkshire are rural, and this for some people is their only source of heating. We are continuing to educate people on the best types of fuels to use to help reduce pollution. Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 - PPP (publicprotectionpartnership.org.uk)

The Pandemic and NO_2

The past two years have been the only time in our history of Air Quality monitoring when we have had very limited vehicles in some months on the road network in West Berkshire.

- West Berkshire saw a change of NO_2 (at the continuous monitor) between -34.95% and +19.66% in 2020 compared to 2019. This equated to a -10.13%% reduction in annual mean concentration relative to 2019. If you compare 2021 to 2019 this is now a great average reduction of 17.2%. Graph (Figure S.4) shows the monthly averages for 2019, 2020, and 2021, the orange lines show the percentage increase and decrease between 2019 (pre covid) and 2021 (the last year with a lock down). As you can see from the graph (Figure S.4) the NO_2 at the continuous monitor in 2021 was less than in 2019.

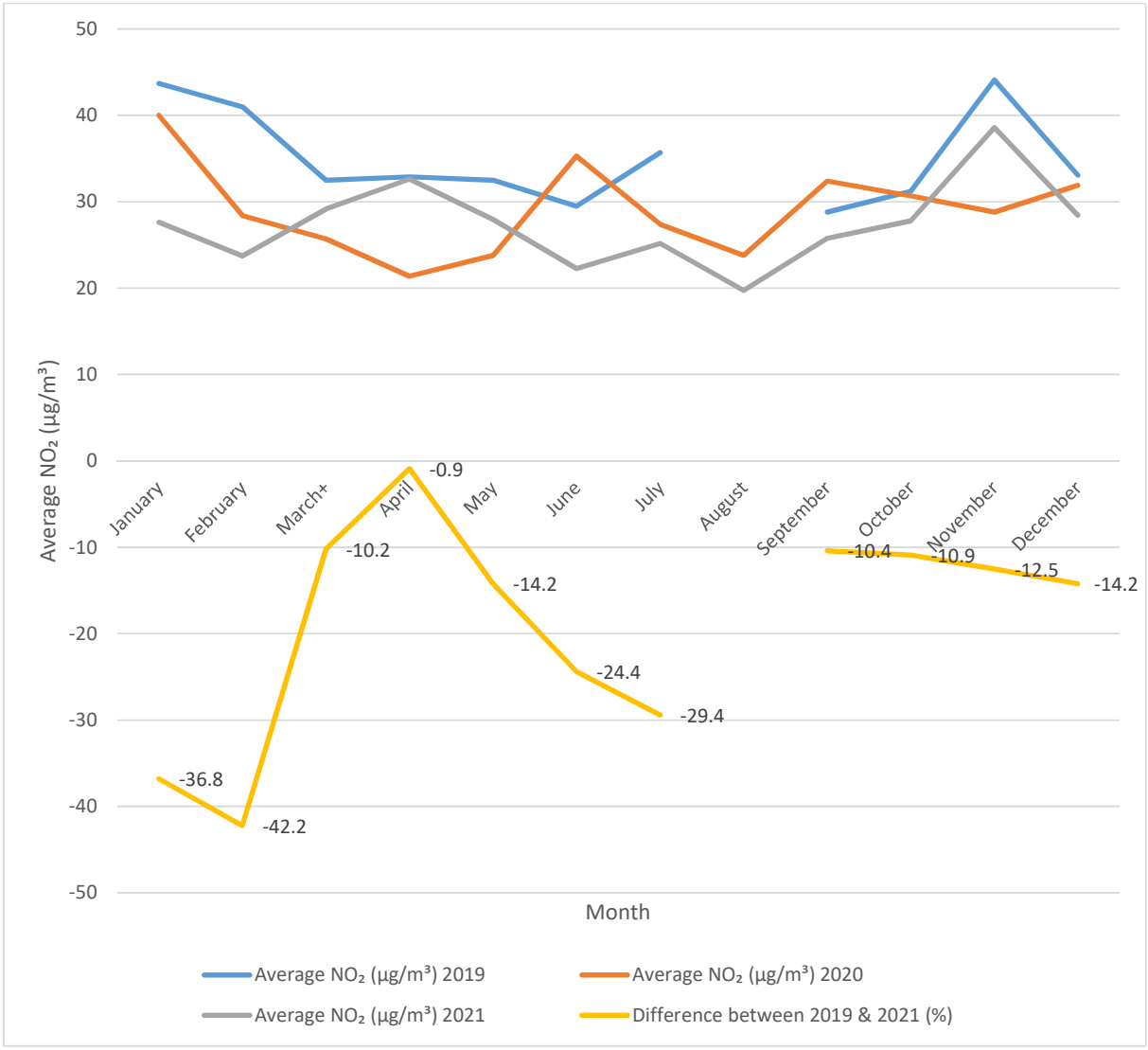


Figure S.4 - A graph comparing the annual NO_2 means at the Newbury CM for each month in 2019, 2020 & 2021 from the Continuous Monitor.

Local Engagement and How to get Involved

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

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

Other useful websites are:

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

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

There are a number of ways our residents can help to improve local air quality:

- Public Protection Partnership https://publicprotectionpartnership.org.uk/environmental-health/air-quality/vehicle-idling/
- Domestic Fuel information https://publicprotectionpartnership.org.uk/environmental-health/air-quality/air-quality-domestic-solid-fuels-standards-england-regulations-2020/
- Walk or cycle short distances of less than one or two miles rather than driving (see http://info.westberks.gov.uk/index.aspx?articleid=27868 for routes in West Berkshire).
- Search for car sharing opportunities using Lift share (see https://liftshare.com/uk) or Faxi (https://faxi.co.uk/) to share journeys with work colleagues
- Newbury Car Club (see http://www.co-wheels.org.uk/newbury)
- Use the bus or train regularly and keep up-to-date with the latest bus route timetables (see http://info.westberks.gov.uk/index.aspx?articleid=27888)
- Urban Limits http://urbanlimits.org/
- Safer Steps http://safersteps.co.uk/
- Road Rangers http://theroadrangers.co.uk/
- Travel Planning (Get Your Coat App) https://getyourcoat.app/
- Independent Travel (RouteGuard App) www.routeguard.co.uk

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Quality Team of Public Protection Partnership for Wokingham Borough Council with the support and agreement of the following officers and departments:

Highways Authority,

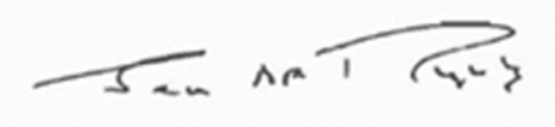
Environmental Health & Public Health,

Planning Authority

This ASR has been approved by: Sean Murphy

This ASR has not been signed off by a Director of Public Health.

This ASR has been signed off by the manager of Public Protection Partnership



Sean Murphy

Head of Public Protection Partnership

If you have any comments on this ASR please send them to Environmental Health at:

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ehadvice@westberks.gov.uk

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Tables

1 Local Air Quality Management

This report provides an overview of air quality in West Berkshire Council during 2020. 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 Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

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 should prepare an Air Quality Action Plan (AQAP) within 12 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 Table 2.1. The table presents a description of the 2 AQMAs that are currently designated within West Berkshire. .Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 Annual Mean;
- NO_2 1 Hour Mean;

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Newbury AQMA	Declared 2009	NO2 1 Hour Mean	An area encompassing a very small number of properties at the roundabout junction of A339, A343 St Johns Road and Greenham Road.	NO	61	0	Newbury AQAP	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=304
Newbury AQMA	Declared 2009	NO2 Annual Mean	An area encompassing a very small number of properties at the roundabout junction of A339, A343 St Johns Road and Greenham Road.	NO	54.4	27.5	Newbury AQAP	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=304
Thatcham AQMA	Declared 2009	NO2 Annual Mean	An area encompassing a very small number of propertiesalong the A4 (40 Chapel Street from x to y)	NO	53.3	23.1	Newbury AQAP	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=304

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

☒ **West Berkshire Council confirm that all current AQAPs have been submitted to Defra.**

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

Defra's appraisal of last year's ASR that the report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to inform future reports.

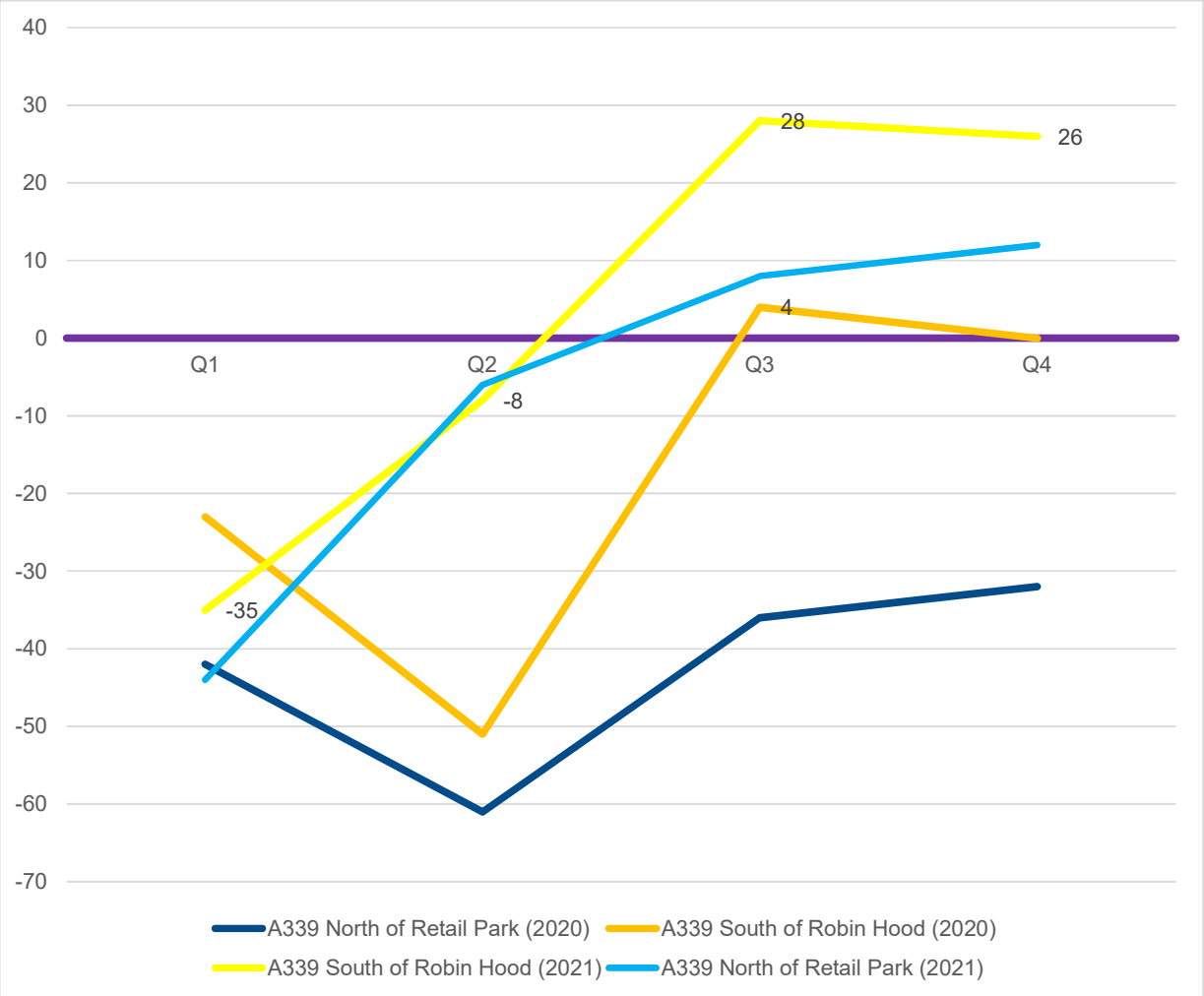
1. Please could the Council ensure the Level of Exceedance Current Year column in Table 2.1 (AQMAs) is correctly filled out. A working link to the current air quality action plan (AQAP) should also be included in the table.
2. Trends are clearly presented and discussed and a robust comparison with air quality objectives is provided, and the impact of the COVID-19 pandemic during 2020 was duly noted.
3. The diffusion tube and AQMA mapping is comprehensive and clearly sets out the details and extent of the monitoring network.
4. The Council previously stated they would consider revocation of both the Newbury and Thatcham AQMAs following the results of the 2021 ASR, however due to the pandemic, the Council have prudently postponed this decision in light of the sharp reductions in concentrations seen in 2020 as a consequence of the lockdowns. This decision is supported.
5. QA/QC procedures were largely applied appropriately, with a detailed discussion provided regarding the decision for choosing which of the local or national bias adjustment factors to use.
6. Following a comment from last year's ASR appraisal, the Council have included a detailed discussion relating to measure to bring about $PM_{2.5}$ emissions reductions, which is commendable and welcomed.
7. The Council have provided a good summary of the impacts from COVID-19 on air quality, clearly showing the benefits of reduced traffic flows on NO_2 concentrations in particular, and highlighting the challenges to LAQM as well as opportunities for behavioural change and potential positive impacts from these.
8. The Council have completed a detailed and thorough report that satisfies the relevant criteria. The Council should continue their good work for future ASRs.

West Berkshire Council has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Traffic Data in West Berkshire Council

The traffic is monitored at 7 places in West Berkshire, A340 in Tidmarsh, A4 in Calcot, A4 in Theale, A4 in Woolhampton, and in Newbury the A339 North Bound, A339 South Bound and A339 North of the retail park.

The Newbury Continuous Monitor is located between the A339 North of the Retail monitoring site and the A339 South of Robinhood roundabout. The traffic from the smaller vehicles (Graph 2.1) Shows the characteristic drop off the lock down in Q1 & Q4 in 2020, and then the recovery of traffic from the 2021 Q1 lock down.

Graph 2.1 - % reduction/increase of Small vehicles (2019 v's 2020 & 2019 v's 2021)



The traffic from the larger vehicles (Graph 2.2) does also show the characteristic drop off the Lockdown in Q1 & Q4 in 2020, and then the recovery of traffic from the 2021 Q1 lock down. However, A339 South of Robin Hood shows an increase in 2020 in Q4, this may be due to the amount of on-line orders and food deliveries in the lock down months, as these

business could still run. But to the North shows a major decrease, this may be due to the deliveries to retail stores being reduced during the second 2020 lockdown.

Graph 2.2 - % reduction/increase of Large vehicles (2019 v's 2020 & 2019 v's 2021)

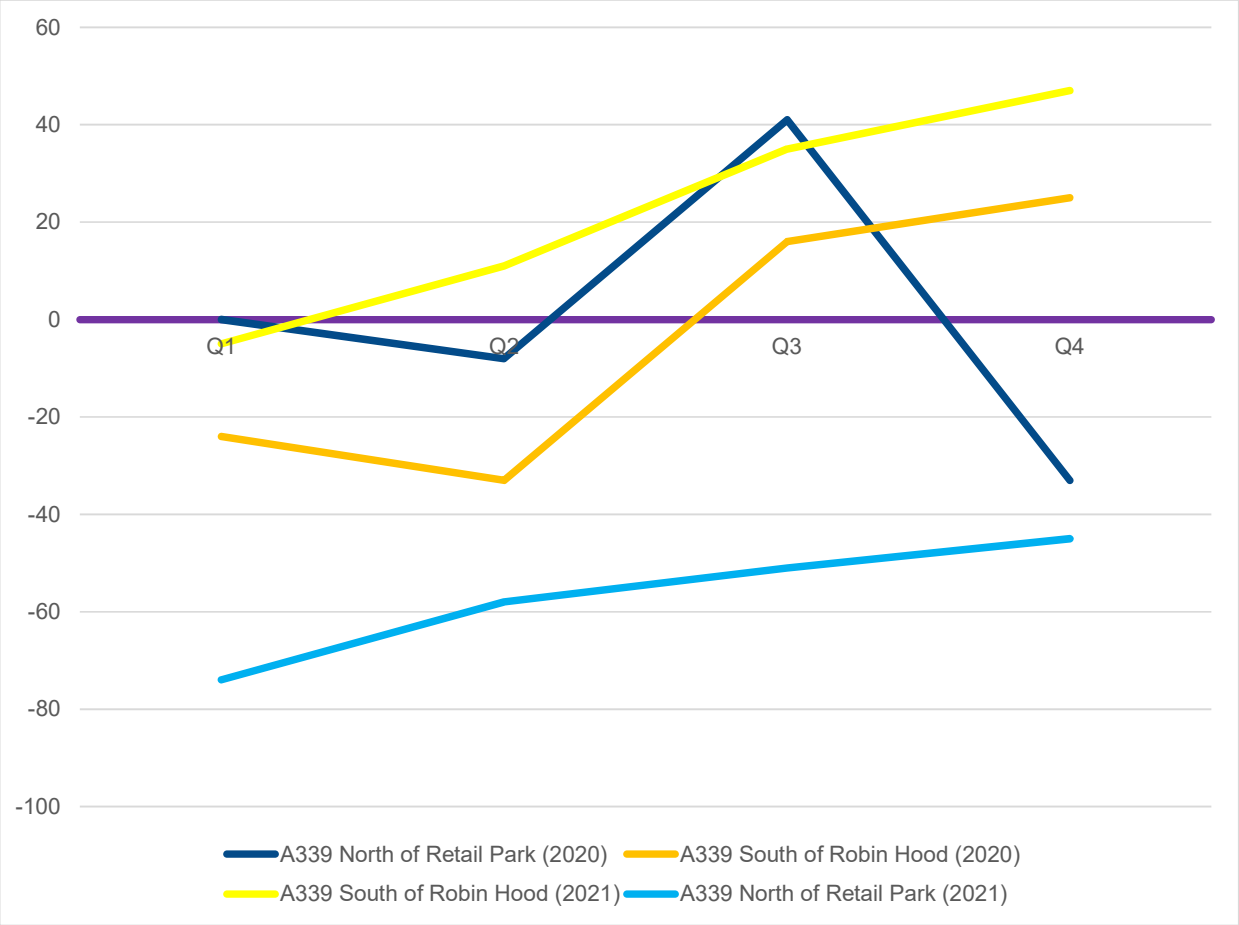


Table 2.2. 17 measures are included within Traffic Data in West Berkshire Council

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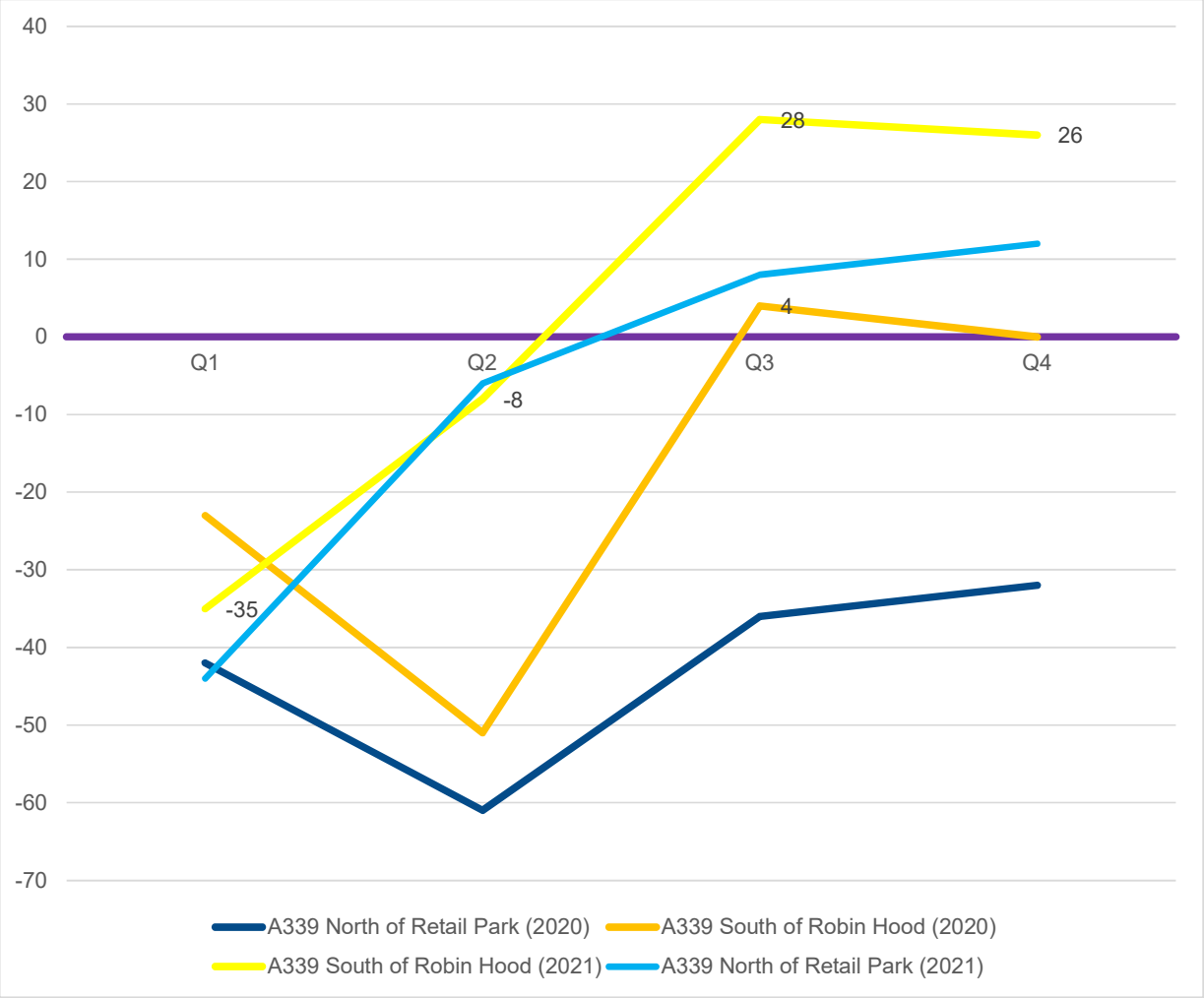

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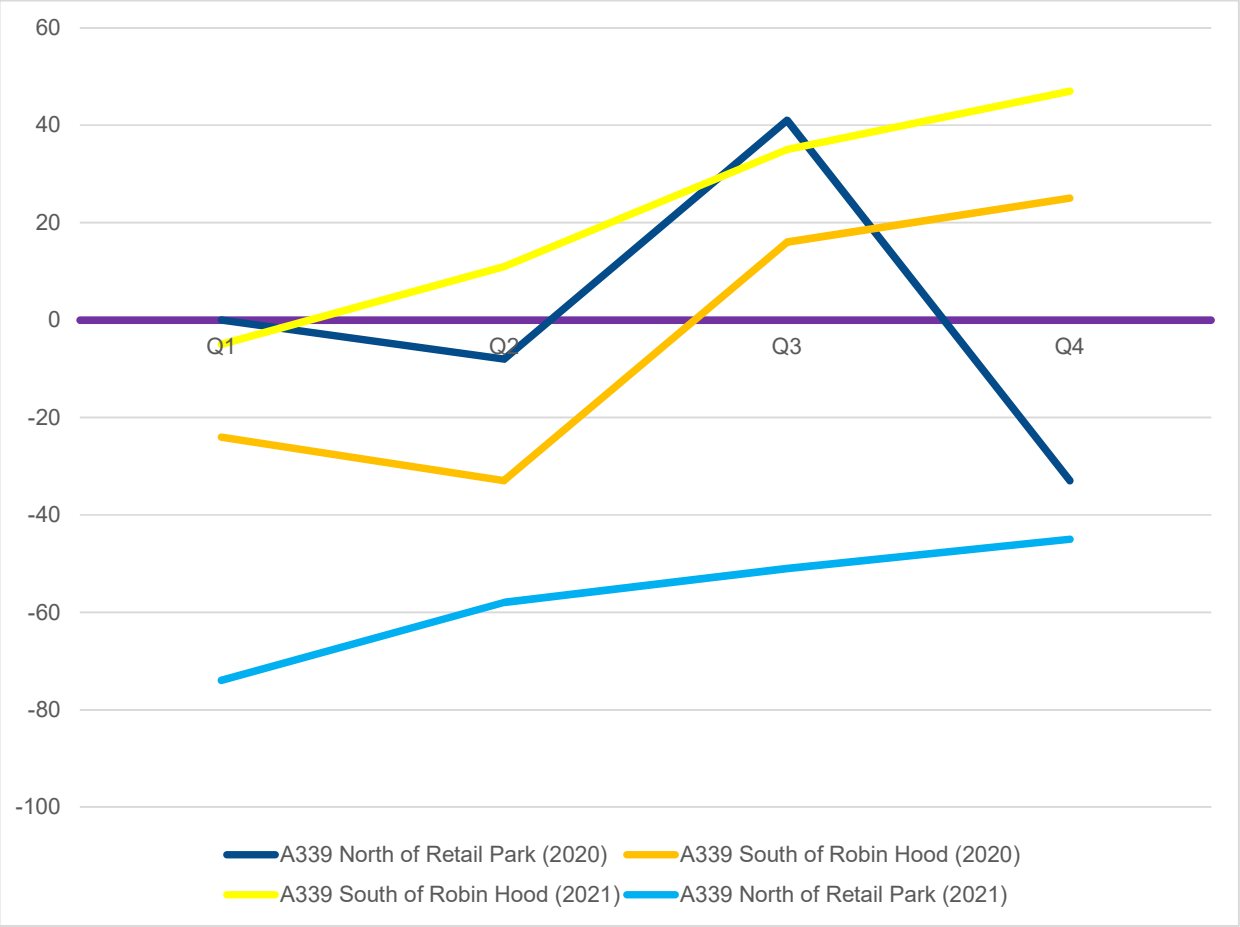

Table 2.2, with the type of measure and the progress West Berkshire have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Traffic Data in West Berkshire Council

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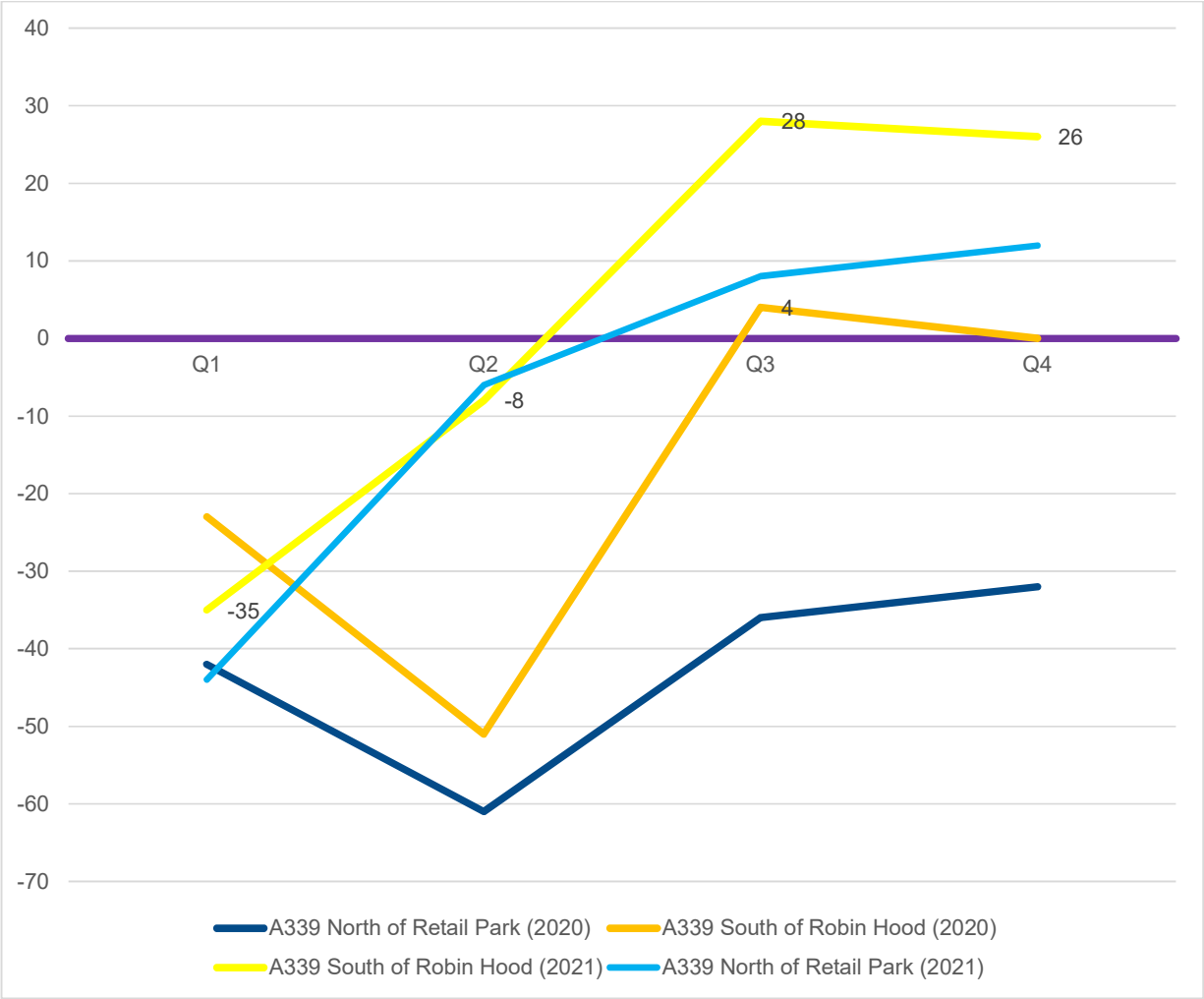

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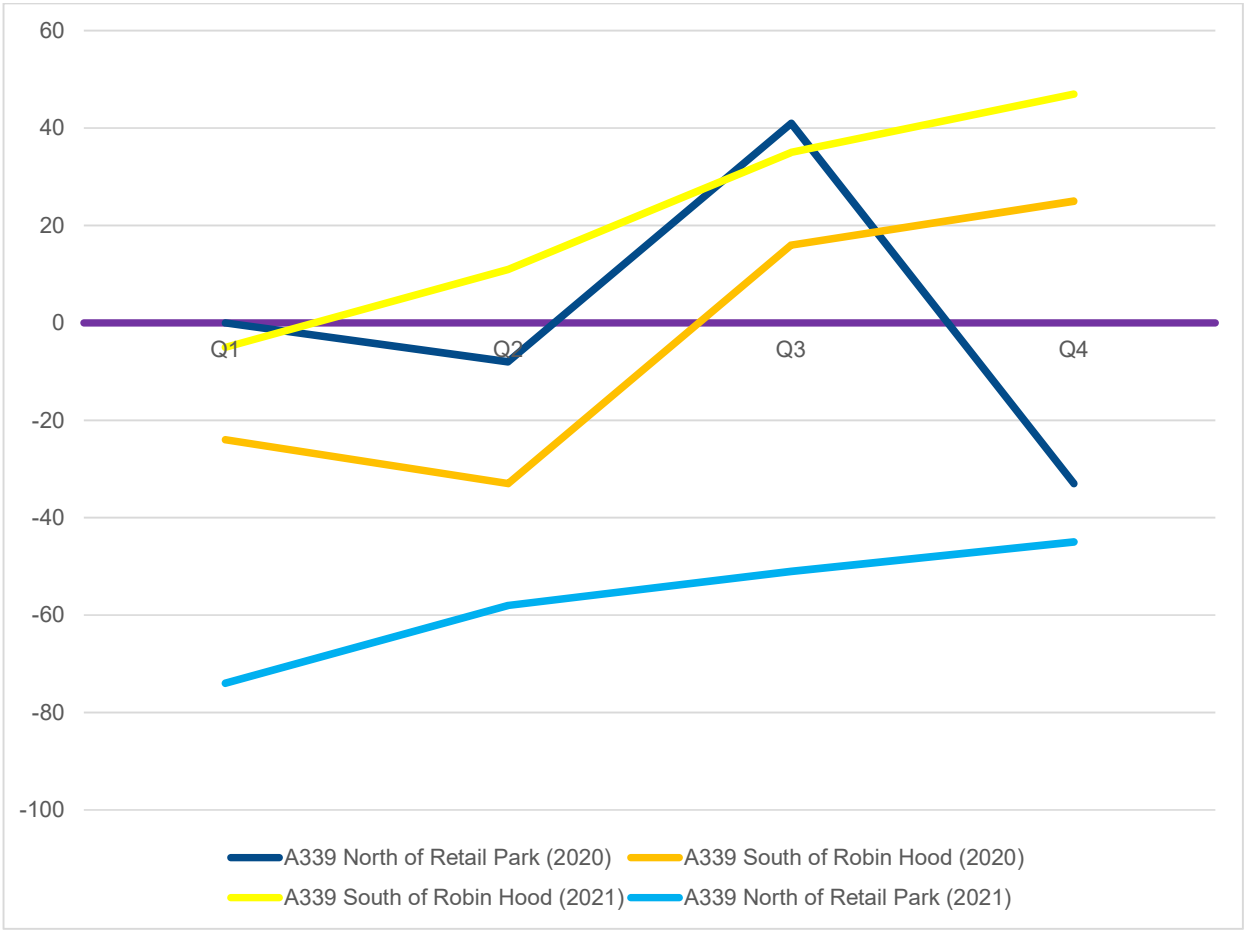

60
40
20
0
-20
-40
-60
-80
-100
Q1
Q2
Q3
Q4
A339 North of Retail Park (2020)
A339 South of Robin Hood (2020)
A339 South of Robin Hood (2021)
A339 North of Retail Park (2021)

Table 2.2.

- More detail on these measures can be found in their respective Action Plans. More detail on these measures can be found in their respective Action Plans (http://info.westberks.gov.uk/CHttpHandler.ashx?id=36580&p=0) . Key completed measures are: Further A339 Bear Lane (Sainsbury's roundabout) improvement works to enable improved traffic flow have been completed and traffic lights were decided against at the nearby St Johns Road roundabout following the modelling impact results. The results of the impact for the changes will not be available until the 2022/23 reports as we will need at least a year's worth of data without the pandemic impact included.
- Bio-Gas Buses pass through the District, as they run from Newbury from Reading which has strict Air Quality standards, this in turn benefits West Berkshire.
- The car club (set up in 2016) continues to expnad and the fleet now includes one electric vehicle. At the end of 2021 the car club had 103 members and the car with the highest use had 374 bookings.
- Many Electric trains are now running through the District and in December 2019 there was a change to the timetable. As a result, the Thatcham Level crossing is being monitored by the Transport Policy Team to investigate the knock-on effect of those changes, and will continue through 2022.
- Active work on the reduction of HGVs through Newbury with the erection of Positive Signage in 2019/20 to influence the travel direction of the freight and greater use of the bypass.
- Further walking, running and cycling groups such as Let's Ride, Run Together and Walking for Health (led walks across West Berkshire) have been set up to provide activities for beginners, mental health groups and other interested parties.
- In 2019, 31 Electric vehicle (EV) charging points were installed in West Berkshire, in 2020 an additional 5 were added. We are allowing increasing these when new Council car parks are being built or supermarkets planned for. The EV chargers are all plotted on the council's web page https://info.westberks.gov.uk/onstreetev
- National Cycle Network 422 expansion – A4 Newbury to Thatcham and on to Calcot was completed in 2019, and continues to be popular, even more so since lockdown. This provision of improved cycle ways through the Thatcham AQMA, and potentially linking

Newbury to Legoland, Windsor https://osmaps.ordnancesurvey.co.uk/51.40608,-1.41302,10,

- Pedestrian and cyclist directional signage – this project commenced in 2018/19 and is continued through out 2021 to promote and improve walking and cycling facilities.
- Cycle parking – improvements to existing facilities and introduction of new ones began and continues in schools into 2021.
- Anit-ilding Leaflets have been designed and distributed to all schools and made available on our website. https://publicprotectionpartnership.org.uk/environmental-health/air-quality/vehicle-idling/
- Our Social media pages are also very active with AQ hints an tips on anti-idling, monitoring and competitions.

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

Newbury

- New station/Council offices car park at Market Street.
- Improvements to the capacity of Robin Hood Roundabout (subject to external funding).
- A4 cycle track, further improvements.
- A339 Sandleford, create junction for new school and future housing development.
- Start construction of Kings Road Link Road (to be completed 2022).
- Further on-street EV charge points throughout the borough.
- New EV charge points in car parks, locations to be confirmed.
- Investment in cycle parking at schools.

Thatcham

- Further development of A4 cycle route.
- Optimisation of traffic signal timings on A4.
- On-street electric vehicle charge points.

Theale

- On-street electric vehicle charge points.

Pangbourne

- On-street electric vehicle charge points.

District wide

- Clean Air Day in June 2022 to increase awareness and promote health, and anti-idling. We have asked all schools in West Berkshire to become AQ Ninjas and earn belts by travelling to school by alternative means.

West Berkshire's priorities for the coming year are

- Continue to implement Air Quality conditions on major planning applications.
- Joint working between Public Health England and the Public Protection Partnership (https://publicprotectionpartnership.org.uk/) 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.
- Carry on the continuous and passive air quality monitoring programmes.
- Establish the feasibility of monitoring $PM_{2.5}$, as this be required through the Environment Act 2021.
- Continue to monitor schools for $PM_{2.5}$ nearest to the AQMA through our DEFRA Grant.
- Bikeability classes for year 5 in Primary Schools to encourage safe cycling and to give them confidence.
- Continue the School Street Programme, which will continue to acheive
  - Cut down on traffic & parking pressures outside schools.
  - Discourage car journeys to school & encourage walking & cycling.
  - Make the street outside schools safer at the start & end of the day.
  - Improve air quality and create a more pleasant environment for everyone.
  - https://info.westberks.gov.uk/school-streets

West Berkshire's priorities for the coming year are to continue monitoring the AQ levels through-out the district, run the DEFRA Grant campaign and to work with other agencies to help improve and keep the Air Quality.

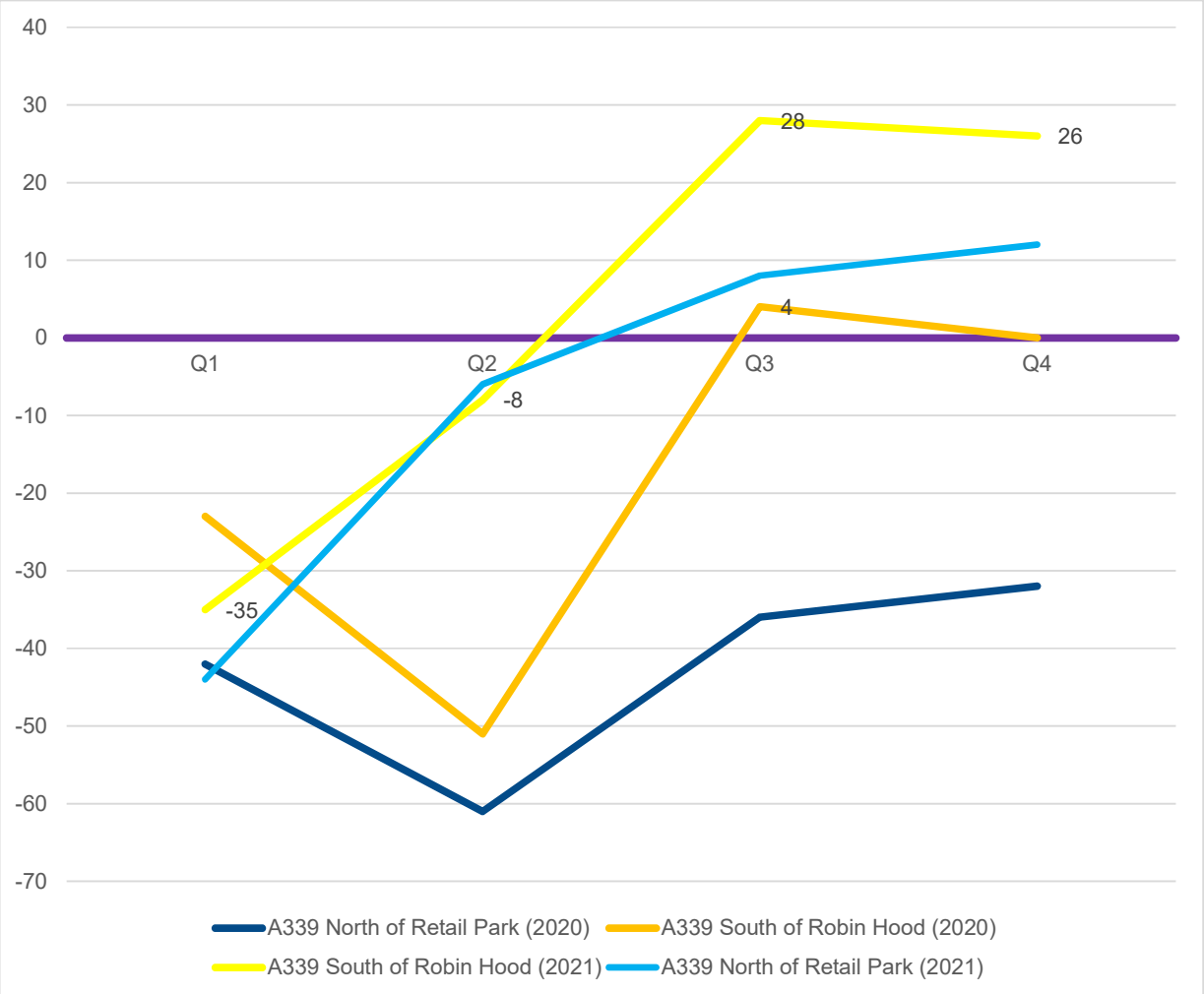
The principal anticipated challenges and barriers to implementation for West Berkshire include lack of funding and resources.

West Berkshire anticipates that the measures stated above and in Traffic Data in West Berkshire Council

The traffic is monitored at 7 places in West Berkshire, A340 in Tidmarsh, A4 in Calcot, A4 in Theale, A4 in Woolhampton, and in Newbury the A339 North Bound, A339 South Bound and A339 North of the retail park.

The Newbury Continuous Monitor is located between the A339 North of the Retail monitoring site and the A339 South of Robinhood roundabout. The traffic from the smaller vehicles (Graph 2.1) Shows the characteristic drop off the lock down in Q1 & Q4 in 2020, and then the recovery of traffic from the 2021 Q1 lock down.

Graph 2.1 - % reduction/increase of Small vehicles (2019 v's 2020 & 2019 v's 2021)



The traffic from the larger vehicles (Graph 2.2) does also show the characteristic drop off the Lockdown in Q1 & Q4 in 2020, and then the recovery of traffic from the 2021 Q1 lock

down. However, A339 South of Robin Hood shows an increase in 2020 in Q4, this may be due to the amount of on-line orders and food deliveries in the lock down months, as these business could still run. But to the North shows a major decrease, this may be due to the deliveries to retail stores being reduced during the second 2020 lockdown.

Graph 2.2 - % reduction/increase of Large vehicles (2019 v's 2020 & 2019 v's 2021)

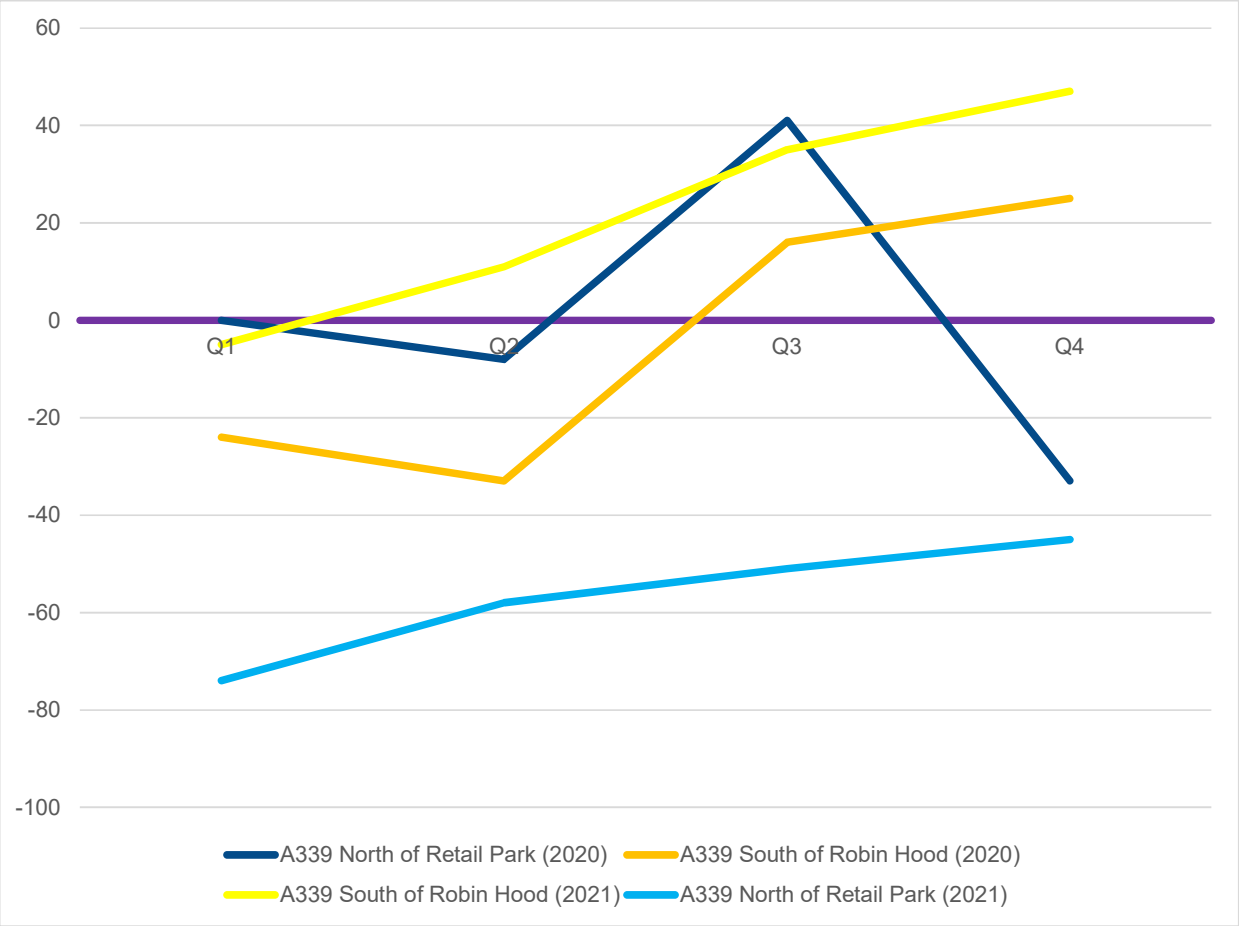


Table 2.2 will achieve compliance in the AQMAs.

Traffic Data in West Berkshire Council

The traffic is monitored at 7 places in West Berkshire, A340 in Tidmarsh, A4 in Calcot, A4 in Theale, A4 in Woolhampton, and in Newbury the A339 North Bound, A339 South Bound and A339 North of the retail park.

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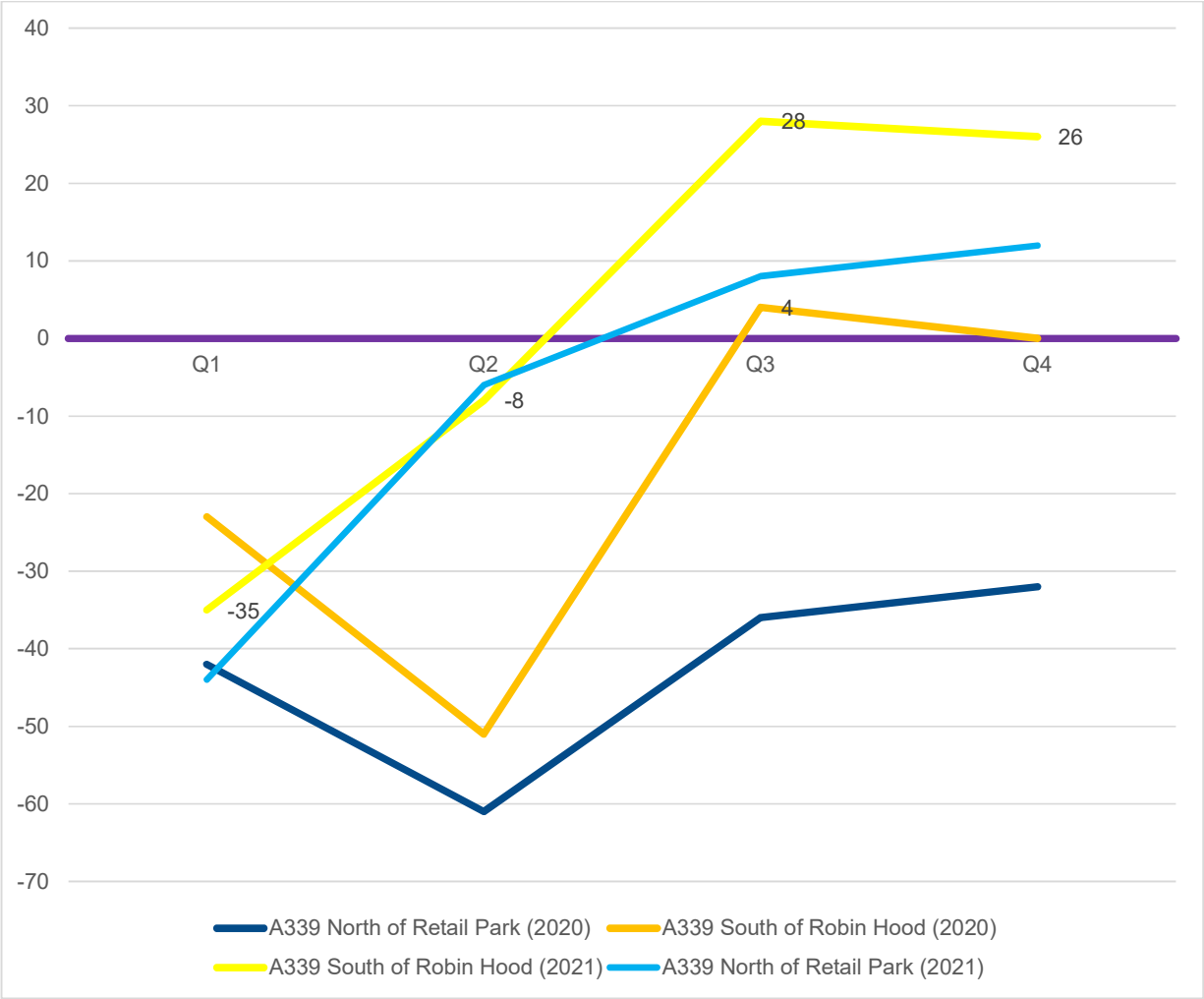

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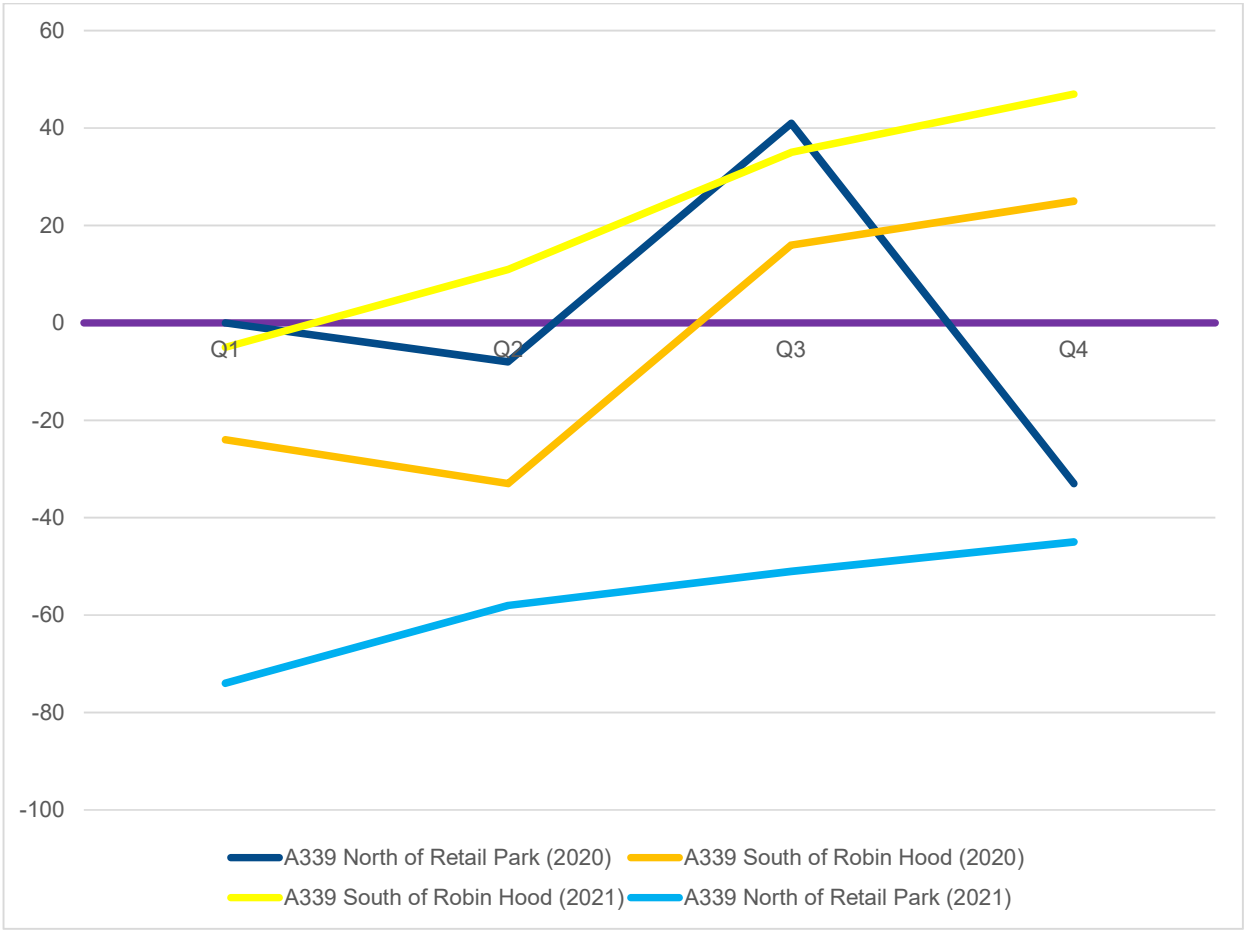

60
40
20
0
-20
-40
-60
-80
-100
Q1
Q2
Q3
Q4
A339 North of Retail Park (2020)
A339 South of Robin Hood (2020)
A339 South of Robin Hood (2021)
A339 North of Retail Park (2021)

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Variable message Signing (VMS) linked to Newbury car Park System	Traffic Management	Other	2011	2011-14	WBC	WBC	NO	Funded		Completed	Negligible	Car park usage	Installed as part of Parkway opening spring 2012	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. Useage reduced due to pandemic
2	Study into signalising junction at Burger King Roundabout	Traffic Management	UTC, Congestion management, traffic reduction	2019	Summer 2019	WBC	WBC	NO	Funded	< £10k	Completed	15 ug/m3(based on 2008 data)	Reduction in queuing time and congestion within AQMA and reduction in NO2 and emission levels	Surveys ordered March 2017 and model to be completed late 2017. Model indicates some benefit to replacing the roundabout with a traffic signal controlled crossroads. No budget is currently in place to deliver such a project, but could be delivered in conjunction with the Sandleford development if funding becomes available.	Decision has been made not to take any further action at this time.
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	2012	2019	WBC	WBC	NO	Funded	£1 million - £10 million	Completed	15 ug/m3(based on 2008 data)	Queuing time and congestion close to AQMA and reduction in NO2 levels	Complete. Changes to roundabout being looked at along with Bear Lane by WBC consultants - see new action. Sainsbury's roundabout, Cheap Street and Market Street have been redesigned to re-route traffic and improve flow. Work to begin January 2019.	Results regarding the AQ impact will not be available until 2021/22 report, to allow for at least 2 years' worth of monitoring.
4	Improved local bus services to reduce short car journeys	Transport Planning and Infrastructure	Bus route improvements	2015	2016	WBC	WBC	NO	Funded		Implementation	Negligible	Increase in no. of passenger journeys	Capital works - Complete. New developer-funded bus service - starting May 2016	Ongoing monitoring of passenger journeys. Also improvements to Reading Buses fleet to alternative fuels (gas). We are on the Reading buses network and they require strict standards.

5	Smarter Choices(1) Investigate the feasibility of a district wide car share scheme	Alternatives to private vehicle use	Car Clubs	2012	2015	WBC	WBC	NO	Not Funded		Compl eted	Negligible	No. of car share cars and their usage	Works commenced	Complete: District wide car sharing isn't feasible - a focus on location journeys instead- see (3).
6	Smarter Choices(2) Investigate the feasibility of a car club for Newbury and Thatcham area (Racecourse)	Alternatives to private vehicle use	Car Clubs	2012	2016	WBC	WBC	NO	Not Funded		Implem entatio n	Negligible	No. of car share cars and their usage	5 Car Newbury scheme was launched in 2016 in partnership with Co-wheels. One of the vehicles is electric. Usage is growing year on year.	2016/17 Public launch, promoting & monitoring uptake. Data will be available on number of members, vehicle usage, number of miles, trips etc. Greater promotion is desired but in 2019 the car club use continued to increase. There is promotion with a short film focused on using the electric car. As at the end of 2019, the car club had 103 Members. The car with the highest use had 374 bookings in 2019. 2020 on hold due to Pandemic.
7	Smarter Choices(3) Promote Car sharing opportunities within the district	Alternatives to private vehicle use	Car Clubs	2012	2032	WBC	WBC	NO	Partially Funded		Implem entatio n	Negligible	No. of car share cars and their usage	West Berkshire Council FAXI car share/cycling & walking partner website being promoted (44 registered as of 9/3/16) and dedicated Council Car share bays (24 registered users).Car sharing within locally situated schools had been explored but wasn't a great deal of interest. AWE had invested heavily in car sharing and have their own internal system.	Number of people registered and their locations and journey type. FAXI car sharing focused around Newbury Town Centre. Opportunity for greater up take. AWE car share still on going.

8	Electrification of Newbury to Reading railway line	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2017	2018	Network Rail	Network Rail	NO	Not Funded		Completed	Negligible. Some air pollution reductions in and around major urban train stations along route as diesel trains are replaced.	Increased reliability of services and increase passenger usage	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 re-sighting. Works have completed on many bridges. Boundary Road Bridge work began in 2015, due for completion Jan 17.). Electric trains started running on Newbury to Reading local services in Jan 2019. London to Bedwyn and London to West Country Services will run on electric power as far as Newbury and then switch to diesel.	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). Electric trains are all running. In December 2019 there was a change to the time table. Thatcham level crossing has been monitored in terms of the knock-on impact of the new timetable on congestion around the station.
9	Supplementary Planning Document for AQ	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	2022	WBC	WBC	NO	Not Funded		Implementation	negligible	Reduce reliance of car in new development. Us of s106 funds	Planning and Air quality document drafted and due to be launched in 2019. No current Supplementary Planning Document.	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	2017	2018	WBC	WBC	NO	Not Funded	< £10k	Implementation	links with 15 ug/m3(based on 2008 data)	Reduction in HDV journeys along this section of road network and decrease in NO2 levels measured.	Freight Strategy review commenced 2013. Discussions by WBC with HCC held. Options paper to TPTG Jan 15, recommending positive signage at a cost of £15-20k on the local network and £20-30k per sign on the A34. WBC can only really influence northbound traffic from the Swan Roundabout. Freight Route Network Maps had recently been updated- purely advisory. Direction signs now in place northbound to encourage greater use of the bypass by HGVs.	Completed signs are up.

11	Electric charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel	2015	2023	WbC	WBC	NO			Implementation	negligible	Use of charging points. Increase in EV ownership and use of/demand for (public) charge points	(1) Successful OLEV grant to install charge points on WBC land 2013-15. (2) Ecotricity Rapid charge points installed at motorway service stations. (3) Agreement by FGW to install at Aldermaston and Theale stations. (4) EV Residential Guidance included in the WBC Residential Parking Guidance (5) ULEV Readiness Programme (6) ULEV Strategy proposed (7) Promoting EV Vehicles. A contract has been let to install charge points on the highway in residential areas. Funded by OLEV grant.	(1) Council charge points installed for WBC use at Kennet Centre (Mar 13) and Ampere Road, Newbury (Mar 14) under OLEV Public Sector charging scheme. (2) Run by Ecotricity, data on use not readily available. (3) Once installed, unlikely to have readily available data on use. (4). EVCP to be considered at all residential developments, as a minimum infrastructure enabling installation of EVCP at a later date. (5) Successful Bid for OLEV funding (Aug 15). For 2 further charge points, installed at Kennet Centre Newbury and 1 at Wokingham for the Joint EH&L Service use (Mar 16). 3 EV vans and 2 EV Cars have been procured, awaiting delivery Mar 16. (6) ULEV Strategy began by TP, for Transport Vision and revised LTP. (7) Support of EV-ENT held by WB Green Exchange in May 2016. 2 electric cars provided with Public Protection Service for work use.

12	Health Education	Public Information	Other	2012	2032	WBC/PH	WBC/PH	NO				Decrease in hospital admissions from asthma. Increase in walking and cycling.		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 & previously part funded the personal travel plan project. PH were focussed on active travel i.e. walking and cycling. Cycling promotion- setting up cycling sessions for beginners, getting adults back into cycling. A bike shed would be installed at Northcroft so those that didn't have a cycle could loan one to take part in the sessions. In 2016 closer links with Director of PH for Berkshire, Strategic Berkshire PH Team and PHE developed. Joint AQ and PH website development created with launch in late 2017	Priorities with PCT did not previously relate to improving health due to poor air quality. Improved links with Public Health now within WBC, including joint working. Permanent Healthy Lifestyles Officer post promoting active travel and physical activity in schools. Cycling, running and walking groups across the district. Promotion of physical activity and active travel. Community Physical Activity fund to be launched March 2019.
13	National Cycle Route (Newbury to Legoland)	Promoting Travel Alternatives	Promotion of cycling	2017	2019	WBC	WBC	NO	Not Funded	£1 million - £10 million	Completed	Negligible	Cycleway usage	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. West Berkshire has committed a further £100,000 via funds from the annual Capital budget. Other funds and monies will be combined to further support the route, such as developer contributions. Cycle facilities have been improved on the A4	2016/17 Survey & Planning, 2017/18 & 2018/19 .On-site works NCN Route 422 is the indicative route title for a National Cycle Route potentially linking Newbury through to Ascot and Windsor 2020 objectives have been delivered.

														between Newbury and Thatcham. Further improvements planned during 2019-2020.	
14	Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride			WBC	WBC	NO	Not Funded		Aborted		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.	Closed – not to be carried out.
15	Cycle lane on A343 St Johns Road between Burger King Roundabout and St Johns Roundabout	Transport Planning and Infrastructure	Cycle network	2012	2015	WBC	WBC	NO	Not Funded	£1 million - £10 million	Completed	Negligible	Reduction in car journeys along this section of road network and decrease in NO2 levels measured	Implemented	Completed. 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	2013	2015	WBC	WBC	NO	Partially Funded		Completed	Negligible	No. of businesses and householders engaged in the Network, with focus on Newbury and Thatcham	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.	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 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. Entered a DEFRA BID 2019 for of an anti-idling campaigned and was successful.

17	Low Emission Zone	Promoting Low Emission Transport	Low Emission Zone (LEZ			WBC	WBC	NO	Not Funded		Aborted	15 ug/m3(based on 2008 data)	Reduction in polluting vehicles	Initial scope report for LEZ. Report by TP taken to TPTG agreed not to proceed as not suitable for Newbury	Not suitable for Newbury.

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The latest $PM_{2.5}$ data available (2017) from DEFRA show that West Berkshire has a maximum level of 11.38 (co-ordinates x 459500 y163500), and the average level of 9.22. (https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2017). Table 2.4 shows that 0.81% of $PM_{2.5}$ is produced by road & transport, the other 99.19% is from other factors.

The fraction of mortality attributable to particulate air pollution indicator value for West Berkshire and other Local Authorities within Berkshire, can be seen in Table 2.3. Compared to the other locals Authorities in Berkshire, West Berkshire has the lowest whereas Slough has the highest. Further information about other areas in the UK can be can be found using the link below.https://fingertips.phe.org.uk/profile/public-health-outcomesframework/data#page/0/gid/1000043/pat/6/par/E12000005/ati/101/-are/E07000194

Table 2.3: Showing the Fraction of Mortality attributable to particulate air pollution indicator value within Berkshire.

Bracknell Forest	Reading	Slough	West Berkshire	Windsor & Maidenhead	Wokingham
5.7	6.3	6.5	5.3	5.8	5.9

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

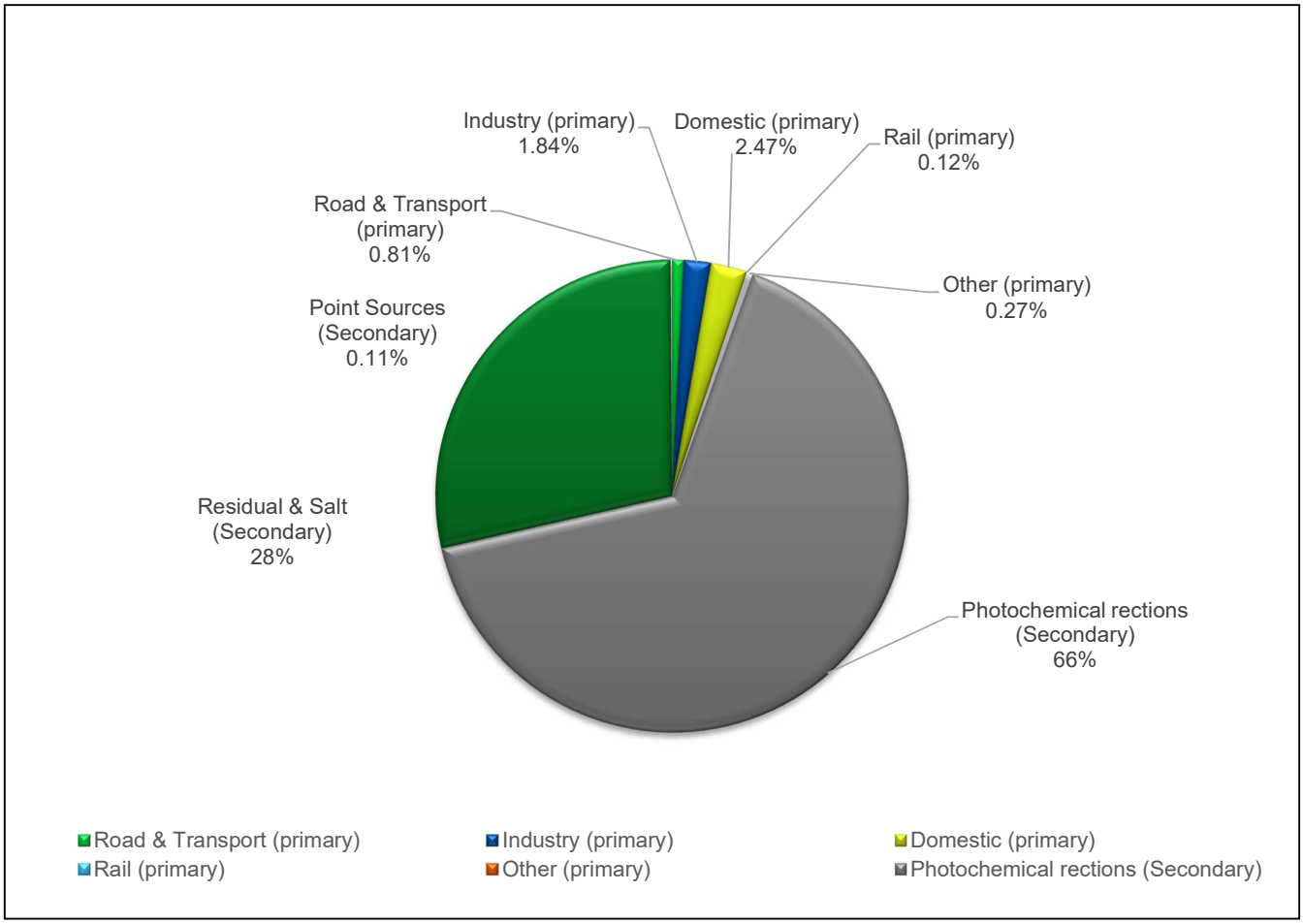
- The link of the Health and Wellbeing Strategy, Public Health Service Plan and the Public Health Action Plan include many actions to increase walking and cycling in order to encourage and increase active travel, to reduce obesity and inactivity. https://info.westberks.gov.uk/wfh

- Joint working between Public Health and Environmental Health teams for air quality will consider in detail how West Berkshire will explore the impact on $PM_{2.5}$ throughout the district and how it may be reduced. The results will be linked to the Public Health Outcomes Framework. It is likely that a marketing plan will be set up to raise awareness of how air quality (which includes $PM_{2.5}$) can be improved by active travel and the uptake of electric vehicles.
- Work on 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 fresh policy is being used to assess residential developments in West Berkshire. The policy has been in use since 2016 when it was at an advanced stage of development and has since been formally adopted (9th May 2017) so it will continue to be used into the future.
- The new policy 'Policy P1: Residential Parking for New Development' has the following advantages for addressing sustainable travel, therefore less traffic. https://info.westberks.gov.uk/CHttpHandler.ashx?id=45231&p=0. It brings down the threshold for when residential travel plans will be required from 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 forthcoming developments than 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 fitted at a later date. Before, this was simply encouraged by officers on larger developments but now it is part of the policy against which applications are assessed. In 2019 31 Electric vehicle (EV) charging points were installed in West Berkshire, the EV chargers are all plotted on the council's web page https://info.westberks.gov.uk/onstreetev
- 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. https://osmaps.ordnancesurvey.co.uk/51.40608,-1.41302,10,

- Pedestrian and cyclist directional signage – this project commenced in 2018/19 to improve walking and cycling facilities and promotion
- Cycle parking – improvements to existing facilities and introduction of new ones began and continues in schools into 2020/21.
- Clean Air Day 2022 in June to help raise awareness and asking Schools to encourage their children to find alternative means to travel to school other than the car. Each day they do this they will earn a grade and soon become a Black Belt Air Quality Ninja!
- The Public Protection Partnership has been awarded the DEFRA AQ Grant (£259k) to measure into the $PM_{2.5}$ of the schools located near the AQMA, and to ascertained what mitigation measures can be taken to each specific site to help them achieve the National AQ Objectives. We will also be carrying out anti-idling campaigns throughout the whole of the borough, with the help of the Behaviour change specialists. We will be looking at site specific signage different areas e.g. taxi ranks, school areas, commuter traffic, day trippers and more.

Table 2.4. A pie chart showing both the Primary and Secondary sources of $PM_{2.5}$



(https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2017)

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

This section sets out the monitoring undertaken within 2021 by West Berkshire and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

West Berkshire undertook automatic (continuous) monitoring of NO_2 at 1 site during 2021 Table A.1 in Appendix A shows the details of the automatic monitoring site. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem.

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 Council undertook non-automatic (i.e. passive) monitoring of NO_2 at 36 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic 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.

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.1.3 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Figure A.2 – Trends in Annual Mean NO2 Concentrations for the Thatcham AQMA

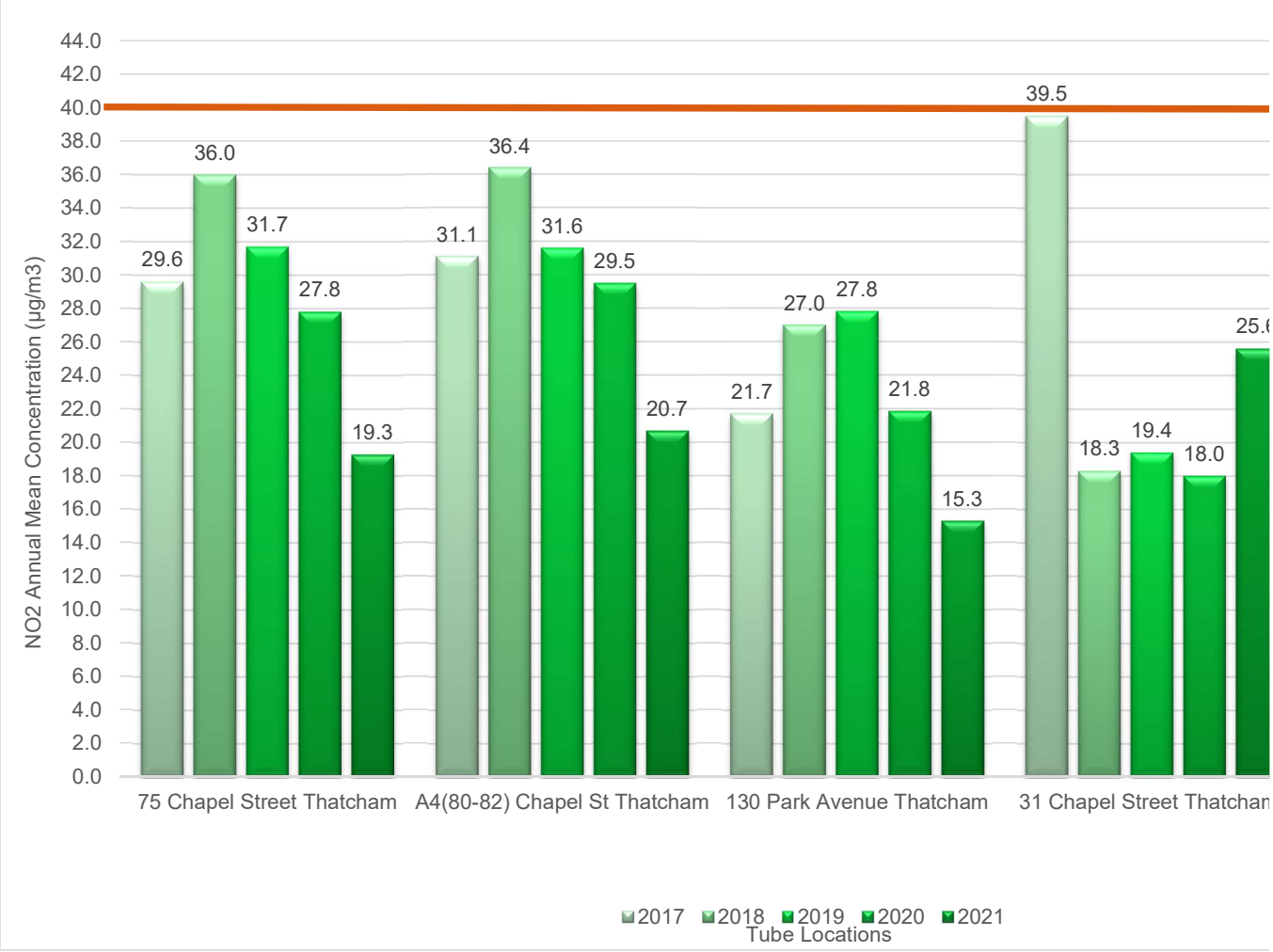


Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

3.1.4 Newbury Continuous Monitor (NO_2)

The data capture at a rate of 97.4 % was and there were no electrical faults with the unit.

For 2021 there were no exceedance of the annual 1 Hourly Objective (200µg/m^3 not to be exceeded more than 18 times per year).

The ratified continuous monitored NO_2 annual mean did not exceed the objective with a year on year reduction from 27.5 µg/m^3 in 2021 compared to 29.2µg/m^3 in 2020, 35.9µg/m^3 in 2019, 36.4µg/m^{3}in 2018 & 40.3µg/m^3 in 2017. The concentrations were lower in 2021 and 2020 on the A339 due to the pandemic.

NO_2 Diffusion Tube Data

3.1.5 Newbury AQMA

There are five diffusion tubes within the Newbury AQMA and three within proximity (see Map D.4). There were no exceedances of the Air Quality Objectives for the diffusion tubes within the AQMA. However, in 2021 four of the locations increased in NO_2 compared to that of 2020. These locations were 1 Winchester Court (27.1µg/m^3 in 2021 from 26.6µg/m^3 in 2020), 3 Howard Road (16.2µg/m^3 in 2021 from 15.2µg/m^3 in 2020), 63 St John's Road (17.2 µg/m^3 in 2021 from 16.4 µg/m^3 in 2020), 1 St Johns Road (22.5µg/m^3 in 2021 from 16.7µg/m^3 in *2020)*. The Newbury Gardens Day Nursery has decreased from 29.8µg/m^3 in 2020 to 18.6µg/m^3 in 2021.

The highest levels of NO_2 in this AQMA were recorded at the continuous monitor (see Map D.3) and the Annual Mean Objective was met, measuring 27.5µg/m^3 NO_2, which has decreased from 29.2µg/m^3 in 2020, the co-located study measured 26.4µg/m^3 in 2021. For the last five years the results have shown an overall decrease in level (see Figure A.2), monitoring continues at those five sites.

If there continues to be no exceedances in the AQMA in the 2024 ASR (omitting 2020 & 2021 data due to Covid-19 lockdown and the new road lay out North of the AQMA) West

Berkshire may be recommending to DEFRA that the Newbury AQMA is revoked as we have continual evidence that the NO_2 is below the Annual Mean Objective of 40.0µg/m^3.

3.1.6 Thatcham AQMA

There are 5 diffusion tube sites (see Map D.7) within the Thatcham AQMA and two within close proximity. For the last five years the results have shown a year on year decrease of the NO_2 Annual Mean Objective within the AQMA.

The highest levels of NO_2 in this AQMA were recorded at 17 Chapel Street 26.5µg/m^3 and the levels did not exceed the Annual Mean Objective. The site has showed a consistent decrease from 40.0µg/m^3 in 2017 to 36.4µg/m^3 in 2018, then to 31.6µg/m^3 in 2019, to 29.5µg/m^3 in 2020, and 26.5µg/m^3 in 2021, (Figure A.3). The only sites to have increased in NO_2 in 2021 were 75 Chapel Street (2021 in 19.3µg/m^3 from 18.3µg/m^3 in 2020) and 40 Chapel Street (2021 in 23.1µg/m^3 from 18.0µg/m^3 in 2020).

If there continues to be no exceedances in the AQMA in the 2024 ASR (omitting 2020/21 due to Covid-19 lockdown) West Berkshire will consider recommending to DEFRA that the Thatcham AQMA is revoked as we have continual evidence that the NO_2 is below the Annual Mean Objective of 40.0µg/m^3. Monitoring will continue during 2022 at the 5 sites.

3.1.7 Sites outside the AQMA (NO_2)

Overall, throughout the whole district, 15 of the 2021 sites showed an increase in NO_2 levels compared to 2020, and 18 showed a decrease. However, in 2020, all the sites decreased compared to the 2019 data due to the national pandemic and lockdowns. All the 2021 increased levels remain below the Annual Mean Objective (40µg/m^3).

The sites which increased in NO_2 and are not in the AQMA's are

- Abbeydale, Monks Lane (increased from 13.1µg/m^3 in 2020 to 14.7µg/m^3 in 2021),
- 6 Market Place, Newbury (increased from 16.3µg/m^3 in 2020 to 19.0µg/m^3 in 2021),
- 40 Bartholomew Street, Newbury (increased from 18.9µg/m^3 in 2020 to 22.8µg/m^3 in 2021),
- A339 Newbury Central (increased from 25.1µg/m^3 in 2020 to 27.6µg/m^3 in 2021),
- Old Bakery, Tidmarsh (increased from 18.1µg/m^3 in 2020 to 20.8µg/m^3 in 2021, but is still below the 2019 NO_2 level of 22.1µg/m^3)

- The Cross Key Inn, Pangbourne (increased from 20.9µg/m^3 in 2020 to 22.5µg/m^3 in 2021),
- Calcot Hotel (increased from 20.5µg/m^3 in 2020 to 24.5µg/m^3 in 2021, but is slightly below the 2019 NO_2 level of 24.8µg/m^3)

The traffic counter on the A340 Tidmarsh has shown that the daily traffic average traffic has amplified in 2021 to 11,439 from 9935 in 2020. However, the 2021 daily averages are not as high as the 2019 yet at 12,959 vehicles. Therefore, the increase of NO_2 at the Old Bakery, Tidmarsh and Cross Keys Inn will be down to the increase of traffic on the roads.

The traffic counter on the AA Calcot has shown that the daily traffic average traffic has increased in 2021 to 32,368 from 26,957 in 2020. However, the 2021 daily averages are not as high as the 2019 yet at 33,356. There has also been in increase in delivery trucks in 2021 (1275) which has overtaken the 2019 (1207) daily average as more people are now having food shopping delivered at home.

The 3 traffic counters in Newbury have all shown that the daily traffic average has increased from 2020, see Graph 2.1 and 2.2, therefore the NO_2 will climb as well.

There were no results greater than 60µg/m^3, which indicates no exceedance of the 1-hour Mean Objective.

The new sites for 2021 were Streatley (near traffic lights), 55 Station Road (Woolhampton), and 1 King Fisher Court, Pangbourne, Calcot School, Westwood Farm School (Tilehurst), all of which have shown NO_2 levels below the Annual Mean Objective.

3.1.8 Particulate Matter (PM_{10})

No particulate matter (PM_{10}) monitoring is undertaken.

3.1.9 Particulate Matter ($PM_{2.5}$)

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

3.1.10 Sulphur Dioxide (SO_2)

No sulphur dioxide monitoring is undertaken as not required by DEFRA.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CM1 Newbury	Roadside	477407	166560	NO2	YES Newbury AQMA	Chemiluminescent	1	4.7	1.8	2

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
31 Chapel Street Thatcham	31 Chapel Street Thatcham	Roadside	451906	167441	NO2	Thatcham AQMA	0.0	1.6	No	
17 Chapel Street Thatcham 1	17 Chapel Street Thatcham 1	Roadside	451870	167438	NO2	Thatcham AQMA	0.0	3.5	No	2.1
17 Chapel Street Thatcham 2	17 Chapel Street Thatcham 2	Roadside	451870	167438	NO2	Thatcham AQMA	0.0	1.5	No	2.4
44 Hambridge Road Newbury	44 Hambridge Road Newbury	Urban Background	448129	166909	NO2	Thatcham AQMA	0.0	4.3	No	2.4
A339(64) Greenham Road Newbury	A339(64) Greenham Road Newbury	Roadside	447448	166454	NO2	Newbury AQMA	12.0	2.0	No	2.5
1 Winchester Court Newbury	1 Winchester Court Newbury	Roadside	447411	166562	NO2	Newbury AQMA	0.0	5.0	No	2.2
Newbury Gardens Day Nursery	Newbury Gardens Day Nursery	Suburban	447352	166619	NO2	Newbury AQMA	0.0	7.0	No	3.0
20 Deadmans Lane Greenham	20 Deadmans Lane Greenham	Suburban	447515	164720	NO2	no	0.0	10.5	No	2.0
A343 Andover Rd(Parkhouse School)	A343 Andover Rd(Parkhouse School)	Kerbside	445899	164705	NO2	no	18.1	0.8	No	2.1

Abbeydale Monks Lane Newbury	Abbeydale Monks Lane Newbury	Kerbside	446921	165303	NO2	no	21.0	2.0	No	2.3
3 Howard Road Newbury	3 Howard Road Newbury	Roadside	447406	166445	NO2	Newbury AQMA	0.0	11.0	No	2.5
63 St Johns Road Newbury	63 St Johns Road Newbury	Urban Background	447380	166533	NO2	Newbury AQMA	0.0	6.2	No	2.6
1 St Johns Road Newbury	1 St Johns Road Newbury	Roadside	447036	166436	NO2	Newbury AQMA	0.0	4.8	No	2.2
7a Bridge Street Hungerford	7a Bridge Street Hungerford	Roadside	433909	168815	NO2	no	0.0	1.5	No	2.3
43 Hawthorn Road Newbury	43 Hawthorn Road Newbury	Urban Background	447478	167868	NO2	no	0.0	13.0	No	2.7
6 Market Place Newbury	6 Market Place Newbury	Urban Centre	447202	167020	NO2	no	9.5	1.3	No	2.2
42 Kings Road Newbury	42 Kings Road Newbury	Roadside	447434	166993	NO2	no	0.0	11.3	No	2.1
40 Bartholomew Street Newbury	40 Bartholomew Street Newbury	Roadside	446939	166848	NO2	no	0.0	2.7	No	1.9
31 Shaw Road Newbury	31 Shaw Road Newbury	Kerbside	447693	167820	NO2	no	0.0	0.6	No	2.2
13 Shaw Road Newbury	13 Shaw Road Newbury	Urban Background	447632	167774	NO2	no	0.0	7.0	No	1.7
132 London Road Newbury	132 London Road Newbury	Roadside	447720	167678	NO2	no	0.0	3.0	No	2.4

A339 Newbury Central	A339 Newbury Central	Kerbside	447454	167296	NO2	no	204.0	4.0	No	2.6
374 London Road Newbury	374 London Road Newbury	Urban Background	449034	167520	NO2	no	0.0	12.5	No	2.3
Old Bakery Tidmarsh	Old Bakery Tidmarsh	Roadside	463504	174864	NO2	no	0.0	2.2	No	2.1
The Cross Key Inn Pangbourne	The Cross Key Inn Pangbourne	Roadside	463468	176433	NO2	no	0.0	4.0	No	1.9
4 Willows Court Pangbourne	4 Willows Court Pangbourne	Roadside	463441	176522	NO2	no	0.0	3.0	No	2.6
Calcot Hotel	Calcot Hotel	Kerbside	466293	171863	NO2	no	16.0	2.0	No	2.3
Elizabeth Court Theale	Elizabeth Court Theale	Urban Background	464574	171294	NO2	no	0.0	32.0	No	2.3
75 Chapel Street Thatcham	75 Chapel Street Thatcham	Roadside	452288	167445	NO2	no	0.0	3.4	No	2.0
A4(80-82) Chapel St Thatcham	A4(80-82) Chapel St Thatcham	Roadside	452071	167468	NO2	Thatcham AQMA	0.0	1.8	No	2.2
130 Park Avenue Thatcham	130 Park Avenue Thatcham	Roadside	451965	167498	NO2	Thatcham AQMA	7.0	2.0	No	2.0
40 Chapel Street Thatcham 3, 40 Chapel Street Thatcham 1, 40 Chapel Street Thatcham 2	40 Chapel Street Thatcham 2	Kerbside	451926	167460	NO2	Thatcham AQMA	0.0	3.5	No	2.1

Continuous Monitor 1, 2 & 3 A343, A339 and Greenham Road Newbury	Continuous Monitor 1, A343, A339 and Greenham Road Newbury	Roadside	447410	166561	NO2	Newbury AQMA	1.0	0.5	Yes	2.2
Calcot School	Calcot School	Roadside	466044	171996	NO2	no	100.0	0.5	No	2.2
Westwood Farm School	Westwood Farm School	Kerbside	466515	175348	NO2	no	50.0	0.5	No	2.2
Streatley	Streatley	Roadside	459202	180749	NO2	no	0.0	0.5	No	2.2
Near Canal / 55 Station Road	Near Canal / 55 Station Road	Kerbside	457291	166573	NO2	no	0.0	1.5	No	2.2

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.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CM1	477407	166560	Roadside	100	97	27.5	36	35.9	29.2	27.5

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☒ **Reported concentrations are those at the location of the monitoring site (annualised, as required), i.e. prior to any fall-off with distance correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

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

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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%).

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
31 Chapel Street Thatcham	451906	167441	Roadside	100	100.0	34.8	31.8	28.6	27.7	25.6
Ot the box thinking and 17 Chapel Street Thatcham 1	451870	167438	Roadside	100	82.7	39.5	36.0	31.7	27.7	26.5
17 Chapel Street Thatcham 2	451870	167438	Roadside	100	92.3	**40.0**	36.4	31.6	29.5	26.2
44 Hambridge Road Newbury	448129	166909	Urban Background	100	100.0	**40.0**	36.4	31.6	29.5	20.1
A339(64) Greenham Road Newbury	447448	166454	Roadside	100	92.3	27.3	26.0	24.1	22.3	28.2
1 Winchester Court Newbury	447411	166562	Roadside	100	100.0	23.4	26.2	29.9	26.6	27.1
Newbury Gardens Day Nursery	447352	166619	Suburban	100	73.1	38.0	36.0	32.7	29.8	18.6
20 Deadmans Lane Greenham	447515	164720	Suburban	100	84.6	-	-	19.6	18.2	15.7
A343 Andover Rd(Parkhouse School)	445899	164705	Kerbside	100	82.7	24.0	23.0	20.2	19.4	13.0

Abbeydale Monks Lane Newbury	446921	165303	Kerbside	100	100.0	11.4	14.2	15.5	13.1	14.7
3 Howard Road Newbury	447406	166445	Roadside	100	82.7	13.2	15.4	19.9	15.2	16.2
63 St Johns Road Newbury	447380	166533	Urban Background	100	100.0	17.7	22.0	18.6	15.4	17.2
1 St Johns Road Newbury	447036	166436	Roadside	100	100.0	21.8	25.0	22.4	16.7	22.5
7a Bridge Street Hungerford	433909	168815	Roadside	100	100.0	28.4	31.0	26.8	22.1	18.5
43 Hawthorn Road Newbury	447478	167868	Urban Background	100	100.0	28.8	26.0	23.1	21.0	15.1
6 Market Place Newbury	447202	167020	Urban Centre	100	100.0	20.5	21.0	18.5	16.3	19.0
42 Kings Road Newbury	447434	166993	Roadside	100	100.0	22.4	24.9	26.0	20.8	16.3
40 Bartholomew Street Newbury	446939	166848	Roadside	100	82.7	23.4	23.0	20.3	18.9	22.8
31 Shaw Road Newbury	447693	167820	Kerbside	100	100.0	31.7	29.0	27.4	23.3	21.9
13 Shaw Road Newbury	447632	167774	Urban Background	100	92.3	28.7	28.0	25.6	25.6	21.9
132 London Road Newbury	447720	167678	Roadside	100	100.0	33.2	30.0	26.5	25.6	25.7

A339 Newbury Central	447454	167296	Kerbside	100	100.0	35.4	32.0	28.1	25.1	27.6
374 London Road Newbury	449034	167520	Urban Background	100	82.7	28.1	29.4	29.9	30.6	16.7
Old Bakery Tidmarsh	463504	174864	Roadside	100	73.1	23.4	23.0	22.1	18.1	20.6
The Cross Key Inn Pangbourne	463468	176433	Roadside	100	67.3	31.8	29.0	29.5	20.9	22.5
4 Willows Court Pangbourne	463441	176522	Roadside	100	82.7	34.2	34.0	29.6	26.2	18.7
Calcot Hotel	466293	171863	Kerbside	100	92.3	29.3	28.0	24.8	20.5	24.5
Elizabeth Court Theale	464574	171294	Urban Background	100	82.7	23.1	19.3	28.4	25.6	14.6
75 Chapel Street Thatcham	452288	167445	Roadside	100	92.3	21.6	22.0	20.3	18.3	19.3
A4(80-82) Chapel St Thatcham	452071	167468	Roadside	100	32.7	29.6	27.0	27.8	21.8	20.7
130 Park Avenue Thatcham	451965	167498	Roadside	100	100.0	31.1	28.0	22.2	24.4	15.3
40 Chapel Street Thatcham 1, 2 & 3.	451926	167460	Kerbside	100	100.0	21.7	18.3	19.4	18.0	23.1
Newbury Continuous Monitor 1,2 & 3 A343, A339 and	447410	166561	Roadside	100	100.0	34.8	31.8	28.6	27.7	26.4

Greenham Road										
Calcot School	466044	171996	Roadside	100	75.0					11.3
Westwood Farm School	466515	175348	Kerbside	100	82.7	-	-	-	-	9.8
Streatley	459202	180749	Roadside	100	80.8	-	-	-	-	20.1
Near Canal / 55 Station Road	457291	166573	Kerbside	100	100.0	-	-	-	-	8.2
1 Kingfisher Court Pangbourne	463551	176623	Roadside	100	82.7	-	-	-	-	20.0

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☒ **Diffusion tube data has been bias adjusted.**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations for the Newbury AQMA

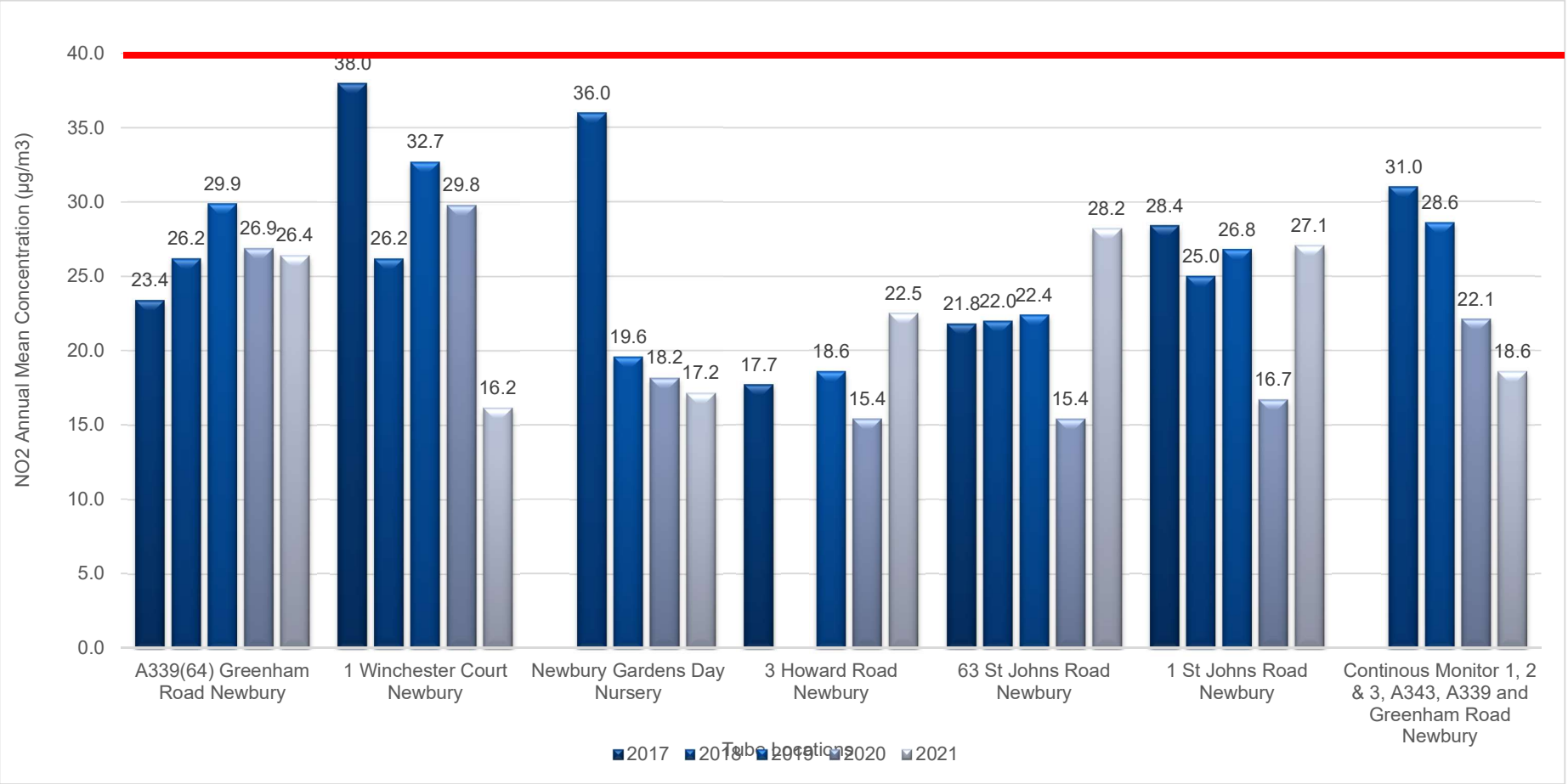


Figure A.2 – Trends in Annual Mean NO_2 Concentrations for the Thatcham AQMA

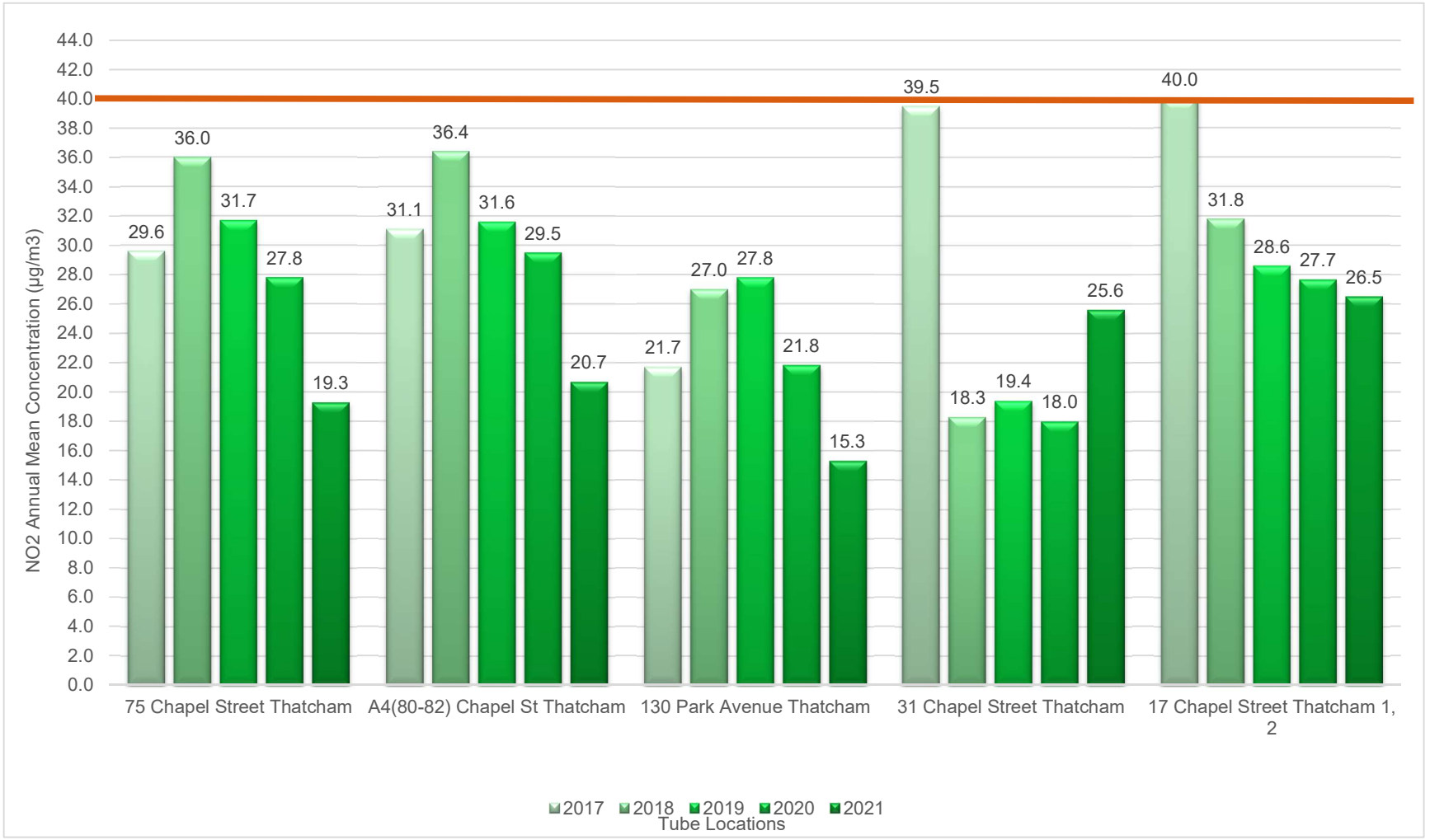


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CM1	477407	166560	Roadside	100	97	8	1	2	1	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

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

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

(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%).

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
40 Chapel Street Thatcham 3	451926	167460		33.4											-	-		Triplicate Site with 40 Chapel Street Thatcham 3, 40 Chapel Street Thatcham 1 and 40 Chapel Street Thatcham 2 - Annual data provided for 40 Chapel Street Thatcham 2 only
31 Chapel Street Thatcham	451906	167441	32.3	33.6	31.0	28.7	27.2	23.8	29.9	24.0	35.5	32.8	34.6	32.6	30.5	25.6		
17 Chapel Street Thatcham 1	451870	167438	31.7		36.1	31.0	29.6	26.5	30.4	24.4	36.3	32.8	37.1		31.6	26.5		
17 Chapel Street Thatcham 2	451870	167438	38.6		27.7	32.4	28.1	25.6	28.6	22.4	36.2	33.3	35.7	35.1	31.2	26.2		
44 Hambridge Road Newbury	448129	166909	26.8	22.4	27.1	26.0	21.1	20.7	23.2	18.4	25.0	22.4	29.0	24.6	23.9	20.1		
A339(64) Greenham Road Newbury	447448	166454	28.9	66.7	34.8	33.9		32.0	28.7	28.7	28.5	25.9	36.5	24.5	33.5	28.2		
1 Winchester Court Newbury	447411	166562	28.1	35.7	36.5	30.1	24.9	25.9	30.5	22.9	34.3	35.3	45.8	36.6	32.2	27.1		
Newbury Gardens Day Nursery	447352	166619	18.3	22.8		24.4	19.7	18.1		34.7	23.3		18.3	19.8	22.2	18.6		
20 Deadmans Lane Greenham	447515	164720	20.9		35.1	15.5	15.1		13.0	12.5	16.3	17.7	24.0	16.7	18.7	15.7		
A343 Andover Rd(Parkhouse School)	445899	164705	18.1	17.0	16.4	16.3	11.2	13.5			13.2	14.0	20.6	14.4	15.5	13.0		
Abbeydale Monks Lane Newbury	446921	165303	17.2	17.2	18.4	17.5	15.0	15.2	15.7	12.1	21.1	17.9	23.9	19.4	17.5	14.7		
3 Howard Road Newbury	447406	166445	18.2	22.2	18.5	20.6		14.5	14.0	11.9	18.6		35.7	18.4	19.3	16.2		
63 St Johns Road Newbury	447380	166533	20.8	24.1	22.1	25.5	18.0	18.8	17.9	15.6	22.8	16.1	23.7	19.9	20.4	17.2		
1 St Johns Road Newbury	447036	166436	23.1	30.6	27.7	28.6	23.0	25.6	24.8	23.8	32.9	25.4	29.1	26.7	26.8	22.5		
7a Bridge Street Hungerford	433909	168815	24.2	22.7	24.3	21.3	19.1	20.2	20.2	18.5	22.2	23.3	26.8	21.3	22.0	18.5		
43 Hawthorn Road Newbury	447478	167868	17.8	22.6	17.7	21.8	16.2	15.4	16.5	12.9	21.8	14.9	20.3	17.7	18.0	15.1		

6 Market Place Newbury	447202	167020	21.7	24.1	22.9	23.1	19.8	23.4	18.2	17.4	26.0	23.3	27.3	24.8	22.7	19.0		
42 Kings Road Newbury	447434	166993	22.2	19.7	22.2	17.9	17.3	14.7	16.9	13.6	21.1	21.7	23.2	22.6	19.4	16.3		
40 Bartholomew Street Newbury	446939	166848	26.8	25.5	28.4	26.3	24.2	24.9			27.7	27.5	32.0	28.4	27.2	22.8		
31 Shaw Road Newbury	447693	167820	24.6	27.8	48.5	22.9	22.8	18.5	22.6	18.1	26.6	26.5	27.9	25.9	26.1	21.9		
13 Shaw Road Newbury	447632	167774	26.5		26.8	25.7	25.7	20.6	23.4	18.5	29.8	29.2	32.4	28.1	26.0	21.9		
132 London Road Newbury	447720	167678	33.6	32.0	28.9	32.0	25.9	27.5	29.2	24.8	34.6	30.9	38.9	27.6	30.5	25.6		
A339 Newbury Central	447454	167296	35.0	31.9	37.2	29.4	26.3	32.7	32.4	21.0	37.8	35.8	43.4	31.7	32.9	27.6		
374 London Road Newbury	449034	167520	21.3	22.4	20.2	17.7	21.0		17.6	13.1	23.5	20.8	21.4		19.9	16.7		
Old Bakery Tidmarsh	463504	174864	25.7		19.7		38.2	21.3	21.9	18.2	24.8	22.1	28.8		24.5	20.6		
The Cross Key Inn Pangbourne	463468	176433		27.7	22.9	34.1	28.7				37.4	25.8	32.1	29.4	29.7	22.5		
4 Willows Court Pangbourne	463441	176522	19.7	26.8	13.3	25.9	22.1			14.6	28.4	23.7	24.4	23.7	22.3	18.7		
Calcot Hotel	466293	171863	25.4	31.8	23.3	27.5	25.0		38.9	17.6	36.5	31.6	30.3	33.2	29.2	24.5		
Elizabeth Court Theale	464574	171294	18.9	22.2		16.9	16.5	12.5	15.3	11.4	21.9	18.9	19.9		17.4	14.6		
75 Chapel Street Thatcham	452288	167445	24.4	25.3	23.3	21.2		19.6	19.1	16.1	24.8	25.2	28.4	24.9	22.9	19.3		
A4(80-82) Chapel St Thatcham	452071	167468		29.7	28.9	26.0	21.9								26.6	20.7		
130 Park Avenue Thatcham	451965	167498	20.1	23.8	19.1	17.4	14.9	10.9	27.4	10.0	18.7	17.0	21.5	17.9	18.2	15.3		
40 Chapel Street Thatcham 1	451926	167460	30.6	34.2	29.6	24.7	24.6	27.5	12.5	21.8	32.6	29.0	33.1	29.8	-	-		Triplicate Site with 40 Chapel Street Thatcham 3, 40 Chapel Street Thatcham 1 and 40 Chapel Street Thatcham 2 - Annual data provided for 40 Chapel Street Thatcham 2 only
40 Chapel Street Thatcham 2	451926	167460		34.7											27.5	23.1		Triplicate Site with 40 Chapel Street Thatcham 3, 40 Chapel Street Thatcham 1 and 40 Chapel Street Thatcham 2 - Annual data provided for 40 Chapel Street Thatcham 2 only
Continuous Monitor 1, A343, A339 and Greenham Road Newbury	447410	166561	33.0	29.8	35.7	28.4	23.5	28.2	29.6	23.5	35.4	34.5	41.9	36.6	-	-		Triplicate Site with Continuous Monitor 1, A343, A339 and Greenham Road Newbury, Continuous Monitor 1, A343, A339 and Greenham Road Newbury and Continuous Monitor 1, A343, A339 and Greenham Road Newbury - Annual data provided for

																	Continuous Monitor 1, A343, A339 and Greenham Road Newbury only
Continuous Monitor 1, A343, A339 and Greenham Road Newbury	447410	166561	33.0	29.8	35.7	28.4	23.5	28.2	29.6	23.5	35.4	34.5	41.9	36.6	-	-		Triplicate Site with Continuous Monitor 1, A343, A339 and Greenham Road Newbury, Continuous Monitor 1, A343, A339 and Greenham Road Newbury and Continuous Monitor 1, A343, A339 and Greenham Road Newbury - Annual data provided for Continuous Monitor 1, A343, A339 and Greenham Road Newbury only
Continuous Monitor 1, A343, A339 and Greenham Road Newbury	447410	166561	33.0	29.8	35.7	28.4	23.5	28.2	29.6	23.5	35.4	34.5	41.9	36.6	31.4	26.4		Triplicate Site with Continuous Monitor 1, A343, A339 and Greenham Road Newbury, Continuous Monitor 1, A343, A339 and Greenham Road Newbury and Continuous Monitor 1, A343, A339 and Greenham Road Newbury - Annual data provided for Continuous Monitor 1, A343, A339 and Greenham Road Newbury only
Calcot School	466044	171996			15.3		10.5	8.6	9.7	7.7	15.4	14.5	18.4	21.4	13.5	11.3		
Westwood Farm School	466515	175348	15.1	14.0	10.3	11.8	8.9		13.0	5.7	12.1	11.7	14.4		11.7	9.8		
Streatley	459202	180749	21.5	28.5	25.3		15.0	20.7		15.2	29.1	27.2	29.8	27.6	24.0	20.1		
Near Canal / 55 Station Road	457291	166573	12.1	12.5	10.3	11.7	8.8	7.4	6.8	6.3	9.7	8.8	12.1	10.6	9.8	8.2		
1 Kingfisher Court Pangbourne	463551	176623	20.7	26.2	27.9	22.2	22.2			13.3	28.5	23.0	27.6	26.1	23.8	20.0		

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

☐ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **West Berkshire Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within West Berkshire Council During 2021

West Berkshire Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by West Berkshire Council During 2021

During 2021 ADEPT with Reading university carried out research project in look at Obesity, traffic flow and air Quality. This included monitoring sites of $PM_{2.5}$ and NO_2 monitoring in Thatcham, and the time of publishing this report the final report has yet to be received and this will be reported in the next ASR.

QA/QC of Diffusion Tube Monitoring

Diffusion Tube Annualisation

As annualisation is required for any site with data capture less than 75% but greater than 25%. The diffusion tubes located at The Cross Keys Inn, in Pangbourne and the A4 Chapel Street in Thatcham both required annulisation. Only 8 months (66.6%) of the data was captured in The Cross Keys and only 4 months (33.3 %) at A4 Chapel Street. The details of the calculation method undertaken is provided in Table C.2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous

analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

West Berkshire Council have applied a local bias adjustment factor of 0.84 to the 2021 monitoring data. A summary of bias adjustment factors used by West Berkshire Council over the past five years is presented in Factor from Local Co-location Studies and Discussion of Choice of Factor to Use

The national study of bias adjustment factors spreadsheet (ref. 03/21 update) suggested a national bias adjustment factor of 0.83 be applied. A copy of the co-location spreadsheet used is provided below (Table C.1).

In determining the bias adjustment factor for the 2020 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 – co-location study in Newbury is monthly.
- If the co-location site is unusual in some way: for example, affected by specific large nitrogen oxides (NOx) sources other than road traffic, such as local industrial installations – the co-location study of Newbury location is predominantly influenced by road traffic.
- For tubes exposed in a similar setting to the co-location site – the co-location study of Newbury site is a roadside location, as are over 95% of the diffusion tubes located in West Berkshire. Therefore, the bias adjustment factor determined from either of these locations may not be of 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 co-location study at Newbury and diffusion tube surveys are all for a full calendar year (automatic monitoring is for the full year, however due to some data loss, the data capture is less than 90% in December 2020).
- 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 14 studies therefore both co-location or National factors can be used.
- 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 co-location

study in Newbury achieved “good” precision, where data is available and the automatic monitoring results from Newbury chemiluminescence are high quality (see the QA/QC of Automatic Monitoring section above).

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

- Where the survey consists of tubes exposed over a range of settings, which differ from the co-location site – this is not the case for West Berkshire (Newbury).
- Where the co-location study is for less than nine months, although the diffusion tube monitoring is for a longer period - The West Berkshire co-location study and diffusion tube surveys are for a full calendar year (2021).
- Where the automatic analyser has been operated using local, rather than national, QA/QC procedures - The West Berkshire chemiluminescence results (automatic monitoring) are high quality, see the QA/QC of Automatic Monitoring section above.
- Where data capture from the automatic analyser is less than 90%, or there have been problems with data quality – Data capture from Newbury automatic monitor was 97.0% in 2021, hence local bias adjustment factor can be used.
- 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 co-location study in Newbury 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 bias adjustment factor of 0.84 should be used to adjust the 2021 data, not the National of 0.83.

Table C.1.

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

The national study of bias adjustment factors spreadsheet (ref. 03/21 update) suggested a national bias adjustment factor of 0.83 be applied. A copy of the co-location spreadsheet used is provided below (Table C.1).

In determining the bias adjustment factor for the 2020 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 – co-location study in Newbury is monthly.
- If the co-location site is unusual in some way: for example, affected by specific large nitrogen oxides (NOx) sources other than road traffic, such as local industrial installations – the co-location study of Newbury location is predominantly influenced by road traffic.
- For tubes exposed in a similar setting to the co-location site – the co-location study of Newbury site is a roadside location, as are over 95% of the diffusion tubes located in West Berkshire. Therefore, the bias adjustment factor determined from either of these locations may not be of 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 co-location study at Newbury and diffusion tube surveys are all for a full calendar year (automatic monitoring is for the full year, however due to some data loss, the data capture is less than 90% in December 2020).
- 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 14 studies therefore both co-location or National factors can be used.
- 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 co-location study in Newbury achieved “good” precision, where data is available and the automatic monitoring results from Newbury chemiluminescence are high quality (see the QA/QC of Automatic Monitoring section above).

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

- Where the survey consists of tubes exposed over a range of settings, which differ from the co-location site – this is not the case for West Berkshire (Newbury).
- Where the co-location study is for less than nine months, although the diffusion tube monitoring is for a longer period - The West Berkshire co-location study and diffusion tube surveys are for a full calendar year (2021).
- Where the automatic analyser has been operated using local, rather than national, QA/QC procedures - The West Berkshire chemiluminescence results (automatic monitoring) are high quality, see the QA/QC of Automatic Monitoring section above.

- Where data capture from the automatic analyser is less than 90%, or there have been problems with data quality – Data capture from Newbury automatic monitor was 97.0% in 2021, hence local bias adjustment factor can be used.
- 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 co-location study in Newbury 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 bias adjustment factor of 0.84 should be used to adjust the 2021 data, not the National of 0.83.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	Local	-	0.84
2020	Local	-	0.99
2019	Local	-	0.91
2018	Local	-	1.0
2017	Local	-	1.01

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring locations within West Berkshire required distance correction during 2021.

QA/QC of Automatic Monitoring

TRL carry out the QA/QC on behalf of West Berkshire Council, below are details of TRL's process of QA/QC.

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

Independent Site Audits

In addition to these checks an independent site audit is carried out every 12 months to ensure the nitrogen dioxide analyser is operating correctly. The audits that are carried out utilise procedures that are applied within DEFRA's National Automatic Air Monitoring Networks Quality Control Programme. The efficiency of the analyser's convertor is checked and the analyser is also leak tested. The gas bottle used for calibrations on site is also checked against the auditor's gas bottle to ensure the stability of the gas concentration.

The site audit for the West Berkshire, Newbury automatic monitoring unit was carried out on 21st December 2021.

A major factor governing the analyser's performance is the NOx analyser's converter and its ability to reduce the nitrogen dioxide to nitric oxide. The recommended range for instrumentation in the national automatic air monitoring network is in the range of 98% - 102% efficient. Our tests show the converter in the West Berkshire, Newbury analyser to be 98.4% efficient at an NO_2 concentration of 270 ppb. This is a good result.

To ensure that the analysers are sampling only ambient air the instruments were leak checked. The results were satisfactory, indicating that the analyser sampling systems were free of significant leaks. The analyser exhibited some instability with its responses to both zero and span (calibration) gases with increased levels of variation (noise), this should be investigated at the next routine service.

The NOx 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 outside the (±10%) recommended limit and it was advised the underlying reason be investigated at the next service.

Please note the following cylinder recalculation test was undertaken at the Twyford station on the same day.

Based on the Twyford NOx analyser's response to the audit standard and audit zero, the concentrations of the stations NO cylinder have been reassessed. This provides an indication of the site standards stability. For the purpose of these stability checks, the criteria adopted within the national network, and used here, is that the recalculated concentration should lie within 10% of the stated concentrations.

The results of the recalculations are presented in Table C.2.

Table C.2 West Berkshire, Newbury and Twyford

TRL Wokingham – NO cylinder 21901300088296				
	NOx (ppb)	**% change from stated**	**NO (ppb)**	**% change from stated**
Manufacturers Stated Concentration	**464**	**---**	**464**	**---**
Recalculated Concentration (07/12/20)	450	-3.1	476	2.6
Recalculated Concentration (21/12/21)	468	0.8	468	0.9

The recalculated results for the site NO cylinder 21901300088296 indicate the concentrations are stable, within the definition adopted above, and can therefore reliably be used to scale ambient data.

All the recommendations of the audit have been investigated accordingly by TRL engineers.

Certificate of Calibration

Calibration factors and zeros have been produced on the basis of the audit calibrations conducted. All of these calibrations were conducted with transfer standards traceable to national metrology standards. The Certificate of Calibration provides the calibration and zero response factors for the oxides of nitrogen analysers under test on the day of the audits. It is available upon request from TRL.

Data Management

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

- Compare the TRL database scaling factors for the day of the audit with the factors and zeros on the Certificate of Calibration. If a deviation greater than the uncertainty associated with the calibration factor on the certificate is found, investigate the underlying reason and implement suitable data management actions.

Automatic Monitoring Annualisation

All automatic monitoring locations within West Berkshire recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No automatic NO_2 monitoring locations within West Berkshire Council required distance correction during 2020.

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Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Swindon	Annualisation Factor Oxford	Annualisation Factor Reading	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
The Cross Key Inn Pangbourne	0.9024	0.8932	0.9019	0.8992	29.7	26.8
A4(80-82) Chapel St Thatcham	0.8680	0.9856	0.9217	0.9251	26.6	24.6

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1
Periods used to calculate bias	10
Bias Factor A	0.84 (0.78 - 0.92)
Bias Factor B	19% (8% - 29%)
Diffusion Tube Mean (µg/m^3)	32.3
Mean CV (Precision)	3.8%
Automatic Mean (µg/m^3)	27.3
Data Capture	99%
Adjusted Tube Mean (µg/m^3)	27 (25 - 30)

Notes:

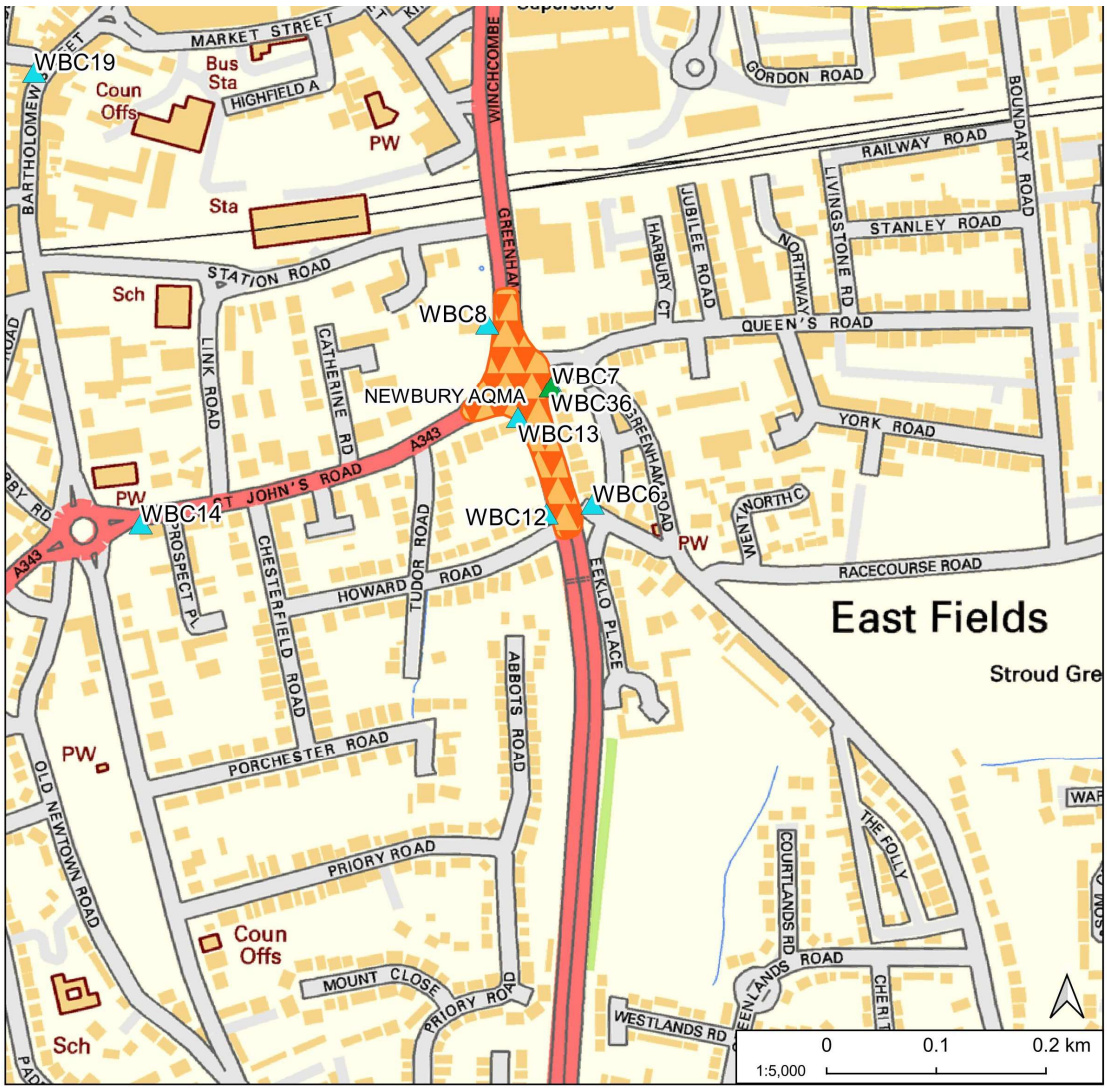
A single local bias adjustment factor has been used to bias adjust the 2021 diffusion tube results.

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

Figure D.1 – Map of Newbury AQMA

Figure D.2 – Map of Thatcham AQMA

Figure D.3 – Map of Newbury AQMA Air Quality Monitoring Locations



Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC6	A339(64) Greenham Road Newbury	28.17
WBC7	1 Winchester Court Newbury	27.07
WBC8	Newbury Gardens Day Nursery	18.61
WBC12	3 Howard Road Newbury	16.18
WBC13	63 St Johns Road Newbury	17.16
WBC14	1 St Johns Road Newbury	22.5
WBC19	40 Bartholomew Street Newbury	22.82
WBC35	Continous Monitor 1, A343, A339 and Greenham Road Newbury	26.6
WBC36	Continous Monitor 1, A343, A339 and Greenham Road Newbury	26.6
WBC37	Continous Monitor 1, A343, A339 and Greenham Road Newbury	26.6

Continuous monitoring site

Diffusion tube

AQMA

Figure D.4 – A Map of Newbury (South) Air Quality Monitoring Locations

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC9	20 Deadmans Lane Greenham	15.69
WBC10	A343 Andover Rd(Parkhouse School)	12.99
WBC11	Abbeydale Monks Lane Newbury	14.74

▲ Continuous monitoring site

▲ Diffusion tube

AQMA

Figure D.5 – Newbury (North) Air Quality Monitoring Locations

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC5	44 Hambridge Road Newbury	20.07
WBC16	43 Hawthorn Road Newbury	15.1
WBC17	6 Market Place Newbury	19.04
WBC18	42 Kings Road Newbury	16.33
WBC19	40 Bartholomew Street Newbury	22.82
WBC20	31 Shaw Road Newbury	21.89
WBC21	13 Shaw Road Newbury	21.88
WBC22	132 London Road Newbury	25.62
WBC23	A339 Newbury Central	27.64

Continuous monitoring site

Diffusion tube

AQMA

Figure D.6 – Map of Thatcham AQMA Air Quality Monitoring Locations

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC1	40 Chapel Street Thatcham 3	-
WBC2	31 Chapel Street Thatcham	25.62
WBC3	17 Chapel Street Thatcham 1	26.54
WBC4	17 Chapel Street Thatcham 2	26.24
WBC30	75 Chapel Street Thatcham	19.27
WBC31	A4(80-82) Chapel St Thatcham	41.64
WBC32	130 Park Avenue Thatcham	15.31
WBC33	40 Chapel Street Thatcham 1	23.11
WBC34	40 Chapel Street Thatcham 2	-

Continuous monitoring site

Diffusion tube

AQMA

Figure D.7 – Map of Pangbourne Air Quality Monitoring Locations

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC26	The Cross Key Inn Pangbourne	27.54
WBC27	4 Willows Court Pangbourne	18.7
WBC42	1 Kingfisher Court Pangbourne	19.96

Continuous monitoring site
Diffusion tube
AQMA

Figure D.8 – Map of Theale & Calcot Air Quality Monitoring Locations

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC28	Calcot Hotel	24.52
WBC29	Elizabeth Court Theale	14.64
WBC38	Calcot School	11.34

Continuous monitoring site

Diffusion tube

AQMA

Figure D.9 – Map of (Site 24) 374 London Road Newbury

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC24	374 London Road Newbury	16.72

Continuous monitoring site

Diffusion tube

AQMA

Figure D.10 – Map of (Site 15) 7a Bridge Street Hungerford

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC15	7a Bridge Street Hungerford	18.48

Continuous monitoring site

Diffusion tube

AQMA

Figure D.11 – Map of (Site 25) Old Bakery Tidmarsh

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC25	Old Bakery Tidmarsh	20.6

Figure D.12 – Map of (Site 39) Westwood Farm School

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC39	Westwood Farm School	9.82

Continuous monitoring site

Diffusion tube

AQMA

Figure D.13 – Map of (Site 40) Streatley

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC40	Streatley	20.14

Continuous monitoring site

Diffusion tube

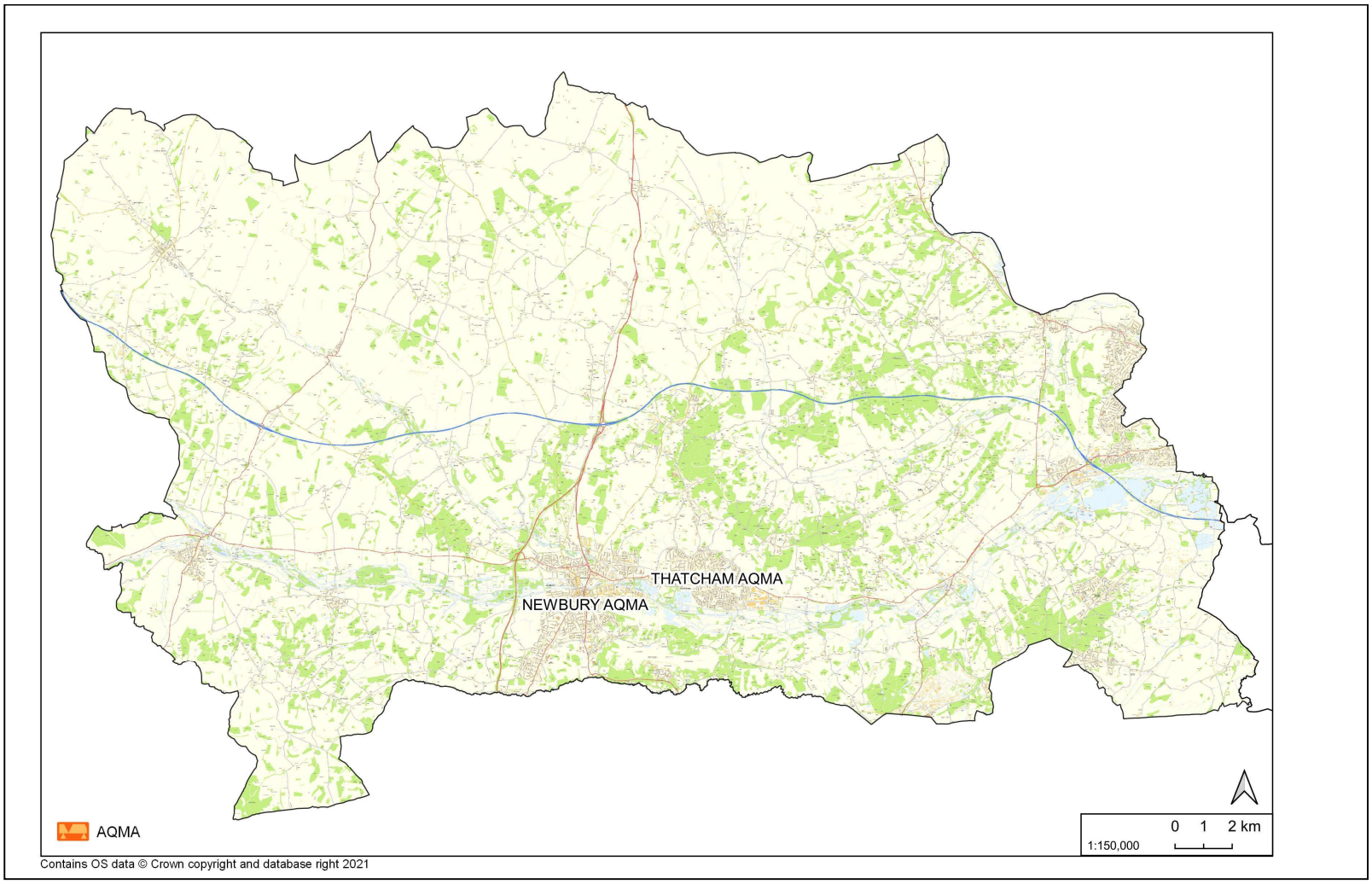
AQMA

Figure D.14 – Map of (41) 55 Station Road

Diffusion Tube ID	Site Name	NO2 Annual Mean
WBC41	Near Canal / 55 Station Road	8.19

Continuous monitoring site
Diffusion tube
AQMA

Figure D.15 – Map of West Berkshire



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England7

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Annual Screening Report 2021, West Berkshire Council, Public Protection Partnership.