

2019 Air Quality Annual Status Report (ASR)

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

June, 2019

Bath & North East Somerset Council

Local Authority Officer	Dr Nicola Courthold Mr Robin Spalding
Department	Environmental Monitoring
Address	Bath & North East Somerset Council Lewis House Manvers Street Bath BA1 1JG
Telephone	01225 396622
E-mail	Environmental_Monitoring@bathnes.gov.uk
Report Reference number	ASR0619
Date	June 2019

Executive Summary: Air Quality in Our Area

Air Quality in Bath & North East Somerset Council

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

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

Bath & North East Somerset is a mainly rural district with Bath as the major urban area, together with the small towns of Keynsham, Radstock and Midsomer Norton. The main pollutant source within the area is road traffic. This is exacerbated in Bath with the city being set in a valley surrounded by hills which can trap the pollution within the city.

As the source of air pollution in Bath and North East Somerset is overwhelmingly from traffic, the approach to improving air pollution is by traffic and transport improvement measures. There is a strong collaboration between the four West of England authorities in this regard and the Travel West brand acknowledges the fact that commuters don't think in terms of authority boundaries. The Sustainable Transport Transition Year fund and the Go Ultra Low (GUL) City Scheme (a West of England project) follow on from the successful Local Sustainable Transport Fund that the Travel West brand carried forward.

In Bath, through traffic travels into the Air Quality Management Area (AQMA) on four main corridors:

- a) M4 junction 18 to A36 south;

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

- b) M4 junction 18 to A367;
- c) A4 west (Bristol) to A36 south; and
- d) A4 west to A4 east (with 7.5t weight limit).

The lack of alternative routes means that the streets are often congested during peak periods, despite a very high proportion of employed Bath residents using sustainable modes for travel to work. The 2011 census indicated that only 25% of employed Bath residents working in the city, drive to work. This has been supported by substantial investments in cycling and walking infrastructure.

In Bath & North East Somerset, five Air Quality Management Areas (AQMAs) have been declared for nitrogen dioxide (NO₂), including the major road network within Bath, Keynsham High Street, a small section of the A4 in Saltford, and sections of the A37 in Temple Cloud and Farrington Gurney. Details of the AQMAs are given in Table 2.1 and maps of the AQMAs are in Appendix E. Details of the AQMAs can also be found at <http://www.bathnes.gov.uk/services/environment/pollution/air-quality/>.

There is no clear evidence of a safe level of exposure to particulate matter (PM) or NO₂ below which there is no risk of adverse health effects. This means that further reduction of PM or NO₂ concentrations below air quality standards is likely to bring additional health benefits⁴.

Bath and North East Somerset Council had 125 NO₂ monitoring sites and 3 particulate matter monitoring sites in 2018. At the end of every year the Council reviews the information which it has collected throughout the year and applies a correction factor. Corrected data is then compared to the national air quality objectives which are detailed in Appendix G. Headlines from 2018 are:

- NO₂ – all continuous monitoring results were below the annual average objective of 40 µg/m³ and there were no exceedances of the 1-hour objective. NO₂ reduced by 9% compared to 2017; this is higher than the average 4 % reduction across the government's national Automatic Urban and Rural Network (AURN).

⁴ DEFRA, Air Quality: A Briefing for Directors of Public Health, 2017

Bath & North East Somerset Council

- PM₁₀ – all monitoring results were below the annual average objective of 40 µg/m³ and there was 1 exceedance of the 24-hour mean objective (35 exceedances are allowed). The results were the same as 2017.
- PM_{2.5} – monitoring was below the annual average objective of 25 µg/m³. There was a 1 µg/m³ reduction compared with 2017.
- Bath – NO₂ diffusion tube concentrations reduced by an average of 12% across Bath compared with 2017. There was a slight increase at one site (DT084 – Bear Flat) and only a 1% reduction at DT090 - Anglo Terrace. 5 sites remain above the annual average objective of 40 µg/m³ at the residential facades across Bath in 2018.
- Keynsham – Diffusion tube monitoring continues to show a reduction in the NO₂ concentrations following the start of the trial for a one-way system in Keynsham. All sites were below the objective of 40 µg/m³ in 2018.
- Saltford – All sites were below the objective of 40 µg/m³ in 2018.
- Temple Cloud – Diffusion tube monitoring remains above the objective of 40 µg/m³. An AQMA was declared for this area in 2018 and an Air Quality Action Plan is being developed.
- Farrington Gurney – Diffusion tube monitoring in Farrington Gurney reduced in 2018 and results were just below the objective of 40 µg/m³ at the residential façade at 39.6 µg/m³ along the A37. Monitoring is continuing to establish if this reduction is an ongoing trend. An AQMA was declared for this area in 2018 and an Air Quality Action Plan is being developed.
- Pensford – Diffusion tube monitoring in Pensford on the A37 has remained below the objective of 40 µg/m³.
- Whitchurch – Diffusion tube monitoring in Whitchurch was below the objective of 40 µg/m³. An AQMA is not being declared but monitoring is continuing at key locations.
- Batheaston/Bathampton – Diffusion tube monitoring remains below 40 µg/m³ at all locations.
- Radstock/Midsomer Norton/Westfield - Diffusion tube monitoring remains below 40 µg/m³ at these locations.
- Paulton/Corston - New diffusion tube monitoring locations in Paulton and Corston were well below the objective of 40 µg/m³. No further action is required.

- 1-hour objective – All diffusion tube monitoring sites are below $60 \mu\text{g}/\text{m}^3$ – this suggests that the 1-hour NO_2 objective is unlikely to be exceeded.
- Bath & North East Somerset has monitored at 5 locations in 2018 using AQMesh indicative samplers. Results for each location included NO_2 , PM_{10} and $\text{PM}_{2.5}$ are shown in Appendix D.
 - Bath – Northampton Street
 - Bath – Terrace Walk
 - Keynsham – High Street
 - Keynsham – Bath Hill
 - Westfield – Wells Road

Actions to improve air quality

Key completed measures in 2018 are:

- Air quality work was dominated by Clean Air Plan technical work and consultation. The Strategic Outline Business Case published in early 2018 identified three main options and the draft Outline Business Case identified a category D Charging Clean Air Zone in Bath as the only option that would enable compliance in 2021. A public consultation took place in October and November with over 750 attending drop-in events and over 8,000 consultation responses. A Cabinet decision was made in March 2019 to implement a category C Charging Clean Air Zone with Traffic Management measures, following the consultation responses, development of the model and taking account of adjustments to emission factors on gradients;
- Widespread air quality and health campaign including advertising the impact of clean air on the back of lower emission buses, bus stop shelters and online;
- Successful bid for the Clean Air Plan Early Measures Fund to implement lower resident's parking permit charges for the ultra-low emission vehicles;
- Taxi licensing policy change that now requires all licensed vehicles to be compliant, enables the use of electric vehicles and incentivises the use of lower emission vehicles;
- Successful Ultra Low Emission Vehicle Taxi Infrastructure bid submission for 10 rapid chargers;
- AQMAs declared in August 2018 for Farrington Gurney and Temple Cloud on the A37;

Bath & North East Somerset Council

- Site assessments and District Network Operator (DNO) approval of Go Ultra Low funded rapid and fast charging locations across the authority area;
- Clean Air Schools Pack pilot for lesson planning on air quality, monitoring and active travel initiatives;
- 14 schools accredited with Modeshift stars Bronze, Silver or Gold. 43 schools signed-up (94 educational institutions in B&NES, excluding universities);
- Increased parking charges in central Bath to deter car use and help reduce NOx emissions;
- Keynsham one way trial scheme commenced in May 2017. The trial remained in place throughout 2018 enabling assessment of the impacts of the scheme. Air pollution levels on Keynsham High Street reduced by more than the average reduction across the area. A decision is scheduled to be made in 2019 as to whether the scheme will be made permanent.

Conclusions and priorities

In 2018, monitoring at existing locations showed a decrease in concentrations at most locations. AQMAs were declared for Temple Cloud and Farrington Gurney in 2018 and Air Quality Action Plans for the Areas are being developed. The Outline Business Case for the Clean Air Plan project was completed and work is progressing on the Full Business Case which is due to be completed in Autumn of 2019.

Bath and North East Somerset Council expects the following measures to be completed over the course of the next reporting year:

- Development and wide distribution of the Clean Air Schools Pack following the 2018 pilot;
- A37 Options and Feasibility Study for Temple Cloud and Farrington Gurney AQMAs;
- Draft and consult on an Action Plan for Temple Cloud Area;
- Draft and consult on an Action Plan for Farrington Gurney Area;
- Full Business Case and Clean Air Fund bid submission as part of the Clean Air Plan project;

Bath & North East Somerset Council

- Review Air Quality Action Plan for Bath following the approval of Clean Air Plan Full Business Case and Clean Air Fund bid submission;
- Implementation of the Clean Air Plan Early Measures Funding for reduced residents' parking permit charges for ultra-low emission vehicles;
- Clean Bus Technology Fund extension spending;
- Commencement of physical works on OLEV funded charging infrastructure (GUL Cities Scheme and ULEV Taxi Infrastructure Scheme);
- Award and implementation of last-mile freight delivery scheme contract using e-cargo bikes;
- Award and implementation of an electric cycle hire scheme contract in Bath;
- Completion of Delivery Service Plan pilot to inform Clean Air Plan supporting measures;
- Installation of a variable message sign on the southbound A46 approach to Bath;
- Clean Air Day publicity campaign including encouraging pledges from third parties via social media and on-street stalls promoting active travel and lower emission vehicles;
- 'Mobility as a service' trial that provides users with credit for using car hire, bus and alternative transport modes in exchange for selling their car. This is part of a joint bid with Bristol City Council and includes mobility stations near bus stops with e-bikes, car club cars and car share parking;
- Bath Transport Study. This is a £450k study funded by the West of England Combined Authority to consider a range of options including; implementing a mass transit system in Bath as well as improvements relating to walking, cycling and existing forms of public transport;
- Public Realm Movement Strategy access restrictions are being progressed in four locations in Bath, starting with Kingsmead Square in Spring 2020, followed by Cheap Street, Westgate Street and Milsom Street;
- The Local Cycling and Walking Investment Plan is to be consulted on in summer 2019;
- Development of a shared management plan for the shared use river path;
- Further work on Metrowest following expected funding confirmation and confirmation of funding for Portishead Line;

Bath & North East Somerset Council

- Delivery of the ULEV Taxi Infrastructure project including installation of 10 rapid chargers across the authority area;
- Adoption of the Joint Local Transport Plan 4 which sets out the vision for transport investment in the West of England and the policy framework within which the West of England authorities will work.

Local engagement and how to get involved

As the main source of air pollution in Bath and North East Somerset is from road sources, the Council wishes to encourage a greater amount of active travel across the district. The cycling infrastructure in Bath and North East Somerset is improving all the time and there are more opportunities to hire electric bikes being developed.

We recommend that people visit the 'Travel West' website (www.travelwest.info/), as this provides live data on public transport for journey planning as well as route information for walkers and cyclists; car clubs; traffic reports; electric vehicle charging infrastructure; and other information that simplifies travel choices. This site is administered by the West of England Local Enterprise Partnership.

Further information on what the Council is doing to improve air quality in Bath as part of the National Air Quality Plan and local engagement events can be found at <http://www.bathnes.gov.uk/bath-breathes-2021>. For further information on current and historic data on air quality levels visit the Council's website: www.bathnes.gov.uk/air-quality.

Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in Bath & North East Somerset Council	i
Actions to improve air quality	iv
Conclusions and priorities	v
Local engagement and how to get involved	vii
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	2
2.1 Air Quality Management Areas.....	2
2.2 Progress and Impact of Measures to address Air Quality in Bath & North East Somerset Council	5
2.3 PM _{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations.....	28
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	30
3.1 Summary of Monitoring Undertaken	30
3.1.1 Automatic Monitoring Sites	30
3.1.2 Non-Automatic Monitoring Sites.....	30
3.2 Individual Pollutants	32
3.2.1 Nitrogen Dioxide (NO ₂).....	32
3.2.2 Particulate Matter (PM ₁₀).....	37
3.2.3 Particulate Matter (PM _{2.5})	39
Appendix A: Monitoring Results	40
Appendix B: Full Monthly Diffusion Tube Results for 2018	71
Appendix C: Supporting Technical Information - Air Quality Monitoring Data QA/QC	81
Diffusion Tube Bias - National Adjustment Factors	81
Diffusion Tube Bias - Local Co-location Factors	81
Discussion of Choice of Which Bias Factor to Use	82
PM Monitoring Adjustment	84
QA/QC of automatic monitoring	84
QA/QC of diffusion tube monitoring	84
Short-term to Long-term Data adjustment.....	85
Distance adjustment to closest receptor	88
Appendix D: Other monitoring	96
D1 Benzene.....	96

D2 AQMesh results	97
Appendix E: Maps of Monitoring Locations and AQMAs	100
Appendix F: Supporting Technical Information – Additional Information.....	115
F.1 Screening Assessment	115
Road Traffic Sources.....	115
Non-road Transport Sources.....	115
Industrial Sources.....	115
Commercial Sources	115
Fugitive or Uncontrolled Sources	115
Appendix G: Summary of Air Quality Objectives in England	116
Glossary of Terms	117
References	118

List of Tables

Table 2.1 – Declared Air Quality Management Areas.....	3
Table 2.2 – Progress on Measures to Improve Air Quality	13
Table A.1 – Details of Automatic Monitoring Sites.....	40
Table A.2 – Details of Non-Automatic Monitoring Sites	41
Table A.3 – Annual Mean NO ₂ Monitoring Results.....	51
Table A.4 – 1-Hour Mean NO ₂ Monitoring Results	66
Table A.5 – Annual Mean PM ₁₀ Monitoring Results.....	67
Table A.6 – 24-Hour Mean PM ₁₀ Monitoring Results.....	67
Table A.7 – PM _{2.5} Monitoring Results.....	69
Table B.1 – NO ₂ Monthly Diffusion Tube Results – 2018	71
Table C.1 – Ratio for Short-term to Long-term Data Adjustment.....	85
Table C.2 – Façade adjustment.....	89
Table D.1 – Results of Benzene Monitoring	96
Table D.2 – Results from AQMesh analysers.....	99
Table G.1 – Air Quality Objectives in England.....	116

List of Figures

Figure 3.1 – Hourly Particulate Matter monitoring on Bonfire weekend.....	38
Figure A.1 – Trends in Annual Mean NO ₂ Concentrations at measured at automatic monitoring sites.....	58
Figure A.2 – Trends in Annual Mean NO ₂ Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Bath – South.....	58
Figure A.3 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Bath – South East	59
Figure A.4 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Bath – South West	59
Figure A.5 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Bath - West.....	60
Figure A.6 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Bath - East.....	60
Figure A.7 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Bath – North East.....	61
Figure A.8 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Bath – Centre South	61
Figure A.9 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Bath – Centre North	62
Figure A.10 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites Midsomer Norton, Westfield, Radstock, Pensford, Paulton and Corston.....	62
Figure A.11 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Farrington Gurney	63
Figure A.12 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Keynsham (1)	63
Figure A.13 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Keynsham (2)	64

Figure A.14 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Salford, Temple Cloud and Whitchurch.....	64
Figure A.15 – Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites – Sites in Batheaston and Bathampton ..	65
Figure A.16 – Trends in Mean PM ₁₀ Concentrations at Windsor Bridge	68
Figure A.17 – Trends in Mean PM ₁₀ Concentrations at Chelsea House	68
Figure A.18 – Trends in Annual Mean PM _{2.5} Concentrations at Chelsea House	70
Figure C.1 – Copy of Local Bias Correction Calculation	82
Figure D.1 – Trends in Benzene Monitoring	96
Figure D.2 – Comparison of AQMesh and continuous analysers during PM ₁₀ episode March 2018.....	98
Figure E.1 – Map showing AQMA in Bath	100
Figure E.2 – Map showing automatic monitoring sites in Bath	101
Figure E.3 – Map showing monitoring sites and AQMA in Bath – North.....	102
Figure E.4 – Map showing monitoring sites in Bath – South	103
Figure E.5 – Map showing monitoring sites in Midsomer Norton, Westfield and Radstock.....	104
Figure E.6 – Map showing monitoring sites and AQMA in Keynsham – West.....	105
Figure E.7 – Map showing monitoring sites and AQMA in Keynsham – East.....	106
Figure E.8 – Map showing monitoring sites and AQMA in Salford	107
Figure E.9 – Map showing monitoring sites in Batheaston and Bathampton	108
Figure E.10 – Map showing monitoring sites in Whitchurch	109
Figure E.11 – Map showing monitoring sites in Temple Cloud.....	110
Figure E.12 – Map showing monitoring sites in Farrington Gurney	111
Figure E.13 – Map showing monitoring sites in Corston.....	112
Figure E.14 – Map showing monitoring sites in Paulton	113
Figure E.15 – Map showing monitoring sites in Pensford.....	114

1 Local Air Quality Management

This report provides an overview of air quality in Bath & North East Somerset Council during 2018. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

The statutory air quality objectives applicable to LAQM in England can be found in Table G.1 in Appendix G.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by Bath & North East Somerset Council can be found in Table 2.1. Further information relating to declared or revoked AQMAs, including maps of AQMA boundaries are available online at <http://www.bathnes.gov.uk/services/environment/pollution/air-quality/>. Alternatively, see Appendix E, which provides maps of the air quality monitoring locations in relation to the AQMAs.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan (inc. date of publication)
						At Declaration	Now	
The Bath London Road Air Quality Management Area - 2013	Declared 1 February 2002, Amended v1 19 August 2005, Amended v2 30 July 2008, Amended v3 18 July 2013	NO ₂ Annual Mean	Bath	The area covers the major road network in Bath, encompassing any buildings whose facades are within the area.	YES	London Road AURN 2001 - 57 µg/m ³	London Road AURN 2018 - 38 µg/m ³	Bath Air Quality Action Plan (2011) - http://www.bathnes.gov.uk/sites/default/files/20110303_final_bath_air_quality_action_plan.pdf
The Bath London Road Air Quality Management Area - 2013	Declared 18 July 2013	NO ₂ 1 Hour Mean	Bath	The area covers the major road network in Bath, encompassing any buildings whose facades are within the area.	YES	Lambridge - 2012 - 62 µg/m ³	Lambridge - 2018 - 46 µg/m ³	Bath Air Quality Action Plan (2011) - http://www.bathnes.gov.uk/sites/default/files/20110303_final_bath_air_quality_action_plan.pdf
The Keynsham High Street Air Quality Management Area 2010	Declared 31 July 2010	NO ₂ Annual Mean	Keynsham	An area covers the town centre and extends along the High Street and Charlton Road encompassing the facades of the buildings within the area.	NO	Keynsham - High Street 2009 - 45 µg/m ³ at façade	Keynsham - High Street 2018 - 31 µg/m ³ at façade	Air Quality Action Plans for Keynsham and Saltford (2016) - http://www.bathnes.gov.uk/sites/default/files/keynsham_and_saltford_air_quality_action_plans_2016_1.pdf
The Saltford Air Quality Management Area 2013	Declared 4 July 2013	NO ₂ Annual Mean	Saltford	An area which covers the Bath Road, Saltford, encompassing any buildings whose facades are within the area, extending from its junction with Beech Road until 150m south of the Glen	NO	Saltford - The Crown 2012 - 47 µg/m ³	Saltford - The Crown 2018 - 31 µg/m ³	Air Quality Action Plans for Keynsham and Saltford (2016) - http://www.bathnes.gov.uk/sites/default/files/keynsham_and_saltford_air_quality_action_plans_2016_1.pdf

Bath & North East Somerset Council

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan (inc. date of publication)
						At Declaration	Now	
Temple Cloud Air Quality Management Area 2018	Declared 20 August 2018	NO ₂ Annual Mean NO ₂ 1 Hour Mean	Temple Cloud	The area starts approximately 245 metres north of the A37/Temple Inn Lane junction and runs along the A37 to approximately 150 metres south of the A37/Eastcourt Road junction.	NO	Temple Cloud 1 2017 – 67 µg/m ³	Temple Cloud 1 2018 – 60 µg/m ³	In development
Farrington Gurney Air Quality Management Area 2018	Declared 20 August 2018	NO ₂ Annual Mean	Farrington Gurney	The area starts approximately 165 metres north of the A37/Church Lane junction and runs south along the A37 to the Bath and North East Somerset Council boundary, and additionally extends approximately 100 metres east along the A362 from the A37/A362 junction.	NO	Farrington Gurney 2 2017 - 52 µg/m ³	Farrington Gurney 2 2018 - 39.6 µg/m ³	In development

Bath & North East Somerset Council confirm the information on UK-Air regarding their AQMA(s) is up to date

2.2 Progress and Impact of Measures to address Air Quality in Bath & North East Somerset Council

Defra's appraisal of last year's ASR concluded (responses in blue):

'The report is well structured, detailed, and provides the information specified in the Guidance. The Council have responded to comments made in the previous ASR and provided some detailed examples of recent improvements in air quality that can be linked to traffic management interventions. The monitoring programme continues to be extensive, highlighting pollution levels falling below objective levels in two AQMAs.

1. The ASR has included results of detailed monitoring assessments for the Temple Cloud and Farrington Gurney.
2. For Temple Cloud, monitoring results over two consecutive years 2016-2017 show consistent exceedances of the annual mean objective for nitrogen dioxide at 3 locations.
3. The assessment includes a map of a proposed AQMA which has been subject to public consultation where majority of public opinion approved the proposed AQMA boundary but also recommended an extension to include all properties along the A37 in Temple Cloud. The proposed AQMA has been extended to include areas encompassing all properties along the A37 in Temple Cloud.
4. Farrington Gurney also sits beside the A37, and the detailed assessment provided has only considered a single year's monitoring for 2017, at 5 locations. Three locations have results either on or above objective levels for annual mean nitrogen dioxide concentrations.
5. This detailed assessment and proposed AQMA boundary has also been subject to public consultation. The proposed AQMA boundary has also been extended to include the A37/A362 junction and vehicle queues eastwards along the A362.
6. In each case above, it would be useful to provide an estimate of the number of properties included within each proposed AQMA and consequent estimate of population resident within the AQMA.

Full details of the calculation will be given in the AQAP, population within the AQMAs are; Farrington Gurney – 44, Temple Cloud – 158.

7. The Council may consider the fast track application process to Defra for declaration of the Temple Cloud AQMA. Please ensure Defra are notified of any changes to AQMAs via the report submission website (RSW).

An AQMA was declared in August 2018. DEFRA was informed and the RSW was updated.

8. As the proposed Farrington Gurney AQMA has only been based on a single year's monitoring, it may be reasonable for the Council to consider a further year's monitoring prior to declaring this AQMA.

An AQMA was declared in August 2018 and the comment has been noted for future reference.

9. Continued monitoring at Whitchurch provides no evidence of exceedances of statutory air quality objectives, with no further requirement to consider an AQMA.

Monitoring is continuing in the area due to local concerns and future housing developments in the area.

10. Saltford and Keynsham AQMAs are now beneath objective levels for the first year. Monitoring should continue prior to reviewing the status of each AQMA to ensure levels remain below objectives.

Monitoring is continuing in both areas and remains beneath the objective; the AQMAs will be reviewed at the end of 2019.

11. We note the response to the request to order the monitoring results by AQMA, this provides a significant improvement in the presentation of results.

Results will continue to be reported by area.

12. We also note that a more detailed consideration of monitoring results has shown improvements, with some positively linked to traffic management schemes in the Local Authority area. We would encourage continued reporting on this theme, which should provide some useful evidence of the potential of local traffic schemes to influence air quality.

13. We note the significance of the requirement placed upon the Council to produce a Clean Air Plan, and welcome the completion of the strategic outline case for development of the plan.

[The Strategic Outline Case and the Outline Business Case have been completed and work is continuing on the Full Business Case.](#)

14. The progress in developing the plan should continue to be reported within Table 2.2 of the ASR report.’

Bath and North East Somerset Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in their respective Action Plans; Bath Air Quality Action Plan (2011) and Air Quality Action Plans for Keynsham and Saltford (2016).

Key completed measures are:

- Air quality work was dominated by the Clean Air Plan technical work and consultation. The Strategic Outline Business Case published in early 2018 identified three main options and the draft Outline Business Case identified, using technical modelling tools as required by central Government, that a category D Charging Clean Air Zone in Bath as the only option that would enable compliance in 2021. A public consultation took place in October and November with over 750 attending drop-in events and over 8,000 consultation responses. A Cabinet decision was made in March 2019 to implement a category C Charging Clean Air Zone with Traffic Management measures at Queen Square, from the options proposed in the Cabinet report⁵. This followed a review of consultation responses, development of the model (with agreement from central Government), and taking account of adjustments to emission factors on gradients. Originally, a higher emission factor was applied to both uphill and downhill traffic flows, however further refinement concluded that the factor should be applied to uphill gradients only – where heavier uphill traffic accounts for greater emissions. This

⁵ <https://democracy.bathnes.gov.uk/ieDecisionDetails.aspx?ID=1218>

development meant the number of locations predicted to exceed the limit value was reduced to one at Gay Street. Modelling of an existing public realm and traffic management scheme close by at Queen Square identified that this scheme would reduce emissions in the area enough to meet the limit value in Gay Street. A continuous engagement approach means that regular meetings continue to be held with key stakeholders including bus and coach operators, hauliers, emergency service providers and commercial vehicle operators.

- A widespread air quality and health campaign was undertaken as a precursor to the Clean Air Zone public consultation in order to raise the issue of air quality and health with the people living and working in Bath. This included advertising the impact of clean air on the back of lower emission buses, bus stop shelters and online;
- Successful bid for the Clean Air Plan Early Measures Fund to implement lower resident's parking permit charges for ultra-low emission vehicles;
- Successful Ultra Low Emission Vehicle Taxi Infrastructure bid submission for 10 rapid charging locations. To inform the bid and promote the potential of electric vehicles as taxis, a number of telematics devices were fitted to taxis;
- Taxi licensing policy change that now requires all licensed vehicles to be compliant, enables the use of electric vehicles and incentivises the use of lower emission vehicles;
- AQMAs declared in August 2018 for Farrington Gurney and Temple Cloud on the A37;
- Site assessments and District Network Operator approval of Go Ultra Low funded rapid and fast charging locations across the authority area;
- Clean Air Schools Pack pilot which involved a primary school in Bath and included pupil air pollution monitoring, air quality lessons, awareness raising poster competition, walking bus pilot and a musical rap performed by the school
- 14 schools accredited with Modeshift STARS Bronze, Silver or Gold. 43 schools signed-up (94 educational institutions in B&NES, excluding universities); and
- Keynsham one way trial scheme commenced in May 2017. The trial remained in place throughout 2018 enabling assessment of the impacts of the scheme. Air pollution levels on Keynsham High Street reduced by more than the average

reduction across the area. A decision is scheduled to be made in 2019 as to whether the scheme will be made permanent.

Bath and North East Somerset Council expects the following measures to be completed over the course of the next reporting year:

- Development and wide distribution of the Clean Air Schools Pack following the 2018 pilot that involved a primary school in Bath and included pupil air pollution monitoring, air quality lessons, awareness raising poster competition, walking bus pilot and a musical rap performed by the school pupils;
- A37 Options and Feasibility Study for Temple Cloud and Farrington Gurney AQMAs;
- Draft and consult on an Action Plan for Temple Cloud Area;
- Draft and consult on an Action Plan for Farrington Gurney Area;
- Full Business Case and Clean Air Fund bid submission as part of the Clean Air Plan project;
- Review Air Quality Action Plan for Bath following the approval of Clean Air Plan Full Business Case and Clean Air Fund bid submission;
- Implementation of the Clean Air Plan Early Measures Funding for reduced residents' parking permit charges for ultra-low emission vehicles;
- Clean Bus Technology Fund extension spending;
- Award and implementation of last-mile freight delivery scheme contract using e-cargo bikes;
- Award and implementation of an electric cycle hire scheme contract in Bath;
- Completion of Delivery Service Plan pilot as part of the Clean Air Plan to inform the supporting measures being developed in the bid submission for the Clean Air Fund;
- Installation of a variable message sign on the southbound A46 approach to Bath;
- Clean Air Day campaign including pledges from third parties and on-street stalls promoting active travel and lower emission vehicles;
- 'Mobility as a service' trial that provides users with credit for using car hire, bus and alternative transport modes in exchange for selling their car. This is part

of a joint bid with Bristol City Council and includes mobility stations near bus stops with e-bikes, car club cars and car share parking;

- Bath Transport Study. This is a £450k study funded by the West of England Combined Authority to consider a range of options including; implementing a mass transit system in Bath as well as improvements relating to walking, cycling and existing forms of public transport;
- Public Realm Movement Strategy access restrictions are being progressed in four locations in Bath, starting with Kingsmead Square in Spring 2020, followed by Cheap Street, Westgate Street and Milsom Street;
- The Local Cycling and Walking Investment Plan is to be consulted on in summer 2019;
- Development of a shared management plan for the shared use river path to promote cycling and walking;
- Further work on MetroWest rail improvements following expected funding confirmation and confirmation of funding for Portishead Line;
- Adoption of the Joint Local Transport Plan 4 which sets out the vision for transport investment in the West of England and the policy framework within which the West of England authorities will work.

Bath and North East Somerset's priorities for the coming year are for the completion of the Full Business Case and Clean Air Fund bid submission as part of the Bath Clean Air Plan work.

The delivery of the programme is challenging and is subject to:

- Success of the funding bids to the Joint Air Quality Unit (JAQU) Clean Air Fund and Implementation Fund to resource the necessary infrastructure and supporting measures that will ensure the reductions in nitrogen dioxide concentrations as stipulated by the Ministerial Direction;
- The timescales for implementing the Clean Air Plan and having the Clean Air Zone infrastructure in place prior to planned commencement in late November 2020, are extremely tight and require a significant upscaling of resource dependent on external JAQU funds (some of which has already been secured).

Progress on the following measures has been slower than expected due to prioritisation of the Clean Air Plan:

- The Bath Air Quality Action Plan was put on hold following the Ministerial Direction to implement a Clean Air Plan in 2017. The long term nature of the Bath Air Quality Action Plan means that it includes additional infrastructure measures that cannot be carried out within the timescale of the Clean Air Plan work.

Temple Cloud and Farrington Gurney

Bath and North East Somerset Council's Environmental Monitoring team have been generating ideas for measures that could form part of the joint Farrington Gurney and Temple Cloud Air Quality Action Plan (AQAP) and result in the required air quality improvement within the areas.

Given the constraints that exist in both the AQMAs it has been deemed appropriate to carry out an Options and Feasibility Study of the available measures. This will involve a full technical assessment; measures will first be assessed for feasibility and then undergo further assessment in terms of quantified air quality benefit, cost implications and other associated impacts if proven feasible.

The study will inform measures to be listed within the Air Quality Action Plan. By taking this approach Bath and North East Somerset Council is seeking to avoid including measures within the AQAP which are then not deemed deliverable given the physical, environmental and built heritage constraints that are present within the areas; and that do not result in the required improvement in air quality.

The Options and Feasibility Study will be undertaken by the consultant Jacobs under the current B&NES Framework for Professional Services. Upon completion of the study, the draft Air Quality Action Plan will be subject to a public consultation later in 2019 to receive the public's views and comments on the acceptability of the measures.

The monitored concentrations of NO₂ decreased from 2017 to 2018 in both Farrington Gurney and Temple Cloud when the annual averages were compared. In

Farrington Gurney this decrease resulted in no exceedances of the annual average objective at façade in 2018. B&NES Council will continue to monitor this trend in Farrington Gurney to establish if it is ongoing; as it could be the case that 2018 was a 'good' year in terms of nitrogen dioxide concentrations.

The constraints and conditions in each AQMA vary; therefore different actions may be required in each area. The decision by B&NES Council to assess all the available measures will ensure that measures within the Air Quality Action Plan are feasible and deliver the required air quality improvement.

Also of relevance to the Farrington Gurney AQMA is the new transport infrastructure proposed in line with the Somer Valley Enterprise Zone; to help facilitate the development of the site. The Somer Valley Enterprise Zone was established in 2017 and is located to the east of Farrington Gurney at Old Mills.

The proposed new transport infrastructure includes improvements to the A37/A362 junction which is within the Farrington Gurney AQMA. The improvements aim to create additional capacity and involve widening the A362 exit arm and reviewing the traffic signal phasing to better optimise flows. The potential impact on traffic flows may affect air quality and therefore the junction improvements will be assessed as a standalone measure within the aforementioned Options and Feasibility Study.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Bath 1	Bath Transport Package	Traffic Management	Other	Bath and North East Somerset Council			Park & Ride (P&R) bus patronage; and vehicles using the P&R	n/a	<p>890 additional P&R spaces between 2012 and 2015. Patronage at the 3 P&R sites overall grew by 16% between 2008/09-2016/17. 4 EV charging sockets installed at each P&R site. Bus infrastructure works included: Raised pavements at 375 stops to ease access on and off buses; 169 Real Time Passenger Information displays; Replacement of existing shelters and the addition of new bus shelters.</p> <p>There are 10 city centre live car parking availability VMS, 7 VMS on the edge of the city and 6 VMS in the City Centre for parking info and P&R promotion. There are plans for a VMS on A46 southbound.</p> <p>Extension of 10am to 6pm traffic restrictions in Stall Street and Lower Borough Walls.</p> <p>Seven Dials shared space and cycle scheme. Closure of Saw Close car park (22 spaces).</p> <p>Central access restrictions are currently being assessed and an initial conclusion is expected on schemes that can be taken forward in the summer.</p>	Substantially Complete.	Planned relocation of Mineral Water Hospital needs to take place before next phase of vehicular restrictions are implemented. This is due to meeting the needs of disabled drivers & passengers.

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Bath 2	Cleveland Bridge area restrictions feasibility study [& Low Emission Zone Feasibility Study]	Promoting Low Emission Transport	Low Emission Zone (LEZ)	Bath and North East Somerset Council			Modelled NO ₂ levels.	n/a	LEZ Feasibility Study completed and findings available online and in full on request. Further feasibility work underway following Clean Air Zones guidance publication and including identification in Devolution Deal Consultation Document. Now superseded by Clean Air Plan work following 2017 Ministerial Direction.	Initial study complete.	Possible NO ₂ emissions reduction of 7% but only marginal changes in resulting concentrations. Further progress subject to Devolution Deal consultation outcome. Originally no funds to implement, but this has changed with Ministerial Direction of 2017.
Bath 3	Low Carbon Bus Trial (CIVITAS 1.3)	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	University of the West of England, First Group and Bath and North East Somerset Council			Fuel usage / costs.	n/a	Complete. As a result, 8 hybrid electric buses now in used on the 3 park and ride services.	Complete.	39% improved fuel economy (mpg). 28% fuel saving (l/100km). Overall operating cost increase of £0.03/km (but due in part to prototype status). NO _x comparison unavailable.
Bath 4	Urban Freight Transhipment (CIVITAS 7.2)	Freight and Delivery Management	Freight Consolidation Centre	University of the West of England, Bath and North East Somerset Council and DHL			HGV traffic flows. Electric vehicle. Number of participating businesses. NO _x emissions.	1% p.a. from HGVs (provisional target)	>80% journey reduction. 55.7% reduction in energy consumption. 38 businesses with 40 retail outlets. Average monthly reduction in deliveries since January 2011 when scheme started is 77%. 91 deliveries in to centre and 22 out for Bath in May 2016. Delivery Service Plans Pilot taking place in 2019 as part of the Clean Air Plan. Also, an e-bike last-mile delivery service is out to tender at the time of writing.	Expired.	Following a review of the economic viability of the operation, the Council has cancelled its contract and ongoing subsidy for the operation, effective from 1st April 2017. DHL, the current operator of the scheme is currently reviewing their commercial viability for the service and are continuing the service until such time as they decide it is no longer a viable enterprise

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Bath 5	Improved Enforcement of TROs (CIVITAS 3.4 - Demand Management Strategies)	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	Bath and North East Somerset Council			HGV traffic flows. NO ₂ levels.	n/a		Complete.	The trial indicated that identifying breaches of the 7.5 tonne weight limit and informally contacting the relevant operators led to a reduction in HGV volumes. For details see 2016 ASR.
Bath 6	Bicycle Hire including Electric Bikes (CIVITAS 6.4 and 6.5)	Transport Planning and Infrastructure	Public cycle hire scheme	Bath and North East Somerset Council			Vehicle mix (% bikes). No. of hires.	n/a	New cycle hire facility launched 2014 with PAYG at 9 stations across Bath. 5 further hire stations added to total 14 in 2016. Contract expired in 2019 and a new electric cycle hire scheme will be tendered in 2019	2018	Over 15,000 hires between June 2014 and June 2016. 877 users per month. Electric cycle hire scheme will be tendered in 2019.
Bath 7	Electric Vehicle Recharging Points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Bath and North East Somerset Council			Vehicle mix (count of electric vehicles). Number of charges p.a. Number of different users.	1% of private car emissions p.a. (provisional target)	Charging sessions increase across West of England charge point commensurate with national uptake of ULEVs. 2 nd wave of OLEV funded chargers in the planning stage following consultation with DNO and commercial partner. Charge points funded by OLEV (GUL and ULEV Taxi Infrastructure).	2021	The West of England GUL City Scheme outlines an increase in charge points sub-regionally from 200 to 400 points, including 'charging hubs'; further rapid chargers; demonstrator vehicles; and 100 council fleet vehicles converted to ULEVs by 2021 across the West of England. Barriers include a lack of resource to implement prior to 2019.
Bath 8	Improve Building Emission Assessments	Policy Guidance and Development Control	Other policy	Bath and North East Somerset Council			Number of air quality assessments including spreadsheet tool.		No progress	Expired.	Lack of resource and low priority due to low %age source apportionment.
Bath 9	ECO Stars Vehicle Recognition Scheme	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	Bath and North East Somerset Council			Number of haulage operators & vehicles audited. HGV vehicle mix survey (number plate and engine standard).		No progress		

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Bath 10	Review Council and Emergency Service Vehicle Fleet	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	Bath and North East Somerset Council			Euro engine standard survey.	5% p.a. (provisional target)	Review undertaken by Energy Saving Trust for successful Go Ultra Low City Scheme Bid. As a result the Council has pledged to change 25% of light duty fleet to ultra-low emission vehicles by 2021. 10 pure EVs already purchased and operating in B&NES plus 4 hired pool cars. Memorandum of agreement is in development with Emergency Service providers – already a high proportion of Euro 6 vehicles.	2021	
Bath 11	Monitoring of Bus Fleet Quality	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	First Group and Bath and North East Somerset Council			Euro engine standard survey. Number of emissions abatement retrofit / original design.	5% emissions over whole fleet p.a. (provisional target)	OLEV Low Emission Bus Scheme bid unsuccessful. Pre-CVRAS Clean Bus Technology Fund relatively ineffective with some retrofitting unable to meet certification requirements. The Clean Air Fund bid as part of the Clean Air Plan and CBTF extension means that theoretically all public bus services will be upgraded to CVRAS Euro VI by the end of 2020. See 'Bath 13'.	2026	Full audit of fleet planned as part of Clean Air Zone proposals.

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Bath 12	Transport & Travel Information	Public Information	Via the Internet	Bath and North East Somerset Council			Number of signs. Contribute to achieving a target increase in bus passenger journeys per annum of 3% on a 2001/2 base level of 9.184m. Contribute to achieving an improvement in favourability recorded for B&NES within the West of England Bus Satisfaction Survey.	n/a	248 real time bus passenger information displays installed across B&NES. Overall bus passenger satisfaction in 2016 stood at 41% very satisfied and 47% fairly satisfied, in 2016.	Complete.	Bus checker app implemented as part of LSTF West of England project and available via www.travelwest.info
Bath 13	Alternative Exhaust Emissions Abatement	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	Bristol City Council			Number of retrofitted HGVs.	n/a	Clean Bus Technology Fund used for retrofitting of 35 buses across the West of England to Euro 5/6. Also Clean Vehicle Technology Fund award (joint bid) enabled Thermal Management Technology (TMT) to 42 buses across the West of England fitted as standard with Selective Catalytic Reduction (SCR). Clean Air Plan CAF bid for 117 fully funded vehicle retrofits, 13 repowers and 26 CBTF Extension funded retrofits.	Nov 2020	Availability of CVRAS (Clean Vehicle Retrofit Accreditation Scheme) accredited retrofit solutions.

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Bath 14	Rossiter Road Traffic Management Measures	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	Bath and North East Somerset Council			Traffic flows. NO ₂ levels.	Moving traffic from receptors.	Completed 2015 and annual mean NO ₂ levels reduced from 49 in 2014 to 28 µg/m ³ in 2016 on Widcombe Parade.	Complete.	
Bath 15	Promotional Website	Public Information	Via the Internet	Bath and North East Somerset Council			Number of visits to website.	n/a	Live AQ dials added and launch of Bath Breathes 2021 website with Clean Air Plan funding.	2017	
Bath 16	B&NES Corporate Travel Plan	Promoting Travel Alternatives	Workplace Travel Planning	Bath and North East Somerset Council			Business mileage. Modal shift (e.g. number of employees transferred from private car to bike, walking or public transport bus for commuting.	1% p.a. (provisional target)	Low emission pool cars provided at Keynsham and Bath offices in association with Europcar, including 4 Renault Zoe E.V (with charging point), Auris Hybrid and 3 Fiat 500's.	2018	Current plan covers 2015-2018

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Keynsham 1	Quantify the benefits from the one way system pilot for the High Street including monitoring and modelling of air quality impacts.	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	Project Delivery.	2017	2017-2018	Reduction in nitrogen dioxide concentrations. Traffic Counts. Reduction in emissions of nitrogen oxides.	Predicted reduction of approximately 3 µg/m ³ NO ₂ on High Street and approximately 1 microgram increase on some areas of alternative route. No significant improvement predicted on Charlton Road.	Trial commenced in May 2017. The reduction in monitored concentrations is between 3 to 27% when comparing similar periods before and after the introduction of the one-way system. Keynsham High Street showed an average reduction in between 25%. NO ₂ concentrations across the district have reduced on average by approximately 10%, thus the percentage reduction that can be attributed to the scheme equates to approximately -7 to 17%. Final decision on whether the changes are made permanent will be in 2019.	2018	
Keynsham 2	Targeted information campaign for the most vulnerable groups (i.e. asthmatics, Chronic Obstructive Pulmonary Disease etc.).	Public Information	Other	B&NES Public Protection and Health Improvement, Public Health, Research and Intelligence Team, Clinical Commissioning Group, Sirona Care and Health.			The number of hits on website. Number of initiatives delivered.	No reduction in concentration in Nitrogen Dioxide, however there would be an exposure reduction for residents.	In progress – designing scheme with Public Health Team.		

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Keynsham 3	This Action Plan influences planning policy to require electric vehicle charge points for each new property.	Promoting Low Emission Transport	Other	Developer and B&NES Planning Development Control.			Number of properties where a power spur for an electric vehicle charge point is installed. Number of planning applications approved with a vehicle charge point as an advisory or required condition.	% reduction in NO _x emissions compared to a diesel.	Placemaking Plan states that electric charging facilities will be sought where practical	Ongoing	
Keynsham 4	Increase public charging points through 'Ultra Low West' (Source West) EV charging infrastructure programme.	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	B&NES Public Protection and Health Improvement			Number of charge points. Number of charging sessions per year.	% reduction in NO _x emissions compared to a diesel.	2 public charge points and 2 charge points for council fleet installed. Further installations are in the planning stage following a successful consultation with the DNO.	2016-2021	
Keynsham 5	Recommend tree planting in future infrastructure programmes	Other	Other	Keynsham Connecting Communities Forum, Keynsham in Bloom (town council), Public Protection and Health Improvement, Public Health, Highways & Parks.			Number of trees planted.	Provision of a barrier to protect residents and visitors	Keynsham High St enhancement likely to be first application of this action. Subject to permanent design once the funding has been signed off and the decision as to whether the scheme is to be permanent has been made.		

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Keynsham 6	This Action Plan influences planning policy to encourage the provision of cycle parking for each new property.	Promoting Travel Alternatives	Promotion of cycling	Developer and B&NES Planning DC.			Number of new properties with cycle storage. Number of planning applications approved with cycle storage as advisory or required condition.	% reduction in NO _x emissions compared to a diesel.	Placemaking plan adopted 2017 and standards require new development to now provide minimum parking (secured and covered).	2016-2029	
Keynsham 7	Explore the promotion of an "Electric Zone".	Promoting Low Emission Transport	Other	Public Protection and Health Improvement & Highways.			Number of signs erected. Number of electric vehicles in peak hours on High Street/Ashton Way with a manual traffic count. Number of charging sessions.	N/A	Subject to outcome of charge point review as part of Go Ultra Low infrastructure demand review work by Bristol Energy on behalf of West of England authorities.		Partly dependent on emerging GUL programme and outcome of one-way trial for certainty over any on-street installations.
Keynsham 8	Influence the design of developments to improve access to public transport, cycling and walking routes.	Transport Planning and Infrastructure	Other	B&NES Placemaking Plan / Planning DC.			Number of approved planning applications with minimum 30 minute bus frequency in or adjacent to site (with 100 metre of the site).	Negligible	Placemaking Plan requires developments to facilitate walking, cycling and public transport	2016-2029	
Keynsham 9	Support the creation of a local "Air Quality Action Group".	Public Information	Other	Connecting Communities Forum			Established as part of the remit of existing of new group.	N/A	Inaugural meeting of Keynsham Cycle Campaign took place recently. An Officer attended and is building stronger links with Transition Keynsham.		

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Keynsham 10	Keynsham Greenway links to National Cycle Network 4, Wellsway School and riverside path into Bristol and S Glos with new bridge over River Avon.	Transport Planning and Infrastructure	Cycle network	Transportation, Bristol City Council, South Gloucestershire Council, Sustrans, developers.	Feasibility study in 2017	Est. 2019	Delivery of project. Number of cycle trips from annual surveys.	Funding secured	Local Cycling and Walking Investment Plan(LCWIP) in development and due for consultation in 2019.	2023	Sufficient contributions to cover final cost and delivery of housing.
Keynsham 11	Work with Community Transport to promote the use of Low emission dial-a-ride vehicles.	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	Keynsham and District Dial and Ride			Low emission vehicle journeys / miles.	% reduction in NO _x emissions compared to a diesel.	No progress		Appropriate vehicle availability, plus budget and fleet renewal programme.
Keynsham 12	Identify, influence and publicise pedestrian and cycling facility improvements	Transport Planning and Infrastructure	Other	B&NES & First Group.	2017	2018-2023	Audit of infrastructure completed. Recommendation will be integrated into this plan. Walking and cycling surveys	N/A	Keynsham Transport Strategy approved in 2016. LCWIP in development and due for consultation in 2019.	2023	
Keynsham 13	Lobby government for incentivising uptake of non-diesel cars.	Other	Other	Public Protection and Health Improvement & Public Health.			Letter sent.	In itself, no improvement, however, there is a quantifiable reduction in emissions with each new Ultra Low Emission Vehicle which is introduced to replace a diesel vehicle	Submitted a consultation response (June 2017) to the DEFRA consultation: 'Improving air quality: national plan for tackling nitrogen dioxide in our towns and cities'.		

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Keynsham 14	Identify and publicise priority cycling routes to support a cycling culture for all.	Transport Planning and Infrastructure	Cycle network	B&NES Environmental Services, Sustrans & South Gloucestershire Council.			Cycling routes identified.	n/a	Network cycle maps plus a range of route maps available on the Council's website, supported by printed versions and cycling events. LCWIP in development and due for consultation in 2019.	Ongoing	
Keynsham 15	Encourage low emission bus services in Keynsham	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	B&NES Public Transportation			Number of bus routes serviced by a Low emission vehicle	% reduction in NO _x emissions compared to a diesel. (or milligrams)	No progress.		The proposed Bath Clean Air Zone will be framed such that Keynsham AQMA will also benefit low emission vehicles.
Keynsham 16	Increase public education messages which promote healthier choices for short journeys	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	B&NES Public Protection and Health Improvement			Delivery of a public education campaign	No reduction in concentration. Exposure reduction	B&NES-wide Active Lifestyle campaigns and activities undertaken. Air quality and health campaign focussed in Bath also benefits Keynsham – bus shelter and rear of lower emission bus advertising as part of the Clean Air Plan.		
Keynsham 17	Work with bus operators on improved services, ticketing and simplified fare structure.	Transport Planning and Infrastructure	Bus route improvements	B&NES Public Transportation			B&NES area bus usage figures. Annually Bus Passenger Satisfaction surveys for B&NES (Transport Focus).	n/a	First Group, the region's largest bus operator launch mobile ticketing (mTickets) in October 2016.	Ongoing	
Keynsham 18	Support the provision of improved lighting on cycle path.	Transport Planning and Infrastructure	Cycle network	B&NES Property Services			Lighting provided to key locations.	n/a	No progress in B&NES, but Bristol City Council has installed solar studs within their boundary.		Concerns about effects on bat corridor, which may be offset by 'bat hat' option.

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Keynsham 19	Advocate increased rail service via "MetroWest" - resulting in increase from hourly to half-hourly rail service.	Transport Planning and Infrastructure	Other	B&NES Environmental Services & other former Avon authorities.	2017-2019	2020-2021	Project implementation. Rail patronage per service at Keynsham (annual rail survey).	Offsets less efficient modes.	Part of MetroWest Phase 1 being developed by the West of England.	2021	
Saltford 1	Targeted information campaign advice for the most vulnerable groups (i.e. asthmatics, Chronic Obstructive Pulmonary Disorder etc.).	Public Information	Other	B&NES Public Protection and Health Improvement, Public Health, Research and Intelligence Team, Clinical Commissioning Group, Sirona Care and Health.			The number of hits on website. Number of initiatives	No reduction in concentration. Reduction in exposure to NO ₂ and fine particles.	In progress – designing scheme with Public Health Team.		
Saltford 2	Recommend tree planting in future infrastructure programmes	Other	Other	Community Air Quality Group (utilising Keynsham Connecting Communities Forum).			Number of trees planted.	Provision of a barrier to protect residents and visitors	Included in Joint Spatial Plan		
Saltford 3	Advice to land owners on planting that can help to protect their properties from air pollution.	Other	Other	B&NES Public Protection and Health Improvement, Highways & Planning			Number of hits on website	No reduction in concentration. Reduction in exposure to NO ₂ and fine particles.	No progress		Limited resources and lowering of nitrogen dioxide concentrations resulted in it being a low priority.

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Salford 4	Influence planning policy to support the increase of electric vehicle charge point infrastructure for each new property.	Promoting Low Emission Transport	Other	Developer and B&NES Planning DC			Number of properties where a power spur for an electric vehicle charge point is installed. Number of planning applications approved with a vehicle charge point as an advisory or required condition.	% reduction in NO _x emissions compared to a diesel.	Placemaking Plan states that electric charging facilities will be sought where practical	2016-2029	
Salford 5	Increase public charging points through 'Ultra-Low West' (Source West) electric vehicle charging infrastructure programme	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	B&NES Public Protection and Health Improvement,			Number of charge points. Number of charging sessions.	% reduction in NO _x emissions compared to a diesel.	No progress.		
Salford 6	Explore the promotion of an "Electric Zone".	Promoting Low Emission Transport	Other	B&NES Public Protection and Health Improvement, & Highways.			Number of signs. Number of electric vehicles in peak hour on A4.	N/A	No progress.		Partly dependent on emerging GUL programme and outcome of one-way trial for certainty over any on-street installations.
Salford 7	Support the creation of a local "Air Quality Action Group".	Public Information	Other	Connecting Communities Forum and B&NES Public Protection and Health Improvement,			Established as part of the remit of existing of new group.	N/A	No progress.		Build on good relationship with parish council.

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Salford 8	Influence planning policy to encourage the provision of cycle parking for each new property.	Promoting Travel Alternatives	Promotion of cycling	Developer and B&NES Planning DC			Number of new properties with cycle storage. Number of planning applications approved with cycle storage as advisory or required condition.	% reduction in NO _x emissions compared to a diesel.	Placemaking Plan requires provision for cycling in new developments	2016-2029	
Salford 9	Work with Community Transport to promote the use of Low emission dial-a-ride vehicles.	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	KADDAR.			Low emission vehicle journeys / miles.	% reduction in NO _x emissions compared to a diesel.	No progress		Lack of available funds and low impact on overall emissions.
Salford 10	Encourage low emission bus services in Salford.	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	B&NES Public Transportation			Number of bus routes serviced by a Low emission vehicle	% reduction in NO _x emissions compared to a diesel.	No progress		The proposed Bath Clean Air Zone will be framed such that Salford AQMA will also benefit low emission vehicles.
Salford 11	Lobby government for incentivising uptake of non-diesel cars.	Other	Other	B&NES Public Protection and Health Improvement			Government response and changes to legislation.	In itself, no improvement, however, there is a reduction with each new ULEV introduced replaced a diesel vehicle	Submitted a consultation response (June 2017) to the DEFRA consultation: 'Improving air quality: national plan for tackling nitrogen dioxide in our towns and cities' .		
Salford 12	Increase public education messages which promote healthier choices for short journeys	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	B&NES Public Protection and Health Improvement			Delivery of a public education campaign	No reduction in concentration. Exposure reduction	B&NES-wide Active Lifestyle campaigns and activities undertaken	On going	
Salford 13	Support the provision or improved lighting on cycle path.	Transport Planning and Infrastructure	Cycle network	B&NES Property Services			Lighting provided to key locations at least	n/a	No progress		Concerns about effects on bat corridor, which may be offset by 'bat hat' option.

Bath & North East Somerset Council

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Salford 14	Continue feasibility work on reopening Salford Station.	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	B&NES, First Group, Network Rail & MetroWest partners			Completed feasibility study	Requires air quality assessment	GWR requested to undertake timetabling work to determine if an additional station is feasible within MetroWest phase 1 timetable.		Supported by West of England Authorities, but not part of MetroWest phases 1 and 2. Awaiting results of GWR timetabling work.

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

As detailed in Policy Guidance LAQM.PG16⁶ (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 Public Health England 'Public Health Outcomes Framework' indicator '3.01 Fraction of mortality attributable to particulate air pollution'⁷ (particulates under 2.5 micrometers in diameter as opposed to nitrogen dioxide)' for Bath and North East Somerset Council in 2017 (the most recent year available) is 4.7% (compared to 4.8% in 2013). This is similar to the values across the South West region of 4.4% and 5.1% nationally.

In 2015 Bath & North East Somerset Council started to monitor PM_{2.5} at Chelsea House, London Road, Bath (CM4), this a roadside site set 15 m back from the road. Monitoring from this location shows similar levels to previous years. Due to its small size PM_{2.5} can travel large distances in the air. 40-50% of PM_{2.5} levels can be from sources outside the local authority boundary (LAQM.TG16)⁸.

Environmental Monitoring are working with the Public Health team on mitigating the impacts of PM_{2.5} within Bath & North East Somerset by developing a project as part of the Keynsham and Salford Air Quality Action Plans that provides targeted information to vulnerable groups through health and social care workers. The potential to expand this to other parts of B&NES will be explored. Public Health are represented on the Air Quality working group which developed the Keynsham and Salford Action Plans and have been involved in the development of the revised Bath Action Plan. Many of the actions in the action plans will reduce PM_{2.5} as well as NO₂; details of the specific actions are given in Table 2.2.

⁶ Local Air Quality Management – Policy Guidance (PG16), April 2016 (<https://laqm.defra.gov.uk/documents/LAQM-PG16-April-16-v1.pdf>)

⁷ <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/0/gid/1000043/pat/6/par/E12000009/ati/102/are/E06000022>

⁸ Local Air Quality Management - Technical Guidance (TG16), April 2016 (<https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf>)

Bath & North East Somerset Council

Within Bath & North East Somerset the area depicted by the city of Bath is a smoke control area. Details of this area can be found at <http://www.bathnes.gov.uk/services/environment/pollution/smoke-control>. Within this area the Council works to ensure that only authorised fuels or appliances are used.

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

3.1 Summary of Monitoring Undertaken

This section sets out what monitoring has taken place and how it compares with the air quality objectives.

3.1.1 Automatic Monitoring Sites

Bath & North East Somerset Council undertook automatic (continuous) monitoring at 4 sites during 2017. Table A.1 in Appendix A shows the details of the sites.

Monitoring was carried out for NO₂ and PM₁₀ and a PM_{2.5} in 2018.

National monitoring results are available at <https://uk-air.defra.gov.uk/> (the London Road Continuous NO₂ analyser is listed as Bath Roadside).

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. Whilst we are fully compliant with the national air quality objective with respect to benzene, Bath & North East Somerset Council has a benzene monitor which is part of the national non-automatic hydrocarbon network located at the London Road continuous site (CM1). Results from this site are available at https://uk-air.defra.gov.uk/data/non-auto-data?uka_id=UKA00306&network=nahc&s=View+Site listed as Bath Roadside and details are also given in Appendix D.

Maps showing the location of the monitoring sites are provided in Appendix E.

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

Bath & North East Somerset Council undertook non-automatic (passive) monitoring of NO₂ at 121 sites during 2018. Table A.2 in Appendix A shows the details of the sites.

51 new sites were introduced in 2018, there were 44 sites as wider monitoring for the clean air plan and a further 7 monitors to respond to public requests and to check other key locations. These were:

- Bath Clean Air Plan
 - DT150 – Brougham Hayes
 - DT151 – Widcombe Hill
 - DT152 – Bathwick Hill
 - DT153 – North Road
 - DT154 – Bradford Road
 - DT155 – Newbridge Hill
 - DT156 – Corn Street
 - DT157 – Charles Street
 - DT158 – Paragon 2
 - DT159 – Walcot Street
 - DT160 – North Parade Road
 - DT161 – Kelston Road
 - DT162 – Corston – A39
 - DT163 – Batheaston – A4, Box Road
 - DT164 – Midford Road
 - DT165 – Brassknocker Hill
 - DT166 – Bathampton – A36
 - DT167 – Weston High Street
 - DT168 – Englishcombe Lane
 - DT169 – Eastbourne Avenue
 - DT170 – St James Parade 2
 - DT171 – Frome Road/Upper Bloomfield
 - DT172 – London Road 2
 - DT173 – Upper Bristol Road 2 (near Nile Street)
 - DT179 – Upper Bristol Road 3 (near Shaftesbury Avenue)
 - DT180 – Wells Road 2 (near Holloway)
 - DT181 – Wellsway
 - DT182 – Gay Street – Lower
 - DT183 – Chapel Row
 - DT184 – Lansdown Road 2
 - DT185 – Greenway Lane
 - DT186 – Coronation Avenue
 - DT187 – Stanley Road West
 - DT188 – Moorland Road
 - DT189 – Old Newbridge Hill
 - DT190 – Church Street
 - DT191 – Batheaston – Mill Lane
 - DT192 – Fairfield Road
 - DT193 – Granville Road
 - DT194 – Brooklyn Road
 - DT195 – Lansdown Lane
 - DT196 – Oakley
 - DT197 – Rush Hill
 - DT198 – Walcot Parade
- Paulton/Radstock/Westfield
 - DT175 – Westfield 3 (Wells Road near Butchers Close)
 - DT176 – Radstock – Wells Road 2 (near The Shambles)
 - DT177 – Paulton (near The Pithay)
- Farrington Gurney
 - DT178 – Farrington Gurney 6 (near Bridge Buildings)
- Pensford
 - DT174 – Pensford 3 (Pensford Hill near Hillside Cottages)
- Other sites
 - DT148 – Julian Road (St Andrew's)
 - DT149 – Camden 3 (moved from Gays Hill to Berkeley Place)

Maps showing the locations of the monitoring sites are provided in Appendix E.

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.

During 2018 Bath & North East Somerset also carried out monitoring at five locations using AQ Mesh samplers.

- Bath – Northampton Street
- Bath – Terrace Walk
- Keynsham – High Street
- Keynsham – Bath Hill
- Westfield – Wells Road

These samplers are indicative and monitor NO₂ using electrochemical sensors, PM₁₀ and PM_{2.5} using optical particle count sensors giving real-time results every 15 minutes. Results are shown in Appendix D.

Monitoring of non-LAQM parameters including pollen and local meteorology which had previously been carried out by Bath & North East Somerset ceased in 2017 as the Council were unable to continue using the monitoring location.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

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

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

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

Automatic Monitoring Data

Results from automatic monitoring of NO₂ are shown in Tables A.3 and A.4 and Figure A.1. All sites measured values less than both the annual average objective (40 µg/m³) and hourly objective (200 µg/m³), therefore the objectives were met.

The trend data shows that 2018 was not a peak year for NO₂, with monitoring results being lower than previous years at all sites (Figure A.1, Appendix A). The results from Windsor Bridge remain significantly lower than in the previous years of 2011-2013. During 2013 the site was relocated due to junction changes and the kerb has moved 2 m further from the monitor. The site is now a similar distance from the road to the residential properties which are located opposite the monitoring point.

Diffusion Tube Monitoring Data

The results of the diffusion tube monitoring are shown in Table A.3 and Figures A.2-A.14. The results have been corrected by bias factors as described in LAQM.TG16⁸. In 2018, the choice of bias factor was reviewed and the local bias factor was chosen in preference to the national bias factor, with the clarification that using this factor will overestimate results from sites which are not directly comparable with the co-located reference site on London Road, Bath. An explanation for this is provided in Appendix C. Sites with less than 75% data capture were annualised using the method described in LAQM.TG16, details are provided in Appendix C. Results were also adjusted to the closest façade where appropriate, details are given in Appendix C and results are shown in Appendix B. The raw monthly diffusion tube monitoring data is shown in Appendix B.

Bath

The results from monitoring sites in Bath show that in 2018 the annual average objective was exceeded at the following locations:

- DT90 - Anglo Terrace
- DT165 - Brassknocker Hill
- DT42 - Dorchester Street
- DT55 - Lambridge
- DT172 - London Road 2
- DT43 - St James' Parade
- DT09 - Upper Bristol Road
- DT60 - Victoria Buildings
- DT20 - Wells Road
- DT21 - Wells Road/Upper Oldfield Park
- DT198 – Walcot Parade

Of these sites the five highlighted in red exceeded the 40 $\mu\text{g}/\text{m}^3$ when adjusted to the closest building façade. All the existing monitoring sites which exceed the NO_2 annual average objective at the façade are within an AQMA.

In addition to the above sites, there are also 5 other sites in Bath (identified below) having levels which are between 36-40 $\mu\text{g}/\text{m}^3$. All these monitoring sites are within an AQMA.

- DT62 - Argyle Terrace
- DT03 - Broad Street
- DT184 – Lansdown Road 2
- DT173 - Upper Bristol Road 2
- DT52-54 - Walcot Terrace

The trends in diffusion tube monitoring since 2008 are shown in Figures A.2-A.9 in Appendix A. Overall, monitoring results of NO_2 in 2018 were lower than in 2017 by an average of 12% across the network. Results are showing a general downward trend at most locations, however there was a slight increase at one site (DT084 - Bearflat) and only a 1% reduction at DT090 - Anglo Terrace.

Monitoring of NO_2 at Widcombe High Street (DT018) continues to show a significant drop in concentrations (around 15 $\mu\text{g}/\text{m}^3$). This is due to a new road layout being created to move through traffic out of the pedestrian centre and away from residential properties. This site is now below the objective and is expected to stay at this level. There are currently no plans to amend the AQMA to remove this small link.

No existing monitoring sites were at or above 60 $\mu\text{g}/\text{m}^3$, indicating the 1-hour objective has been met. There are currently no plans to amend the AQMA to remove the 1-hour objective from the Bath AQMA.

Bathampton/Batheaston

Monitoring continued along Bathampton High Street and London Road West in Batheaston. As part of the wider Clean Air Plan monitoring further sites were also added on the A4 in Batheaston, A36 in Bathampton and on the Toll Bridge linking the 2 villages (Figure E.9 in Appendix E). The results from 2018 show that levels at all locations were below 40 $\mu\text{g}/\text{m}^3$. Monitoring will continue in Batheaston and Bathampton as part of the Clean Air Plan.

Corston

As part of the wider Clean Air Plan monitoring a monitoring site was added on the A39 in Corston (Figure E.13 in Appendix E). The results from 2018 show that levels were below $40 \mu\text{g}/\text{m}^3$ and no further action is required. Monitoring has ended as the results were below the objective.

Farrington Gurney

Following high concentrations of NO_2 being identified in Temple Cloud in 2016, other potential areas along the A37 were investigated including Farrington Gurney. Initially one site was located at the junction of the A37 and A362 in January 2017. Following high readings at this location a further 4 sites were added, in 2018 following the AQMA consultation a monitor was added close to Bridge Buildings as there was concern over a potential hotspot (Figure E.12 in Appendix E).

The results shown in Table A.2 show that the monitoring in Farrington Gurney reduced in 2018 and results were just below the objective of $40 \mu\text{g}/\text{m}^3$ at the residential façade at $39.6 \mu\text{g}/\text{m}^3$ along the A37. Monitoring is continuing to establish if this reduction is an ongoing trend.

Following high concentrations in 2017, an AQMA was declared in August 2018. Monitoring continues at 2 locations on A37 and one location on A362 which had NO_2 concentrations above $36 \mu\text{g}/\text{m}^3$.

Keynsham

As part of the Getting around Keynsham Transport Strategy, the Council was trialling a one-way system in the centre of Keynsham, a decision will be made in 2019 on whether this will be made permanent. To monitor the effects of the scheme, 5 additional diffusion tubes have been located in the town. The diffusion tubes were installed in September 2016 to have pre-trial monitoring. The trial began in May 2017. Locations of the monitoring sites are shown in Figure E.6 and E.7 in Appendix E. The results shown in Table A.2 show that all the monitoring locations after bias and annual corrections are below $40 \mu\text{g}/\text{m}^3$.

The results show that the trial one-way system has reduced NO₂ concentrations on the High Street by approximately 15%. A small increase of 3% was seen at one location on the alternative route.

Midsomer Norton/Radstock/Westfield

Monitoring in Midsomer Norton, Radstock and Westfield was carried out at 3 locations (Figure E.5 in Appendix E). All monitoring was below 40 µg/m³.

Paulton

As part of the wider monitoring a monitoring site was added on the in Paulton (Figure E.14 in Appendix E). The results from 2018 show that levels were below 40 µg/m³ and no further action is required. Monitoring has ended as the results were below the objective.

Pensford

Following high concentrations of NO₂ being identified in Temple Cloud in 2016, other potential areas along the A37 were investigated including Pensford. In 2017 two monitoring sites were included, one in the street canyon section of the hill on the A37 and the second close to the primary school. In 2018 the site in the canyon was moved to investigate further along the road (Figure E.15 in Appendix E).

The results for monitoring locations in Pensford in Table A.2 show that the levels were below the objective. Monitoring in Pensford is continuing to identify if there are any hotspots of pollution.

Saltford

In 2018 monitoring was carried out at 2 locations within Saltford. Figure E.8 in Appendix E is a map showing the locations of the monitoring sites. The results from 2018 show that levels at both locations were below 40 µg/m³ at the façade of properties. Monitoring will continue at 2 sites in Saltford and the AQMA will be reviewed at the end of 2019.

Temple Cloud

Following a request from Cameley Parish Council a diffusion tube was installed in May 2016 on the A37 in at Temple Cloud in a narrow section of road, which also included a street canyon (Figure E.11 in Appendix E). The initial results from this monitored suggested that concentrations at this section of the A37 may be high. A further 4 monitoring sites were added in September 2016 and a further 3 monitoring sites were added in May 2017 to see the extent of the high levels. In 2018 monitoring was reduced to 3 key locations on the A37.

The results shown in Table A.2 show that the monitoring locations on the A37 exceeded the annual average objective after bias and annual corrections were applied. At the property facades, one sites were above the annual average objective. In 2018 all sites were below $60 \mu\text{g}/\text{m}^3$, this indicates the 1-hour objective was not exceeded.

Based on the 2017 results, an AQMA was declared for both the annual average and 1-hour NO_2 objectives for the A37 in Temple Cloud in August 2018.

Whitchurch

Following a high result in 2015 at the Whitchurch site monitoring site a wider study was commissioned. A further 5 monitoring locations in Whitchurch were added to the network in May 2016 and one on the school façade was added in January 2017. In 2018 this was reduced to 4 key locations. Figure E.10 in Appendix E is a map showing the locations of the monitoring sites. The results from 2018 show that levels at all locations were below $40 \mu\text{g}/\text{m}^3$ at the façade of properties. Monitoring will continue at 4 sites in Whitchurch.

3.2.2 Particulate Matter (PM_{10})

Monitoring for PM_{10} has been carried out at 2 sites during 2018 using BAM1020 analysers. The data has been corrected to Gravimetric equivalent by dividing by 1.2. QA/QC procedures are described in Appendix C.

Chelsea House is located on the façade of a residential property and Windsor Bridge is at a worse case location on the opposite side of the junction to the residential

properties. In 2013 the Windsor Bridge site was moved across the junction due to changes in the road layout.

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

The results show that the annual average objective was not exceeded during 2018 and the number of exceedances of the 24 hour objective was below 35 at both sites (Tables A.5 and A.5). Figures A.11-A.12 shows that the levels of PM₁₀ are similar to previous years at Windsor Bridge and Chelsea House.

There was one peak above the 24 hour objective in February 2018, this was due to weather conditions, wood burning and continental air. This was also seen in other areas of the UK. A smaller peak was also seen on Bonfire night when the pollution from local bonfires and fireworks coincided with calm conditions (Figure 3.1).

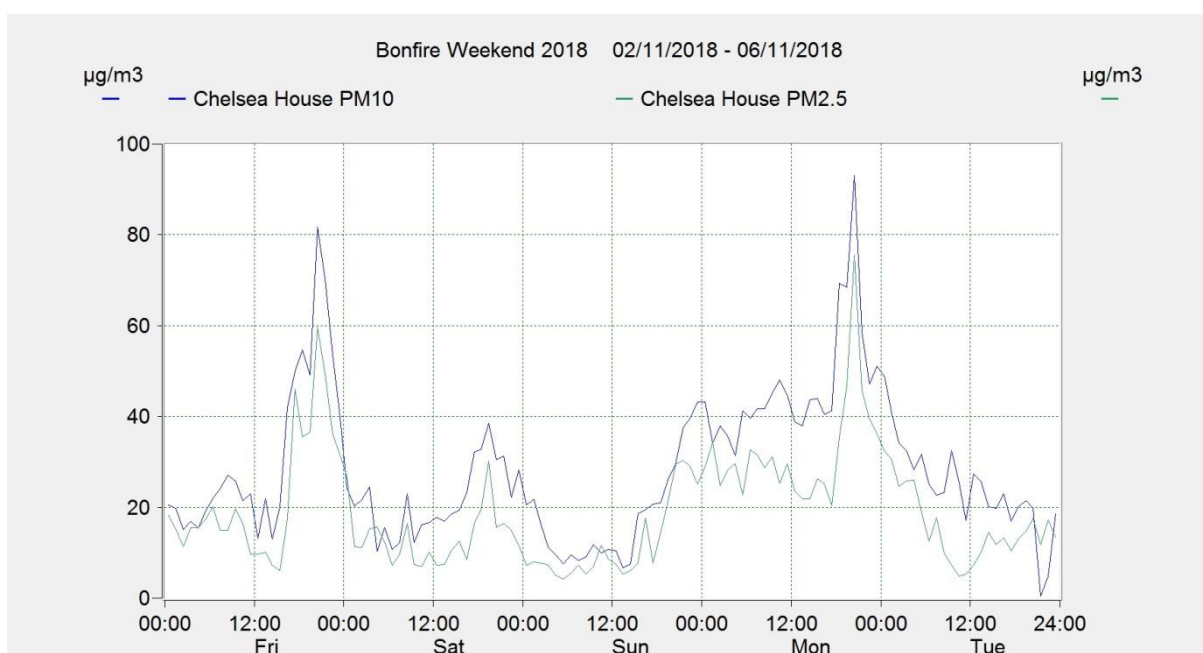


Figure 3.1 – Hourly Particulate Matter monitoring on Bonfire weekend

3.2.3 Particulate Matter (PM_{2.5})

Bath & North East Somerset Council started monitoring PM_{2.5} in July 2015. Table A.7 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past 4 years.

The results show that concentrations of PM_{2.5} remain at similar levels over the last 3½ years, however there is currently not enough data to establish a long-term trend at this site.