

## Executive Summary: Air Quality in Our Area

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

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

The Council has a duty to review and assess air quality within its district under the Part IV of the Environment Act 1995 and this Annual Status Report has been prepared to fulfil this requirement.

Air pollutants can arise from a variety of sources, including transport and industry. Pollutant levels are assessed against health-based national air quality objectives. Where the objectives are not met, Air Quality Management Areas (AQMAs) must be declared and an Action Plan put in place to improve the air quality in these areas.

## Air Quality in South Gloucestershire

South Gloucestershire lies to the north and east of the city of Bristol with the River Severn forming the western boundary. The area is a diverse mix of urban and rural areas, including major residential, industrial and commercial developments. The road network within South Gloucestershire contains the major junction of the M4 and M5 motorways. The population of South Gloucestershire is estimated to be 277,600<sup>4</sup> and has grown by 13% on the number recorded in the 2001 census (245,600). The population is projected to continue to rise, meaning that managing future development and providing vital transport infrastructure is a key challenge.

The main air pollutant of concern locally is nitrogen dioxide (NO<sub>2</sub>), which originates primarily from road traffic emissions.

---

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

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

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

<sup>4</sup> Source: Office for National Statistics (ONS) Mid-year estimate 2016 (published 22 June 2017)

The air quality in South Gloucestershire is generally good. However, there are some areas in the district where the air quality does not meet the national air quality objective for nitrogen dioxide levels, mostly due to the combination of busy, congested roads and the close proximity of people living by these roads.

### **Air Quality Management Areas**

There are three AQMAs currently declared in South Gloucestershire in respect of the annual mean objective for nitrogen dioxide:

- Cribbs Causeway – adjacent to the M5 Junction 17 roundabout
- Staple Hill – in the centre around the Broad Street/ High Street/ Soundwell Road/ Victoria Street crossroads
- Kingswood – Warmley – from the Bristol/ South Gloucestershire boundary in Kingswood along the A420 to the junction with Goldney Avenue in Warmley.

Full details of these AQMAs are included in Table 2.1 of this report and maps are available in Appendix E. Further information on the AQMAs are available on the Council website at [www.southglos.gov.uk/airquality](http://www.southglos.gov.uk/airquality) and on the Defra website at [https://uk-air.defra.gov.uk/aqma/local-authorities?la\\_id=238](https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=238).

### **Trends in monitored concentrations**

There is no clear long-term trend in nitrogen dioxide concentrations at the diffusion tube monitoring sites across the district, although 2016 saw nitrogen dioxide concentrations increase at the majority (83%) of the monitoring sites. While the overall trend in nitrogen dioxide concentrations in the Kingswood – Warmley and Staple Hill AQMAs has been relatively stable over the past decade with a slight downward trend in recent years, in 2016 there was a general upward trend in monitored nitrogen dioxide concentrations from 2015 across 77% of monitoring sites in the Kingswood – Warmley AQMA and 85% of monitoring sites in the Staple Hill AQMA), mirroring that seen across the district as a whole. There is no obvious reason for this but pollutant concentrations can vary significantly from one year to another due to a number of factors, in particular the meteorological conditions, which can present unfavourable conditions for pollutant dispersion.

The Yate automatic monitoring site shows the annual mean nitrogen dioxide concentrations have been generally stable, although in 2016, there was an increase

in monitored concentrations from 21µg/m<sup>3</sup> in 2015 to 24µg/m<sup>3</sup>, this however remains well below the annual mean objective (40 µg/m<sup>3</sup>).

Particulate matter is also a pollutant of concern. This is also monitored at the Yate Automatic Monitoring site. The trend in particulate matter (PM<sub>10</sub>) concentrations at this site shows that annual mean concentrations have overall been slowly declining since 2006 at Yate. In 2016, the monitored concentration fell slightly to 14 µg/m<sup>3</sup>, having remained constant at 15 µg/m<sup>3</sup> between 2013 and 2015. The monitored PM<sub>10</sub> concentrations remain well below the annual mean and 24-hour mean objectives at this site.

The trends in the data from the Yate Automatic Monitoring station and within the AQMAs are discussed fully in Chapter 3 of the report and trend graphs are available in Appendix A.

### **Pollutant sources**

The following pollutant sources were considered as part of the review of air quality for this report, as detailed in the Defra LAQM Technical Guidance (LAQM.TG16)<sup>5</sup>.

- Road Traffic Sources
- Non-Road transport Sources
- Industrial Sources
- Commercial and Domestic Sources
- Fugitive and Uncontrolled Sources

No new major sources of emissions were identified. Full details are provided in Appendix D of the report.

### **How the Council works to manage local air quality**

South Gloucestershire Council is a unitary authority and Planning, Transport and Environmental Health are all within the same Directorate (Environment and Community Services) enabling close working between these teams. This has particularly allowed close working between Environmental Health, with their responsibilities for local air quality management and the Strategic Transport and Environment Policy Team, who currently lead on air quality action plan development

---

<sup>5</sup> <http://laqm.defra.gov.uk/technical-guidance/>

and implementation. Furthermore, a close working relationship has been developed with Public Health, and their work on the built environment recognises the importance of aligning spatial planning and transport work with its associated impacts on air quality and health.

The council is continuing to revitalise its air quality governance and reporting arrangements in recognition of the public health aspects of poor air quality and to develop a more holistic approach across the Council to address air quality issues.

South Gloucestershire also works closely with other neighbouring authorities in the West of England (Bath and North East Somerset, Bristol City Council and North Somerset), particularly with regard to regional strategic work areas such as transport.

Also of importance is the West of England Combined Authority which was established in February 2017. The constituent councils are Bath and North East Somerset, Bristol and South Gloucestershire. Through the Combined Authority, more decisions will be made locally on areas such as transport, housing and skills, and crucially more funding will be available to improve transport infrastructure, create new jobs and improve adult education and skills. The West of England Combined Authority will continue to work closely with North Somerset. There is a legacy of successful joint working between the four authorities.

## **Actions to Improve Air Quality**

Key progress includes:

- Entire fleet of Council pool cars switched to electric in early 2017, with OLEV funding secured to switch 20% of other fleet vehicles to electric by 2021.
- Access funding secured to 2020, to enable the continuation of school, business and community travel planning measures to promote sustainable travel choices.
- Clean Bus Technology Funding (CBTF) awarded in December 2015 following a joint bid by Bristol, South Gloucestershire and Bath and North East Somerset Councils. The funding was used to upgrade 35 of the most polluting Euro II and III local buses by retrofitting Selective Catalytic Reduction Technology (SCRT) to achieve Euro Standard V/VI, thereby reducing tailpipe

NOx emissions on those services, all of which operate in the Bristol, Bath and South Gloucestershire AQMAs. The retrofitting was completed in 2017.

- A £4.79m Office for Low Emission Vehicles (OLEV) funding grant was awarded to the four West of England local authorities and First Bus in August 2017. This funding will help unlock a £28m investment by First, to potentially transform a significant part of their fleet (up to 110 vehicles) into bio-methane powered buses. The new buses, which could start running by 2019, will contribute to reducing air pollution levels across the West of England area, including the Staple Hill AQMA.
- A signing review of delivery bays was undertaken during 2015 in Kingswood. Implementation of remedial measures following that review were completed in October 2016, which will improve local enforcement.
- The local transport capital programme 2016/17 approved a wider parking management review of the extended Kingswood - Warmley AQMA. Recommendations from the review address parking issues along the A420 Hill Street/Deanery Road and in Warmley, and the two resulting schemes are due to be completed in 2018 and 2019 respectively.
- Completion of several schemes that improve the cycling infrastructure associated with the Bristol/Bath Railway Cycle Path which serves the Staple Hill AQMA.
- Successful joint bid with Bristol City Council as lead authority for a Clean Air Zone (CAZ) Feasibility Study with £498,600 at the end of 2016. Early work has indicated that if a Clean Air Zone were to be introduced in Bristol that this would impact sufficient “through” vehicle trips to also improve air quality in the Kingswood – Warmley and Staple Hill AQMAs.

Full details of progress in implementing the existing Air Quality Action Plan for Kingswood and Staple Hill are contained in Section 2.2 of this report.

Other actions being progressed on a wider West of England basis aimed at reducing traffic congestion which should contribute to improved air quality include:

- Metrobus - a rapid public transport system which will provide direct routes to key employment, education and leisure destinations around the area<sup>6</sup>. Further information is also provided in Appendix D.
- Cribbs Patchway Metrobus Extension<sup>7</sup> - an extension of the Metrobus scheme to serve the proposed Cribbs Patchway New Neighbourhood on the former Filton Airfield.
- MetroWest - improved rail services and infrastructure<sup>8</sup>.
- Cycle Ambition Fund – improvements to cycle routes to provide better door-to-door journeys<sup>9</sup>
- GoUltraLowWest<sup>10</sup> - a grant funded project by OLEV (Office for Low Emission Vehicles) for investment in the promotion of electric vehicles throughout the West of England region. The Government's aspiration is that by 2040, every new car in the UK will be an ultra-low emission vehicle.

## Conclusions and Priorities

Exceedances of the nitrogen dioxide annual mean objective remain, with the majority of these occurring in the Kingswood – Warmley and Staple Hill AQMAs, confirming the AQMAs are still required. However, there was one exceeding monitoring location on the Kingswood/Soundwell border (site 147) which was outside of the AQMAs. The 2017 monitoring results for this location will be reviewed and should a further exceedance be identified, further action will be taken as appropriate. Further details are provided in Chapter 3.

The monitoring results showed a rise in nitrogen dioxide concentrations at the majority (83%) of the Council's monitoring sites in 2016. Pollutant concentrations can vary significantly from one year to another however, due to a number of factors, in particular, the meteorological conditions.

Since the declaration of the Cribbs Causeway AQMA in 2010, the monitoring results have shown the nitrogen dioxide concentrations are below the annual mean objective at the façade of the single residential property within the AQMA. Defra recommended

---

<sup>6</sup> <https://travelwest.info/metrobus>

<sup>7</sup> <https://travelwest.info/projects/cribbs-patchway-metrobus-extension>

<sup>8</sup> <https://travelwest.info/projects/metrowest>

<sup>9</sup> <https://travelwest.info/projects/cycle-ambition-fund>

<sup>10</sup> <https://travelwest.info/drive/electric-vehicles/go-ultra-low-west>

in their appraisal of the 2016 Air Quality Annual Status Report that revocation of the AQMA should be considered. This report confirms that there was no exceedance in 2016 within this AQMA, demonstrating compliance for the last six years.

Consequently, we propose to revoke the Cribbs Causeway AQMA. Further detail is provided in Chapter 3.

The on-going priority for the coming year is to review and update the Air Quality Action Plan for Kingswood and Staple Hill to incorporate the extension of the Kingswood AQMA to Warmley. Whilst some progress has been made, the work has taken longer than anticipated due to the complexity of the work involved and staff resource issues. Completion of the Action Plan is anticipated during 2018.

Work will continue in conjunction with Bristol City Council as appropriate, on the Clean Air Zone Feasibility Study to deliver improvements and compliance with air quality objectives in the shortest timescale possible.

However, it should be noted that the Council faces major challenges at a time of significant pressure on public finances, particularly in relation to local government funding, which could impact on delivering air quality improvements.

The transport system is subject to significant pressure within South Gloucestershire, due to the sheer level of travel demand generated by the current population and by people coming into the area on a daily basis to work, shop and for leisure reasons. These pressures are shown through traffic congestion on South Gloucestershire's road network and capacity problems on local rail services.

The provision for the housing requirement of 105,500 new homes by 2036 for the West of England area has been made in the Joint Spatial Plan (JSP)<sup>11</sup> which has been developed by the four West of England authorities. 32,500 of these new homes are likely to be built in South Gloucestershire.

Alongside the JSP, the four councils have developed a Joint Transport Study (JTS)<sup>12</sup>. The JTS is designed to help the region meet the growing travel demands that new growth will bring, as well as tackling existing pressure on road and public transport networks. This includes providing the key transport infrastructure needed to reduce reliance on cars and tackle congestion and measures to improve walking and cycling, better access to public transport and, where necessary, highway capacity

---

<sup>11</sup> <https://www.jointplanningwofe.org.uk/consult.ti?>

<sup>12</sup> <https://www.jointplanningwofe.org.uk/consult.ti/JTSTransportVision>

improvements. This joint approach to planning and transport will ensure that future growth decisions are made with an understanding of the necessary transport investment needed to achieve sustainable communities.

## **Local Engagement and How to get involved**

A workshop carried out in November 2016, which included representatives from Environmental Health, Spatial Planning, Transport and Public Health within the Council, and external expertise in respiratory medicine and air pollution monitoring, including representatives from Public Health England and the University of the West of England, identified the need to raise public awareness of air quality locally.

As a result, a project, developed jointly with the University of the West of England will use public participatory research in a school adjacent to the Kingswood - Warmley AQMA. It will provide indicative monitoring of particulate matter (PM<sub>2.5</sub>) by using personal monitors to record levels of pollution to which children are exposed during travel to and from school. The project also aims to increase awareness of air pollution among children, parents and teachers and will be undertaken in early 2018. If successful, the project could be repeated in other locations within South Gloucestershire.

### **What you can do**

Everyone can help to improve air quality in South Gloucestershire and beyond. By making informed personal choices, particularly with regard to travel, we can help to improve air quality and improve our own health in the process.

- Substituting car use, if and when possible, with a bus or train journey, or preferably by walking or cycling, not only reduces air pollution but improves our health and wellbeing.
- If possible, sharing lifts with colleagues to work will save petrol money and as well as reducing the number of cars on the road.
- When looking to change your vehicle, take air pollution in consideration and opt for the cleanest vehicle you feasibly can. Low emission electric and /or hybrid vehicles are becoming more affordable and government funding and grants are available.

While most air pollution in South Gloucestershire is caused by road traffic, other measures that could be considered include:

- Upgrading boilers to newest and most efficient gas condensing boilers with lowest NO<sub>x</sub> (and carbon) emissions.
- “Clean” renewable energy generation, for example via solar photovoltaics.
- Using Defra approved appliances and smokeless fuels suitable for use in a smoke control area whether you are in a smoke control area or not.

There are decisions we can all make to reduce air pollution. Even relatively small changes can add up and make a real difference to the quality of the air we all breathe.

Further information is available on our website [www.southglos.gov.uk/airquality](http://www.southglos.gov.uk/airquality).

We also recommend you visit the Travel West<sup>13</sup> website (<https://travelwest.info/>) as this provides live information on public transport for journey planning as well as route information for walkers and cyclists. It also provides traffic reports, information on electric vehicle charging infrastructure and other information that simplifies travel choices.

---

<sup>13</sup> <https://travelwest.info/>