



# 2022 Air Quality Annual Status Report (ASR)

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

Date: October 2022

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## Executive Summary: Air Quality in Our Area

### Air Quality in Solihull

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

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

Solihull MBC recognises that a cleaner, healthier environment benefits people and the economy. Clean air is vital for people's health and the environment, essential for making sure Solihull is a welcoming place to live and work now and in the future to our prosperity.

On-going monitoring shows there is no requirement to declare an Air Quality Management Area (AQMA), however SMBC is committed to monitoring air quality, using a diffusion tube network and reviews of the network will continue after analysis of results and liaison with highways and others to understand potential new areas to monitor.

Our Clean Air Strategy (2019-24) demonstrates our clear commitment to improve air quality and outlines the measures that will be taken over the next 5 years and more importantly shows that there is a process in place to continually aim to improve air quality across the Borough. The strategy is available on our website at:

<https://www.solihull.gov.uk/Environment-and-animals/Air-quality-monitoring-in-Solihull>

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<sup>1</sup> Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

<sup>3</sup> Defra. Air quality appraisal: damage cost guidance, July 2021

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

The main area of concern in Solihull regarding air quality is a section of the A45 from Clock Island towards Birmingham on both sides of the carriageway following two Ministerial Directions.

In 2018, SMBC received a Ministerial Direction in relation to air quality on two road links within the borough, forecast to have exceedances of the European Limit Values for NO<sub>2</sub> according to the national Pollution Climate Mapping (PCM). The two links in question (PCM link reference 86030 and 99175) are located on the A45 adjacent to Birmingham Airport

In response to this Direction, as part of a Targeted Feasibility Study, SMBC identified a series of behavioural change measures expected to support bringing forward compliance on each link. The measures were targeted at major employers in close proximity to the A45.

In 2019, changes in the national PCM model projections indicated that the air quality exceedance in Solihull would extend beyond the time period originally identified. As such, SMBC received a second Ministerial Direction, which is the subject of the Full Business Case (FBC), submitted concurrently with this Annex. Extensive assessment has been undertaken by Atkins to fully understand the extent of the problem.

This shows that air quality will improve over the coming years due to the shift amongst the general public and transport operators to cleaner vehicles which emit fewer harmful pollutants. However, natural compliance with the EU Limit Value will not be met until 2025 according to the latest baseline modelling.

As presented in the FBC, the only option that will comply with the EU Limit Value in the 'shortest possible time' is the closure of a footway adjacent to the A45. This is planned to be undertaken by Highways England in Q1 2022 as part of the M42 Junction 6 improvement scheme. Compliance is achieved, in a legal sense, by removing the receptor.

At the same time, and in support of the objectives of the Local Plan and Clean Air Strategy, SMBC is proposing additional complementary measures to make a positive impact on air quality in the area. These measures are in part a continuation of the behavioural change programme that was identified as part of the first Ministerial Direction, and unable to be implemented in full, due to the impacts of Covid-19.

An expanded series of complementary workplace travel planning measures has been identified – both to achieve the original intent of the first series and to similarly support the

second additional Ministerial Direction. The programme of measures is planned for implementation over a three-year period, to deliver air quality improvements prior to the 'natural compliance' date of 2025. The programme would target businesses in close proximity to the A45, with the aim of encouraging and incentivising sustainable transport.

This wider set of behavioural change measures complement the FBC by reducing uncertainty in net outcome and by mitigating the risk of delay as the primary measure is not in SMBC's direct control. The delivery of this intensive workplace travel planning will help to support the borough's aim of improving air quality by focusing on an area of the borough that has high employment activity and therefore high potential for change.

There are some major highway works that may have an impact on air quality in the borough: works around HS2 are ongoing and a Development Consent Order (DCO) for the delivery of the M42 Junction 6 Improvement.

### **Development Consent Order-DCO**

Highways England received a Development Consent Order (DCO) for the delivery of the M42 Junction 6 Improvement Scheme. As part of the delivery of the scheme a new slip road is being constructed from the A45 east bound to the M42 northbound.

Work commenced on the initial stages of the improvements to M42 J6 in March 2020 and are continuing. The scheme will reduce congestion in the area and therefore should reduce emissions from vehicles. There is a new junction to be constructed on the M42 between junctions 5 and 6 with a new dual carriageway to connect to the Clock Interchange on the A45 and this is expected to be completed by September 2023.

When completed the capacity on the motorway will be increased so reducing congestion. Access will be improved to key locations such as Birmingham Airport and access will also be improved for cyclists and pedestrians.

The remaining works around junction 6 itself are expected to be completed by August 2024. Full details can be found on the Highways England web site.

<https://highwaysengland.co.uk/our-work/west-midlands/m42-junction-6/>

## HS2

HS2 is one of the largest infrastructure projects ever undertaken in this country, and will transform connectivity and economic performance at local, regional, and national levels.

Solihull will be served by a new HS2 station, to act as a hub for the wider region; consequently, generating significant numbers of access and egress trips to destinations both in the immediate vicinity of the station, and places further afield in the West Midlands and beyond. To make the most of the opportunity presented by HS2, SMBC has created UK Central which is an economic development programme that seeks to capitalise on the opportunities afforded to the Borough by HS2 and wider growth plans.

While these growth and development plans provide a rare opportunity for significant economic growth and benefits for Solihull, it is vital to ensure the extra trips generated by these developments do not have an adverse impact on the transport network and environment.

The HS2 enabling works commenced in 2019 and the main works commenced in 2021. Works will continue in our Borough from now until the date the new line opens which is expected to be between 2029 and 2032.

An environmental minimum requirement (EMR) has been issued for haulage routes which has been approved by the Secretary of State. Full details of these can be found here:

<https://www.gov.uk/government/publications/environmental-minimum-requirements>

SMBC have challenged HS2 on their lorry route plans and one route for increased lorry movements was refused at planning stage and SMBC was supported at an appeal by HS2.

HS2 have committed to use Euro VI vehicles for their work. All diesel HGVs working the length of the HS2 project will be powered by the cleanest available Euro VI engines, going beyond current standards set here in the UK. Vehicle emission standards, denoted by the “Euro” categorisation, have been set and toughened over recent years and currently all newly made combustion engine vehicles must comply with Euro VI, the most recent and strictest standard.

By insisting that all HGVs working on the project comply with the project’s standards, HS2 Ltd hopes it will encourage its suppliers to invest in new, cleaner, and more efficient

vehicles. The company has already introduced the stipulation for HGVs and extended the standard for cars and vans.

The Covid lockdowns during 2021 continued to show a reduced amount of traffic for some portions of the year due to ongoing home working by some sections of the borough.

The diffusion tube results were generally lower than pre covid and the current locations will continue into next year and beyond.

### **Other Works**

There are works to be carried out on A45/Damson Parkway junction, which is one of the busiest in Solihull, serving not only Birmingham Airport but also a major car manufacturer in the area and one of the largest employers in the area. Once completed, the junction will be able to cater for future traffic demands, reducing the extent of congestion at the junction and thereby improving local air quality. The new junction arrangement will also include bus priority measures, through the implementation of a bus lane, and improved facilities for cyclists and pedestrians, which will complement wider measures to encourage a shift away from car use.

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

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

The 2019 Clean Air Strategy<sup>5</sup> sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero<sup>6</sup> sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

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<sup>5</sup> Defra. Clean Air Strategy, 2019

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

Solihull produced its first clean air policy in 2019 and a steering group has been formed within the Council which consists of officers from Public Health, Highways, Communications, Monitoring and Compliance, Planning, Procurement and Sustainability along with elected members. The group has set out its aims and purposes in their strategy documents and meets on a regular basis to discuss strategies and policies as well as monitoring results and potential hot spots. The aim is to proactively steer action regarding air quality issues.

Consultation with planning colleagues continues for any significant applications received which are assessed against the effect they may have on the air quality in Solihull.

Solihull is also in the process of updating its Local Plan. This sets out the vision for future development to enable the borough to grow and develop into the place we would like it to be. As part of the policy P9 'to mitigate and adapt to climate change' a new requirement was proposed in the local plan that all new residential dwellings shall have at least one EV charging point, this has now been superseded by the new Part S in the Building Regulation (June 2022).

The Draft Local Plan is currently being examined by two Inspectors appointed by the Secretary of State.

The local plan review can be found on our website at: [Solihull Local Plan Review](#)

Road transport represents a major source of air pollution in Solihull and is also the main source of carbon emissions, contributing to the Borough's carbon footprint. Eliminating these harmful impacts from transport is therefore a core priority of the Council.

This will be achieved through a wider approach to sustainable travel that incorporates measures to reduce travel demand, increase levels of walking and cycling as well as developing new models of demand-responsive public transport.

Solihull Council has a new cycling and walking strategy for the borough following consultation with local residents and businesses. Alongside the comprehensive new strategy, a Local Cycling and Walking Infrastructure Plan (LCWIP) has also been developed and approved.

The Cycling and Walking strategy outlines the overall strategic approach to active travel in Solihull. The document supports the National Cycling and Walking Plan, adopted in July 2020, and sets a clear standard for cycling and walking infrastructure. It aims to embed cycling and walking initiatives into local policy and ensures major developments consider integrating active travel infrastructure from the start.

The need to develop a Cycling and Walking Strategy, and associated LCWIP, was initially established as part of the Council's transport strategy, Solihull Connected, and is further emphasized by the work that the Council has adopted, such as the Clean Air Strategy and Climate Change Prospectus. Encouraging residents to cycle and walk more often also closely aligns with the Council's Net Zero Action Plan which outlines how the borough intends to achieve net zero carbon emissions by 2041.

During the development of the Cycling and Walking Strategy and associated LCWIP there were two rounds of consultation, firstly in February 2020 and again in November/December 2020. Some of the key themes mentioned during consultation included support for segregated cycle lanes, improving cycle storage facilities and reducing barriers for pedestrians in local centres.

Elements of the strategy are already being implemented. Two temporary segregated cycle lanes that connect Solihull Town Centre with Knowle and Shirley have been implemented through use of Active Travel Funding (ATF), with further funding allocated via the City Region Sustainable Transport Settlement (CRSTS) to significantly upgrade the facilities and make them permanent. Following a successful bid to the Emergency Active Travel Fund there are 2 free to use cycle repair stations including bike stand, pressure gauge pump and tools for simple repairs installed at Stratford Road, Shirley outside Shirley Park and Whitlocks End rail station car park.

The Council updated its EV Strategy and plans to install up to 500 charging connections in car parks and other destinations by 2026 and up to 1,000 charging connections nearby to residents without the off-street parking space to charge at home by 2030.

## **Conclusions and Priorities**

SMBC has not declared any Air Quality Management Areas (AQMAs) and we endeavour to ensure that the air quality objectives are met in Solihull. No exceedances of the air quality objectives were recorded in 2021 but as with last year Covid continued to impact traffic generally. We are however continuing to monitor air quality throughout the borough via our diffusion tube network.

Results of the NO<sub>2</sub> diffusion tubes are well below the NO<sub>2</sub> Air Quality Objective level (40 µg/m<sup>3</sup>) and since 2019 have been below half that value (20 µg/m<sup>3</sup>). Levels are on a downward trend though, as expected, have risen slightly above the Covid impacted 2020 data set.

Solihull Council requested the West Midlands Air team to undertake a piece of research to use the newly developed, high resolution Atmospheric Dispersion Model (ADMS) to explore air quality context for Solihull area. The results indicate that other than the A45 area, PM<sub>2.5</sub> levels do not exceed the EU Limit Value for PM<sub>2.5</sub> (an annual average concentration of 25 µg/m<sup>3</sup>). Although Solihull do not currently monitor this pollutant, monitoring PM will be reviewed in 2022 as an integral element of the Air Quality strategy review

The current monitoring locations will be continued for 2022 and we will continue reporting directly to Defra (through JAQU) regarding monitoring results on the A45, which was subject to the Ministerial Direction. In addition, we will continue to monitor the impact of HS2 works.

### **Priorities for 2022**

Reviewing and updating the Clean Air Strategy (2019-24) and action plan ensuring that the refreshed strategy and plan provides an effective response to the new duties imposed on the Council by the introduction of new PM<sub>2.5</sub> targets.

The review and refresh of the strategy will provide an opportunity to review progress and ensure alignment with key strategies including, [The Solihull Council Plan](#), [Net Zero Action Plan](#) and the [Electric Vehicle Strategy](#)

The focus of the refreshed strategy will include:

#### **Effective Monitoring**

Ensuring an effective dynamic approach for monitoring air quality across the borough that provides real time information to the public utilising the latest technology for active monitoring of a range of pollutants, including particulate matter.

#### **Managing emissions**

Narrowing the gap to reduce health inequalities in areas affected by poor air quality and deprivation whilst ensuring that major developments adopt measures to improve air quality, such as the installation of electric vehicle charging points, and appropriate mitigation measures.

#### **Raising awareness**

Changing behaviour and connecting with people through community engagement and air quality alerts, improving awareness and understanding of the health impact of poor ambient

and indoor air quality on health and how exposure can be reduced whilst at home or about in the borough.

### **Working with Schools**

Promoting and encouraging sustainable travel to and from school, improving road safety, air quality and pupils' ability to travel independently. We will continue to deliver idling action events, introduce more School Streets initiatives, and promote 'greening' around schools where possible.

### **Cleaner Transport**

Continuing the provision of infrastructure to support walking and cycling and EV charging network, promoting the uptake of electric vehicles, and increasing the number of cleaner vehicles in the Council's fleet.

We will also continue to pursue actions to improve air quality across Solihull, taking advantage of partnership development and external funding opportunities to develop and deliver further measures.

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

### **Net Zero Action Plan**

As part of Solihull's commitment to achieve net zero, the council has been working with key stakeholders and consulting with residents to develop a Net Zero Action Plan (NZAP).

Published in November 2021 the Net Zero action Plan seeks to:

- Identify actions Solihull Council can take to reduce greenhouse gas emissions across the Borough
- Estimate the carbon savings, costs or payback and co-benefits associated with implementing the actions
- Explore a method of prioritising actions needed to enable the net zero transition

In order to develop the plan an online public consultation was held to gather opinions from residents and businesses across Solihull on the actions the borough needed to consider to reach the net zero ambition. The responses from the public consultation highlighted the importance of education to encourage individuals to monitor and manage energy use in buildings, the importance of public and active travel infrastructure and awareness raising on the environment and impacts of waste.

**Your Future Solihull** is the Council's climate change and sustainability campaign. The site provides access to key Council policies which relate to climate change and sustainability in addition to tips and information for the public to help make Solihull more sustainable, look after the natural environment and collectively reduce emissions.

People who live and work in Solihull can help to improve air quality by using sustainable transport options, such as walking cycling and using public transport or to share transport through car sharing at [www.liftshare.com](http://www.liftshare.com) although at this current time lift share is limited due to Covid. As fuel prices are on the rise it is hoped that lift share schemes will become more popular.

Residents can obtain more air quality information on the following websites:

DEFRA's UK-AIR: Air information Resource <https://uk-air.defra.gov.uk>

Environmental Protection UK Air Pollution website



<https://www.environmental-protection.org.uk/policy-areas/air-quality/about-air-pollution/>

Solihull MBC hold an annual Solihull Greener Schools award ceremony where local schools are recognised for their commitment to sustainable and greener practices and this year the focus was on 'net zero' The award challenged pupils to learn about the local and global environment and strive to make the school more eco-friendly.

### **Local Responsibilities and Commitment**

This ASR was prepared by the Economy and infrastructure team of Solihull Council with the support and agreement of the following officers and departments:

This ASR has been approved by:

<b>Councillor Andy Mackiewicz</b> Cabinet lead for Air Quality	
<b>Ruth Tennant</b> Director Of Public Health	

This ASR has been signed off by the Director of Public Health

If you have any comments on this ASR, please send them to Nick Laws at:

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# 1 Local Air Quality Management

This report provides an overview of air quality in Solihull during 2021. 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 Solihull MBC to improve air quality and any progress that has been made.

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

## 2 Actions to Improve Air Quality

### **Air Quality Management Areas**

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

Solihull currently does not have any declared AQMAs but will continue to monitor via our diffusion tube network throughout the borough. Our Clean Air Strategy (2019-24) sets out our aims for the next 5 years and this available on our website:

<https://www.solihull.gov.uk/Environment-and-animals/Air-quality-monitoring-in-Solihull>.

## Progress and Impact of Measures to address Air Quality in Solihull

Defra's appraisal of last year's ASR concluded:

- That discussion on the Councils work to target PM2.5 emissions and/or concentrations specifically could be elaborated on in future reports.

*Solihull Council engaged WM Air to undertake a piece of research to use the newly developed, high resolution ADMS air quality model to explore the air quality context for Solihull area. The results indicate that other than the A45 area, PM2.5 levels do not exceed the EU Limit Value for PM2.5 (an annual average concentration of 25 µg/m<sup>3</sup>). Although Solihull do not currently monitor this pollutant, monitoring PM will be reviewed in 2022 as an integral element of the Air Quality strategy review*

- That the Council is encouraged to maintain some monitoring locations for long-term study where possible.

*Following a review of the NO2 diffusion tube network it was approved that all monitoring points should remain to ensure long term study.*

- The Council should ensure the latest version of the national adjustment factor tool is used in next year's ASR.

*This report uses the correct version of the national adjustment factor tool*

Solihull has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1. 18 measures are included within Table 2.1, with the type of measure and the progress Solihull have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1.

More detail on these measures can be found in their respective Action Plans

**Key completed measures are:**

- The Solihull Low Carbon Energy Centre has been given the go ahead with approval for planning permission granted in May 2021. Funding for this carbon saving scheme has been provided by the government’s Heat Networks Investment Programme (HNIP) and the West Midlands Combined Authority. The scheme demonstrates the Council’s commitment to using innovative renewable energy solutions by investing in low carbon heat and power and forms part of a wider strategic approach Solihull Council is developing to help decarbonise the borough over the next twenty years. The Council is working with its partners to finalise a Full Business Case and appoint a final contractor to build, maintain and operate the network. First phase customers could be hooked up and start benefitting from the network from as early as Spring 2023.
- School Streets is currently running at 6 schools and will be launched at a further 3 schools before the end of the academic year in July bringing it to a total of nine.
- ‘Engines off – Young lungs at work’ is an anti-idling campaign that has had 23 schools taking part so far. We are now looking at extending this campaign to include non-school areas that are affected by drivers leaving their engines running such as outside the hospital, doctors, shops, level crossings etc.
- SMBC are now working with 15 schools and colleges to develop Green School Travel Plans.
- SMBC have two Business Support Officers working with businesses and employees to reduce car usage by offering a variety of initiatives such as cycling promotion, ECargo bike training, public transport taster tickets and hybrid working
- SMBC has been awarded match-funding from British Cycling’s Places to Ride capital grants programme for four new community cycling hubs in Solihull for February 2022. To encourage cyclists there will be a number of activities to include basic bike repairs, group rides, security marking and adapted bikes.
- Solihull Council has partnered with Silence UK to host a taster session for local residents to test ride new state-of-the-art electric mopeds It’s hoped these cheap to run, fully electric vehicles could play a significant role in cutting both congestion and harmful carbon emissions along some of the busiest routes in Solihull. The taster day took place at the Blythe Valley Business Park. With expert instructors on hand for advice and demonstration. During the 20-minute bike trial ride for participants. The initial taster session was open to eligible residents who live along the Stratford Road and regularly commute or travel by car. Following on from the test ride, participants can opt-in to an extended, free-of-charge trial period, lasting between two and four weeks, during which they will be encouraged to swap their regular car

journeys and use an e-moped instead. The trial period is designed to further understand how these types of electric vehicles can reduce not only carbon emissions but also the number of single-occupancy cars on the road, cutting congestion and freeing up space for public transport, especially along key transport routes. If this initial extended trial scheme proves successful, Solihull Council hope to continue its work in collaboration with Silence UK to roll out similar initiatives across the borough. This project forms part of the wider West Midlands Combined Authority (WMCA) funded UK Central investment programme, which is delivering a wide range of projects, from walking and cycling improvement schemes to town centre regenerations

**Solihull expects the following measures to be completed over the course of the next reporting year:**

- SMBC is planning an event for 2022 to encourage taxi drivers to convert their diesel cabs into zero emissions electric vehicles. A company will bring along a converted black cab for drivers to test drive and answer any queries they may have as well as promoting the benefits of electric over diesel.
- Funding has been awarded from Transport for West Midlands' Better Streets Fund for Berkswell Parish Council to deliver improvements around the school and village centre in increase safety and encourage walking and safer cycling. The scheme will include traffic calming measures and new footpaths at key points to promote safer pedestrian and cycle travel.
- SMBC is working to understand how the roads of the future need to look. This encompasses a wide variety of projects from new cycling and walking links, to trialing emerging zero emission autonomous vehicle technology, work to help shape the future is under way. Over the next 18 months a Connected Autonomous Vehicle (CAV) pathfinder project will see the Council work in partnership with a range of organisations to demonstrate real-world uses and learn about the technology with the aim of understanding how in the future residents and visitors might be offered new means of zero emission shared transport and an alternative to single occupancy car journeys. The trials will utilise a state of the art fully electric shuttle, capable of seating up to ten passengers, and operating both manually and autonomously on the public highway. The first trial took place at the NEC which operated autonomously along a 1-mile section of Pendigo Way between Hall 5 and Resorts World throughout September. The CAV trials are a collaboration between

Solihull Council, GBSLEP and Coventry-based engineering firm Aurrigo Driverless Technology who designed and built the shuttle. Further trials at other locations will take place in 2022 with members of the public able to book a trip. The shuttle is fully electric and has a range of 100 miles. The vehicle is charged at the end of each day and is capable of operating up to 20mph in autonomous mode, obeying the maximum speed limit on the NEC site at all times. A safety operator is on board at all times during the trials, in line with current UK legislation relating to autonomy



The trials utilised a state of the art fully electric shuttle, capable of seating up to ten passengers, and operating both manually and autonomously on the public highway.

- Solihull Council is working with Transport for West Midlands (TfWM) on a region-wide Road Sensor Network project. During 2021/22 around 300 traffic and environmental sensors were installed on important traffic routes across the West Midlands, including 20 locations in Solihull. The data gathered by these sensors will help TfWM and the local authorities to better understand traffic movements and environmental conditions over the next five years
- Solihull Connected transport strategy was published in 2016. It sets out the future direction for investment in our transport system. It also looks into research regarding behavioural change and marketing techniques to encourage a greater shift to sustainable modes as we invest in new infrastructure. It supports and enables the integrated delivery of sustainable and efficient forms of transport like mass-transit, cycling and walking. Available here: <https://www.solihull.gov.uk/About-the-Council/Solihullconnected>

A new Solihull Connected is currently under production for adoption by the Council in 2023. Public consultation into the new transport strategy is planned to take place in the Autumn of 2022.

**Solihull Metropolitan Borough Council's priorities for the coming year are**

Reviewing and updating the Clean Air Strategy (2019-24) and action plan ensuring that the refreshed strategy and plan provides an effective response to the new duties imposed on the Council by the introduction of new PM2.5 targets.

The review and refresh of the strategy will provide an opportunity to review progress and ensure alignment with key strategies including, the Council Plan, Net Zero Action Plan, and the Electric Vehicle Strategy).

**Solihull worked to implement these measures in partnership with the following stakeholders during 2021:**

- Schools across Solihull
- Residents of Solihull
- Birmingham University
- West Midland Combined Authority
- Transport for West Midlands
- Birmingham Airport

**The principal challenges and barriers to implementation that Solihull anticipates facing are**

- The ability of current vehicle emission standards to deliver reductions in NOx emissions.
- The number of diesel vehicles travelling in and around Solihull (which have increased primary emission of NO2 and diesel particulate).
- Managing potential tensions between the air quality implications of new developments and drive to delivering economic growth
- Unnecessary vehicle idling at various locations across the borough, particularly amongst heavy diesel vehicles.
- Uncertainties with respect to future travel behaviour, particularly around confidence in the use of public transport

**Progress on the following measures has been slower than expected:**

Over the last two years, some initiatives have been impacted because of the COVID pandemic. Whilst work on initiatives have now resumed further delays were seen during 2021 as life readjusted during the post pandemic period. Key initiatives impacted include:

**Working with schools and businesses**

COVID has had an impact upon the work undertaken with schools and businesses. Action to promote the development of travel plans, promotion of active travel and initiatives to encourage the use of green infrastructure was limited due to the pandemic but are now resuming in earnest.

Anti-idling measures and Behavioural change programmes were also impacted by the pandemic but will provide a focus for action during 2022

Plans to enable an effective ability to actively monitor Particulate Matter has also been impacted but building upon the modelling undertaken by WM Air we will ensure that developing an effective and dynamic approach to monitoring is a fundamental consideration and objective during the review of the Solihull Air quality Strategy.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Draft Local Plan	Policy Guidance and Development Control	Other policy	2019	2023	SMBC	In house	No	n/a	< £10k/£10k	planning	Increased Ev uptake	Plan approved by inspectorate	Submitted to inspectorate	Need approval by planning inspectorate
2	Town Centre Heat Network	Promoting low emission plant	Procurement of combustion sources	2018	2024	SMBC and Developers	Consortium of Developers	No	funded	No cost to SMBC	planning	Unable to determine	Approval granted and works commencing	Planning	Some years to completion
3	Delivery of the Electric Vehicle Strategy	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2020	2021	SMBC	In house	No	n/a	< £10k/£10k	completed	Reduced vehicle emissions	Proportion of alternatively fuelled vehicles in the fleet	Implementation on-going	Changing public opinions on EV
4	Installation of new EV charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2021	2026	SMBC/Partners	Variety of sources inc in house, Govnt,	No	Not secured	>15 million	Partly implemented	Reduced vehicle emissions	Usage to be reviewed	Implementation on-going	More charging points should influence car purchasing
5	Pop up cycle lanes	Traffic management	Strategic highway improvements	2020	2021/22	Active travel fund/SMBC	Dft/SMBC	No	Fully funded	£1m/£1m	planning	Reduced vehicle emissions	Increased number of cyclists	Planning	Work is due to be completed Dec 21 to Jan 22
6	Electric bike hire scheme	Promoting travel alternatives	Promoting of cycling	2020/21	2021	Transport for West Midlands	TfWM	No	Fully funded	< £10k/£10k	completed	Reduced vehicle emissions	Scheme review for uptake	Too early to determine use	Promoting service
7	Increase in EV fleet	Promoting low emission transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2021	2022	SMBC tender process	n/a	No	Tender process	< £10k/£10k	planning	Reduced vehicle emissions	Updated fleet	Some vehicles have been updated	New technology needed for larger fleet vehicles
8	Home working	Promoting travel alternatives	Facilitate home working	2019	On-going	SMBC	n/a	No	n/a	< £10k/£10k	Ongoing	Reduced vehicle emissions	Home working is constantly reviewed by CEO and heads of service	High numbers of staff working from home	Corporate decisions to be made to determine forward planning
9	HS2 haulage routes approval	Freight and delivery management	Route Management Plans/ Strategic routing strategy for HGV's	2020	2024	HS2/SMBC	n/a	No	n/a	< £10k/£10k	planning	Reduce HGV through village	Reduce HGV through village	Planning stage	Approved with sec of state
10	School Streets (extension)	Traffic management	Reduction of speed limit, 20 mph zones	2017	2021/22	SMBC	n/a	No	n/a	< £10k/£10k	Partly implemented	Reduced vehicle emissions and improved safety around schools	Reduced vehicle emissions	Planning stage	Scheme extended to more schools

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
11	Community bike hubs	Promoting travel alternatives	Promotion of cycling	2021	2022	SMBC/British Cycling places to ride	British Cycling places to ride	No	Funded	<£10k/£10k	Not yet completed	Reduced vehicle emissions	Reduced vehicle emissions	Planning stage	none
12	Engines Off: Young Lungs at Work	Traffic management	Anti-idling enforcement	2019	On-going	SMBC	n/a	No	n/a	< £10k/£10k	Partly implemented	Reduced vehicle emissions	Reduced vehicle emissions	Not quantified	Needs constant re enforcement
13	Lift share scheme	Alternatives to private vehicle use	Lift share scheme	2019	On-going	SMBC, NEC, Birmingham airport, B'ham Business Park, Resorts World	n/a	No	n/a	< £10k/£10k	completed	Reduced vehicle emissions	Reduced vehicle emissions	Low uptake	Scheme shelved temp. due to Covid
14	Taxi retrofit event	Promoting Low Emission Transport	Taxi emission incentives	2021	2022	SMBC/Clipper automotive	n/a	No		< £10k/£10k	planning	Reduced vehicle emissions	Reduced vehicle emissions	Planning stage	High initial outlay for taxi owners
15	Berkswell Traffic calming	Promoting travel alternatives	Promotion of walking	2021	2022	SMBC/TfWM better Street's fund	TfWM	No	Funded	£500k/£500k	planning	Reduced vehicle emissions	Uptake of walking	Planning stage	Will encourage walking due to increased road safety
16	CAV trials	Promoting Low Emission Transport	other	2021	2022	SMBC/ GBSLEP and private company	West Midlands Combined Authority/GBSLEP	No	Funded	£500k/£500k	Partly implemented	Reduced vehicle emissions	One successful trial in 2021 with more planned for 2022I	One successful trial in 2021 with more planned for 2022I	none
17	E moped trial	Promoting Low Emission Transport	other	2021	2022	SMBC/WMCA/private company	WMCA	No	Funded			Reduced vehicle emissions	Trial in Nov 2021	First trial successful	Uptake of e moped over car

## **PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations**

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

The Defra background maps for 2021 show very similar readings to that of 2020 and 2019 with an average annual mean of 8.5 µg/m<sup>3</sup>. No areas within Solihull are considered likely to exceed the EU Limit Value for PM<sub>2.5</sub> (an annual average concentration of 25 µg/m<sup>3</sup>).

The [Public Health Outcomes Framework](#) (PHOF) is a Department of Health tool which sets out key indicators on the state of public health and includes an indicator relating to air pollution from fine particulate matter, (PM 2.5) – indicator ‘D01 Fraction of mortality attributable to particulate air pollution’ reports the estimated fraction of all cause adult mortality attributable to anthropogenic particulate air pollution.

latest published figures for Solihull are for 2020 and are 5.7%. This figure is slightly higher than the figure reported for the West Midlands region (5.4%) and marginally higher than the average figure reported for England in 2020 (5.6%).

We recognise that pollution from fine particulate matter is important. In order to understand the geographical distribution across the borough we approached a local academic organisation West Midland Air (WM Air) to undertake a piece of research to explore and model the air quality context for Solihull area. The results indicate that other than the A45 area, PM<sub>2.5</sub> levels do not exceed the EU Limit Value for PM<sub>2.5</sub> (an annual average concentration of 25 µg/m<sup>3</sup>). (See 3.1.5)

### **Solihull is taking the following measures to address PM<sub>2.5</sub>**

Solihull Council recognises the need to monitor PM<sub>2.5</sub> and welcomes the introduction of targets under the Environment Bill. We will ensure that the revised Air Quality strategy includes actions to develop our monitoring programme so that PM<sub>2.5</sub> is actively monitored

providing the public with information about air quality levels in their area. The strategy will also include actions to:

- Work alongside other council departments with joint inputs into key council policies that can impact on air quality and exposure reduction. I.e. Transport strategy
- Deliver publicity campaigns throughout the year to provide information about particulate matter and the impacts of PM emissions from domestic solid fuel use, bonfires, and sales of solid fuels.
- Ensure that the Public Health perspective is integrated into the next iteration of the Local Plan including a requirement that a Health Impact Assessment is undertaken for proposed developments over a certain size.
- Continue to develop publicity campaigns about traffic idling.
- Promote Low Emission Vehicle Events for the public to showcase a variety of electric cars and bikes.

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

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

### Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

Solihull Metropolitan borough Council does not currently have any automatic monitoring sites

#### 3.1.2 Non-Automatic Monitoring Sites

Solihull MBC undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 31 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic sites. There were a total of 47 monthly tubes with eight of these sites accommodating triplicate tubes (these are along the A45 following a ministerial direction).

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

### Individual Pollutants

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

### 3.1.3 Nitrogen Dioxide (NO<sub>2</sub>)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

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

During 2021 there were no exceedances of the air quality objectives for the annual mean NO<sub>2</sub>.

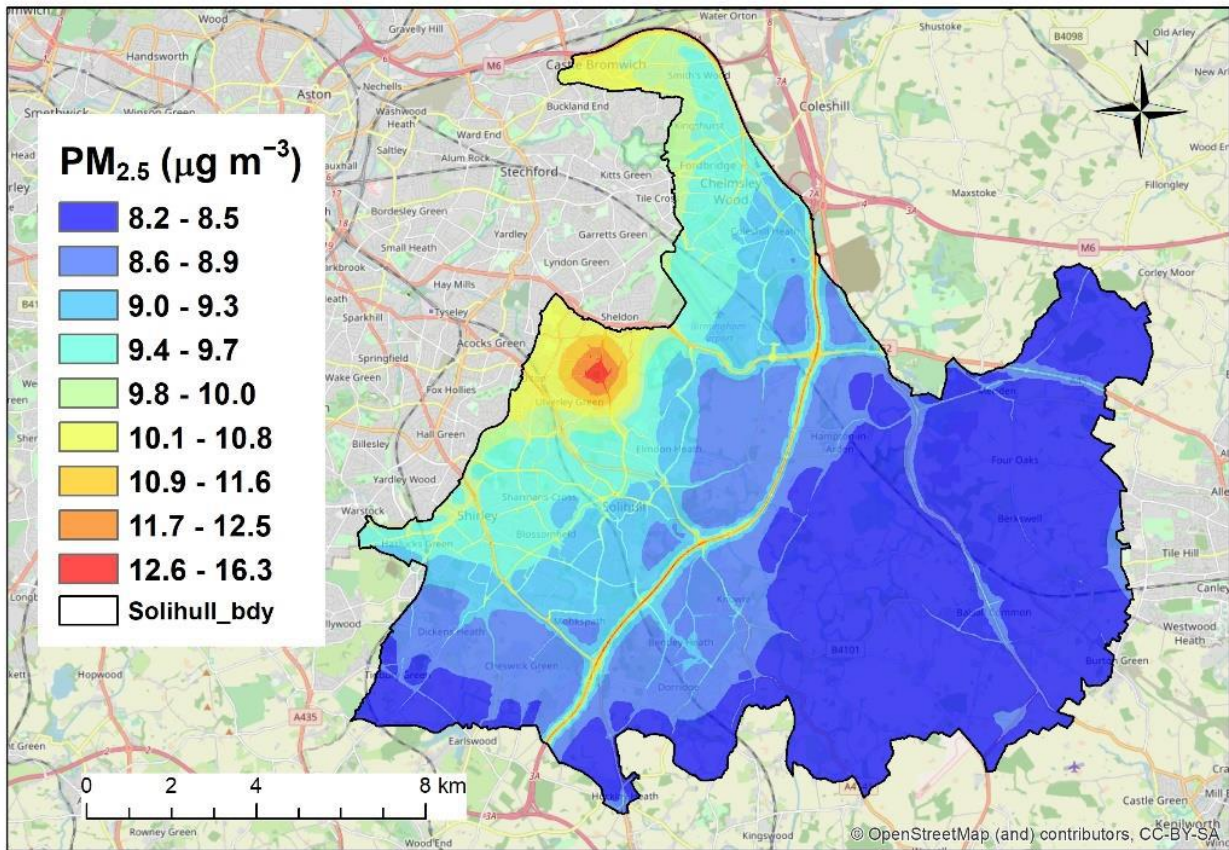
Table A.4 shows historical data and is limited to 3 years for trend analysis (and for many sites only 1 or 2 years are available for comparison). Other sites have been utilised across the borough, since 2017/2018 however, sites were removed from the monitoring network when found to be highly compliant with objective levels. Going forwards SMBC will keep the current sites for longer periods to allow for longer term trend data to be produced.

A review of our diffusion tube network will continue after analysis of results and liaison with highways to understand any potential new areas to monitor.

### 3.1.4 Particulate Matter (PM<sub>2.5</sub>)

**3.1.5** As an existing West Midland Air (WM Air) partner, Solihull Council requested the WM-Air team to undertake a piece of research to use the newly-developed, high resolution Atmospheric Dispersion Model (ADMS) air quality model to explore the air quality context for Solihull area. The results indicate that other than the A45 area, PM<sub>2.5</sub> levels do not exceed the EU Limit Value for PM<sub>2.5</sub> (an annual average concentration of 25 µg/m<sup>3</sup>). Although Solihull do not currently monitor this pollutant, monitoring PM will be reviewed in 2022 as an integral element of the Solihull Air Quality Strategy review

PM2.5 levels across Solihull (using the Atmospheric Dispersion Model (ADMS))



## Appendix A: Monitoring Results

### Table A.1 – Details of Automatic Monitoring Sites

**Solihull have no Automatic Monitoring Sites to report for 2021**

Table A.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
AB1	Kingsleigh Drive	Roadside	414297	289963	NO2	Not in AQMA	0.0	11.4	No	1.9
AB4	Olton Library	Roadside	413337	282206	NO2	Not in AQMA	0.0	5.6	No	1.9
AB5	Elm Farm Avenue	Roadside	417108	285417	NO2	Not in AQMA	0.0	15.0	No	2.1
AB6	Streetsbrook Road	Roadside	414698	279709	NO2	Not in AQMA	0.0	11.4	No	1.4
AB8	Warwick Road Nursery	Roadside	415229	279699	NO2	Not in AQMA	0.0	4.8	No	2.0
AB9	Stratford Road/Haslucks Green	Roadside	411740	279645	NO2	Not in AQMA	0.0	3.2	No	2.0
AB16	Bishopton Close	Roadside	412229	278254	NO2	Not in AQMA	0.0	5.2	No	2.2
AB17	New Road	Roadside	414622	279481	NO2	Not in AQMA	0.0	2.8	No	1.9
AB21	Kenilworth Road/Kelsey	Roadside	424203	276372	NO2	Not in AQMA	0.0	20.1	No	2.0
AB23	Clock Lane Road	Roadside	418494	282878	NO2	Not in AQMA	0.0	4.5	No	1.8
AB24	Stratford Road/Costa	Roadside	413003	277139	NO2	Not in AQMA	0.0	10.6	No	1.9
AB28, AB29, AB30	A45/Clock Lane C	Roadside	418505	282921	NO2	Not in AQMA	40.0	3.3	No	2.3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
AB31, AB32, AB33	A45 Nr Tristar C	Roadside	417400	283121	NO2	Not in AQMA	24.0	4.0	No	2.4
AB34, AB35, AB36	A45 Nr Arden C	Roadside	419213	283020	NO2	Not in AQMA	72.0	4.3	No	2.1
AB37, AB38, AB39	A45/Old Damson Lane C	Roadside	417223	283137	NO2	Not in AQMA	0.0	6.9	No	1.6
AB40, AB41, AB42	Church Lane C	Roadside	419242	282980	NO2	Not in AQMA	125.0	3.1	No	2.4
AB43, AB44, AB45	Church Lane 2 C	Roadside	419500	283004	NO2	Not in AQMA	220.0	3.1	No	2.4
AB46, AB47, AB48	Longacre C	Roadside	419285	283022	NO2	Not in AQMA	35.0	1.0	No	2.4
AB49, AB50, AB51	A45/Goodway C	Roadside	416277	283691	NO2	Not in AQMA	0.0	7.1	No	2.0
AC1	Orkney Close	Roadside	417716	289086	NO2	Not in AQMA	0.0	2.6	No	1.9
AC2	Kenilworth Road/Centre	Roadside	423881	277290	NO2	Not in AQMA	0.0	12.7	No	1.9
AC3	Kelsey Lane	Roadside	424383	276289	NO2	Not in AQMA	0.0	17.3	No	1.7
AC4	Bosworth Drive	Roadside	417180	286880	NO2	Not in AQMA	0.0	8.2	No	1.9

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
AC5	Longmore Road	Roadside	412965	278406	NO2	Not in AQMA	0.0	5.9	No	1.9
AC6	Lode Lane by JLR	Roadside	415001	281564	NO2	Not in AQMA	0.0	10.3	No	1.7
AC7	Old Lode Lane	Roadside	414902	282623	NO2	Not in AQMA	0.0	12.3	No	1.7
AC8	Rye Close Croft	Roadside	418682	287390	NO2	Not in AQMA	0.0	7.8	No	1.9
AC9	Whitefields Road	Roadside	414088	278186	NO2	Not in AQMA	0.0	17.5	No	1.9
AC10	Darlaston Row	Roadside	423969	282261	NO2	Not in AQMA	0.0	2.3	No	1.9
AC11	Old Damson Lane/opp JLR dist centre	Roadside	416984	282619	NO2	Not in AQMA	0.0	12.2	No	1.7
AC12	Hurdis Road	Roadside	411493	278780	NO2	Not in AQMA	0.0	11.1	No	1.7

**Table A.3 – Annual Mean NO<sub>2</sub> Monitoring Results: Automatic Monitoring (µg/m<sup>3</sup>)**

**Solihull have no Automatic Monitoring Sites to report for 2021**

**Table A.4 – Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)**

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
AB1	414297	289963	Roadside		100.0			21.2	16.7	17.9
AB4	413337	282206	Roadside		100.0		29.3	27.0	22.0	22.9
AB5	417108	285417	Roadside		90.4		20.2	18.8	15.3	15.0
AB6	414698	279709	Roadside		82.7			21.9	17.0	18.9
AB8	415229	279699	Roadside		82.7			24.8	20.5	23.0
AB9	411740	279645	Roadside		90.4		33.8	31.2	25.1	26.2
AB16	412229	278254	Roadside		90.4			24.1	20.9	19.3
AB17	414622	279481	Roadside		90.4			26.1	17.2	19.8
AB21	424203	276372	Roadside		100.0			17.8	10.3	10.6
AB23	418494	282878	Roadside		100.0			19.5	13.2	14.5
AB24	413003	277139	Roadside		100.0			21.3	15.2	16.5
AB28, AB29, AB30	418505	282921	Roadside		90.4			21.4	15.1	22.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
AB31, AB32, AB33	417400	283121	Roadside		100.0			36.7	26.6	25.6
AB34, AB35, AB36	419213	283020	Roadside		100.0			<b>49.9</b>	32.8	32.0
AB37, AB38, AB39	417223	283137	Roadside		100.0			29.4	21.3	22.5
AB40, AB41, AB42	419242	282980	Roadside		100.0			39.2	23.8	26.3
AB43, AB44, AB45	419500	283004	Roadside		100.0			<b>43.8</b>	27.2	29.9
AB46, AB47, AB48	419285	283022	Roadside		100.0			<b>55.3</b>	36.3	34.4
AB49, AB50, AB51	416277	283691	Roadside		100.0			22.2	17.7	17.2
AC1	417716	289086	Roadside		100.0				18.0	19.8
AC2	423881	277290	Roadside		100.0				12.1	12.3
AC3	424383	276289	Roadside		100.0				10.1	10.9
AC4	417180	286880	Roadside		100.0				16.8	17.1
AC5	412965	278406	Roadside		100.0				15.9	17.1

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
AC6	415001	281564	Roadside		100.0				15.7	16.6
AC7	414902	282623	Roadside		100.0				19.2	20.9
AC8	418682	287390	Roadside		90.4				16.7	17.8
AC9	414088	278186	Roadside		100.0				10.8	11.2
AC10	423969	282261	Roadside		90.4				18.2	18.7
AC11	416984	282619	Roadside		100.0					12.6
AC12	411493	278780	Roadside		92.3					12.2

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

Diffusion tube data has been bias adjusted

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

#### Notes:

The annual mean concentrations are presented as  $\mu\text{g}/\text{m}^3$ .

Exceedances of the NO<sub>2</sub> annual mean objective of  $40\mu\text{g}/\text{m}^3$  are shown in **bold**.

NO<sub>2</sub> annual means exceeding  $60\mu\text{g}/\text{m}^3$ , indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

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

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

- (1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations

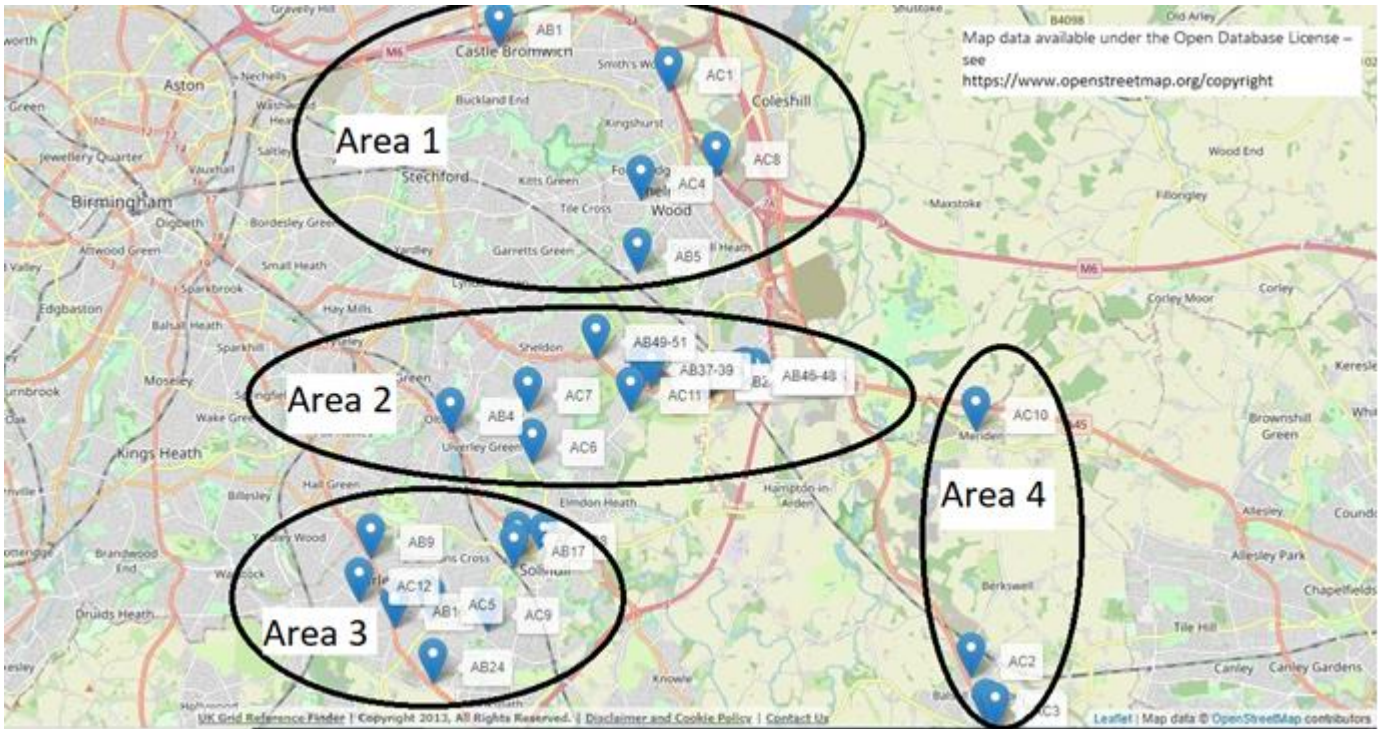
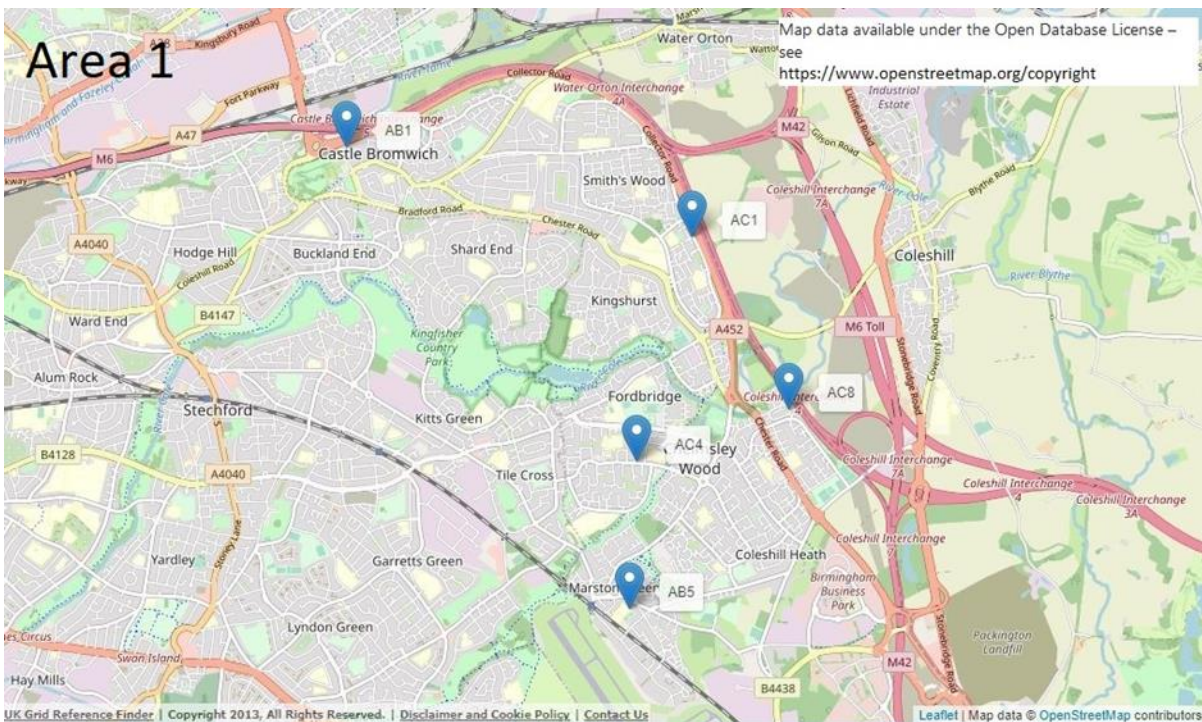
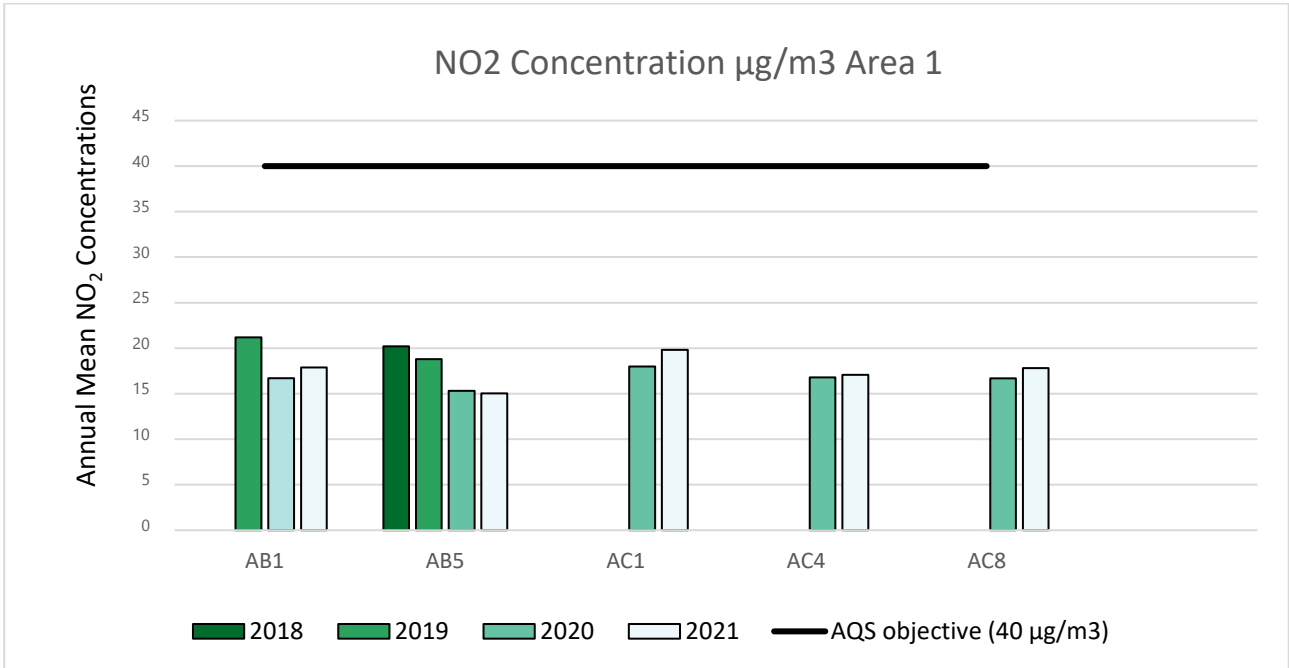


Fig 1 identifies the locations of diffusion tubes across Solihull. For ease the locations of tubes have been grouped into 4 areas.

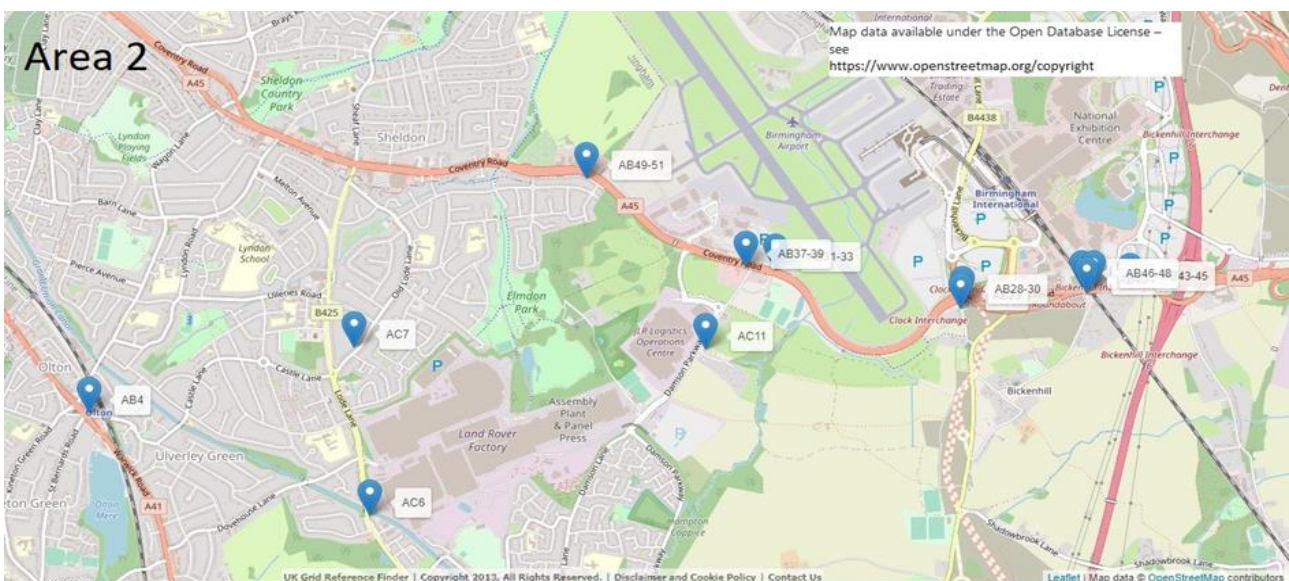
**Area 1 Tubes**

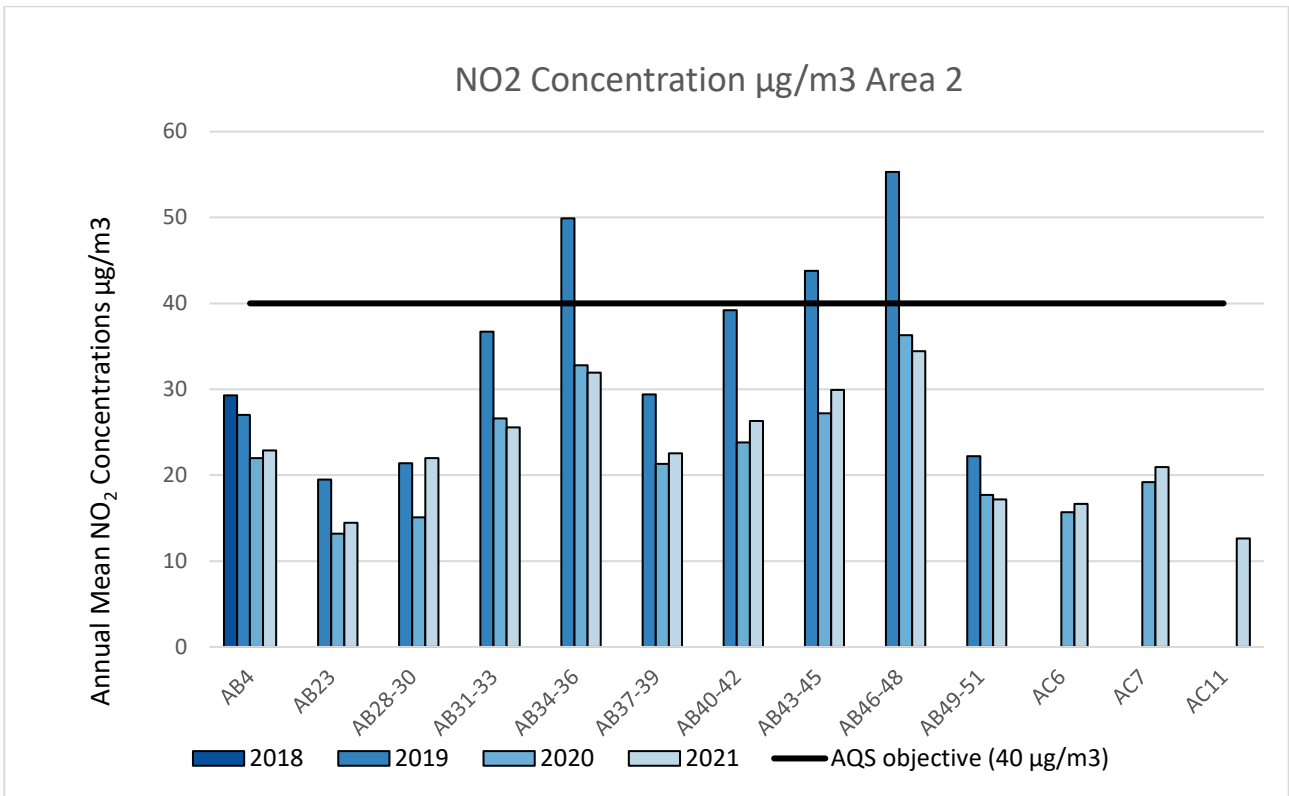




levels are well below the NO2 Air Quality Objective level (40  $\mu\text{g}/\text{m}^3$ ) and since 2019 have been below half that value (20  $\mu\text{g}/\text{m}^3$ ). Levels are on a downward trend though, as expected, have risen slightly above the Covid impacted 2020 data set.

### Area 2 Tubes

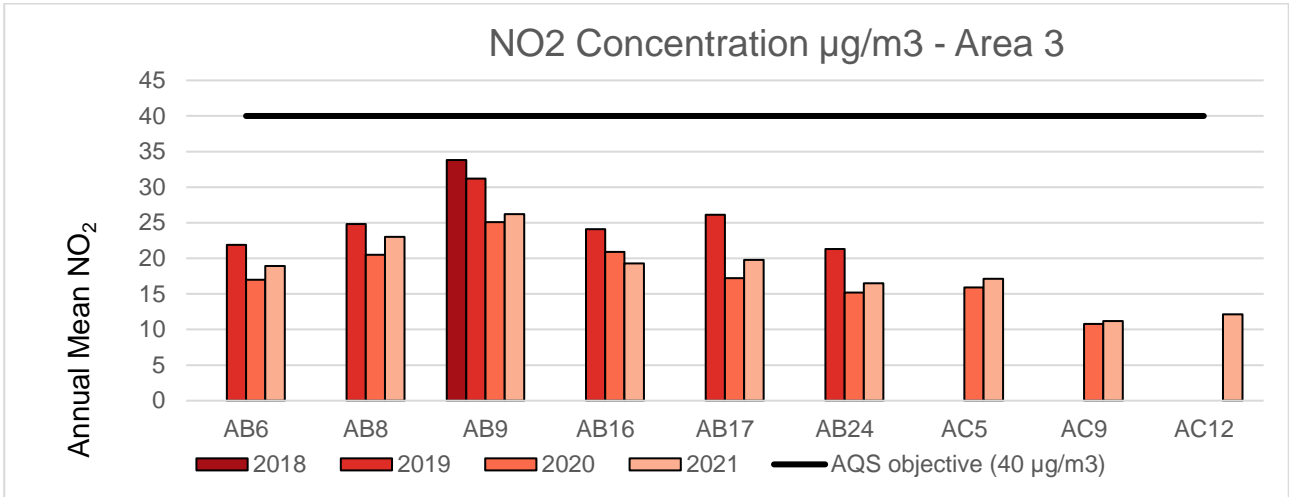




Exceedances of the NO2 Air Quality Objective level (40  $\mu\text{g}/\text{m}^3$ ) noted in 2019 have not recurred. Levels are on a downward trend though, as expected, have risen slightly above the Covid impacted figures for 2020 data set.

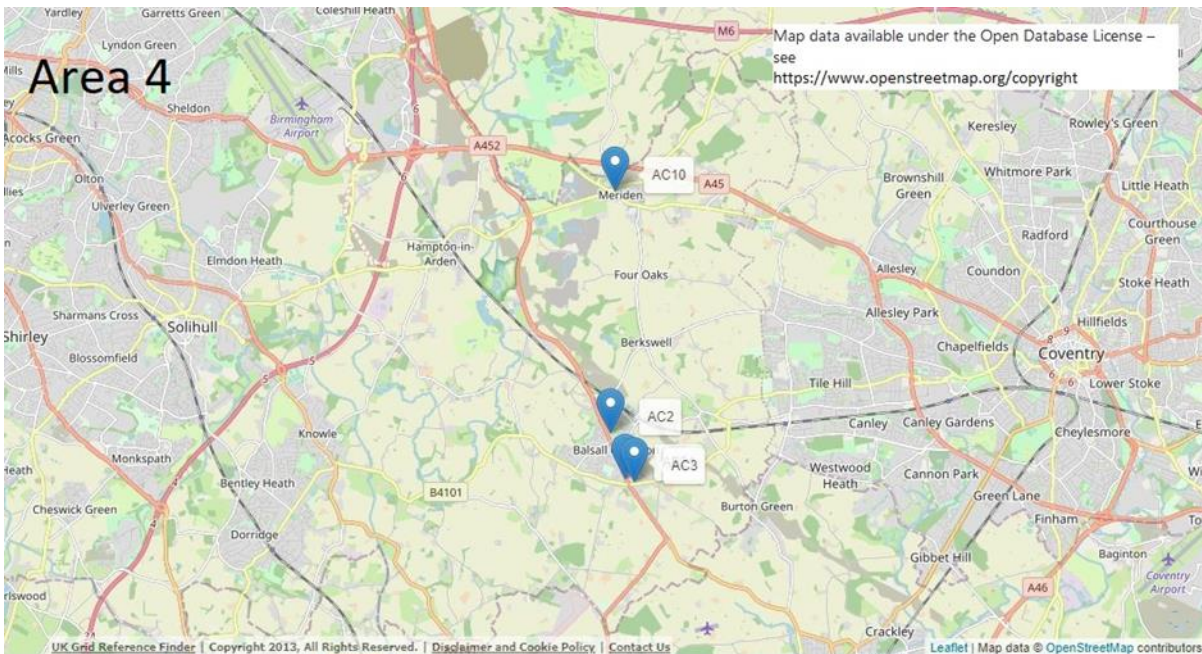
### Area 3 Tubes

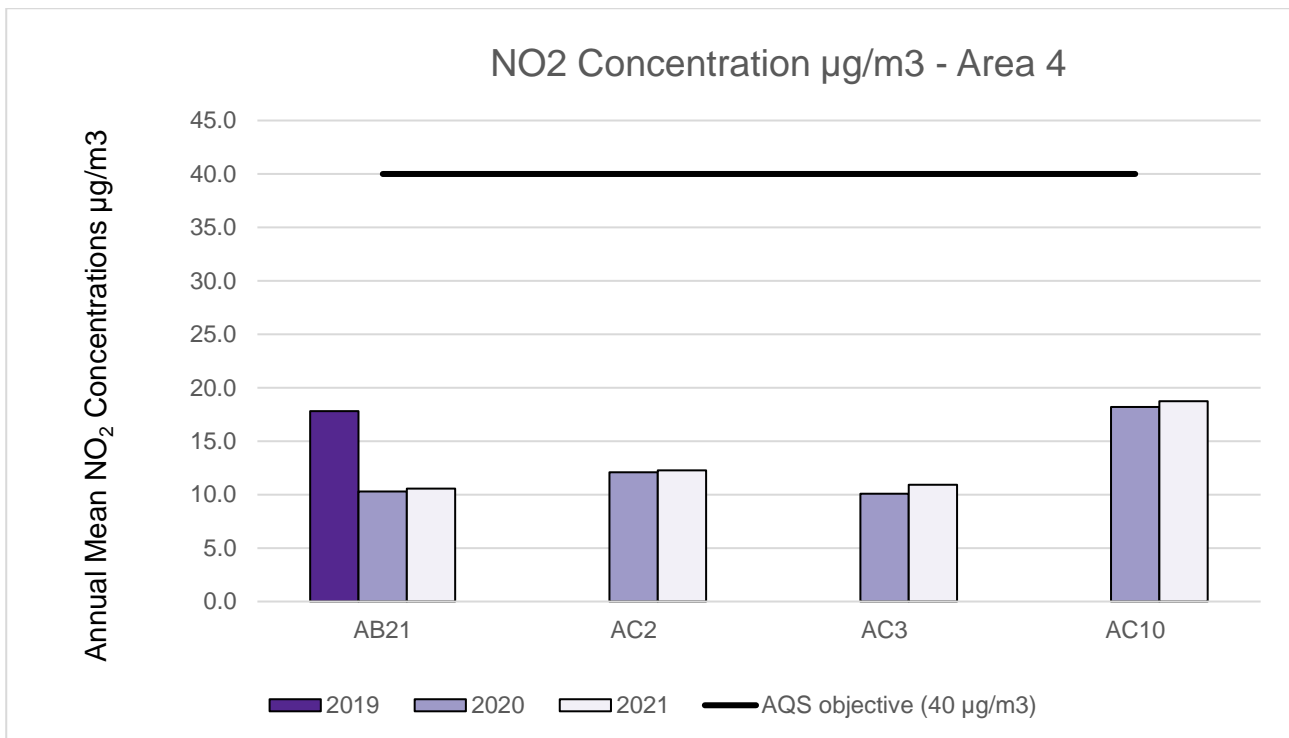




levels are well below the NO2 Air Quality Objective level (40  $\mu\text{g}/\text{m}^3$ ). Levels are on a downward trend though, as expected, have risen slightly above the Covid impacted figures for 2020 data set.

### Area 4 Tubes





levels are well below the NO<sub>2</sub> Air Quality Objective level (40  $\mu\text{g}/\text{m}^3$ ) and since 2019 have been below half that value (20  $\mu\text{g}/\text{m}^3$ ). Levels are on a downward trend though, as expected, have risen slightly above the Covid impacted figures for 2020 data set.

## Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO<sub>2</sub> 2021 Diffusion Tube Results (µg/m<sup>3</sup>)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AB1	414297	289963	28.2	20.1	24.5	22.2	19.3	18.8	19.5	16.8	22.8	20.7	27.6	21.3	21.8	17.9	-	
AB4	413337	282206	31.3	25.6	31.5	28.9	27.0	24.4	26.2	21.6	31.4	25.2	35.8	26.2	27.9	22.9	-	
AB5	417108	285417	25.8	18.8	19.2	18.3	14.4	12.9	15.3	13.2	20.7	18.7	24.5		18.3	15.0	-	
AB6	414698	279709	26.9	22.0	24.1	25.7	22.7	20.6	21.1	18.8		21.7	27.1		23.1	18.9	-	
AB8	415229	279699	29.6	27.6	27.0	31.0	24.0	26.1	25.8		31.3	21.5	37.0		28.1	23.0	-	
AB9	411740	279645	34.0	27.7	33.8	31.4	32.2	29.1	31.0	28.2	34.2	31.0	39.2		32.0	26.2	-	
AB16	412229	278254	24.5	24.3	26.8	20.3	22.5	21.2	21.7	14.4	27.5	26.7	28.9		23.5	19.3	-	
AB17	414622	279481	27.7	18.7	24.0	25.2	22.1	20.3	24.6	19.1	29.4	24.0	30.4		24.1	19.8	-	
AB21	424203	276372	19.2	15.5	16.2	14.3	10.4	9.3	8.8	7.0	10.9	9.1	18.4	15.7	12.9	10.6	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AB23	418494	282878	23.9	13.8	36.6	15.7	15.1	14.5	15.3	15.4	18.4	11.7	12.8	18.6	17.6	14.5	-	
AB24	413003	277139	21.9	16.3	21.8	20.2	18.2	19.4	19.1	18.9	23.5	18.2	25.6	18.6	20.1	16.5	-	
AB28	418505	282921	35.3	21.8	30.0	26.1	23.5	22.4	23.7	23.3	27.1	22.1	33.6		-	-	-	Triplicate Site with AB28, AB29 and AB30 - Annual data provided for AB30 only
AB29	418505	282921	32.6	26.1	30.4	30.9	24.0	24.5	25.2	24.1	27.3	22.6	31.7		-	-	-	Triplicate Site with AB28, AB29 and AB30 - Annual data provided for AB30 only
AB30	418505	282921	36.1	24.3	27.3	29.0	24.5	24.5	22.2	24.7	28.7	21.2	34.3		26.8	22.0	-	Triplicate Site with AB28, AB29 and AB30 - Annual data provided for AB30 only
AB31	417400	283121	38.1	26.4	28.7	24.9	30.3	22.5	27.9	23.7	35.3	29.9 1.	38.5	29.6	-	-	-	Triplicate Site with AB31, AB32 and AB33 - Annual data provided for AB33 only
AB32	417400	283121	39.8	27.4	32.0	26.6	31.7	23.3	27.4	22.3	36.1	32.6	44.7	33.3	-	-	-	Triplicate Site with AB31, AB32 and AB33 - Annual data provided for AB33 only
AB33	417400	283121	42.6	27.5	33.0	27.1	32.6	24.6	29.2	23.3	37.0	35.3	40.0	33.8	31.2	25.6	-	Triplicate Site with AB31, AB32 and AB33 - Annual data provided for AB33 only
AB34	419213	283020	46.3	36.0		31.7	38.5	32.4	35.9	29.7	51.3	45.8	50.7	39.5	-	-	-	Triplicate Site with AB34, AB35 and AB36 - Annual data provided for AB36 only
AB35	419213	283020	37.0	29.1	38.1	34.4	40.7	33.2	39.0	32.6	41.6	41.4	46.7	40.3	-	-	-	Triplicate Site with AB34, AB35 and AB36 - Annual data provided for AB36 only
AB36	419213	283020	47.0	30.8	37.7	33.8	34.6	30.7	36.6	33.0	56.2	47.5	48.0	37.3	39.0	32.0	-	Triplicate Site with AB34, AB35 and AB36 - Annual data provided for AB36 only
AB37	417223	283137	35.1	26.8	30.2	29.9	26.4	23.5	24.2	24.5	27.4	25.2	32.2	26.9	-	-	-	Triplicate Site with AB37, AB38 and AB39 - Annual data provided for AB39 only
AB38	417223	283137	33.3	23.7	29.3	28.8	25.1		25.8	22.4	26.1	24.3	32.0	28.7	-	-	-	Triplicate Site with AB37, AB38 and AB39 - Annual data provided for AB39 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AB39	417223	283137	34.9	26.1	29.9	30.8	27.3		27.4	23.4	27.0	24.1	34.4	25.5	27.5	22.5	-	Triplicate Site with AB37, AB38 and AB39 - Annual data provided for AB39 only
AB40	419242	282980		31.0		37.4	32.9	29.2	31.7	29.1	36.8	23.8	40.8	29.9	-	-	-	Triplicate Site with AB40, AB41 and AB42 - Annual data provided for AB42 only
AB41	419242	282980	36.4	28.6	33.0	33.0	32.6	29.8	30.0	28.2	35.8	25.5	41.7	28.3	-	-	-	Triplicate Site with AB40, AB41 and AB42 - Annual data provided for AB42 only
AB42	419242	282980	37.5	22.9	35.6	29.2	33.6	30.5	30.5	31.3	36.4	21.8	40.2	29.6	32.1	26.3	-	Triplicate Site with AB40, AB41 and AB42 - Annual data provided for AB42 only
AB43	419500	283004	36.9	29.0	36.6	40.2	38.5	33.7	37.4	35.7	36.6	31.9	42.8	30.8	-	-	-	Triplicate Site with AB43, AB44 and AB45 - Annual data provided for AB45 only
AB44	419500	283004	34.3	32.4	16.5	43.7	37.9	36.9	38.0	28.8	42.3	26.5	46.8	30.6	-	-	-	Triplicate Site with AB43, AB44 and AB45 - Annual data provided for AB45 only
AB45	419500	283004	36.5	29.4	36.2	38.0	37.3	36.4		72.9	39.6	28.0	45.1	32.0	36.5	29.9	-	Triplicate Site with AB43, AB44 and AB45 - Annual data provided for AB45 only
AB46	419285	283022	51.5	39.8	37.7	33.8	49.0	37.0	39.1	31.0	51.5	46.6	47.8	42.0	-	-	-	Triplicate Site with AB46, AB47 and AB48 - Annual data provided for AB48 only
AB47	419285	283022	43.6	37.4	39.5	32.8	47.9	35.0	40.0	39.9	51.6	42.6	51.6	40.0	-	-	-	Triplicate Site with AB46, AB47 and AB48 - Annual data provided for AB48 only
AB48	419285	283022	45.0	39.7	39.9	35.9	46.8	34.1	38.6	36.2	50.7	45.9	53.1	37.0	42.0	34.4	-	Triplicate Site with AB46, AB47 and AB48 - Annual data provided for AB48 only
AB49	416277	283691	31.3	21.6	23.2	22.4	18.0	15.3	15.5	14.1	18.7	18.9	25.7	23.8	-	-	-	Triplicate Site with AB49, AB50 and AB51 - Annual data provided for AB51 only
AB50	416277	283691	29.9	23.6	24.4	21.3	18.3	14.4	17.4	13.9	19.4	19.3	29.5	25.4	-	-	-	Triplicate Site with AB49, AB50 and AB51 - Annual data provided for AB51 only
AB51	416277	283691	32.4	22.5	24.5	20.0	19.3	15.2	16.9	13.2	18.8	19.3	26.0	21.6	21.0	17.2	-	Triplicate Site with AB49, AB50 and AB51 - Annual data provided for AB51 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.82)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AC1	417716	289086	27.3	27.1	24.1	29.2	20.7	20.0	21.9	18.9	27.4	18.5	29.4	25.5	24.2	19.8	-	
AC2	423881	277290	19.1	17.8	15.7	16.8	12.3	10.9	13.0	10.4	14.2	13.6	20.4	15.6	15.0	12.3	-	
AC3	424383	276289	16.4	18.7	12.9	13.3	9.7	9.6	11.3	9.1	13.9	12.1	19.0	13.9	13.3	10.9	-	
AC4	417180	286880	29.9	21.9	23.1	19.2	19.5	14.9	17.2	14.5	21.7	20.2	25.4	22.5	20.8	17.1	-	
AC5	412965	278406	25.2	21.1	22.5	23.7	19.8	17.8	18.9	14.4	22.4	18.1	24.5	22.5	20.9	17.1	-	
AC6	415001	281564	27.8	24.6	20.3	19.1	17.7	14.5	17.1	14.2	21.2	18.6	26.2	22.3	20.3	16.6	-	
AC7	414902	282623	28.4	20.8	28.3	27.7	23.7	22.7	24.9	21.3	28.2	24.1	32.2	24.3	25.5	20.9	-	
AC8	418682	287390	29.9	24.9	22.5		19.7	18.7	21.4	17.1	22.9	17.9	23.5	20.5	21.7	17.8	-	
AC9	414088	278186	18.9	16.1	12.5	12.6	10.5	10.3	11.2	9.7	14.7	13.0	19.5	14.7	13.6	11.2	-	
AC10	423969	282261	28.1	22.7	25.2	17.7	21.3	19.1	20.3	18.0	25.0		30.3	23.9	22.9	18.7	-	
AC11	416984	282619	24.4	17.1	20.2	13.8	12.0	10.6	11.7	11.2	13.3	11.6	23.2	15.7	15.4	12.6	-	
AC12	411493	278780		17.5	17.3	15.6	13.1	11.8	12.3	10.2	14.2	12.8	21.6	16.5	14.8	12.2	-	

All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1

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

- Local bias adjustment factor used
- National bias adjustment factor used
- Where applicable, data has been distance corrected for relevant exposure in the final column
- Solihull MBC confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System

**Notes:**

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

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

### **New or Changed Sources Identified Within Solihull During 2021**

There are some sources in Solihull that have been identified with a potential to impact air quality. These may include sources that are already operational, have planning permission granted or have been identified at an earlier stage of the planning process. Sources may include additional road traffic, static or standby plant, biomass or industrial processes, etc.

### **The M42 Junction 6 Development Consent Order (DCO) 2020**

The scheme has been in development since March 2016 with a DCO application being made at the end of 2018, with a hearing held between May and November 2019. The Examining Authority's (ExA) recommendations on the scheme were submitted to the Secretary of State (SoS) for Transport in February 2020 and the SoS's decision (one of granted consent) was published on the 21st May 2020.

### **Birmingham Clean Air Zone (CAZ)**

Birmingham City Council (BCC) have now introduced a charging CAZ covering all roads within the Middleway Ring Round surrounding the city centre as from 1st June 2021.

The A45 Coventry Road forms one of the main arterial corridors into Birmingham and the Birmingham CAZ will inevitably have an impact upon the composition of traffic on the A45 corridor and the exceedance link in Solihull.

The Birmingham CAZ Traffic Model Forecasting Report indicates that in 2020 the proportion of non-compliant vehicles crossing the CAZ boundary during the AM peak is forecast to reduce from 28% of the total flow to 9% of the flow which equates to a reduction of 40,000 non-compliant vehicles crossing the boundary. The report can be found [here](#).

In addition, the introduction of the various measures, including the CAZ, are forecast to result in an overall reduction of 22,000 vehicles crossing the CAZ boundary. The scheme therefore results in two changes – a reduction in the overall number of non-compliant vehicles, and a reduction in overall traffic demand. Given that the A45 is one of the main corridors into Birmingham it is therefore logical to conclude that there would also be a reduction in the number of non-compliant vehicles on the A45 and a corresponding reduction in flow.

The Forecasting report indicates that by 2022 the proportion of non-compliant vehicles crossing the Birmingham CAZ boundary is forecast to reduce from 20% to 3% which is a reduction of approximately 35,000 vehicles (AM Peak). Additionally, the total flows crossing the boundary are forecast to reduce by approximately 16,000 vehicles. In comparison, the forecast flows on the A45 Coventry Road are forecast to reduce by 2% (-900 vehicles AADT).

The introduction of the Birmingham CAZ and associated measures will result in a reduction in the proportion of non-compliant vehicles travelling on the A45 Coventry Road, including the exceedance location in Solihull, and will also result in a slight reduction in the overall traffic flows. The proposed Birmingham scheme will therefore have a slight beneficial impact upon the exceedance location in Solihull in the absence of any other measures to improve the local air quality.

## **HS2**

HS2 is one of the largest infrastructure projects ever undertaken in this country, and will transform connectivity and economic performance at local, regional, and national levels. Solihull will be served by a new HS2 station, which will act as a hub for the wider region; consequently, generating significant numbers of access and egress trips to destinations both in the immediate vicinity of the station, and also places further afield in the West Midlands and beyond.

To make the most of the opportunity presented by HS2, SMBC has created UK Central which is an economic development programme that seeks to capitalise on the opportunities afforded to the Borough by HS2 and wider growth plans.

While these growth and development plans provide a rare opportunity for significant economic growth and benefits for Solihull, it is vital to ensure the extra trips generated by these developments do not have an adverse impact on the transport network and environment. It is therefore important that Solihull works closely with its neighbours

## **Other**

Applications have been given approval for a number of large developments in the borough, these can be found by following the link below and typing in the application number PL/...../... at: <https://publicaccess.solihull.gov.uk/online-applications/>

**PL/2021/00659** | Reserved matters consent sought for the development of 137 dwellings within Phases F and G of Plot 3 on the outline site, including public open space, SUDs attenuation pond, with play facilities to be provided alongside cycle and pedestrian routes, required by condition No. 3 relating to the reserved matters of layout, appearance and landscaping pursuant to planning permission reference PL/2018/02731/MAJFOT. | The Green (Phase F+G) Stratford Road Shirley B90 4LA (Decision 17/08/21)

**PL/2021/01782** | Prior notification for a change of use from office to residential for 8 (1 bed 1 person) units @ 37.5sqm and 1 (1 bed 2 person) unit @ 51sqm per floor over four floors. 32 (1bed 1 person) and 4 (1 bed 2 person) units in total. | 737 Warwick Road Silhill B91 3DG. (Decision 16/09/2021)

**PL/2020/01993** | Demolition of the existing garden centre and associated buildings, and the erection of an extra care facility (Use Class C2) comprising: a village care centre; 39 No. one and two bedroom care suites; 46 No. one and two bedroom care apartments; and associated works, including car parking, access, landscaping and associated engineering works | Wyndley Garden Centre Warwick Road Knowle B93 0DX. (Decision 25/03/22)

**PL/2020/01379** | Demolition of existing building and erection of 48 No. retirement living apartments for older people (Sixty years of age and/or partner over fifty-five years of age), guest apartment, communal facilities, access, car parking, and landscaping. 354 Stratford Road Shirley B90 3DN | (Decision 08/10/2021)

**PL/2020/01273/PPOL** | Outline application for demolition of Homer House and removal of portacabin buildings at rear. Redevelopment of site with two separate buildings containing total of 72 one and two bedroomed apartments with access from Homer Road and 27 parking spaces at ground level. Roof top gardens and amenity space on each building and landscaping on the north and west elevations of block 1. Layout, scale, landscaping (insofar as it relates to landscaping on blocks 1 and 2) and access not reserved. Landscaping (other than landscaping on blocks 1 and 2) and appearance reserved for later approval | Homer House 8 Homer Road Solihull B91 3QQ. (Decision 22 Apr 2022).

**PL/2021/01418/PPFL** | Expansion of the existing 1FE primary school to form a new 2FE school for 420 pupils ranging from Reception to Year 6. In addition to the 420 pupil intake, there will be 30 pre-school and 60 nursery children attending the school as a result of the proposal. The existing school site area will increase to 19,828m<sup>2</sup> from 16,305m<sup>2</sup>. The proposal will consist of an additional 5 new class bases for year 1 to year 6. An additional reception class base and extended nursery provision together with internal alterations, additional on staff site parking provision an external enclosed MUGA and minor

reconfiguration of the external play space for the KS1 play areas and access paths. The proposal will also seek permission for a temporary access route to be established via Creynolds Lane from the east of the site via the existing adjacent field next to the school sports field. | Cheswick Green Primary School Cheswick Way Cheswick Green Solihull B90 4HG. (Decision 10 Mar 2022)

**PL/2021/03072/MAJFDW** | Demolition of existing local centre and development of new mixed-use local centre including up to 79 residential units (including a new vicarage) (Use Class C3), retail, commercial, business and services and healthcare (Use Class E (a),(b),(c),(d),(e),(f),(g)(i)), hot food take-away (Sui generis), and local community uses (Use Class F1 and F2 (a),(b)), open space, landscaping, car parking and associated infrastructure. | Kingshurst Village Centre And Former Mountford Public House, Marston Drive, Over Green Drive, Gilson Way And Church Close. (Decision 29 Apr 2022)

**PL/2021/02796/PPRM** | Reserved matters consent sought for the development of 73 dwellings within sub-phase F of Plot 3 on the outline site, including public open space, SUDs attenuation pond, with play facilities to be provided alongside cycle and pedestrian routes, required by condition No. 3 relating to the reserved matters of layout, appearance and landscaping pursuant to planning permission reference

PL/2018/02731/MAJFOT. | Sub Phase F The Green Stratford Road Shirley Solihull B90 4LA, (Decision 15 Jul 2022)

**PL/2015/51409/PPOL** | Outline planning application for development of a motorway service area, associated infrastructure and landscaping, with defined means of access for consideration including building and engineering operations and associated works to facilitate access to and egress from the motorway service area to the M42 (north and southbound) and an underpass beneath Solihull Road. | Proposed Motorway Service Area Solihull Road Hampton In Arden Solihull. (Appeal allowed 11.03.2022)

### **Additional Air Quality Works Undertaken by Solihull During 2021**

A feasibility study carried out as part of the first Ministerial Direction determined that a behavioural change programme of intensive workplace travel planning carried out with the major employees in the area of the A45 would be the best method of reducing the NO<sub>2</sub> in the shortest possible time. A dedicated officer is continuing this work throughout 2021.

In support of works required by a second Ministerial Direction, to address air quality exceedances on a section of footpath running along the A45 As presented in the a Full Business Case (FBC), has now been submitted to Defra / JAQU detailing the planned closure of the related footway (works to be undertaken by Highways England (HE) in 2022 as part of the M42 Junction 6 improvement scheme). The closure was necessary to accommodate the new HE M42 DCO scheme but will also remove receptors (and associated exposures) as a consequence. SMBC await ministerial approval of the FBC and confirmation that time frames achieve the 'shortest possible time' criteria.

At the same time, and in support of the objectives of the FBC, the Local Plan and the Clean Air Strategy, SMBC is proposing additional complementary measures to make a positive impact on air quality in the area. These measures are in part a continuation of the behavioural change programme that was identified as part of the first Ministerial Direction, and unable to be implemented in full, due to the impacts of Covid-19. An expanded series of complementary workplace travel planning measures has been identified – both to achieve the original intent of the first series and to similarly support the second additional Ministerial Direction

### **QA/QC of Diffusion Tube Monitoring**

The diffusion tubes deployed by Solihull Metropolitan Borough Council are supplied and analysed by the UKAS accredited laboratory Gradko International Ltd who fully ratify the data. They participate in the Workplace Analysis Scheme for Proficiency (WASP) operated by the Health and Safety Executive.

The tubes used are 50% TEA/Acetone. As tubes are not the reference method it is necessary to bias correct the results based on national colocation studies. This factor varies each year and for 2021 the figure used was 0.82 using the overall factor shown on the National Diffusion Tube bias adjustment factor spreadsheet as shown below using spreadsheet version 9/22.

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 09/22				
Follow the steps below in the correct order to show the results of relevant co-location studies						This spreadsheet will be updated at the end of March 2023				
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods						Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet				
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.						LAQM Helpdesk Website				
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.						Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.				
Step 1:		Step 2:	Step 3:	Step 4:						
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor <sup>2</sup> shown in blue at the foot of the final column.						
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data <sup>2</sup> .	If you have your own co-location study then see footnote <sup>4</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953						
Analysed By <sup>1</sup>	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>4</sup>	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2021	B	London Borough of Richmond upon Thames	9	16	13	215%	G	<b>0.82</b>
Gradko	50% TEA in acetone	2021	KS	Marylebone Road Intercomparison	10	52	41	24.2%	G	<b>0.81</b>
Gradko	50% TEA in acetone	2021	R	Reading Borough Council	12	30	26	15.3%	G	<b>0.86</b>
Gradko	50% TEA in acetone	2021	R	Merton Council	9	50	32	55.4%	G	<b>0.64</b>
Gradko	50% TEA in acetone	2021	UB	Wandsworth Council	11	29	26	9.8%	G	<b>0.91</b>
Gradko	50% TEA in acetone	2021	R	LB Newham	11	29	23	26.6%	G	<b>0.79</b>
Gradko	50% TEA in acetone	2021	KS	London Borough of Croydon	12	48	39	23.4%	G	<b>0.81</b>
Gradko	50% TEA in acetone	2021	<b>Overall Factor<sup>2</sup> (16 studies)</b>						<b>Use</b>	<b>0.82</b>

Sites are classified as defined in the Department of Food and Rural Affairs technical guidance LAQM TG16 as follows:

- Kerbside 0-1 m of a busy road
- Roadside 1-15m of a busy road
- Urban Background distanced from the source
- Suburban residential area on outskirts of a city

Monitoring was completed in adherence with the 2021 Tube Monitoring Calendar

### Diffusion Tube Annualisation

All diffusion tube monitoring locations within Solihull recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

### Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO<sub>x</sub>/NO<sub>2</sub> continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Solihull MBC have applied a national bias adjustment factor of 0.82 to the 2021 monitoring data. A summary of bias adjustment factors used by Solihull over the past three years is presented in Table C.1.

**Table C.1 – Bias Adjustment Factor**

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	09/22	0.82
2020	National	06/21	0.83
2019	National	09/20	0.89

### **NO<sub>2</sub> Fall-off with Distance from the Road**

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO<sub>2</sub> monitoring locations within SMBC required distance correction during 2021.

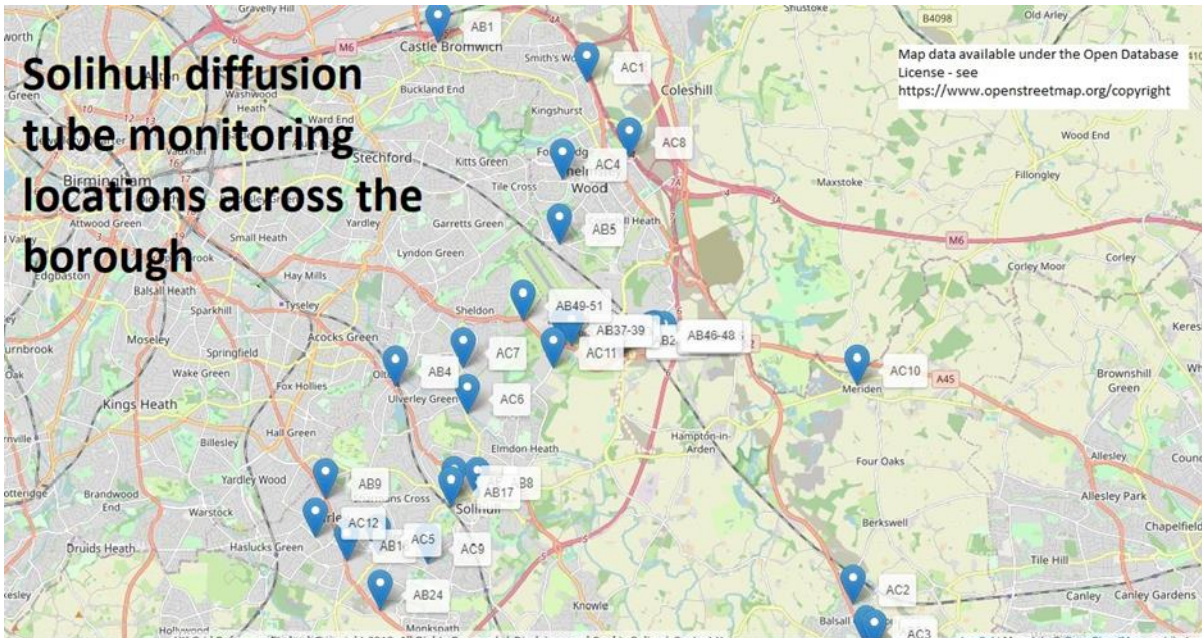
The triplicate sets of diffusion tubes are in place to review and monitor air quality associated with the stretch of the A45 referenced earlier. The majority of sites have receptors further away than 20 metres and therefore should not be distance correct, however, it is worth noting that none of these tubes showed concentrations greater than 40µg/m<sup>3</sup>

### **NO<sub>2</sub> Fall-off with Distance from the Road**

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table B.1.

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

Figure D.1 – Map of Non-Automatic Monitoring Site



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

Table E.1 – Air Quality Objectives in England<sup>7</sup>

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

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

## Glossary of Terms

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

## References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.