2024 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

Date: June 2024

Information	Solihull MBC Details
Local Authority Officer	A Clover
Department	Economy and Infrastructure
Address	Council House, Manor Square, Solihull
Telephone	0121 704 8000
E-mail	planning@solihull.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in Solihull (SMBC)

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year[1].

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution[2].

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO_2)	Sulphur dioxide (SO_2) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM_{10} refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres.

[1] UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

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

Clean air is vital for people's health and the environment and essential for making Solihull a welcoming place to live and work. A prosperous borough and sustainable economy relies on a cleaner, healthier environment that benefits residents and businesses.

We pride ourselves on being a Council that is small enough to care, but big enough to make a difference. We work closely with our public sector partners, businesses, the voluntary sector and communities to improve the lives of the people we serve. Our residents are at the heart of everything we do and we always put them first.

For a number of years now SMBC's on-going monitoring programme has demonstrated that residential exposures comply with national Air Quality Objectives. This means that DEFRA do not require us to declare an Air Quality Management Area (AQMA). However, we have still been busy with air quality initiatives and projects across the borough.

Main pollutants of concern

The main pollutants that we have focussed on historically have been those related to road traffic, hence previous ASRs have reviewed Nitrogen Dioxide (NO_2) with additional discussions on particulate. Our focus now includes looking at $PM_{2.5}$ levels within the borough, given the associated impact on public health.

Solihull's Clean Air Strategy 2019 - 2024 demonstrates our commitment to improve air quality. The council are currently working on a new Air Quality Strategy (2024 – 2028) that will steer us through the next 5 years and on towards new targets and ambitions. Communication is a key aspect of the new strategy, and we need to ensure the council takes our residents and businesses along with us on this journey.

Hotspot locations and areas of concern

A key geographical area of concern in Solihull relates to footpaths running alongside sections of the A45, Coventry Road (East / West between Junction 6 of the M42 and the Clock Interchange Island). Both sides of the carriageway were originally forecast in Defra's Pollution Climate Mapping (PCM) model to have exceedances of annual average limits for Nitrogen Dioxide (NO_2) set out in the Ambient Air Quality Directive.

A package of behaviour change measures including workplace travel plans, use of cycling and walking networks, car sharing schemes, changes to signing and fleet efficiency advice were agreed with government ministers, however, further assessment and prediction showed mitigation in the 'shortest possible time' required closure of the affected section of

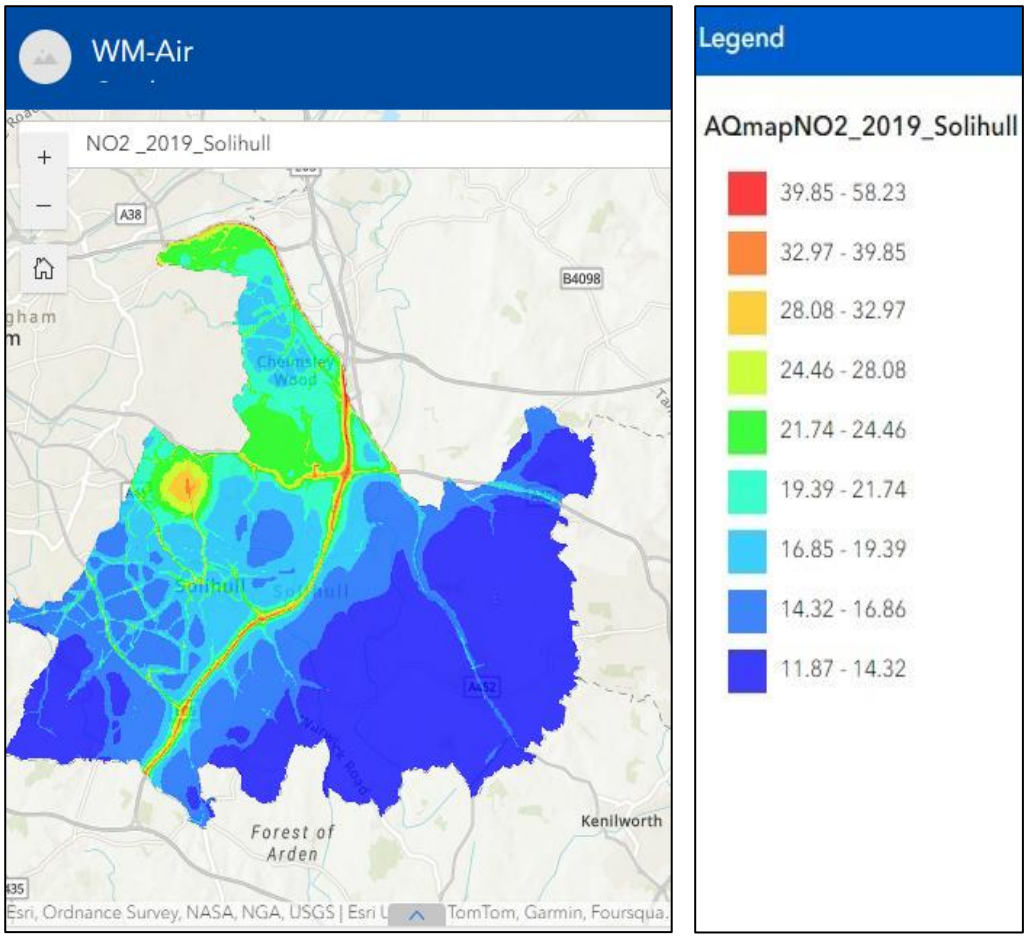
footway (east bound /northerly path), adjacent to the A45. This closure was required and completed as part of a works on the wider M42 Junction 6 Improvement Scheme and now footpath users have an alternative more direct access to destinations, which takes them away from the areas of exposure.

Photograph showing footpath closed (right) and new entryway / path (left)

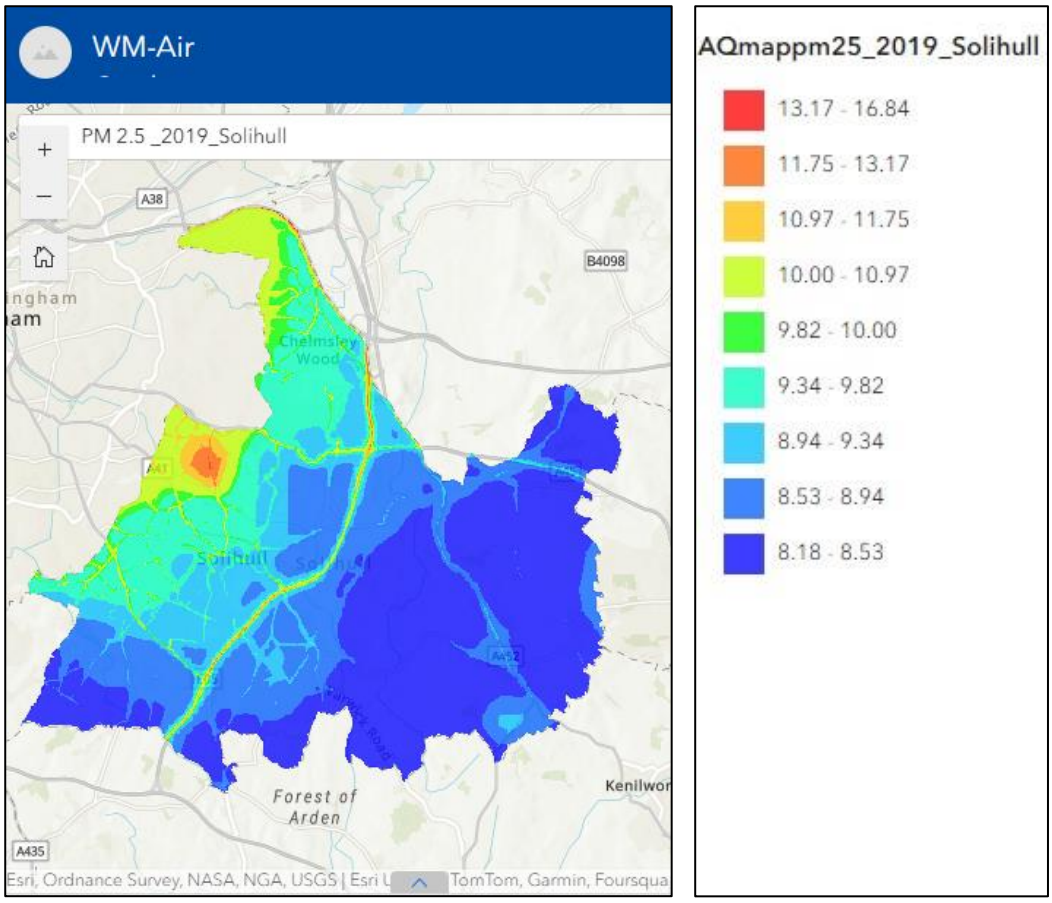
SMBC have continued with the behavioural change programme that was identified as part of the first Ministerial Direction. The programme of measures is planned up to and beyond the 'natural compliance' date of 2025. The programme has successfully targeted a number of businesses near the A45 and is maintaining close dialogue with participants.

While the aim of the behaviour change project was initially to target businesses near the A45 (including those with high or major employment activity) the Sustainable Travel Team have not limited their reach or scope and continue to engage with all interested commercial partners. This means that the benefits of the project will last well beyond the timeframes envisaged by the original Ministerial directions. Furthermore, air quality officers, specialists in public health and members of the Sustainable Travel Team at the council are currently engaging with the West Midlands Combined Authority (WMCA) to develop further behaviour change initiatives in Solihull. Such overlap in expertise will help considerably in prioritising work across SMBC while delivering much needed economies of scale and experience.

As detailed later, Solihull Council has been working with research fellows at the University of Birmingham, WM-Air - the West Midlands Air Quality Improvement Programme, to progress high resolution Atmospheric Dispersion Model System (ADMS) models of the borough. Modelling outputs continue to show an area of elevated concentrations of NO_2 and $PM_{2.5}$ in a 'hotspot' location that we have been aware of for some time.



WM-Air Model output: NO_2 (2019 baseline).



WM-Air Model output:$PM_{2.5}$ (2019 baseline).

Following its initial discovery and while awaiting confirmation of its prevalence (in later model runs) the council deployed dedicated passive monitors to gather on-site NO_2 data in the hotspot location. Results were reviewed monthly, to see if modelled NO_2 levels matched monitoring results and now we have over 12 months of data that indicates measured NO_2 levels are well below corresponding predictions.

Alongside NO_2 review, officers are currently liaising with the WM-Air team and WMCA to investigate $PM_{2.5}$ levels at this hotspot location and the council has also reached out to Defra (and potentially Environment Agency) representatives to discuss and query related data inputs.

Local large transport schemes and initiatives

There are some major works that may impact on current or future air quality in the Borough. Works around HS2 are ongoing and M42 Junction 6 Improvements are on course to change how users navigate local motorway and trunk roads. Both the HS2 route and the M42 DCO scheme fall within 1km of our Ministerial Direction area.

Development Consent Order (DCO) Junction 6, M42

Since 2021, National Highways have been working on a £282 million improvement project at junction 6 of the M42. The project is designed to increase capacity and reduce congestion, improve access to Birmingham Airport and other key businesses and improve access for cyclists and walkers. The improvements will also support economic growth in the area where investment has been constrained by poor journey times and traffic congestion.

Works include a new 2.4km dual carriageway link road; a new junction on the M42 motorway, Junction 5A; a new pedestrian footbridge over the A45; bridge replacement and realignment of the existing local road network. Click here to see an overview of the Junction 6 improvement scheme layout.

The remaining works are expected to be completed in 2024 / 2025 and updates will be provided in Solihull's next ASR submission. Full details can be found on the National Highways web site. Click on this link M42 Junction 6 improvements to view latest updates.

A45/Damson Parkway

Approximately 1.5km to the west of the M42 DCO scheme there are planned A45 / Damson Parkway junction improvement works. The junction is one of the busiest in

Solihull, serving not only Birmingham Airport, but also a major car manufacturer in the area, hence relevant to two large employers, one being a major transport hub. The new junction arrangement includes 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. This project is currently at the Final Business Case (FBC) stage.

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.

Whilst 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 the Borough from now until the new line opens which is expected to be between 2029 and 2032.

A set of environmental controls (Environmental minimum requirements (EMRs)) were adopted by all HS2 contractors and haulage route users, as approved by the Secretary of State for Transport. Full details can be found here: HS2 EMRs

HS2 have committed to using Euro VI classification vehicles for their construction work, Euro VI being the current and most recent vehicle emissions 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 also placed stipulations on other vehicles, cars and vans.

Solihull MBC has assessed lorry and haul route proposals for HS2 on a case-by-case basis. Where the council have felt detrimental effects needed to be further mitigated,

matters have been raised with HS2 and in some cases gone on to the Secretary of State for ruling.

Trends in air pollution in Solihull

As Covid restrictions lifted at the beginning of 2022, traffic began to return to more normal patterns across the borough, although some home working (and hence a reduction to commuter journeys) has continued.

By reviewing the latest 2023 NO_2 data from Solihull's annual diffusion tube monitoring programme we can see what impact local and wider traffic patterns are now having on pollutant concentrations in the area (more detail is given later in this report).

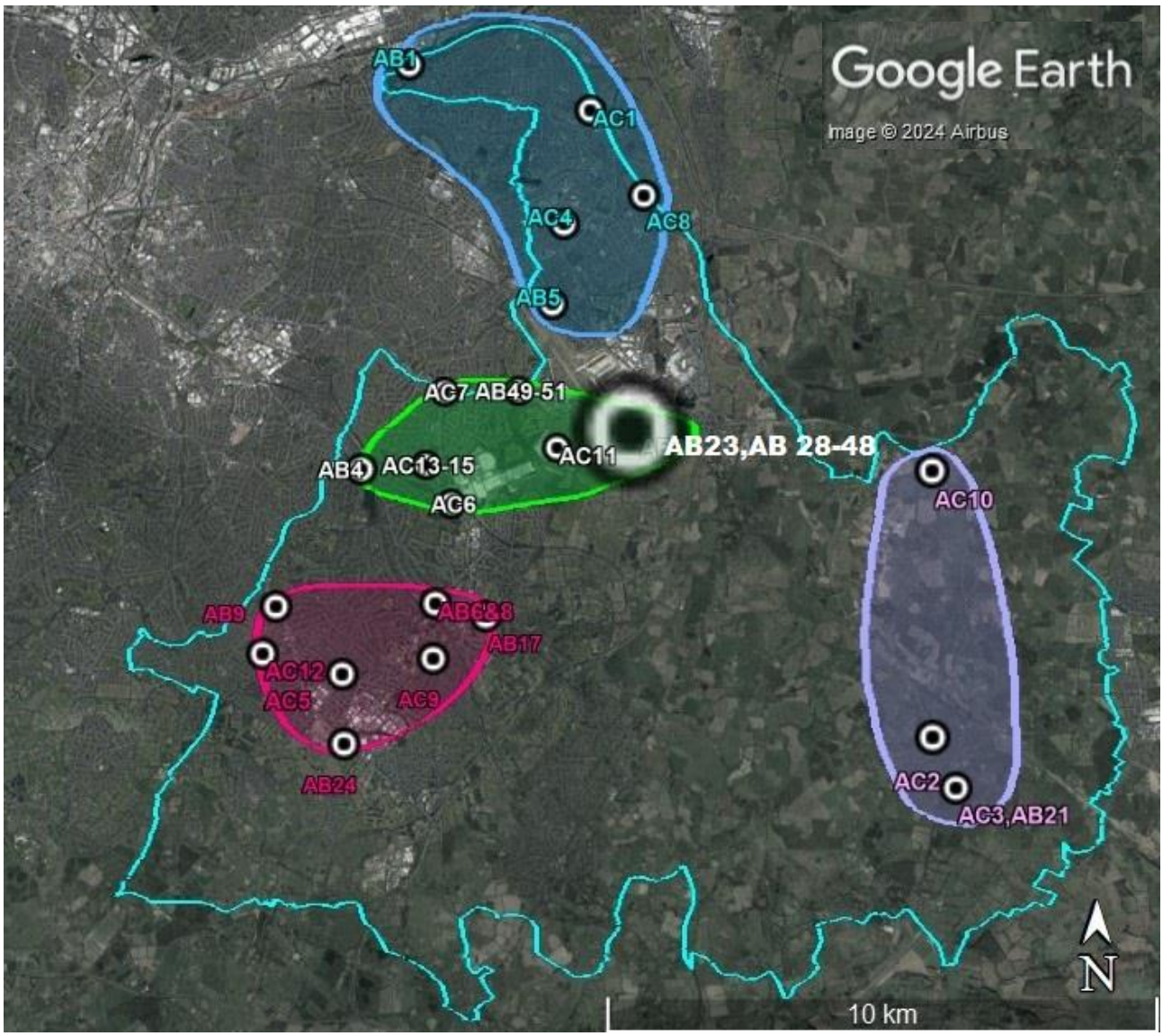
In nearly all cases, 2023 results show lower pollutant concentrations than corresponding levels recorded for 2022. Some sites are reporting 2023 levels that are comparable with the 2020 Covid year, which included periods of lockdown, limited travel, and hence significantly lowered traffic related pollutant concentration levels.

We are aware that our ASR includes the reporting of data from a number of diffusion tubes, which can be confusing, and we have found it easier to analyse and discuss diffusion tube results by gathering similar tube locations (or the types of emissions they are monitoring) together in discreet areas. We hope this helps everyone understand how the council are interpreting our 2023 data.

We have segregated tubes into distinct north, central, east and west areas. These designated areas are defined by the blue, green, lilac and pink polygons respectively shown below but more information on these areas and pollutant levels are given in Appendix A. Monitoring Results of this report. Each area hosts the following tubes:

- Area 1 Blue (to the north) tubes AB1,5 and AC1,4,8
- Area 2 Green (central) tubes AB4,23,28-51, AC6,7,11,13-15
- Area 3 Pink (to the east) tubes AB6,8,9,17,24 and AC5,9,12
- Area 4 Lilac (to the east) tubes AB21 and AC,2,3 and 10

For the north, east and west areas, all pollutant concentrations are lower than both 2021 and 2022 recorded levels. This is a very encouraging trend if we consider it describes pollutant concentration levels for a large proportion of Solihull's population.



Solihull Council Map of Nitrogen Dioxide (NO_2) diffusion tube locations and areas

For monitoring locations in the central green area (Area 2), data shows less consistent reductions in NO_2 levels. Tubes are located at sites that front directly on to the A45, Coventry Road. Some of these sites may have been affected by significant traffic management and lane closures resulting in traffic congestion and queuing during the M42 improvement works or ongoing HS2 construction works.

Whilst this means that results should be treated with caution, 2023 data continues to replicate previous ASR findings, with the highest concentrations of NO_2 being recorded at a set of triplicate tubes located back of pavement on the section of the A45 carriageway implicated in our Ministerial Direction (tubes AB46-48), see Diffusion tube Annual Mean NO_2 Monitoring Results. This triplicate site is compliant with NO_2 objective levels, for the 2023 data year, and there are no receptors near this monitoring location. The adjacent footpath no longer continues eastward towards the M42 (now turning into a carpark

complex away from the roadway) and this area of footpath / road is due to be removed permanently by the National Highways' M42 Junction 6 improvement scheme. However, SMBC shall continue to monitor and scrutinise this location and its results and to appraise technical leads at DEFRA / JAQU.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan[3] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter ($PM_{2.5}$), the pollutant most harmful to human health. The Air Quality Strategy[4] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[5] details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel, and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Alongside improving our own understanding of both regional and local fine particulate matter ($PM_{2.5}$) levels, Solihull Council have responsibilities placed on us by government to meet the new national interim and long-term targets for $PM_{2.5}$.

Solihull's new Air Quality Strategy

Solihull produced its first Clean Air Strategy in 2019 and at the same time formulated a steering group to guide objectives and oversee delivery on actions. We are progressing steadily and are now working hard on refreshing the Strategy so that it is up-to-date and fit

[3] Defra. Environmental Improvement Plan 2023, January 2023

[4] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

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

for purpose in 2024. This has been one of our core actions for 2023 and the work sits alongside other related documents and initiatives.

The new Air Quality Strategy, 2024 – 2028, will see a significant step up in the council's commitments to securing improvements to both monitoring, as well as interpreting and informing its residents and businesses on both internal and external air quality issues.

The new document went out to consultation in February 2024 and is currently being finalised. Alongside the Strategy, SMBC have produced a report reviewing and summarising the various consultation comments we received, and we are also finalising an Action Plan (that will run alongside the Strategic objectives, describing in more detail how we shall achieve our identified targets).

The original Air Quality Steering Group which, back in 2019, consisted of officers from Public Health, Highways, Communications, Monitoring and Compliance, Planning, Procurement and Sustainability along with elected members and our UK Central colleagues, has now been expanded to include representatives from the UK Health Security Agency (UKHSA), WMCA and the University of Birmingham's West Midlands Air Quality Improvement Programme 'WMAir'. We are also in the process of opening up its circulation to guest members such as Birmingham International Airport.

Solihull Council works closely with colleagues in the WMCA, who regularly host meetings and workshops to facilitate discussion and to gather feedback from its seven constituent councils. WMCA also partner with research fellows at the University of Birmingham's WMAir team to deliver seminars, technical updates and discussions around new areas of research and development. Local authorities have also welcomed special interest groups such as 'Asthma UK' and 'Mums for Lungs' who are invited to regional events and given a platform to address delegates.

Towards the end of 2023 the WMCA established a dedicated forum (The Air Quality Framework Delivery Group) for local authorities and other regional partners to allow close collaboration between the WMCA and its constituent local authorities alongside Transport for West Midlands (TfWM) and other relevant and key partners, with a focus on public health, behaviour change, environment, research and innovation.

In addition to attending these larger groups, Solihull officers regularly meet with neighbouring authorities and representatives at

- West Midlands Environmental Protection Group (WMEPG)
- Midland Joint Advisory Council (MJAC)

Development Control

Solihull Council receives hundreds of planning applications a year. Where significant development is proposed or has the potential to present significant air quality issues, the council's internal consultation processes ensure planning case officers receive specialist advice and guidance where it is needed. In some instances, officers may require a detailed air quality assessment be undertaken, in others, transport or travel planning matters may need to be addressed. Decisions must also meet the council's wider planning policy requirements, that constrain and control inappropriate development, for example by restricting development in the Green Belt.

Solihull manages its growth, in a sustainable way, through the application of its Local Plan, and alongside key transport and infrastructure strategies, where regional considerations and policy requirements are laid out.

Solihull Council is in the process of adopting an up-to-date Local Plan, which is currently being examined by Inspectors appointed by the Secretary of State.

Transport Strategies and Solihull Connected

Like many towns and cities across the country, road transport represents a significant source of air pollution in Solihull, and hence a challenge in terms of reducing traffic related congestion and pollution. Whilst we are already one of the best-connected destinations in Europe, we are perfectly positioned to benefit from significant new investment in our transport network, bringing with it benefits to our economy, environment and health.

Solihull Council has embarked on a strategy of 'managed growth' through the promotion of 'UK Central' bringing together all of the economic assets of the borough including regional business parks, town centres, industry, the Airport, future HS2 and the NEC. The council is determined to make this vision of 'managed growth' a reality.

Solihull is making the case for investment and demonstrating how we will manage growth in a sustainable way, working alongside the WMCA. We need to have a clear transport strategy for the arrival of HS2 and future development opportunities.

As the first station north of London, HS2 will highlight the need for more investment in Solihull's local transport network. The Council is keen to capitalise on this prominence to secure improvements across the borough. The ambition behind Solihull Connected is to plan for balanced investment in transport infrastructure that still caters for cars, while emphasising alternatives.

At the start of 2023 Solihull's Transport Strategy was updated to reflect more recent shifts in travel patterns and behaviours and to ensure it remains responsive to the needs of the borough, now and into the future. The strategy is accompanied by a detailed Delivery Plan which sets out our key investment priority areas including enabling the HS2 Growth Strategy and Local Plan Review, connecting UKC growth centres, supporting access to business parks and housing sites, promoting a transformation in public transport, cycling improvements, increasing road network reliability and resilience and creating innovative local community transport initiatives.

Cycling and Walking Strategy

The need to develop a Cycling and Walking Strategy, and an associated Local Cycling and Walking Infrastructure Plan (LCWIP), was initially established as part of the Council's transport strategy, Solihull Connected. Following extensive consultation with residents and businesses Solihull published its Cycling and Walking Strategy in March 2021. The Cycling and Walking Strategy summary and all the related documents are available in one place on our dedicated Your Future Solihull webpages.

The Cycling and Walking Strategy presents the Council's overall approach to active travel in the borough. The strategy will set out our vision for how we will deliver cycling and walking infrastructure, how we will improve the capability and confidence of our residents to cycle and walk more often and how we will ensure new developments cater for cycling and walking.

The Cycling and Walking Strategy is a key step in our approach to accommodate growth in travel demand on our network while maintaining Solihull's special character.

Key aims of the Cycling and Walking Strategy are to:

- set the overall vision for cycling and walking in Solihull
- set a clear standard for cycling and walking infrastructure
- ensure major developments consider active travel - more sustainable approach to transport
- embed cycling and walking initiatives into local policy

Alongside the comprehensive new strategy, a Local Cycling and Walking Infrastructure Plan (LCWIP) has also been developed. This is a detailed document that provides a strategic approach to identify a long-term Cycling Network Plan and a number of core walking zones (CWZs) within major district centres and employment zones. The LCWIP has identified key corridors within the local network which will form the basis of a long-term

Cycling Network Plan for the Borough. The CWZs have been identified to improve the pedestrian environment in areas with current or potential high footfall.

In the previous ASR we advised that two temporary segregated cycle lanes, connecting Solihull Town Centre with Knowle and Shirley, had been created through use of Active Travel Funding (ATF), with further funding allocated via the City Region Sustainable Transport Settlement (CRSTS). We can also report on the Blythe Valley Cycle Route, a new shared use cycle and walking route to connect the large residential area of Monkspath to the Blythe Valley Business Park. The new connection also provides access to employees at the business park to retail centres near the Stratford Road / M42 junction 4. Following their successful rollout, 2023 saw all three cycle lanes ratified and made permanent.

Following our Highways Team securing c£1m of funding from Active Travel England and the Department for Transport (DfT), 2023 also saw improvements to several walking routes across the borough, that link and enhance routes between residential areas and schools and colleges. These include widening of footways, new crossing facilities and removing barriers to walking and cycling.

Switching to Electric Vehicles (EVs)

In our 2023 ASR we advised on 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.

The council are progressing this action as a priority, securing contracts and moving towards the first phase and the installation of charging spaces.

The Council has updated it’s EV energy demand forecast out to 2035 in light of the Zero Emission Vehicle mandate, which came into force in January 2024, and increased usage year on year of the Council’s public charging infrastructure.

Solihull remains committed to becoming a Net Zero Council and will require all vehicles operated for the purpose of delivering Council services to be capable of operating with zero tailpipe emissions by 2030.

An increasing proportion of the fleet operated by contract partners is also shifting to zero tailpipe emission operations, including environmental services, community social care and parking enforcement vehicles.

In 2022 we carried out an event focussing on encouraging taxi drivers to convert to zero emission vehicles. We are taking a refreshed focus on this for 2024 and will soon be consulting with the taxi and private hire vehicle trade, in regard to changes to taxi licensing rules and future emission standards.

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. This remains our main priority. No exceedances of the air quality objectives were recorded in 2023. In our 2023 ASR (detailing 2022 data) we did advise issues with elevated levels of NO_2 at a triplicate site along the A45. However, we have reviewed historical information and note an error in one of our 2022 data tables. We can confirm that Solihull has not had any exceedances of NO_2 concentrations from January 2020 and the majority of our monitoring sites have been recording levels below half that value (of 20 µg/m^3).

SMBC are pleased to note that levels have shown an overall downward trend across the borough. We note that a small number of sites along the A45's eastbound carriageway footpath have shown some very minor increases in concentrations in the last year. As mentioned previously, locations (in Area 3 – Green) are along a section of carriageway previously defined by Ministerial Direction.

The following are important conclusions that inform future monitoring, especially for areas associated with our Ministerial Direction.

The current monitoring of locations will be continued throughout 2024 to provide trend data analysis.

A45 sites shall be subject to ongoing monthly trend review, as the council continue to report levels directly to Defra (through additional monitoring and evaluation commitments with the Joint Air Quality Unit, JAQU) as required, to ensure we are fully transparent with our findings.

In addition, diffusion tube results shall be reviewed on an annual basis to ensure we are deploying passive monitoring where it is most effective and needed.

SMBC have also set a number of fixed priorities to improve our $PM_{2.5}$ monitoring and reporting capabilities and we have welcomed close partnership working with the WMCA who have secured funding to help us progress these aims. Through a Department for Environment, Food and Rural Affairs (Defra) air quality grant, the WMCA is installing a new

low-cost $PM_{2.5}$ sensor network right across the West Midlands region. Development and installation of the region wide sensor network will focus on the monitoring of $PM_{2.5}$ concentrations for a minimum period of five years. The network will aid in providing greater spatial resolution on air pollutant concentrations across the region, helping WMCA and local authorities to gain a greater understanding of air quality within the region, at the same time providing the public with easily accessible information on concentrations through a public facing data platform. The data platform will be hosted on a WMCA website/webpage, which will provide wider air quality information to the public and regional partners, helping to raise awareness on how to reduce pollutant concentrations and personal exposure. The website will link to and support our own Solihull webpages, which we are also aiming to significantly improve in 2024.

Priority $PM_{2.5}$ monitoring is also planned at identified hotspots within the region, and together with the WMCA the council will be working hard to understand the extent and severity of any hotspots in our area.

We will also be working alongside the Authority to improve how we both communicate with the Public via mechanisms such as through our website and via a WMCA online air quality platform. The WMCA currently have this platform under construction, and it will provide information for people on air pollution across the West Midlands, as well as a portal to display the air quality data from the regional sensor network.

The sensor data will feed into a centralised dashboard for the public to see, and near real time air quality data will be available with other relevant air quality datasets for the region.

Solihull recognises that in 2021 the World Health Organization (WHO) revised its global air quality guidelines. The EU air quality standards are less strict for all pollutants than the WHO air quality guideline levels and WHO advised that in 2021 97% of the urban population was exposed to concentrations of fine particulate matter ($PM_{2.5}$) above the 2021 WHO annual guideline of 5 $\mu g/m^3$.

The Governments Environment Plan A Green Future: Our 25 Year Plan to Improve the Environment sets out the government goal of achieving cleaner air, and its Clean Air Strategy, published in 2019, outlined a comprehensive suite of actions required across all parts of Government to improve air quality and maximise public health benefits. As part of this, the Environment Act 2021 was established, and this required long-term targets to be set for fine particulate matter ($PM_{2.5}$). These have been set through the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 and are as follows:

- Annual Mean Concentration Target ('concentration target') – a target of 10 micrograms per cubic metre (µg/m^3) to be met across England by 2040.
- Population Exposure Reduction Target ('exposure reduction target') – a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

The government has also brought in a $PM_{2.5}$ interim target of 12 µg/m^3 by 2028.

There is a legal requirement for the targets to be achievable and also objectively measurable.

Solihull do not currently monitor $PM_{2.5}$, but as detailed above we shall soon have this capability, following the installation of a number of $PM_{2.5}$ low-cost sensors.

Priorities for 2023

Reviewing and updating our current Clean Air Strategy (2019-24) has been a key priority of the council and we know that both the Strategy and any associated Action Plan needs to provide an effective response to the new duties imposed on the Council including those introduced by the government's new $PM_{2.5}$ targets.

The review and refresh of the strategy has provided an opportunity to ensure alignment with key policies including:

The Solihull Council Plan – where we commit to deliver "Priority 6: Enhance our natural environment, improve air quality and reduce net carbon emissions".

Net Zero Action Plan (NTAP) - where we acknowledge the air pollution implications presented by buildings, transport, and energy supply.

Solihull's Electric Vehicle Strategy – where one of our key objectives is "Air Quality – reduce hazardous pollutants originating from road vehicles that have severe impacts on residents' health".

Improving our approach to air quality monitoring.

We are always reviewing ways to make improvements and rationalise our monitoring programme and plan to do a full review of our diffusion tube sites by December 2024 (in partnership with monitoring and evaluation colleagues at Defra / JAQU). Officer time has already been committed to working closely with WMCA partners, to roll-out the WMCA sensor network and behaviour change projects across the borough, to significantly improve our monitoring deployment capabilities and messaging on air quality.

Leading by example

Solihull's exciting future is to shift towards a low-carbon economy and our robust plans to reach net zero emissions by 2041 as a borough were recently recognised as amongst the best in the country.

'Your Future Solihull', the Council's climate change and sustainability campaign, recognises that we all need to adapt our lifestyles and behaviours to live more sustainably. Protecting and enhancing our natural environment remains a priority to support both the health and wellbeing of our residents and in our fight against climate change.

The council continue to provide leadership for air quality policy and action across Solihull, through our active travel and schools programme, whilst continuing to explore and work with other organisations and the public to encourage action on air quality. In addition, officers are due to embark on further Defra air quality grant funded projects in the next 12 months, to focus on further potential Behaviour Change initiatives within the borough. Projects sit both internally within the council and externally with the WMCA.

Raising awareness

We have committed to raising public awareness on the health impact of air pollution in our updated Air Quality Strategy (2024-2028) that is due to be published soon. We want to encourage the community to take actions to reduce their contributions to local air quality emissions and be able to protect the most vulnerable. We plan to undertake a review of our website in the coming months and in conjunction with the new $PM_{2.5}$ sensor network, will work towards integrating this with the WMCA centralised dashboard (for regional air quality information near real time air quality data).

Supporting schools and businesses

We currently undertake an ambitious programme of supporting both schools and businesses to develop and promote initiatives to reduce air pollution. This is planned to continue in the near future.

Managing emissions from developments and buildings

We ensure proposals for new developments include air quality screening to identify potential impacts on air quality where required. This is an ongoing process and forms an integral part of our development control responsibilities. We are also in the process of finalising documents that will help the council achieve policy objectives, via the preparation of

Supplementary Planning Documents (SPDs) e.g., our planned Health SPD should be published within the next 12 months.

Cleaner road, rail and air transport.

The Council's transport strategy, Solihull Connected, and related documents such as our Cycling and Walking Strategy sets out a programme of investment and improvement that shall be ongoing for the next 12 months.

Local Engagement and How to get Involved

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.

The webpages currently host a large array of information, under the following subject headings:

The pages detail events, community activities and how to get involved, we even have podcasts to listen to.

Members of the public can view public consultations on the SMBC web site which allows notifications of future engagements: https://yourvoicesolihull.uk.engagementhq.com/

Our Climate change and sustainability news archive shows an extensive array of initiatives that Solihull has been involved with over the last three years.

A couple of 2023 examples, are given below:

- “Solihull MBC hold an annual Solihull Greener Schools award ceremony where local schools are recognised for their commitment to sustainable and greener practices. The award challenges pupils to learn about the local and global environment and strive to make the school eco-friendly.”
- “Solihull Council’s electric cargo bike recently showed its versatility by doing the heavy lifting in a community litter pick event in North Solihull. With a carrying capacity of 900 litres or 100kg of weight, the e-cargo bike proved to be a useful and eco-friendly addition for enthusiastic litter pickers in Chelmsley Wood.”

People who live and work in Solihull can help to improve air quality by making sustainable transport decisions and by making other choices that either reduce or remove harmful emissions or exposures. Walking, cycling and using public transport are often the first things that come to mind, and car sharing at www.liftshare.com is also an option to consider when fuel prices are on the rise. However, making clean energy choices and minimising our own emissions is also important, for example recycling our green waste and not burning garden waste or bonfires.

The WMCA provides regional information on their Air Quality webpages and people who are interested in staying up-to-date with information from the WMCA environment team can register for updates. Their Air Quality Framework Document gives detailed information on the legislation, regional policy and delivery plans.

In addition, the WMCA has recently developed an Air Quality Literacy Training programme for Local Authority officers and elected members to gain a better understanding of what air quality is, specifically within the West Midlands, enabling them to consider air quality in their work, helping in the move towards improved air quality and public health. This was launched to coincide with Clean Air Day on June 20th, 2024.

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

- DEFRAs UK-AIR: Air information Resource
  https://uk-air.defra.gov.uk
- Environmental Protection UK Air Pollution website

  New community: IES & EPUK focus on implementation | www.the-ies.org

Local Responsibilities and Commitment

This ASR was prepared by teams in the Economy and Infrastructure Directorate alongside Public Health colleagues at Solihull Metropolitan Borough Council with the support and agreement of the following departments and teams:

CLAUDE

Climate Change and Sustainability

Public Health

Planning Design and Engagement

Sustainable Travel & Highway Management

Solihull Active Team

Transport & Infrastructure Commissioning

UK Central (ULEV, Programme Development and other specialist teams)

This ASR has been approved by:

Councillor Andy Mackiewicz **Lead for Air Quality**	
Ruth Tennant **Director of Public Health**	

This ASR has been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to Amanda Clover at:

ECONOMY & INFRASTRUCTURE DIRECTORATE
Solihull Metropolitan Borough Council
Development Management
Council House, Manor Square
Solihull B91 3QB

Telephone: 0121 704 8008

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1 Local Air Quality Management

This report provides an overview of air quality in Solihull Metropolitan Borough Council (Solihull MBC) during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. 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

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

Solihull MBC currently does not have any declared AQMAs. A local Air Quality Strategy, Solihull Clean Air Strategy 2019 – 2024 is in place to prevent and reduce polluting activities. The strategy is currently being updated.

2.2 Progress and Impact of Measures to address Air Quality in Solihull MBC

Defra's appraisal of last year's ASR concluded that overall, the report was detailed, concise and satisfies the criteria of relevant reporting standards as well as providing necessary information. The format and detailed description of measures being taken forward by the council to tackle air quality were welcomed and encouraged for future reporting. This has therefore been replicated in this report. Defra welcomed a good $PM_{2.5}$ section which included PHOF D01 indicators, and additional studies relating to $PM_{2.5}$ across the borough. Previous comments about mapping issues affecting the readability of maps and diagrams have also been addressed in this report.

Actions to improve air quality

Updates on air quality actions are provided below. Please be advised information is provided on the 2023 period alongside measures to be completed over the course of the next reporting year as we do not want to duplicate or replicate actions.

Solihull MBC has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.. 18 measures are included within Table 2., with the type of measure and the progress Solihull have made during the reporting year of 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2..

Action 1 – Low-cost sensor array

One of Solihull's key ambitions (and an action noted by Defra feedback in 2022/23 as an important pro-active ambition) is to develop a $PM_{2.5}$ monitoring programme in Solihull.

Solihull have worked closely with the WMCA who have secured funding through a Department for Environment, Food and Rural Affairs (Defra) air quality grant, to enable them to install a new low-cost $PM_{2.5}$ sensor network right across the West Midlands region. Development and installation of the region wide sensor network will focus on the monitoring of $PM_{2.5}$ concentrations for a minimum period of five years.

Contractors have now been appointed to supply the sensors, and approximately 12 will be rolled out to each constituent local authority in the West Midlands, alongside three 'floating' sensors.

Installation is underway and Solihull has worked closely with lead officers at the combined authority to ensure sensor deployment delivers the necessary criteria for both Solihull and the WMCA.

Action 2 – Hotspot investigation

Solihull routinely undertakes review of its diffusion tube network. We have an ongoing duty to ensure that our passive monitoring network captures high risk pollution areas.

High resolution Atmospheric Dispersion Model System (ADMS) models of both Solihull and the wider West Midlands area have been produced by the University of Birmingham's WMAir programme to aid WMCA constituent councils in their understanding of both local and regional $PM_{2.5}$ levels. Modelling predictions have already informed the low-cost sensor deployment strategy, however for Solihull, the modelling describes a hotspot within our boundary. The latest models have now verified this hotspot (2019 baseline data, made available 2024) and so the council need to properly investigate and quantify this hotspot for all pollutants of concern.

We expanded our passive diffusion tube network at the end of 2022 (for the 2023 data set) to investigate the hotspot for NO_2 (data suggests this hotspot is not reflected in real world conditions). As such part of this action has been delivered, however there are a number of additional steps that we need to take, which shall form the remaining part of this action:

- Undertake $PM_{2.5}$ investigations to verify predictions i.e., secure strategic deployment of $PM_{2.5}$ monitors in the area.

Some of this action has already been captured by rollout of the low-cost sensor network which is targeting this area. However, the council are currently working with WMCA and the WMAir team for a summer 2024 deployment of additional monitoring capability.

- Liaise with Defra on PRTR / NAEI returns to ascertain and if necessary amend data inputs for the related grid square.

This is currently underway, and we hope to give a full update on this in our 2025 ASR.

Action 3 - Improving our communication

How we communicate air quality issues with our residents and businesses is crucial in securing a better understanding for individuals of how exposure can impact on our health and wellbeing. Without this understanding we cannot expect to secure long lasting

behaviour changes or progress a move towards low emissions, sustainable living and working environments. Our communications will be placing an emphasis on impacts and resulting health effects, so we will be providing useful resources that discuss risks from wood and solid fuel burning alongside how small changes, such as switching off engines and anti-idling can help reduce emissions.

Alongside our own website improvements, we shall be liaising closely with the WMCA to ensure that any cross referencing and links we share are consistent and give complimentary messaging.

We will be overhauling our air quality webpages in 2024 alongside the WMCA's website and data platform development.

Solihull Council's Air Quality Strategy and Action Plan

Solihull Council's new Air Quality Strategy and associated Action Plan recognises the three priority actions detailed above as important, if not essential, elements to our progress on improving air quality understanding, assessment and intervention. Here are the relevant actions as will be identified in our new 2024-2028 Air Quality Strategy and Action Plan*:

Improving our approach to monitoring air quality.

- Improving our capabilities for monitoring air quality across the borough (in particular PM2.5).
- Improving public access to the latest, regular air quality monitoring information.
- Ensuring a focus on risk areas and increased exposure potential.
- Working with partners to secure monitoring at sensitive receptors like schools, care homes and hospitals.
- Utilising results from modelling and prediction tools to help better understand pollution levels across the borough .
- Improving the focus on indoor air quality issues and their health effects.
- Exploring the installation of Air Quality monitoring equipment on lighting columns and street furniture.

Raising awareness, providing quality information and guidance to members of the public.

- Developing and launching a new Air Quality Web page.
- Focusing on raising awareness of the impact of wood burners and other indoor sources of air pollution.
- Working in partnership with the health and care sector to improve communication to the most vulnerable residents.

Excerpts from proposed 2024-2028 Air Quality Strategy and Action Plan
**based on draft wording which may change slightly prior to publication*

WMCA and Solihull Indoor Air Quality Behaviour Change project.

One of the projects covered by Defra funding to the WMCA includes the delivery of behaviour change projects across the region, to be delivered by WSP and focussing on $PM_{2.5}$. The trial focus for Solihull will be around indoor air quality information, messaging

and securing better indoor air quality behaviours. As with the other seven trials and neighbouring constituent authorities, trials are planned for scaling up across the region and/or replication in other Local Authorities, either by Local Authority (LA) officers or other regional partners.

Solihull's Behaviour Change trials are currently in development and delivery plans are set to be finalised in summer 2024.

Consultants commissioned to carry out this work package are also creating an 'impact tool'. This tool will utilise multiple datasets including demographic and pollutant concentration data to help determine the impact of the behaviour change trials. The tool will also be developed so it can analyse future behaviour change projects delivered.

Indoor air quality research project

Working in partnership with Birmingham University, the aim of the project is to understand and evidence the impacts arising from retro fit programmes (in particular the improvements on indoor environment, comfort and health), by placing indoor sensors into approximately 60 properties to measure the air quality, humidity, and temperature before and after undertaking retro fitting in a range of properties.

Solihull Local Plan

The examination of Solihull's Local Plan was paused in 2023 due to delays in the publication of the National Planning Policy Framework (NPPF). The updated version of the NPPF was published on 19 December 2023. The examination of Solihull's Local Plan remains paused. The council remains committed to having an adopted plan in place as soon as possible.

The new Local Plan will have environmental considerations at its heart, as it sets out a vision for future sustainable development across the borough. The Plan will ensure that issues such as air quality, sustainable growth and travel, the protection and enhancement of the environment as well as impacts to local and neighbourhood amenity, are considered, as part of any decision-making process. Progress on the Local Plan review can be found here Solihull Local Plan Review. A dedicated examination page on the Council's website has been created, and this will be maintained throughout the examination process: Solihull Local Plan - Examination in Public.

Town Centre Heat Network

Solihull Town Centre Low Carbon Energy Network project has been given the go-ahead following approval of the business case by Cabinet in October 2023. 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 Energy Network, including the construction of a new Energy Centre at Tudor Grange Park will provide low carbon heat and power (electricity) to a range of public and private sector customers within Solihull town centre, including Council owned buildings, education campuses and commercial offices.

An Energy Services Company (ESCo) known as Solihull Energy Limited has been established and is finalising a contract with a selected provider to Design, Build, Operate and Maintain (DBOM) the energy centre and network for the next 15 years. The ESCo will be responsible for managing individual contracts and customer agreements associated with the Town Centre Energy Network.

Installation of new EV charging points

The council have entered into a contract with a Charge Point Operator to install and operate a network of up to 500 electric vehicle charging spaces across public car parks and other strategic locations by March 2026.

The first phase of installations will see over 150 charging spaces commissioned in 2024 supported by c.£800k grant funding obtained through the West Midlands LEVI Pilot Project and with remaining capital costs privately financed.

In addition, the council are exploring options with the Charge Point Operator to co-locate air quality monitoring equipment within, or sharing a power supply with, the EV charging equipment which could allow a significant expansion of AQ data collection without the expense of dedicated enclosures and power supplies.

2023 also saw the opening of Europe's largest EV charging hub at the NEC featuring 32 high powered chargers under a solar PV canopy, 150 pre-bookable standard AC chargers and associated café and toilet facilities.

Increase in council EV fleet

The council's Net Zero commitments require all vehicles used for delivering Council services to operate with zero tailpipe emissions by 2030.

Current arrangements for operation and overnight storage of the Council's own fleet make full fleet electrification particularly challenging until a new central depot location is developed.

In the interim the council are replacing vehicles with battery electric alternatives as contracts are refreshed and we build out the workplace and depot charging infrastructure to support the fleet decarbonisation transition. Eight care homes have had EV chargers fitted in 2023.

An increasing proportion of the fleet operated by contract partners is also shifting to zero tailpipe emission operations, including environmental services, community social care and parking enforcement vehicles.

A45 Behaviour Change Project

The sustainable travel business support team are delivering a three-year behaviour change project to August 2025 funded by DEFRA. The project targets businesses in close proximity to the A45, with the aim of encouraging and incentivising sustainable transport and improving air quality in the area.

Businesses are supported to carry out staff travel surveys and develop a travel plan and can access grants to improve cycling facilities and install EV charging points. SMBC officers can deliver events and activities to support travel plan actions and commuters are incentivised to make fewer single occupancy car journeys with access to:

- Free public transport passes
- e-Bike loans
- Love To Ride Solihull challenges
- Free cycle training and cycle maintenance
- Walking incentives and walk leader training

In addition, new Supplementary Planning Documents (SPDs) have been developed to provide guidance to developers of residential, commercial and educational sites in Solihull. As well as guidance, the adoption of the SPDs requires developers not only to produce a travel plan, but to pay a monitoring fee and performance bond to ensure that travel plan

actions are successfully delivered, and users of the new sites are encouraged to travel by more sustainable modes.

Home working

The Council's transition to Smarter Ways of Working continues to present the council and its workforce with the opportunity to re-think how and where we work. With the option to access portable technology, dependent upon the requirements of the role, a lot of our people are not bound to a single workplace or traditional ways of working, with many choosing to continue to spend a good proportion of their week working from home.

The council maintains its ambition to relieve the pressure on our transport infrastructure and reduce the carbon footprint of work overall. Smarter Working offers ways to do that and bring about a better work experience for people who live and work in our area.

School Streets

Many schools across the borough experience a number of traffic related issues at the beginning and end of each school day. Our School Streets project aims to address such issues by limiting traffic in the streets surrounding schools at key times, creating a predominantly car free zone.

We aim to create a safer, more pleasant environment for everyone around schools. The scheme promotes active travel to school by walking and cycling, which in turn, will help to reduce congestion and pollution in the area.

The benefits of the scheme include:

- an increase in walking and cycling and active lifestyles for pupils and parents/carers
- a reduction in traffic speed, congestion and pollution around the school gates which will aid children and parents when accessing school
- improvements in levels of childhood obesity
- provide a tool to allow the Council to proactively respond to parking related concerns raised by parents and residents

School Streets is currently running at 11 sites.

Engines off – Young lungs at work

'Engines off – Young lungs at work' is an anti-idling campaign that has had 24 schools taking part so far. We are now looking at extending this campaign to include other non-school areas that are affected by drivers leaving their engines running such as outside

hospital, doctors, shops, level crossings etc. (there is currently one non-educational site involved in the scheme).

School lessons, assemblies and walking to school initiatives

Solihull council officers regularly go into schools to support lessons and the school curriculum. We have delivered a number of clean air assemblies in primary schools and also Year 5 clean air lessons encouraging children to make changes that can improve air quality reaching over 4,000 children.

For Year 6 pupils, the council deliver our New Roads initiative to children as they transition to secondary schools and for many, become independent travellers for the first time. The initiative focuses on air quality and how the children's future travel choices can make a difference.

Walk to School weeks are now run in May and October. Our latest campaign in May 2024 had over 7,000 children and their families signed up.

The council have worked closely with a number of its schools and colleges to develop Green School Travel Plans and 16 schools currently have national accreditation for their School Travel Plans, 12 have received a Green Level and 4 have Bronze.

Community Cycle Hubs

Solihull Council continue to collaborate with local partners and communities on the 'Bike It Solihull' project. This is a community recreational cycling project which offers increased cycling opportunities to Solihull residents, through utilising four community cycling hubs in local parks.

The project aims to break down barriers for people wanting to ride a bike and to support people into suitable activities, whatever their capabilities or previous cycling experience. The cycling activity programme delivered from the hubs is primarily aimed at entry-level participation for new and returning riders, to increase their cycling skills and confidence, so that they can progress to cycling independently whether this be for leisure or travel.

A focus on volunteering and partnership working and the upskilling of more community members is proving to be a sustainable option for the delivery of local cycling activities.

Autonomous Vehicles

Our 2023 ASR advised on a trial that was conducted at Birmingham Airport using an autonomous vehicle, which was able to carry up to 10 passengers, funded by the Greater Birmingham & Solihull Local Enterprise Partnership.

Solihull Council became the first local authority in the country to purchase a fully electric autonomous shuttle.

Building upon successful deployment of the Council's fully electric autonomous shuttle bus at Birmingham Airport, the NEC and Birmingham Business Park, in 2023 the Council secured £5.5m of funding to deliver a project to introduce three fully electric autonomous shuttles to link Birmingham International Rail Station to Birmingham Business Park – to provide a new commuter service to occupants and visitors to the park, in a bid to encourage them on to public transport rather than private vehicle. The project is part of the Council's wider Low Carbon Future Mobility programme, exploring how to reduce transport-related carbon and air pollutants. The project is due to complete in March 2025.

Berkswell Village scheme final update

The Berkswell Village scheme was completed in 2022 and is therefore no longer considered an ongoing air quality action.

The scheme created a much slower speed environment for all road users. The overall reduction in motor vehicles speeds has been well received by the local community, and the new pedestrian crossing facility is well used on a daily basis and in particular, children going to and from school. This now links the remote park and stride facility from the local public house, which in turn has reduced pressure on the school gate area, improved air quality outside of the school and is encouraging more people to undertake a 10-minute walk with the added health and wellbeing benefits this provides to both the children and parents from the local community. Overall, the scheme has worked well and has met its road safety and environmental objectives.

Capability fund

A capability fund was set up following a successful bid from Transport for West Midlands to help Solihull achieve our commitment to promote active and sustainable modes of travel across Solihull, making it easier for people to leave the car at home, and support those who want to change their travelling habits and have a positive impact on resident's health and help reduce carbon emissions.

The council have worked with businesses and the public promoting cycling, walking and public transport, which has included delivery of free cycle training & maintenance, cycle security marking and e-bike tasters. We have also held sessions in school holidays and taught children to ride, alongside delivering fun scooter sessions in our local schools.

Following the success of the 2022 locally awarded Capability Funding, the Sustainable Travel Team are awaiting confirmation of funding from the newly announced funding award to WMCA. Our proposals include more free cycle and scooter training for children and adults and cycle security marking, as well as piloting new schemes such as school cycle clubs and a ‘try before you buy’ bike scheme. We will also look to raise awareness of our School Streets areas and offer grants for school cycle storage.

We shall therefore update on this project in future ASRs.

Solihull MBC has and continues to work with the following stakeholders during 2023 to implement measures in partnership:

- Residents of Solihull
- Schools across Solihull
- West Midland Combined Authority (WMCA)
- University of Birmingham WMAir programme team
- Transport for West Midlands (TfWM)
- Birmingham Airport
- National Exhibition Centre (NEC)
- Public Health representatives and the NHS
- UK Health Protection Agency
- Defra, JAQU

The principal challenges and barriers to implementation of measures, that Solihull MBC anticipates facing are:

- fleet refresh and emission standards delivering pollutant necessary reductions
- the mix of diesel vehicles travelling in and around Solihull
- air quality implications of new developments / delivering economic growth
- vehicle idling at various locations across the borough
- encouraging future travel behaviour and confidence in the use of public transport
- major infrastructure works in the Borough prior to the opening of schemes

Progress on the following measures has been slower than expected:

Reviewing and updating the Clean Air Strategy (2019-24) and Action Plan is now complete pending publication. The council wanted to ensure the refreshed strategy and plan provide

an effective response to the new duties imposed on the Council, including those introduced in relation to new $PM_{2.5}$ targets and so a number of actions needed to be progressed in this updated document so that it will be fit for purpose.

Table 2.2 – Progress on Measures to Improve Air Quality

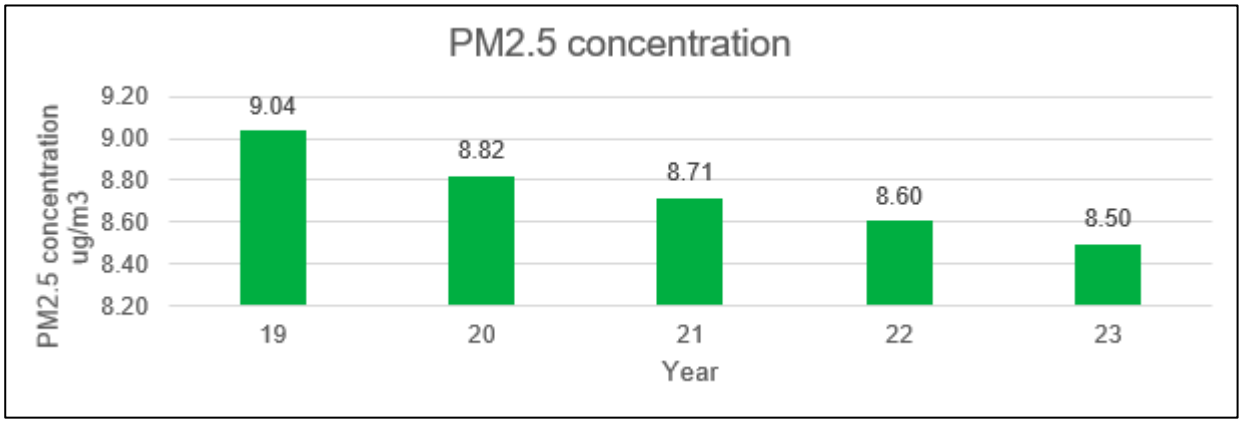
Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	New low-cost sensor array to measure $PM_{2.5}$ within SMBC borough	Policy Guidance and Development Control / Public Information	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2023/24 (Measure to go into new Air Quality Strategy and Action Plan	2025	SMBC, WMCA, WMAir, alongside regional and constituent Local Authorities	Part of WMCA/Defra Air Quality Grant and LA resource	Yes	Funded	£1m shared across a number of WMCA projects	Implementation	Action is to aid Air Quality Strategy and Action Plan focus and future inform monitoring programme	$PM_{2.5}$ data provision	Action forms part of a wider WMCA Framework Delivery Plan. Scheme is underway	Securing safe and accessible public or private sites
2	NO_2 and $PM_{2.5}$ Hotspot identification in SMBC	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2023/24 (Measure to go into new Air Quality Strategy and Action Plan	2025	SMBC, WMCA, WMAir, alongside regional and constituent Local Authorities	Part of WMCA/Defra Air Quality Grant funding and LA resource	Yes	Funded	£1m shared across a number of WMCA projects	Planning	No actual reduction but important investigation into validation of predictions and model outputs	Validation, review and update of modelling inputs and outputs	Equipment and project investigation agreed, siting of monitoring to be secured	Securing a representative site to host monitoring equipment
3	Improving SMBC air quality web presence in tandem with WMCA webpage development and data platform	Public Information	Via the Internet	2023/24 (Measure to go into new Air Quality Strategy and Action Plan	2024	SMBC, WMCA, ICT specialists	In house resourced alongside Defra funded	Yes	Funded	£10k - £50k	Planning	Behaviour change leading to reduced emissions from modal shift etc	Delivery of new SMBC and WMCA webpages	Programme underway to develop web resources	Specialist technical support needed to navigate necessary ICT criteria
4	Solihull Air Quality Strategy and associated Action Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023/2024	2024	SMBC	In house	No	n/a	<£10k	Implementation	Unable to determine	Approval and publication of Strategy and associated Action Plan	Nearly complete pending appropriate sign-off	Strategy requires necessary approval
5	WMCA Behaviour Change project.	Public Information	Other	2024	2024	WMCA, SMBC and external consultants	Part of WMCA/Defra Air Quality Grant and LA resource	Yes	Funded	£1m shared across a number of WMCA projects	planning	Unable to determine	Project delivery and documented outcomes	Initial project focus and scope discussed with consultants	Uptake of offer by target groups
6	Indoor air quality research project	Public Information	Other	2024	2024	SMBC, WMCA and University of Birmingham	Part WMCA / Defra Air Quality Grant and University funding	Yes	Funded	Research funding dependant of uptake (total not known)	planning	Unable to determine	Project delivery and documented outcomes	Initial project focus and scope discussed with university	Uptake of offer by target homes
7	Solihull Local Plan	Policy Guidance and Development Control	Other policy	2019	2024	SMBC	In house	No	n/a	<£10k	planning	Dependant on schemes coming forward	Plan approved by inspectorate	Submitted to inspectorate, examination is paused.	SMBC seeks the resumption of examination
8	Town Centre Heat Network	Promoting low emission plant	Procurement of combustion sources	2018	2024/25	SMBC and Developers	Consortium of Developers	No	Funded	No cost to SMBC	planning	Unable to determine	Business case concluded. Next stage to appoint contractor	Planning	Some years to completion
9	Installation of new public EV charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2021	2026	SMBC/Charge Point Operators	Variety of sources inc. private sector, Gov grant (LEVI, CRSTS)	No	Funded	> £10m	Partly implemented	Reduced vehicle emissions	Usage to be reviewed	Implementation on-going	More charging points should influence car purchasing
10	Increase in council EV fleet	Promoting low emission transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2021	On-going – zero tail pipe emissions by 2030	SMBC tender process (Lease companies)	n/a	No	Tender process	Cost neutral (higher capital costs offset by reduced operational costs)	Planning	Reduced vehicle emissions	Updated fleet	Some vehicles have been updated	Operational challenges related to depot charging infrastructure and specialist vehicle availability

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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	A45 Behaviour Change Project	Promoting Travel Alternatives	Workplace Travel Planning	2023	2025	SMBC/Partners	Defra grant as part of Ministerial Direction	Yes	Funded	£100k - £500k	Planning	Modal shift and reduced vehicle emissions	Documented outcomes and Defra sign off	Ongoing	Uptake of offer by target businesses
12	Home working	Promoting travel alternatives	Facilitate home working	2019	On-going	SMBC	n/a	No	n/a	<£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
13	School Streets	Traffic management	Reduction of speed limit, 20 mph zones	2017	2024	SMBC	n/a	No	n/a	£15k for each individual school	Partly implemented	Reduced vehicle emissions and improved safety around schools	Reduced vehicle emissions	Planning stage	Scheme extended to more schools
14	Engines Off: Young Lungs at Work	Traffic management	Anti-idling enforcement	2019	On-going	SMBC	n/a	No	n/a	Dependant on resource requirements and officer time	Partly implemented	Reduced vehicle emissions	Reduced vehicle emissions	Not quantified	Needs constant re enforcement
15	School lessons, assemblies and walking to school initiatives	Promoting travel alternatives	Promotion of walking	2020	On-going	SMBC	n/a	No	n/a	Dependant on resource requirements and officer time	On-going	Reduced vehicle emissions	Reduced vehicle emissions	Good uptake	Encourage walking
16	Community Cycle Hubs	Promoting travel alternatives	Promotion of cycling	2021	On-going through community involvement	SMBC / British Cycling places to ride	British Cycling places to ride	No	n/a	Delivered focus now on volunteering & partnership working	On-going continued delivery	Reduced vehicle emissions	Reduced vehicle emissions	Good uptake	Implemented
17	Autonomous Vehicles	Promoting Low Emission Transport/ Promoting travel alternatives	Other	2023	2025	The project is part of the Council's wider Low Carbon Future Mobility programme	combined government and industry funding	No	Funded	1m - £10m	Ongoing	Reduced vehicle emissions	Reduced vehicle emissions	Ongoing	Implemented
18	Lift share scheme	Alternatives to private vehicle use	Lift share scheme	2019	On-going	SMBC, NEC, Birmingham airport and Business Park, Resorts World	n/a	No	n/a	< £10k	On going	Reduced vehicle emissions	Reduced vehicle emissions	Ongoing	Low uptake

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[6], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$)). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

In Solihull Town Centre, Defra background maps have shown a gradual reduction in $PM_{2.5}$ levels (2018 – 2023) by approximately 0.5 – 0.6 µg/m^3. As an example, the geographical grid square nearest to our Solihull Council House, and close to our town centre, shows a slow but gradual decline in $PM_{2.5}$ levels since 2018:



A review of 2024 predictions shows that this decline is anticipated to continue.

The Defra background maps do not show any areas of Solihull that exceed the 2020 Stage 2, EU Limit Value for $PM_{2.5}$ (an annual average concentration of 20 µg/m³).

Modelling $PM_{2.5}$

The council recognises that pollution from fine particulate matter is important, as is understanding where it comes from and how levels vary across the borough. Our partnership with research fellows at the University of Birmingham, WM-Air - the West Midlands Air Quality Improvement Programme, have helped us with the production of high-resolution Atmospheric Dispersion Model System (ADMS) models of both Solihull and

[6] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

the wider West Midlands area. The latest models have now been produced (2019 baseline data, made available 2024) and they continue to indicate that $PM_{2.5}$ levels do not exceed the 2020 Stage 2, EU Limit Value for $PM_{2.5}$ (an annual average concentration of 20 µg/m³).

Monitoring $PM_{2.5}$

Defra approved $PM_{2.5}$ monitoring units can be expensive to install and require significant resources to service and maintain and so Solihull Council have been liaising closely with the WMCA to discuss the council's ambitions to improve the borough's $PM_{2.5}$ monitoring capabilities. The Combined Authority listened carefully to our concerns and as part of the WMCA Air Quality Framework Reference Document, confirmed a number of initiatives that will help both Solihull and the wider region progress $PM_{2.5}$ improvement agendas. The 2023 document can be viewed here Air Quality Framework Reference Document.

Solihull will join regional neighbours in hosting a number of new low-cost $PM_{2.5}$ sensors that will form a network right across the West Midlands. $PM_{2.5}$ does not adhere to any notional boundaries and so this project will enable each local authority to gather data and better understand pollution behaviour both within and external to their boroughs. We anticipate a clearer picture of the movement and distribution of $PM_{2.5}$ across the region will emerge following deployment of sensors.

The council will also be working alongside the WMCA to improve how we communicate with our residents and businesses, via an online air quality platform. A website, currently under construction, will provide information for people on air pollution across the West Midlands, as well as a portal to display the air quality data from the regional sensor network. Solihull have an ambition to create close ties between our website and the WMCA platform, to ensure residents and businesses can gain the maximum amount of information and support for those who want to better understand the health implications of air pollution, and to learn more about what they can do to improve theirs and other's exposures.

The sensor data will feed into a centralised dashboard for the public to see, and near real time air quality data will be available alongside other relevant air quality datasets for the region. Close liaison with highways and others will help the council and neighbouring authorities progress future monitoring goals.

$PM_{2.5}$ and health impacts

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 2022 and show 6.03%. This figure is slightly higher than figures reported for the West Midlands region (5.68%) and the average figure reported for England in 2022 (5.82%).

This figure is calculated using sophisticated modelling, and relies on air pollutant model inputs, so the council are taking care to ensure that the modelling data used is correct and validated.

As stated previously, Solihull Council recognises the need to monitor $PM_{2.5}$ and welcomes the introduction of targets under the new legislation. The council's revised Air Quality Strategy includes a number of actions to develop our monitoring programme (so that $PM_{2.5}$ is actively monitored) and to provide the public with information about air quality levels in their area.

The strategy will also include actions to:

- Work alongside other council departments so that key policies impact on air quality and exposure reduction.
- Deliver better information, campaigns and steps that people can take within the borough to reduce their $PM_{2.5}$ exposure
- Ensure that the Public Health perspective is integrated into Local Plan reviews
- Continue to work with local businesses, schools and other institutions on travel planning and publicity campaigns about traffic idling.

Table 2.1 above lists the measures Solihull are taking to better understand, assess and then to address $PM_{2.5}$ issues. In addition to this we are currently reviewing our Smoke Control Areas and enforcement activities, which will have an impact on both $PM_{2.5}$ and other pollutants.

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

This section sets out the monitoring undertaken within 2023 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 2019 and 2023 to allow monitoring trends to be identified and discussed.

The council are working towards ensuring all our sites have at least 5 years of historical data (to enable trend analysis). Nearly all our sites have achieved this for our 2023 data set, apart from our more recent additions at AC11, AC12 and AC13-15, which were only added at the start of 2023. AC11 was added to the network at the request of local residents. AC 12 was introduced because one of our tube locations on Stratford Road was being tampered with and so we chose to deploy this tube at another location to the south of Solihull Town Centre.

AC13-15 is a new triplicate site and our most recent new deployment. It is being used to investigate the NO_2 hotspot location that the WMAir ADMS modelling is predicting. This triplicate site recorded an annual mean concentration level for 2023 for NO_2 of 10.6 µg/m^3. This tube has not been included in our trend analysis.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Solihull Council does not currently undertake automatic (continuous) monitoring at any sites during 2023.

3.1.2 Non-Automatic Monitoring Sites

Solihull Council undertook non- automatic (i.e., passive) monitoring of NO_2 at 31 sites during 2023. Table A.2 Appendix A presents the details of the non-automatic sites.

A full review of passive diffusion tube monitoring of NO_2 is due to be undertaken in 2024. This is to remove sites where diffusion tubes are recording consistently low concentrations of NO_2 (that are so low that trend analysis is unlikely to reveal relevant pollution patterns of

increase or decrease). This review will be undertaken with full consultation with the relevant monitoring and evaluation teams in Defra and JAQU.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (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.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.2 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e., the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2023 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.

Table A.4 shows historical data for periods of between 4 and 5 years for trend analysis except for Tubes AC11–15 which are more recent monitoring location deployments.

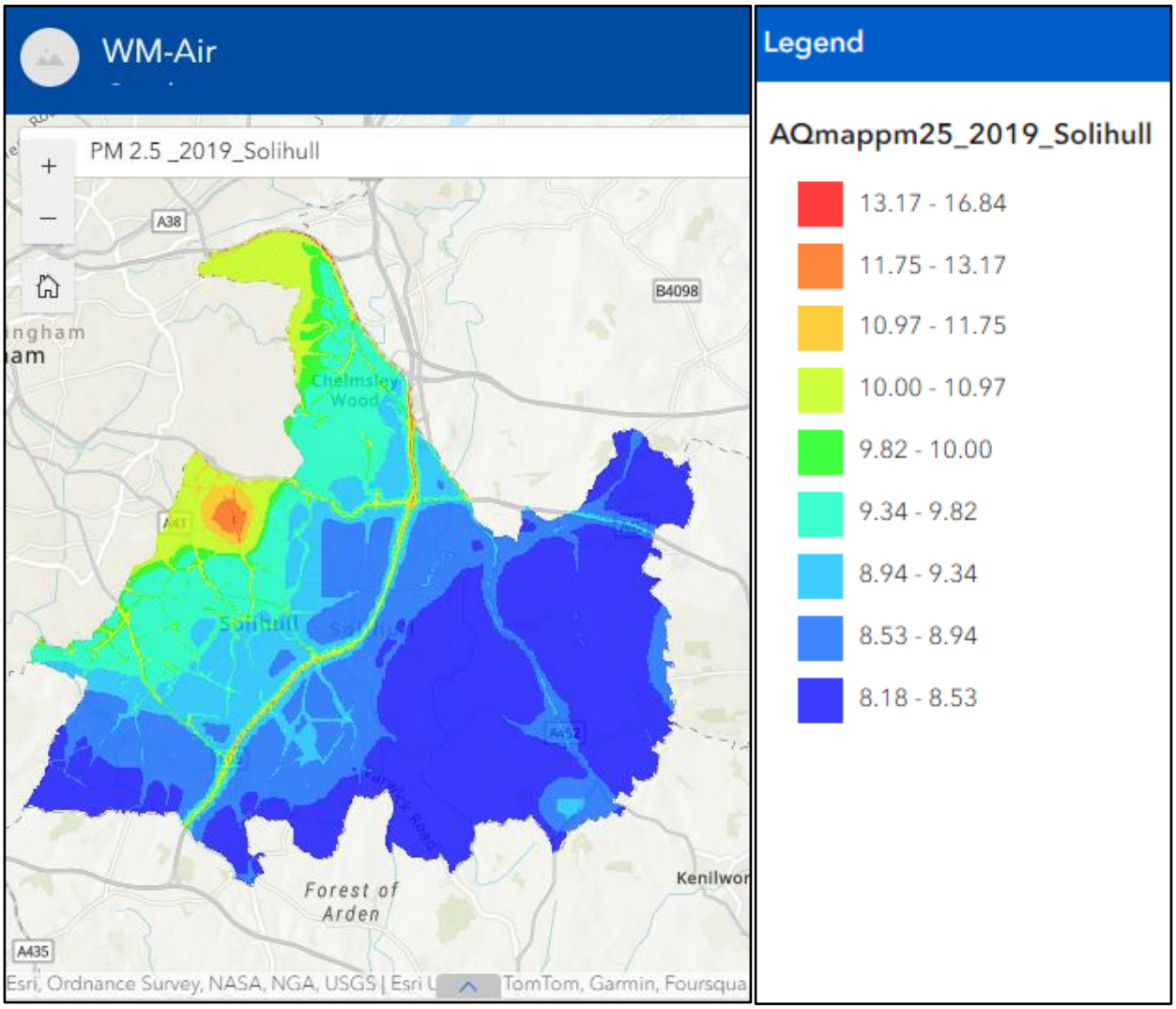
The AC13-15 triplicate site (located to investigate WMAir ADMS modelling predictions) recorded a 2023 annual mean NO_2 concentration level of 10.6 µg/m^3 (bias adjusted). Model predictions indicate the same location to have an annual mean NO_2 concentration of 29 µg/m^3. This disparity is part of an ongoing investigation and shall be further reported when the council have undertaken more detailed investigations.

The AC13-15 triplicate site has not been included in trend analysis, but it is noted NO_2 concentrations are below other tubes in this area.

Historically, some sites have been removed from the council's monitoring network, when found to be highly compliant with objective levels. Going forward the council will endeavour to keep sites operational for sufficient periods so as to allow for trend data to be produced and analysed. However, the council will carry out an annual review of diffusion tube locations, to ensure appropriate deployment across the borough and having due regard to new hotspot information and / or at potential elevated pollution locations.

3.2.2 Particulate Matter ($PM_{2.5}$)

High resolution Atmospheric Dispersion Model (ADMS) air quality model has been produced to explore the air quality context for Solihull area. The results indicate that $PM_{2.5}$ levels do not exceed the EU Limit Value for $PM_{2.5}$ (an annual average concentration of 20µg/m³).



Although Solihull do not currently monitor this pollutant, a new low-cost sensor network is being deployed in 2024. When data is available (and is deemed to be submissible by Defra, regarding relevant accreditations) this shall be provided.

Appendix A: Monitoring Results

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
AB1	Kingsleigh Drive	Roadside	414273	289970	NO_2	No	0.0	9.0	No	1.9
AB4	Olton Library	Roadside	413337	282206	NO_2	No	0.0	5.6	No	1.9
AB5	Elm Farm Avenue	Roadside	416935	285342	NO_2	No	0.0	21.0	No	2.1
AB6	Streetsbrook Road	Roadside	414698	279709	NO_2	No	0.0	13.0	No	1.4
AB8	Warwick Road Nursery	Roadside	415229	279699	NO_2	No	0.0	4.8	No	2.0
AB9	Stratford Road/ Haslucks Green	Roadside	411740	279645	NO_2	No	0.0	13.5	No	2.0
AB17	New Road	Roadside	415622	279481	NO_2	No	0.0	2.8	No	1.9
AB21	Kenilworth Road/Kelsey	Roadside	424203	276372	NO_2	No	0.0	22.0	No	2.0
AB23	Clock Lane Road	Roadside	418494	282878	NO_2	No	0.0	48.0	No	1.8
AB24	Stratford Road/Costa	Roadside	413003	277139	NO_2	No	0.0	11.0	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) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
AB28, AB29, AB30	A45/Clock Lane C	Roadside	418505	282921	NO_2	No	43.4	3.3	No	2.3
AB31, AB32, AB33	A45 Nr Tristar C	Roadside	417400	283121	NO_2	No	20.0	4.5	No	2.4
AB34, AB35, AB36	A45 Nr Arden C	Roadside	419213	283020	NO_2	No	60.0	5.6	No	2.1
AB37, AB38, AB39	A45/Old Damson Lane C	Roadside	417223	283137	NO_2	No	0.0	6.9	No	1.6
AB40, AB41, AB42	Church Lane C	Roadside	419242	282980	NO_2	No	125.0	3.6	No	2.4
AB43, AB44, AB45	Church Lane 2 C	Roadside	419500	283004	NO_2	No	220.0	3.1	No	2.4
AB46, AB47, AB48	Longacre C	Roadside	419285	283022	NO_2	No	35.0	3.1	No	2.4
AB49, AB50, AB51	A45/Goodway C	Roadside	416277	283691	NO_2	No	0.0	7.1	No	2.0
AC1	Orkney Close	Roadside	417716	289086	NO_2	No	0.0	1.7	No	1.9
AC2	Kenilworth Road/Centre	Roadside	423813	277290	NO_2	No	0.0	13.6	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) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
AC3	Kelsey Lane	Roadside	424383	276289	NO_2	No	0.0	17.3	No	1.7
AC4	Bosworth Drive	Roadside	417180	286880	NO_2	No	0.0	6.3	No	1.9
AC5	Longmore Road	Roadside	412965	278406	NO_2	No	0.0	5.3	No	1.9
AC6	Lode Lane by JLR	Roadside	415001	281564	NO_2	No	0.0	10.7	No	1.7
AC7	Old Lode Lane	Roadside	414893	283670	NO_2	No	0.0	11.7	No	1.7
AC8	Rye Close Croft	Roadside	418703	287434	NO_2	No	0.0	7.8	No	1.9
AC9	Whitefields Road	Roadside	414649	278700	NO_2	No	0.0	19.0	No	1.9
AC10	Darlaston Row	Roadside	423982	282211	NO_2	No	0.0	2.0	No	1.9
AC11	Old Damson Lane / opp JLR building	Roadside	416984	282619	NO_2	No	0.0	12.2	No	1.7
AC12	Hurdis Road	Roadside	411493	278780	NO_2	No	0.0	11.1	No	1.7
AC13, AC14, AC15	Redfern Close	Urban Background	414535	282293	NO_2	No	5.0	25.5	No	2.3

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
AB1	414273	289970	Roadside	100	100.0	21.2	16.7	17.9	17.0	16.7
AB4	413337	282206	Roadside	100	100.0	27.0	22.0	22.9	22.2	20.9
AB5	416935	285342	Roadside	100	100.0	18.8	15.3	15.0	14.6	14.6
AB6	414698	279709	Roadside	90.4	90.4	21.9	17.0	18.9	18.6	18.2
AB8	415229	279699	Roadside	100	100.0	24.8	20.5	23.0	20.4	20.3
AB9	411740	279645	Roadside	100	100.0	31.2	25.1	26.2	25.2	23.3
AB17	415622	279481	Roadside	100	100.0	26.1	17.2	19.8	19.4	18.1
AB21	424203	276372	Roadside	100	100.0	17.8	10.3	10.6	10.2	8.6
AB23	418494	282878	Roadside	92.3	92.3	19.5	13.2	14.5	15.7	13.5
AB24	413003	277139	Roadside	100	100.0	21.3	15.2	16.5	15.6	13.1
AB28, AB29, AB30	418505	282921	Roadside	100	100.0	21.4	15.1	22.0	22.1	21.0
AB31, AB32, AB33	417400	283121	Roadside	100	100.0	36.7	26.6	25.6	27.6	26.8
AB34, AB35, AB36	419213	283020	Roadside	100	100.0	49.9	32.8	32.0	34.9	35.2
AB37, AB38, AB39	417223	283137	Roadside	100	100.0	29.4	21.3	22.5	21.6	21.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
AB40, AB41, AB42	419242	282980	Roadside	100	100.0	39.2	23.8	26.3	27.7	27.3
AB43, AB44, AB45	419500	283004	Roadside	100	100.0	43.8	27.2	29.9	31.1	29.6
AB46, AB47, AB48	419285	283022	Roadside	100	100.0	55.3	36.3	34.4	37.0	37.9
AB49, AB50, AB51	416277	283691	Roadside	100	100.0	22.2	17.7	17.2	16.5	15.6
AC1	417716	289086	Roadside	100	100.0		18.0	19.8	18.1	17.9
AC2	423813	277290	Roadside	100	100.0		12.1	12.3	12.8	10.9
AC3	424383	276289	Roadside	100	100.0		10.1	10.9	10.4	9.4
AC4	417180	286880	Roadside	100	100.0		16.8	17.1	16.5	15.0
AC5	412965	278406	Roadside	100	100.0		15.9	17.1	16.4	15.7
AC6	415001	281564	Roadside	100	100.0		15.7	16.6	15.1	15.4
AC7	414893	283670	Roadside	100	100.0		19.2	20.9	19.6	19.0
AC8	418703	287434	Roadside	100	100.0		16.7	17.8	16.4	15.6
AC9	414649	278700	Roadside	100	100.0		10.8	11.2	11.2	9.9
AC10	423982	282211	Roadside	100	100.0		18.2	18.7	20.1	17.1
AC11	416984	282619	Roadside	100	100.0			12.6	12.6	12.3
AC12	411493	278780	Roadside	100	100.0			12.2	12.0	11.3
AC13, AC14, AC15	414535	282293	Urban Background	84.6	84.6					10.6

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22**

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

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

Notes:

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

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

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

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 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%).

Figures A.1 to A.8 – Maps and Trends in Annual Mean NO_2 Concentrations

Figure A.1 – Map of diffusion tubes in Area 1 (Blue) North

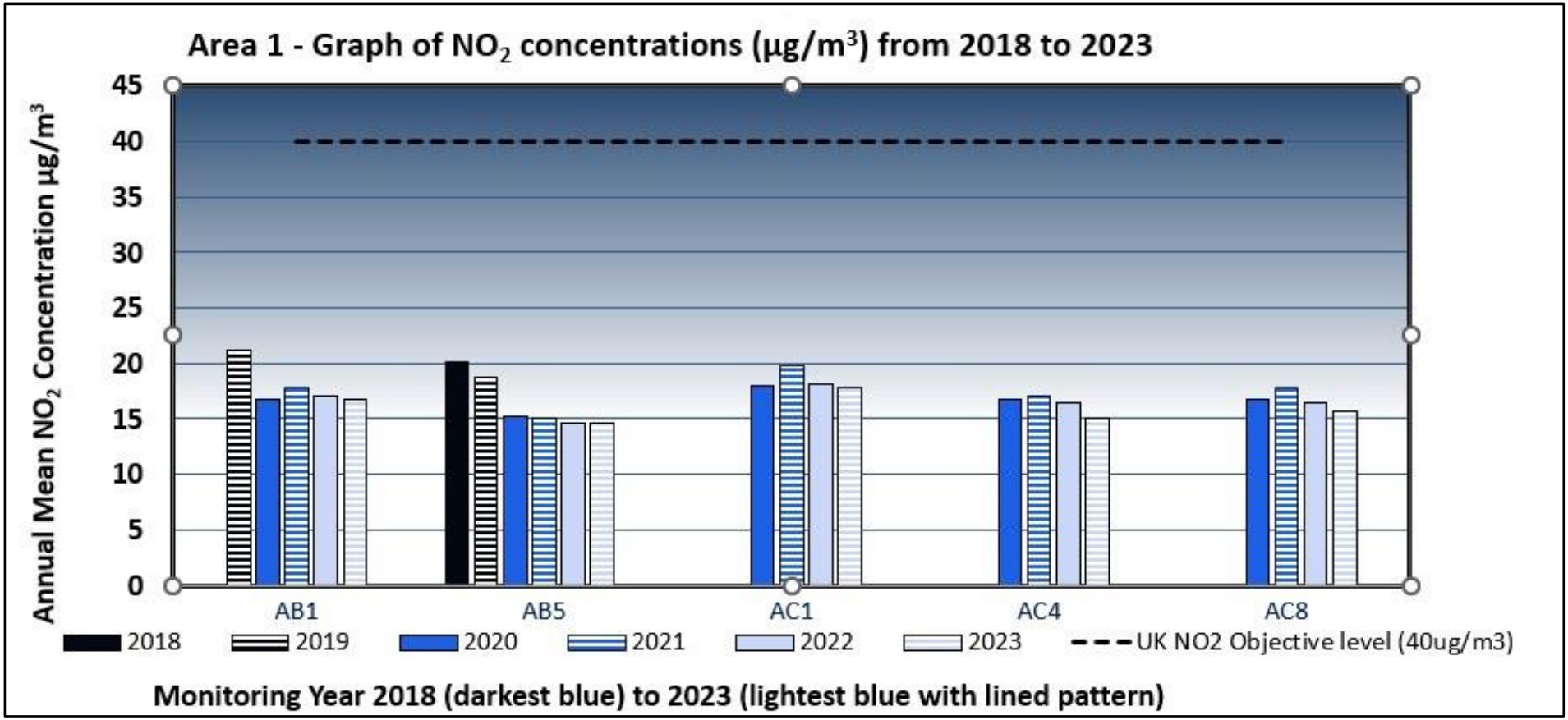


Figure A.2 - Trends in Annual Mean NO_2 Concentrations in Area 1 (Blue) North

Area 1 Trend analysis and discussion

NO_2 concentrations in Area 1 (North) are low, and since 2020 are at, or below, the 20 µg/m^3 level. We can see that there is a consistent, and for some sites, quite a linear downward trend and while Covid affected 2020 data does not follow this trend (with a more significant drop in levels) it is encouraging to see that 2023 data is now at or below reduced Covid 2020 NO_2 concentrations.

Figure A.3 – Map of diffusion tubes in Area 2 (Green) Central

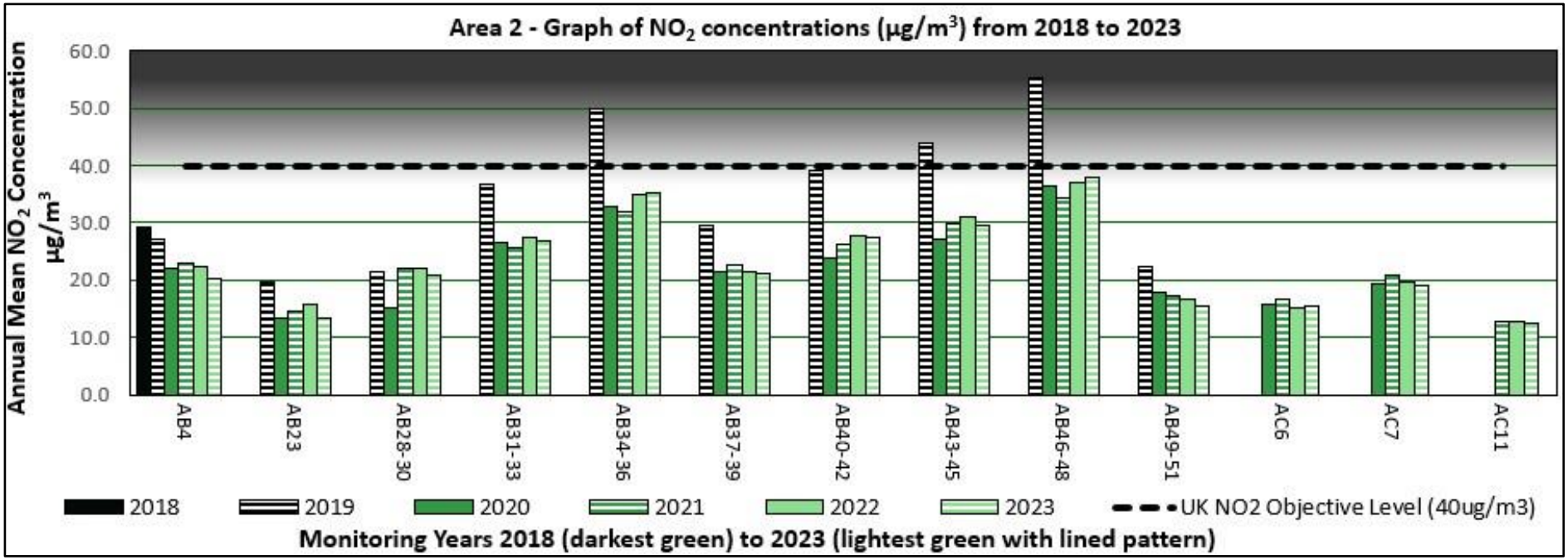


Figure A.4 - Trends in Annual Mean NO_2 Concentrations in Area 2 (Green) Central

Area 2 Trend analysis and discussion

Area 2 NO_2 concentrations showed a marked decrease from 2019 to 2020 following significant reduction in traffic patterns during Covid. It is encouraging to see a number of sites have sustained these reduced levels. Other site concentrations have slowly increased albeit not to higher 2019 levels. This is likely due to a gradual return to more normal traffic patterns. SMBC note that for closely located triplicate tubes AB34-36 and AB46-48 levels mirror one another and both show a slight increase over the past three years. There has been ongoing traffic management throughout 2023 in and around tubes AB34-36 and AB40-48 caused by major infrastructure projects in the area, this may have affected the 2023 data. Solihull Council pay particular attention to tubes AB34-36 and AB46-48 and are mindful that these locations form part of our Ministerial Direction reporting framework and so receive ongoing scrutiny by the council.

Figure A.5 – Map of diffusion tubes in Area 3 (Pink) West

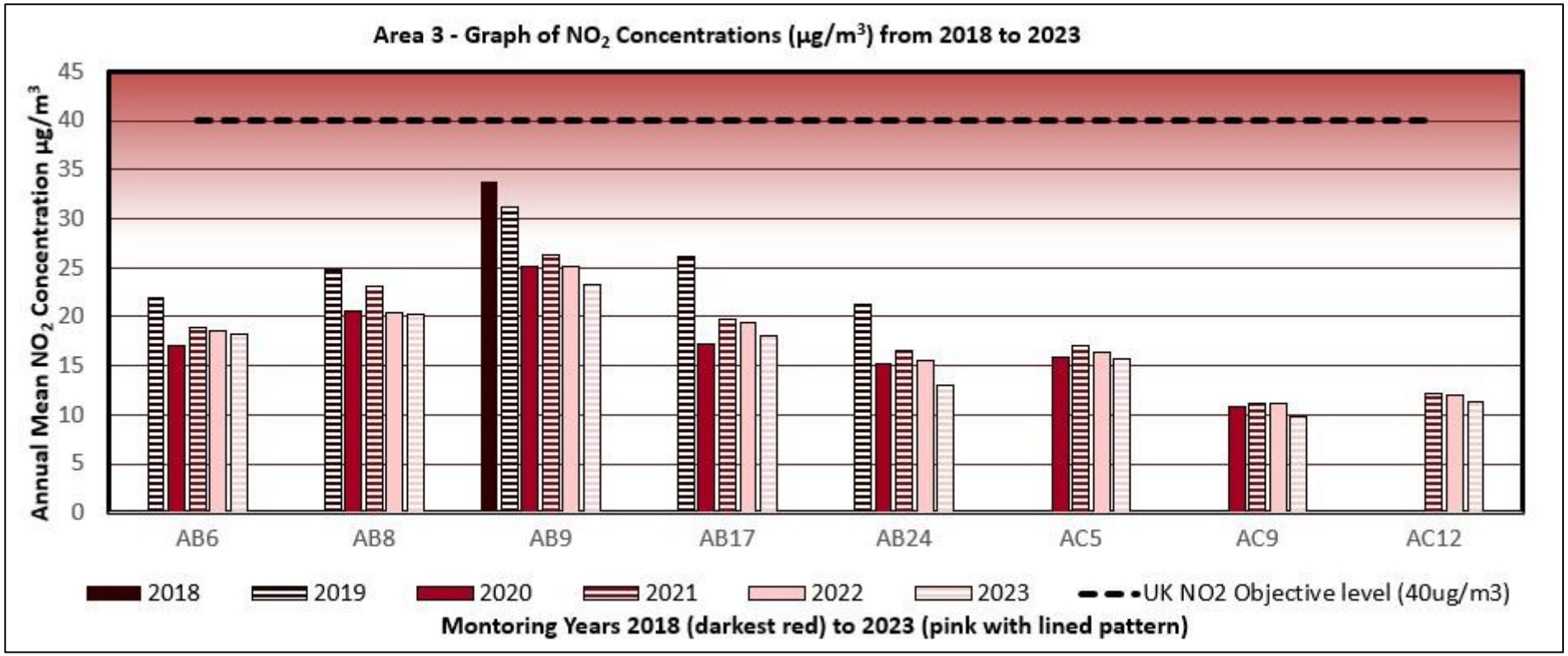


Figure A.6 - Trends in Annual Mean NO_2 Concentrations in Area 3 (Pink) West

Area 3 Trend analysis and discussion

Area 3 NO_2 concentrations are showing a consistent reduction from 2021. Apart from tube AB9, all tubes are at or below the 20 µg/m^3 level (tube AB9 trends indicate this may also be achievable in the future).

For the majority of Area 3 sites there is a moderately linear downward trend, and it is anticipated that concentrations will continue downward, to levels at or below respective suppressed Covid 2020 concentrations.

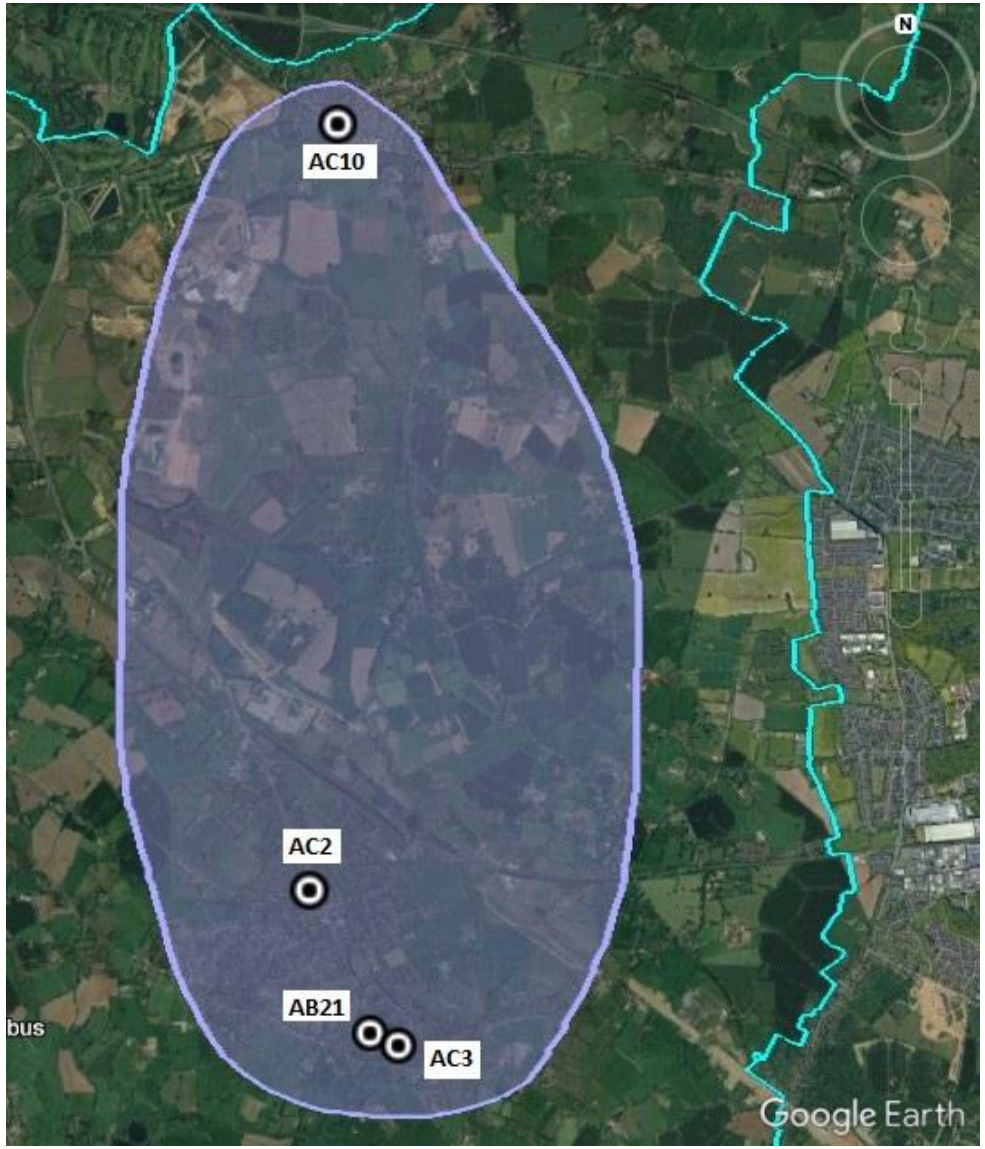


Figure A.7 – Map of diffusion tubes in Area 4 (Lilac) East

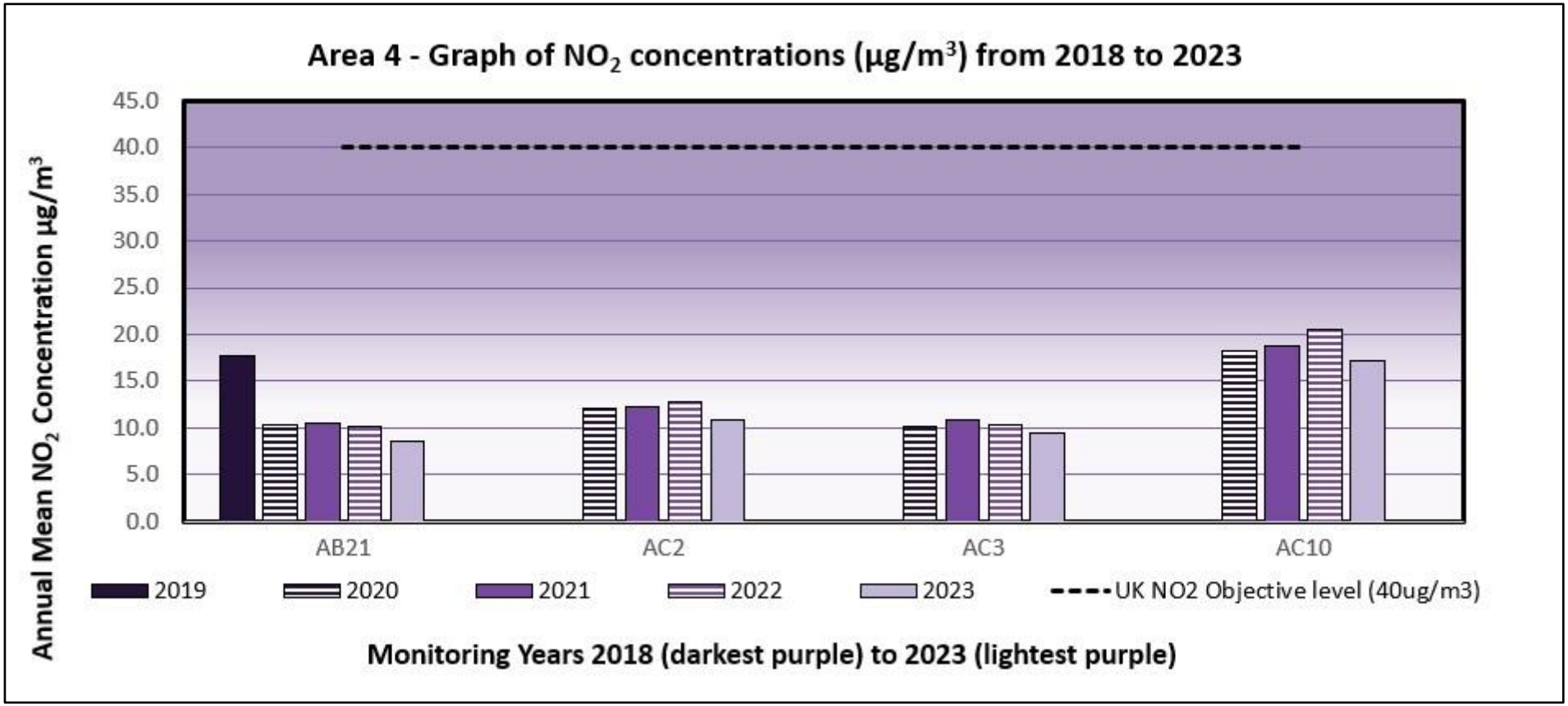


Figure A.8 - Trends in Annual Mean NO_2 Concentrations in Area 4 (Lilac) East

Area 4 trend analysis and discussion

Area 4 NO_2 concentrations are some of our lowest in the borough. It is understood that some Area 4 tubes were originally deployed due to concerns over potential HS2 haul route options. All tubes are showing concentrations that are reducing from 2022 and all tubes sit well below air quality objective levels.

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO_2 2023 Diffusion Tube Results ($\mu g/m^3$)

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 (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AB1	414297	289963	27.0	25.7	18.2	18.9	17.9	17.0	12.5	17.2	20.3	20.7	28.2	17.9	20.1	16.7		
AB4	413337	282206	33.8	30.8	25.2	25.1	22.2	24.2	17.8	21.4	28.5	25.9	28.0	18.9	25.1	20.9		
AB5	417108	285417	21.6	20.2	16.8	15.3	12.4	13.4	12.8	14.7	20.2	21.8	24.4	17.0	17.5	14.6		
AB6	414698	279709	22.6	27.2	24.5	20.0		21.3	15.3	18.0	23.3	22.1	27.1	19.9	21.9	18.2		
AB8	415229	279699	31.0	29.5	23.6	23.5	26.6	24.8	14.8	20.3	24.6	25.2	29.9	19.5	24.4	20.3		
AB9	411740	279645	40.8	36.4	22.5	25.7	23.8	23.5	20.0	26.3	29.7	29.9	35.6	23.4	28.1	23.3		
AB17	415622	279481	31.2	28.8	22.5	16.5	21.2	20.5	13.4	17.4	22.0	21.3	29.9	17.1	21.8	18.1		
AB21	424203	276372	12.2	13.9	12.0	9.6	7.7	7.8	4.8	7.2	9.8	11.6	16.9	10.5	10.3	8.6		
AB23	418494	282878	22.4	18.8	14.6	13,85	14.6	14.8	10.6	15.2	17.0	17.8	20.4	12.5	16.2	13.5		
AB24	413003	277139	22.0	20.3	14.3	15.9	12.9	13.3	8.1	14.0	18.3	18.6	18.8	12.4	15.7	13.1		
AB28	418505	282921	36.5	31.3	23.0	19.3	23.1	22.3	19.5	23.8	26.0	20.9	35.1	18.4	-	-		Triplicate Site with AB28, AB29 and AB30 - Annual data provided for AB30 only
AB29	418505	282921	38.7	27.9	22.7	20.7	23.7	23.1	19.4	22.4	25.2	26.4	34.6	21.8	-	-		Triplicate Site with AB28, AB29 and AB30 - Annual data provided for AB30 only
AB30	418505	282921	33.0	32.3	23.9	20.8	24.2	24.2	16.8	24.9	24.3	22.8	34.0	23.1	25.3	21.0		Triplicate Site with AB28, AB29 and AB30 - Annual data provided for AB30 only
AB31	417400	283121	40.1	36.8	30.0	22.1	22.1	30.1	27.2	27.8	38.5	37.4	40.1	25.4	-	-		Triplicate Site with AB31, AB32 and AB33 - Annual data provided for AB33 only
AB32	417400	283121	40.4	37.9	28.4	22.6	22.2	30.4	29.2	30.1	40.3	37.8	41.3	29.2	-	-		Triplicate Site with AB31, AB32 and AB33 - Annual data provided for AB33 only
AB33	417400	283121	43.0	36.5	28.2	28.5	24.3	31.4	28.9	30.6	39.3	38.8	35.1	28.4	32.2	26.8		Triplicate Site with AB31, AB32 and AB33 - Annual data provided for AB33 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 (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AB34	419213	283020	53.3	47.2	34.9	32.3	32.4	46.0	41.8	37.6	51.8	44.3	47.2	36.9	-	-		Triplicate Site with AB34, AB35 and AB36 - Annual data provided for AB36 only
AB35	419213	283020	44.3	46.0	38.5	40.1	35.2	46.0	41.9	39.7	48.8	46.5	43.9	35.0	-	-		Triplicate Site with AB34, AB35 and AB36 - Annual data provided for AB36 only
AB36	419213	283020	39.1		40.4	42.3	32.5	45.2	44.9	40.0	48.5	47.9	45.1	41.0	42.4	35.2		Triplicate Site with AB34, AB35 and AB36 - Annual data provided for AB36 only
AB37	417223	283137	30.2	28.6	25.5	25.8	27.2	23.8	19.3	24.7	26.9	28.4	32.4	20.8	-	-		Triplicate Site with AB37, AB38 and AB39 - Annual data provided for AB39 only
AB38	417223	283137	32.7	27.0	23.1	23.1	27.1	25.3	20.0	23.4	26.2	28.6	30.7	20.1	-	-		Triplicate Site with AB37, AB38 and AB39 - Annual data provided for AB39 only
AB39	417223	283137	33.1	27.5	25.3	21.1	25.6	23.8	19.6	23.5	26.7	21.6	32.7	20.9	25.6	21.3		Triplicate Site with AB37, AB38 and AB39 - Annual data provided for AB39 only
AB40	419242	282980	36.9	29.0	33.3	33.8	46.4	39.5	21.0	31.9	30.5	32.9	38.8	19.7	-	-		Triplicate Site with AB40, AB41 and AB42 - Annual data provided for AB42 only
AB41	419242	282980	38.9	39.1	33.1	33.7	41.5	39.7	20.6	31.0	26.9	30.8	34.3	19.7	-	-		Triplicate Site with AB40, AB41 and AB42 - Annual data provided for AB42 only
AB42	419242	282980	33.8	40.7	33.8	34.8	44.7	39.0	21.3	28.6	30.6	34.2	38.0	21.8	32.9	27.3		Triplicate Site with AB40, AB41 and AB42 - Annual data provided for AB42 only
AB43	419500	283004	38.5	43.1	36.6	37.9	48.1	40.8	25.2	35.9	36.3	34.6	36.5	22.1	-	-		Triplicate Site with AB43, AB44 and AB45 - Annual data provided for AB45 only
AB44	419500	283004	43.8	29.1	41.6	36.1	46.5	43.9	24.4	33.5	35.3	28.0	40.4	23.3	-	-		Triplicate Site with AB43, AB44 and AB45 - Annual data provided for AB45 only
AB45	419500	283004	45.8	42.6	30.6	36.2	49.4	33.3	25.9	31.7	33.2	33.1	38.7	20.2	35.6	29.6		Triplicate Site with AB43, AB44 and AB45 - Annual data provided for AB45 only
AB46	419285	283022	50.1	55.7	46.4	36.2	39.2	50.1	48.9	44.9	54.3	51.5	43.6	38.7	-	-		Triplicate Site with AB46, AB47 and AB48 - Annual data provided for AB48 only
AB47	419285	283022	50.0	50.9	39.5	35.6	38.0	47.0	48.4	41.1	56.8	45.8	50.4	33.3	-	-		Triplicate Site with AB46, AB47 and AB48 - Annual data provided for AB48 only
AB48	419285	283022	55.1	55.2	42.0	42.7	40.6	45.0	46.2	44.5	51.3	43.9	45.8	37.1	45.7	37.9	25.3	Triplicate Site with AB46, AB47 and AB48 - Annual data provided for AB48 only
AB49	416277	283691	23.9	24.5	19.8	16.0	15.1	15.4	9.2	13.9	17.9	20.0	27.8	20.3	-	-		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 (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AB50	416277	283691	28.9	22.9	20.6	19.2	15.9	15.5	9.0	13.8	16.6	20.6	27.5	20.2	-	-		Triplicate Site with AB49, AB50 and AB51 - Annual data provided for AB51 only
AB51	416277	283691	27.9	20.4	19.5	15.7	16.2	15.0	9.6	13.9	17.7	18.7	25.9	20.9	18.8	15.6		Triplicate Site with AB49, AB50 and AB51 - Annual data provided for AB51 only
AC1	417716	289086	26.0	26.4	18.6	19.1	19.9	19.2	12.8	18.0	24.0	24.7	29.6	20.4	21.6	17.9		
AC2	423881	277290	18.4	17.1	14.2	12.8	12.2	10.9	7.9	10.8	12.0	14.8	14.3	12.1	13.1	10.9		
AC3	424383	276289	17.9	15.7	10.5	8.3	8.7	8.6	7.4	9.5	11.6	12.6	15.7	9.2	11.3	9.4		
AC4	417180	286880	24.3	24.9	18.0	5.4	14.5	14.6	12.6	14.8	22.3	22.2	25.1	18.2	18.1	15.0		
AC5	412965	278406	27.8	22.2	18.8	17.1	17.1	14.6	10.9	15.3	20.2	21.2	23.3	18.1	18.9	15.7		
AC6	415001	281564	26.7	24.5	20.0	14.0	13.7	14.8	12.0	14.9	19.6	17.4	26.1	18.4	18.5	15.4		
AC7	414902	282623	30.2	27.9	22.6	20.6	20.3	20.8	15.1	20.0	24.6	22.8	29.4	20.6	22.9	19.0		
AC8	418682	287390	22.8	23.5	18.9	18.3	18.5	17.6	11.3	15.6	20.7	19.5	24.7	14.8	18.8	15.6		
AC9	414649	278700	15.7	16.1	11.9	9.1	9.4	9.3	6.6	9.3	12.8	12.7	19.4	10.8	11.9	9.9		
AC10	423982	282211	30.0	23.5	22.1	18.8	14.9	17.6	17.3	18.9	22.6	18.6	24.7	18.7	20.6	17.1		
AC11	416984	282619	22.3	17.2	13.8	12.3	13.6	11.9	9.3	11.7	14.3	15.2	22.9	14.0	14.9	12.3		
AC12	411493	278780	19.7	18.5	14.9	12.1	10.3	10.3	7.1	9.5	12.8	17.0	19.1	12.4	13.6	11.3		
AC13	414535	282293			14.7	10.4	10.9	9.0	6.4	10.5	14.1	15.2	19.7	11.0	-	-		Triplicate Site with AC13, AC14 and AC15 - Annual data provided for AC15 only
AC14	414535	282293			14.4	13.1	10.7	10.0	6.7	10.3	13.5	17.6	22.4	12.9	-	-		Triplicate Site with AC13, AC14 and AC15 - Annual data provided for AC15 only
AC15	414535	282293			13.7	11.7	11.3	9.9	6.2	9.4	13.8		22.0	14.0	12.7	10.6		Triplicate Site with AC13, AC14 and AC15 - Annual data provided for AC15 only

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

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22**

☐ **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 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

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

Exposure periods for May / June did not comply with NO_2 Diffusion Tube Calendar. This is detailed here QA/QC of Diffusion Tube Monitoring

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 MBC During 2023

A number of sources were identified by Solihull in our 2023 ASR (2022 data) as providing a potential to impact air quality. Some of these sources remain in 2023, and 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 of May 2020.

It is not known if the construction phases of the scheme (or related traffic management and lane closures etc.) has affected air quality however there are a number of diffusion tubes local to this scheme that should capture any increased pollution potential.

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 function 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

Planning applications have been given approval for a number of major developments in the borough, these can be found by following the link below and by typing in the application number PL/…../… link: Solihull Council planning application search.

APPLICATION NUMBER	SITE ADDRESS	PROPOSAL	DECISION
PI/2022/01784/PPFL	Prince Of Wales, High Street, Solihull Lodge.	Demolition of the former Prince of Wales public house and the erection of a 72-bedroom care home facility with frontage parking together with the change of use of former agricultural land at the rear to ancillary amenity space for residents including the provision of Green Care Farming with landscaping, and associated works (Cross boundary application - Solihull and Bromsgrove)	Approved 2022-2023
PL/2023/00393/VAR	20 -66 Station Road, Solihull.	Variation of Condition 1 (drawing numbers) on planning approval PL/2019/02766/PPFL for the erection of up to 48 No. one bedroomed apartments in two storey extension above existing retail parade and maisonettes, alterations to ground floor unit to	Approved 2022-2023

		create new residential entrance to development, cycle store and associated works. Namely: to reconfigure the internal arrangement to allow both PL/2019/02766/PPFL and PL/2021/03246/PPFL	
PL/2021/00975/PPOL	Lincoln Road Wharf, Lincoln Road, Olton.	Outline planning permission for 10 No. 2 bedroom apartments, 5 No. 1 bed apartments, and 2 No. 2 bedroom semi-detached dwellings on land at Lincoln Road Wharf with associated works and 19 No. parking spaces. At this point access, appearance, layout and scale are put forward for consideration. (Landscaping is reserved for future determination)	Approved 2023
PL/2022/01660/PPRM	Land Rear Of 86 Meriden Road, Hampton in Arden.	Erection of residential dwellings with parking, internal access roads, landscaping and all other details required by condition No. 1 relating to the reserved matters of landscaping, appearance, layout and scale pursuant to planning permission reference PL/2022/01812/VAR	Approved 2023
PL/2022/01812/VAR	Land Rear Of 86 Meriden Road Hampton in Arden	Amendments to planning permission dated 18.05.2022 (PL/2019/02546/PPOL) for: outline application for residential development of up to 109 units with associated access and public	Approved 2023

		open space (landscaping, appearance, layout and scale reserved for future determination). Namely: Remove conditions 8 and 9	
PL/2022/01797/PPFL	Eastcote Park Care Home, Knowle Road, Eastcote.	Two storey extension to care home providing 12 additional bedrooms and associated care facilities (including lounges and stores)	Approved 2023
PL/2022/02513/VAR	Bower Lodge, Stratford Road, Shirley	Variation of Condition 1 and removal of condition 5 on approval PL/2020/01379/PPFL dated 08.10.2021 for full planning permission for the 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. Namely: Revise site access to utilise existing site access on western boundary and alter layout of car parking and buggy store. Remove condition 5 as dropped kerbs no longer required	Approved 2023
PL/2022/01942/VAR	Berkswell Quarry, Cornets End Lane Meriden	Vary condition Nos. 8, 9 and 10 of planning approval 2003/1480 (PL/2003/01876/FULM) for extension to sand and gravel quarry, to: incorporate updated	Approved 2023

		documents and drawings; to permit continued sand and gravel extraction to 31.12.2026; and to permit continued infilling for restoration purposes to 31.12.2031	
PL/2022/01187/PPFL	Hampton Garden Nurseries, Eastcote Lane, Hampton in Arden	Development at the existing garden centre and commercial horticultural nursery incorporating new polytunnels, kiosk and two barns and landscaping / maintenance services	Approved 2023
PL/2022/02308/PPFL	Little Beanit Farm, Waste Lane, Berkswell	Development of a Battery Energy Storage System (BESS) including ancillary works and access arrangements	Approved 2023
PL/2023/00535/VAR	Composting Site, Berkswell Quarry, Cornets End Lane, Berkswell.	Variation of condition 7 of planning permission dated 23rd April 2008 (PL/2007/00421/FULM) for an open windrow composting of organic material. Namely: to allow the composting operation approved to run concurrently with the mineral extraction and landfill operations at Berkswell Quarry or to 31st December 2031, whichever is the later east of the site via the existing adjacent field next to the school sports field.	Approved 2023
PL/2023/00536/VAR	Composting Site, Berkswell Quarry,	Variation of condition 6 of planning permission dated 25th April 2012 (PL/2011/01060/CU) for the	Approved 2023

	Cornets End Lane, Berkswell.	change of use to provide reconfiguration of composting site including repositioning of the permitted workshop, weighbridge and office; installation of portable concrete blocks; and provision of improved concrete-surfaced circulation space. Namely: to allow the composting operation approved to run concurrently with the mineral extraction and landfill operations	
PL/2023/00537/VAR	Wood Chipping Site, Berkswell Quarry, Cornets End Lane, Berkswell.	Variation of condition 3 of planning permission dated 27th January 2014 (PL/2013/00070/FULM) for the construction of a concrete pad and associated operational development and change of use of land to carry out wood chipping operations. Namely: to allow the wood chipping operation hereby approved shall run concurrently with the mineral extraction and landfill operations at Berkswell Quarry or to 31st December 2031, whichever is the later	Approved 2023
PL/2023/01850/VAR	Resortsworld, National Exhibition Centre (NEC), Solihull	Variation of Conditions 12 and 13 attached to planning approval PL/2017/01268/VAR for the erection of a mixed-use leisure/entertainment complex casino (sui generis), factory outlet centre (class A1), hotel (class C1),	Approved 2023

		spa (class D2), cinema (class D2), conference and banqueting centre (class D1), food and drink uses (class A3/A4/A5), car parking and servicing, plant and associated public realm and landscape works; NAMELY: to allow an additional 925 sqm of unrestricted retail floor space	
PL/2022/02400/PPFL	Chep UK Ltd, Bickenhill Lane, Bickenhill	Demolition of existing buildings and erection of a single industrial/storage and distribution unit (Class E(g)(iii), B2, and/or B8) with associated access, servicing, parking and landscaping	Approved 2023
PL/2022/01386/PPFL	Plot 6700, Birmingham Business Park.	Full planning application for the development of Plot 6700, Solihull Parkway, Birmingham Business Park, to provide two warehousing units (flexible Use Class falling within B2 and B8), with ancillary office space (Use Class E(g)(i)), car parking spaces and loading docks, access, landscaping and hardstanding	Approved 2023

Additional Air Quality Works Undertaken by Solihull MBC During 2023

Solihull have recently been advised of updates to WMAir high resolution Atmospheric Dispersion Model System (ADMS) models of both Solihull and the wider West Midlands area (2019 baseline data). Work is ongoing to review these recent outputs and predictions.

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 co-location studies. This factor varies each year and for 2023 the figure used was 0.83 using the overall factor shown on the National Diffusion Tube bias adjustment factor spreadsheet as shown below using spreadsheet version 3/24.

It is advised that one of our diffusion tube changeovers (end of May / start of June 2023) was a week out, so tubes were changed 7th June 2023 instead of 31st May 2023. The council have liaised with representatives on the LAQM Helpdesk who have indicated that this should not cause a problem with the data. Both parties tested input parameters and noted that Diffusion Tube Data Processing Tool allowed the deviation (as timeperiods remained within the 4-5 week changeover parameters).

In addition, at one site in the borough, due to the early comencement of 2024 diffusion tube calendar (on 3rd January 2024) one of our school sites was closed and could not be accessed. We therefore changed this tube over on 8th January instead of 3rd January 2024. Again this was discussed with LAQM colleagues and again it was noted that the timeperiods remained within the 4-5 week period.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/24

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

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

This spreadsheet will be updated at the end of June 2024

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with

AECOM and the National Physical Laboratory.

Step 1:	Step 2:	Step 3:									
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								
If a laboratory is not shown, we have no data for this laboratory	The 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	If you have your own co-loc								
Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m3)	Automatic Monitor Mean Conc. (Cm) (µg/m3)	Bias (B)	Tube Precisions	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2023		Overall Factor (15 studies)				Use		0.83

Bias (B) | Tube Precisions | Bias Adjustment Factor (A) (Cm/Dm)
Use | 0.83

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Solihull MBC 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 2024 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.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Solihull Council have applied a national bias adjustment factor of 0.83 to the 2023 monitoring data. A summary of bias adjustment factors used by the council over the past five years is presented in **Error! Reference source not found.**.

The council have used the National Diffusion Tube Bias Adjustment Factor Spreadsheet, Version Number 03/24. The relevant spreadsheet field entries are:

Gradko; 50% TEA in acetone; 2023; Overall Factor (15 studies); Use and 0.83

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.83
2022	National	03/23	0.82
2021	National	9/22	0.82
2020	National	06/21	0.83
2019	National	09/20	0.89

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure

has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

One site, where a set of triplicate tubes are located is along the A45, required adjustment, however this site has no nearby receptors, and this is noted in the table below.

Table C.4 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
AB46, AB47, AB48	1.0	36.0	37.9	20.4	25.3	*Receptor is more than 20m further from the kerb than your monitor - treat result with caution.*

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

Figures D.1 and D.2 – Maps of Non-Automatic Monitoring Sites

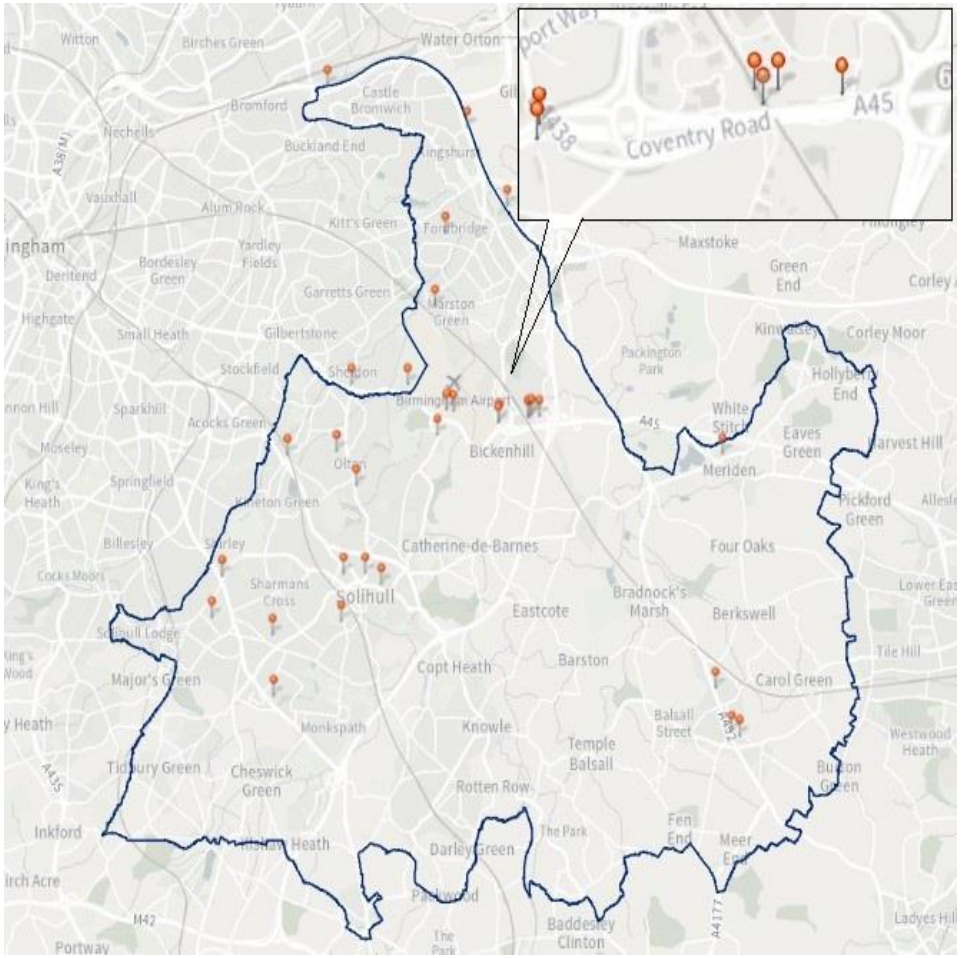


Figure D.1 - Diffusion tube map showing approximate diffusion tube locations.

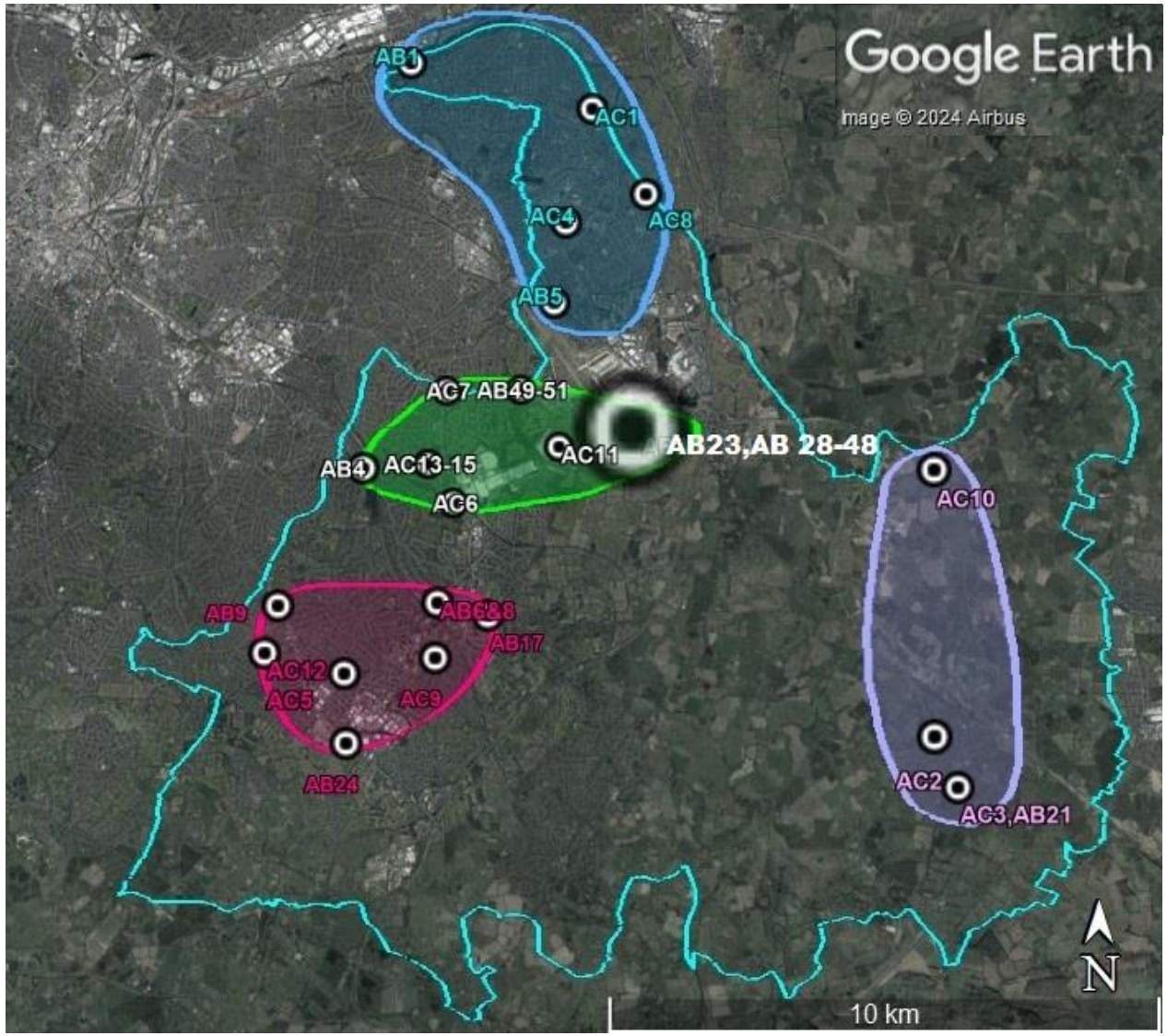


Figure D.2 – Map showing more detailed diffusion tube and related assessment areas

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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

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

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

Abbreviation	Description
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. 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.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
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