

# Coventry City Council

## 2022 & 2023 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, 2023

<b>Information</b>	<b>Coventry City Council Details</b>
<b>Local Authority Officer</b>	Neil Chaplin & Frances Taylor
<b>Department</b>	Environmental Protection
<b>Address</b>	Floor 11, One Friargate, Coventry, CV1 2GN
<b>Telephone</b>	024 7697 2263
<b>E-mail</b>	Env.protection@coventry.gov.uk
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## Executive Summary: Air Quality in Our Area

### Air Quality in Coventry

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

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages<sup>3</sup>, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017<sup>4</sup>.

The main pollutants of concern in Coventry are nitrogen dioxide and particulate matter. These pollutants are predominantly associated with road traffic emissions particularly on busy roads and in areas where traffic queues regularly. The issues arise when people spend time near high levels of these pollutants whether through housing, working or recreation.

In Coventry, the main concern is centred on housing that is in close proximity to the major arterial routes with high levels of queuing traffic, principally around busy junctions and traffic lights. Current hotspots include parts of Holyhead Road, Walsgrave Road and Foleshill Road.

Rather than focussing on individual roads and junctions, Coventry has declared the whole area as an AQMA. This decision was taken to ensure that the problem wasn't simply moved from one road or junction to another. More information is available at:

<https://www.coventry.gov.uk/pollution-1/air-quality>

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

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

<sup>3</sup> Defra. Air quality appraisal: damage cost guidance, January 2023

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

Recent years' NO<sub>2</sub> diffusion tube monitoring results show that, whilst there are fluctuations, there is a general decline in levels of nitrogen dioxide and levels of PM<sub>10</sub> do not exceed the national standards. The 2020 results showed a large drop in levels due to the Covid-19 lockdown requirements and associated reduction in traffic flows, so this data should not be considered typical. The 2021 and 2022 levels reflect a return to more 'normal' traffic flows and continue in the general trend of declining concentrations however we still have a small number of exceedances along Holyhead Road. The LAQAP will address this once works to manage the traffic in the area of Holyhead Road are completed.

Coventry City Council continues to work closely with neighbouring authorities and Government Agencies to address poor air quality. The Council is part of the Coventry and Warwickshire Air Quality Alliance, Midlands Joint Advisory Committee (MJAC), Pollution Groups in both the West Midlands and Warwickshire and is collaborating with the University of Birmingham with their WM-Air Project.

Coventry was identified by DEFRA in July 2017 as one of 28 cities requiring further action to tackle areas of poor air quality related to emissions of nitrogen dioxide.

Coventry received a Ministerial Direction to implement a Clean Air Zone (CAZ) however the Council has developed an alternative package of measures that is predicted to achieve compliance with the NO<sub>2</sub> objective in a shorter timescale.

This alternative package was accepted by Defra and a revised Ministerial Direction was issued in February 2020 with Defra also confirming that a Clean Air zone is not required in Coventry.

Coventry City Council (CCC) is committed to transforming Coventry into a cleaner and healthier city, supporting economic growth, improving health and providing a wider choice of travel options; and improvements in air quality underpin this vision. Coventry was awarded the UK City of Culture for 2021 (which took place May 2021 – May 2022 due to the pandemic) and making improvements to benefit air quality within the city fully aligns with the City of Culture themes of Being Human, Reinvention and Moving, and the vision of reimagining the place of culture in a diverse, modern Britain.

Coventry therefore has taken the opportunity to adopt a solution which will deliver a lasting improvement in air quality and to showcase this solution to a wider audience.

Coventry is renowned for its rich tradition in innovation, and CCC is keen to support innovative solutions involving emerging technology.

The Council has published its new [Transport Strategy](#) for the period 2022 – 2037. The Strategy has a number of broad themes, and at the heart of these is the need to tackle climate change and improving public health and air quality. The Council has also released a [draft Climate Change Strategy](#) for the period until 2030. The draft Strategy proposes to develop a zero-carbon route map which will cover the switch to electric vehicles, promoting modal shift away from private vehicles to public and active transport options, and heating/lighting efficiency and use of renewables.

In addition to this, Coventry has been a Marmot City since 2013. This means Coventry City Council is dedicated to improving public health and tackling the health inequalities that exist across the city, through partnership working and pursuit of the Marmot Principles. Principle 8 (Pursue environmental sustainability and health equity) includes action to improve the air quality within the city to reduce health inequalities. The Marmot monitoring tool will be published soon.

## 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<sup>5</sup> sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM<sub>2.5</sub> targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce PM<sub>2.5</sub> in their areas. The Road to Zero<sup>6</sup> details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

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<sup>5</sup> Defra. Environmental Improvement Plan 2023, January 2023

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

There is a considerable amount of work being undertaken by Coventry City Council that has the potential to improve air quality whether directly or indirectly. Table 2.2 lists seventy-two measures and provides a summary of the main actions being undertaken.

With the establishment of the West Midlands Combined Authority (WMCA), regional initiatives to achieve air quality improvements should be forthcoming. There will be major opportunities for regional sustainable growth to be secured with Coventry at the forefront of low emission vehicle technology research and development.

Coventry City Council currently has representatives at the Coventry and Warwickshire Air Quality Alliance. The alliance is an informal group of officers from Public Health, Planning Transport, Environmental Health and partner organisations across the sub region. The alliance has been working in partnership to support collaborative efforts to improve air quality in Coventry and Warwickshire, which has included developing an active travel campaign: "Choose How You Move" (please see website at:

[www.coventry.gov.uk/activetravel](http://www.coventry.gov.uk/activetravel) ). In addition, five of the local authorities from the alliance have collaboratively developed a Supplementary Planning Document (SPD) on air quality, that sets out design criteria and measures developers are expected to implement as part of planning applications. It is hoped that developing this document on a regional basis will improve consistency across the area. The SPD was adopted on the 6<sup>th</sup> September 2019 by Coventry City Council with the other authorities also recently adopting.

Improving air quality also features as a priority in the Coventry Health and Wellbeing Strategy 2019 – 2023 (this document is currently being revised)

[https://www.coventry.gov.uk/downloads/file/31238/coventry\\_health\\_and\\_wellbeing\\_strategy\\_2019-2023](https://www.coventry.gov.uk/downloads/file/31238/coventry_health_and_wellbeing_strategy_2019-2023)

Coventry City Council is supporting the West Midlands Air Quality Improvement Programme (WMAQIP). Led by the University of Birmingham, the project comprises three broad themes which aim to improve understanding of the region's air pollution challenges and to provide new capability to support clean air measures. Part of this work will be to look at PM<sub>2.5</sub> and additional monitoring of PM<sub>2.5</sub> was undertaken in Coventry in 2021-2.

The Council were successful in bidding for £1.2 million of funding and have installed 39 rapid charging points around the city to charge electric taxis. This will provide the infrastructure to support the uptake of ultra-low emissions electric taxis in Coventry, and reduce emissions from older diesel vehicles. The first of these were installed and operational during 2018 and is now complete (currently there are 22 electric hybrid Hackney Carriages and 137 electric/electric hybrid private hire vehicles licensed in

Coventry) along with the on-going provision of over 800 on-street charging points for residents to use, the highest number of charging points outside of London. The Council also secured £1.5 million and upgraded over 100 National Express buses to Euro VI Standard engines and £2.2 million for a fleet of 10 electric buses to operate in the City. In addition to this, the Council and TfWM were awarded £50 million (with an additional £78 million from bus operators) to become the first all-electric bus City in the UK, the first 50 of these buses entered service during 2022, a further 80 are expected to be delivered during 2023 with the remainder in service by 2025.

Coventry City Council secured £2 million from the Government's Early Measures Fund to improve air quality along the A4600 corridor which runs between the City centre and M6 Junction 2. A package of measures has been developed including junction improvements, new technology to improve traffic management, public engagement and electric vehicle trials for taxi drivers in the City. Coventry will continue to bid for funding measures as they become available.

In February 2020, following submission of the Outline Business Case and modelling in 2019, the [Government confirmed that Coventry does not need to introduce a charging Clean Air Zone](#) (CAZ D), which would have seen older and more polluting vehicles charged for entering a large area of the city.

Instead, the Government has agreed that the package of measures put forward by the Council could be effective in reducing NO<sub>2</sub> levels without the wider social and economic disbenefits that the CAZ D would have created.

In line with the Government direction, the [Full Business Case](#) has now been completed, and was submitted to Government in December 2020/February 2021, following Cabinet approval and a revised [Ministerial Direction](#) issued in May 2021

The resulting Local Air Quality Action Plan (LAQAP) has been [based on air quality and traffic monitoring data and modelling](#) and the package of measures focusses on improving NO<sub>2</sub> levels at those locations where particular problems have been identified, which are Holyhead Road and Foleshill Road.

The LAQAP package focuses upon encouraging local trips to be made by walking and cycling rather than the car, with significant investment in a new high-quality cycle route between Coundon and the city centre, and on an engagement programme with schools, businesses and local communities building on the successful work already done in the Walsgrave corridor.

The Holyhead Road abatement element of the package includes targeted junction and road layout changes on Holyhead Road and parallel routes to allow traffic to flow more freely, reduce congestion and to provide better walking and cycling routes into the city. These measures will allow the traffic flows on Holyhead Road to be reduced through restrictions if necessary to allow NO<sub>2</sub> levels to be brought below legal limits on this route.

On Foleshill Road, traffic management measures will be introduced to remove through traffic, which will be encouraged to use the A444 to access the city centre instead.

The government has endorsed this package and has awarded the Council £25.4 million in grant funding to deliver it.

The Council consulted with the public and businesses on the Plan in March 2018 and in Spring 2020 and amended the package to reflect the feedback received. The Council undertook further [consultation on the Spon End and Upper Hill Street](#) schemes in Nov-Dec 2021, and following the [consultation responses](#) received the Council has made some changes to the proposals which will require Government approval.

## Conclusions and Priorities

Exceedances in NO<sub>2</sub> continue to be identified inside the existing AQMA although the general trend shows that levels are declining. Implementing the measures identified in the [Local Air Quality Action Plan](#) (LAQAP) is the primary focus. The key priorities for addressing air quality in these areas remains the reduction in queuing traffic and congestion at junctions.

Other priorities for 2023/24 include:

- Complete the measures contained in the Full Business Case and Local Air Quality Action Plan (LAQAP)
- Commence work on a new Air Quality Action Plan (AQAP)
- Continue to monitor NO<sub>2</sub> concentrations at existing locations using existing technology and to introduce new technologies that will give more accurate, real-time measurements
- Continue to raise public awareness of air quality through campaigns for active travel such as City Ride events, a new 'Choose How You Move' website for Coventry and Warwickshire and promotion of Defra's 'Burn Right' campaign.
- Work with West Midlands Combined Authority on behaviour change campaign related to wood burning stoves



- Continue green procurement such as electric vehicle recharging points for the promotion of low emission transport and vehicle fleet efficiency improvements
- Continue R&D into the Coventry Very Light Rail (VLR) project

## Local Engagement and How to get Involved

A large proportion of road vehicles are private car users. There are lots of simple things the public can do to help improve air quality locally, such as:

- Using public transport and park and ride facilities
- Walking or cycle short journeys rather than using the car
- Make use of the city's new segregated cycle lanes in Coundon and on Binley Rd
- Share journeys with colleagues and friends
- Switch off car engines when stationary
- Choosing a low emission car for your next purchase – there are Government funds available
- Choosing an ultra-low NO<sub>x</sub> boiler with a dry NO<sub>x</sub> emission rate of 40mg/kWh or less for your next purchase
- Avoid burning garden and domestic waste and use local recycling facilities

If using a wood burning stove or open fireplace, ensure the correct/smokeless fuels are being used. Please see the council website for more information:

[https://www.coventry.gov.uk/info/26/pollution\\_licensing/1368/smoke\\_control\\_areas/2](https://www.coventry.gov.uk/info/26/pollution_licensing/1368/smoke_control_areas/2)

and the [Burnright](#) and [Woodsure](#) websites

## Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Department of Coventry City Council with the support and agreement of the following officers and departments:

- Sunil Budhdeo Transport Innovation Manager
- Richard Smith Cycle Coventry Engagement Co-ordinator
- Linda Sullivan Programme Manager, Transport and Infrastructure
- Emily Stewart Programme Officer – Inequalities, Public Health Team
- Alicia Phillips Programme Manager – Inequalities, Public Health Team
- Hakan Bikim Project Manager Major Projects Team
- Mick Coggins Senior Licensing & Enforcement Officer, Taxi Licensing

This ASR has been approved by:



Allison Duggal, Director of Public Health and Wellbeing, Coventry City Council

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

If you have any comments on this ASR please send them to Frances Taylor at:

Floor 11, One Friargate, Coventry, CV1 2GN

Telephone - 024 7697 2263

Email – [Env.protection@coventry.gov.uk](mailto:Env.protection@coventry.gov.uk)

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# 1 Local Air Quality Management

This report provides an overview of air quality in Coventry during 2021 and 2022. 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 Coventry City Council to improve air quality and any progress that has been made.

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

## 2 Actions to Improve Air Quality

### Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 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.

A summary of AQMAs declared by Coventry City Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within Coventry.

Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation is as follows:

- NO<sub>2</sub> annual mean

**Table 2.1 – Declared Air Quality Management Areas**

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
City wide AQMA	1st November 2009	NO2 Annual Mean	The whole city as defined by the city boundary	YES	Annual average levels of NO2 identified as exceeding 40µg/m3 at a number of roadside locations in city YES	Annual average levels of NO2 identified as exceeding 40µg/m3 at a number of roadside locations in city	None	Predicted to be exceedances of annual mean NO2 at various locations with relevant exposure in the city (within AQMA)	<a href="https://www.coventry.gov.uk/downloads/file/1773/air_quality_action_plan_2007">https://www.coventry.gov.uk/downloads/file/1773/air_quality_action_plan_2007</a>

Coventry City Council **confirm the information on UK-Air regarding their AQMA(s) is up to date.**

Coventry City Council **confirm that all current AQAPs have been submitted to Defra.**

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

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

1. Robust and accurate QA/QC procedures were applied. Calculations for bias adjustment, annualisation and distance-correction factors were outlined in detail.
2. The Council has included discussion and review of its monitoring strategy. This is welcomed, and the Council should continue to review its monitoring strategy on a regular basis.
3. Comments from last year's ASR have been mentioned and addressed. This is welcomed, and we encourage this to continue in future ASRs.

**Response: All noted with thanks**

4. Council have provided maps of the diffusion tube monitoring network. The maps within the report could be improved. For example, the base map colours make the maps hard to read, and some maps scales are not particularly useful (eg. the Foleshill Road / Longford Road Tubes map does not show enough detail of road names and buildings). However, the Council have provided a link to an interactive map which is very clear and easy to use. This is commended.

**Response: Noted, however these colours are our standard base map from our GIS system. Readers are directed to the online map.**

5. The report discusses the Councils Local Air Quality Action Plan which was produced as part of the Full Business Case to demonstrate the Council could be effective in reducing NO<sub>2</sub> levels without the wider social and economic disbenefits that a Clean Air Zone (CAZ) would create. However, Table 2.1 suggests the AQAP for the city-wide AQMA is from 2007 and is therefore out of date. The Council is encouraged to formally adopt a revised AQAP in the next reporting year.

**Response: Acknowledged. We hope to complete a new AQAP by the next reporting year. The LAQAP produced as part of the FBC is progressing and measures will form the basis of the new AQAP**

6. There are some minor formatting errors within the report. The Council is reminded to ensure spelling or formatting errors are corrected prior to publication.



- a. There is one instance where the report shows “Error! Reference source not found” instead of a link (page 26).
- b. Table A.2 is missing borders in some columns, mainly in the 2020 column. Horizontal lines demarking each row would make the data within the report easier to read.
- c. There is some text in a light green font in Appendix F, which is hard to read.

**Response: Noted with thanks**

7. Overall the report is detailed, concise and satisfies the criteria of relevant standards. The Council should continue their good and thorough work.

**Response: Noted with thanks**

Coventry City Council has taken forward a number of direct measures during the current reporting years of 2022 and 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. A total of **Seventy two** measures are included within Table 2.2, with the type of measure and the progress Coventry City Council have made during the reporting years of 2022 and 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on some of these measures can be found using the following links and in their respective Strategies/Action Plans

- CCC Air Quality webpage - <https://www.coventry.gov.uk/pollution-1/air-quality>
- Transport Strategy - <https://www.coventry.gov.uk/transportstrategy>
- Draft Climate Change Strategy - <https://www.coventry.gov.uk/climate-change/tackling-climate-change/2>
- Urban Forestry Strategy - <https://www.coventry.gov.uk/heritage-ecology-trees/coventry-urban-forestry-strategy-2022-2032>
- Coventry Very Light Rail - <https://www.coventry.gov.uk/verylightrail>
- Air Quality SPD - [https://www.coventry.gov.uk/downloads/download/5199/air\\_quality\\_supplementary\\_planning\\_document\\_spd](https://www.coventry.gov.uk/downloads/download/5199/air_quality_supplementary_planning_document_spd)
- Electric Bus City - <https://www.coventry.gov.uk/news/article/4475/coventry-on-the-road-to-becoming-uk-s-first-all-electric-bus-city>

Key completed measures are:

- Coventry Station Masterplan and associated public realm works
- 403 Slow and Fast Charge on-street electric vehicle points installed
- Installation of variable messaging signage (VMS) and air quality sensors along the A4600, including the Ball Hill corridor now capable of diverting traffic onto alternative routes in real-time episodes of high pollution
- West Midlands cycle hire scheme launched covering City centre and both University campuses.
- Implementation of mobility credit scheme whereby residents can trade old vehicles for public transport subsidies to reduce transport emissions
- Coundon cycle route substantially complete and opened
- First batch of 50 electric buses as part of the electric bus city scheme delivered and operational in 2022

Coventry City Council expects the following measures to be completed over the course of the next reporting year:

- Completion of key measures contained in the LAQAP to facilitate compliance with the NO2 objective level in the shortest possible time
- Binley Road and Canley Cycleways
- Delivery of further 80 electric buses under the electric bus city scheme

Coventry City Council's priorities for the coming year are:

- Continued implementation of the Full Business Case containing package of measures to achieve compliance in the shortest possible time
- To facilitate the introduction of dynamic traffic management, highway improvements are required to ensure that pinch points on the local road network are removed to allow traffic to be diverted away from pollution hotspots without creating a problem elsewhere. This package element is focused on the Holyhead Road corridor and the parallel routes and further information is available on the [Council's website](#). This package will relieve traffic pressures on Holyhead Road, ensuring reduced traffic

flows and freer-flowing traffic thereby reducing NO<sub>2</sub> levels at the worst pollution hotspot within the city.

- A city-wide programme of travel planning initiatives to include all schools and educational establishments, all major businesses and employers, and local communities within or adjacent to the main corridors within which NO<sub>2</sub> levels are identified to be a problem. These initiatives will seek to reduce the number of car trips being made at a local level by encouraging people to adopt more sustainable and healthy alternatives such as walking, cycling or using public transport.
- Continue the R&D programme into Very Light Rail scheme
- Commence work on a new AQAP
- Review historic Smoke Control Orders
- To support the engagement programme aimed at encouraging more people to cycle, improvements will be made to the city's cycle network, with high standard routes being built on four key corridors connecting the city centre with outlying suburbs and key destinations. These corridors are:

1. Foleshill Road
2. City Centre to Binley and Hospital
3. City Centre to Whitley
4. City Centre to University of Warwick

This seeks to encourage more cycling for local journeys by providing high standard infrastructure on key routes running through identified pollution hotspots.

Coventry City Council worked to implement these measures in partnership with the following stakeholders during 2021 and 2022:

- JAQU
- West Midland Combined Authority
- Transport for West Midlands

The principal challenges and barriers to implementation that Coventry City Council anticipates facing are:

- Maintaining the long-term effectiveness of measures through continued investment, given insecurity of resources especially revenue funding;
- Ability to influence other policy areas that impact on travel demand across the city, such as new development or education / social policies;
- Providing attractive and affordable alternatives to the car when the Council does not directly control public transport services;
- Possible new or changed legislative controls requiring the council to implement additional measures for particulate matter, which the current package of work and the proposals in the Business Case do not directly address

Progress on the following measures has been slower than expected due to:

- Impact of Covid-19 has delayed the implementation of the Full Business Case
- Local Plan has required additional traffic and air quality modelling and ANPR surveys were delayed due to, roadworks, adverse weather and vandalism.

Coventry City Council anticipates that the measures stated above and in Table 2.2 and those outlined in the Full Business Case to JAQU will achieve compliance in the City-wide AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	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	Park and Ride South (Memorial Park)	Alternatives to private vehicle use	Bus based Park & Ride	2018		Coventry City Council (CCC) /Transport for West Midlands (TfWM)	Coventry City Council Transport for West Midlands	NO			Completed	Reduced vehicle emissions	Uptake	Operational	Allows drivers to park and finish their journey into the city centre by bus. Introduction of car parking charges may dissuade some users. Improvements include planned introduction of greener efficiency measures, EV charge points being installed for car park. Project initiated to introduce solar panels onto buildings to feed EV car parking and make the park more self-sustaining in energy use
2	Canley Station Park & Ride	Alternatives to private vehicle use	Rail based Park & Ride	2010		CCC and Transport for West Midlands (TfWM)	CCC	NO			Completed	Reduced vehicle emissions	Uptake	Operational, ongoing	Allows commuters to park at the stations and continue their journey on train. 20 additional covered cycle racks have been provided. Possibly looking at micro mobility through introducing e-bikes and e-scooters which is at research stage
3	Tile Hill Station Park & Ride	Alternatives to private vehicle use	Rail based Park & Ride	2010		CCC & TfWM	CCC, TfWM, DfT	NO			Completed	Reduced vehicle emissions	Uptake	Operational, on-going	Allows commuters to park at the stations and continue their journey on train. Now currently developing plans for improvements, designs being costed, and outline business case drafted. Awaiting DfT confirmation of funding through the City Region Sustainable Transport Settlement. There will be an increase in car parking, a new bus interchange, improved walking and cycling access and secure cycle parking, making onward journeys multi-modal and linking to e-scooter trials where successful. 32 extra covered cycle racks have already been provided
4	Car Share (Lift-Share) Coventry & Warwickshire	Promoting Travel Alternatives	Personalised Travel Planning	2014	2015	CCC, Liftshare	CCC	NO			Completed	Reduced vehicle emissions	Uptake	Operational, ongoing	Car Share scheme is available via Liftshare. Some businesses have their own systems which are limited to their staff only.

5	Mercury emissions trading scheme	Environmental Permits	Tradable permit system through permit systems and economic instruments	2014	2015	CCC / Solihull Borough Council	CCC / Solihull Borough Council	NO			Completed	Reduced industrial emissions	Uptake	Ongoing	A trading scheme for mercury emissions from cremations has been established between Coventry and Solihull councils and is still ongoing. The scheme allows two crematoria in Solihull to fulfil their obligations under the Environmental Permitting Regulations to abate at least 50% of their emissions for mercury by trading emissions permits with Coventry City Council under an independent burden sharing scheme
6	Coventry Local Plan and Coventry City Centre Area Action Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2016	2016	CCC	CCC	NO			Completed	Reduction / mitigation in NOx and PM	Reduction / mitigation in NOx and PM	Complete	Policy documents that encourage and promote the shift away from fossil fuels to low emissions alternatives i.e. district heating systems and renewable energy. In addition the policies promote low emissions vehicle infrastructure, public transport links and promotion of cycling and walking
7	Heatline Project	Promoting Low Emission Plant	Emission control equipment for small and medium sized stationary combustion sources / replacement of combustion sources	2013	2015	CCC, CDEC (Coventry District Energy Company), ENGIE	CCC	NO			Completed	Reduction / mitigation in NOx and PM	Uptake	Operational, ongoing	The Heatline district energy network produces over 106,000 MW/hrs of electricity per year (enough for 36,000 homes) and over 13,000MW/hr thermal heat from the municipal waste incinerator to heat eight major buildings within the city centre, one of which is Coventry Cathedral. The scheme eliminates the need for gas boilers at these premises and makes full use of the waste heat using a 650m3 thermal store. Carbon savings are around 1300 tonnes per year with NOx and particulate matter emissions from connected premises being reduced to zero. There is an active programme to connect further large buildings to the scheme including the new Friargate business district and a new leisure centre. Funding from the Heat Networks Delivery Unit of DECC is being used to explore the feasibility of new connections in the Canley area of the city to link with an existing network operated by the University of Warwick. The Heatline connection to the council Friargate offices was completed in 2021 and will serve new buildings in the wider Friargate development currently under construction. Extensions to system to serve other public buildings expected to commence in 2022.

8	Air Quality Supplementary Planning Document	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	2019	CCC	CCC	NO			Completed	Reduced emissions	Compliance	Ongoing	A specific Policy Document (CCC, Air Quality SPD) has been created to support and provide technical guidance to policy EM7 (Air Quality) in the Coventry Local Plan and was adopted in 2020. Provides developers with guidance on low emissions infrastructure and heating, mitigating impacts from construction and damage costs. Due for review in 12-18 months.
9	Agile working-Kickstart team	Promoting Travel Alternatives	Encourage / Facilitate home-working	2018	2018	CCC	CCC	NO			Completed	Reduced vehicle emissions	Staff Uptake	Ongoing	During the pandemic the working at home rules have forced staff to work at home where possible which also reduced the need to travel. Council staff and support systems have coped well and adapted to increased home working supported by new technology and it is likely that a large number of staff will adopt a hybrid model of 1-2 days in the office and working from home, reducing the need to travel cutting private car movements and emissions.
10	Pedestrian Thoroughfare - public realm	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2017	2020	CCC	CCC	NO			Completed	Reduced vehicle emissions	Uptake reduced congestion	Completed	The creation of the Friargate bridge with a new pedestrian boulevard over the ring road has created a more direct route for pedestrians into the city centre from the Coventry railway station. The ring road previously provided a significant barrier to walking and the boulevard reduces reliance on taxis and buses to move rail commuters arriving at the station into the City Centre. Walking and cycling routes have been improved from Greyfriars Lane to High Street and on Fairfax Street and new cycle hire schemes have been implemented in these locations. Additionally, by implementing enhanced walking routes through Greyfriars Green and improving the lighting we have made this route a preferred walking route into the city centre. Walking/cycling also promoted by new station masterplan and development.

11	Further public realm works	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2018	2021	CCC, Network Rail, TfWM	CCC	NO	Funded	> £10 million	Implementation	Reduced vehicle emissions	Uptake	Ongoing	The £100m Coventry Station Masterplan is near completion and will enhance the journey into the city centre, encouraging the use of trains rather than cars and providing a "Welcome to Coventry Moment". The arrival at the station is enhanced by new public realm, new signage and walking and cycling routes allowing visitors to see how Coventry is a very walkable city. The new cycle hire scheme has been rolled out at key transport hubs across the city and covers from the Railway station to Pool Meadow bus station.
12	Love Your Bike/Dr Bike sessions	Promoting Travel Alternatives	Promotion of cycling	2016		CCC	CCC	NO			Completed	Reduced vehicle emissions	Uptake reduced congestion	Ongoing	Dr Bike and cycle maintenance training sessions have been delivered by local bicycle mechanics
13	Let's Ride Coventry	Promoting Travel Alternatives	Promotion of cycling	2018		CCC, British Cycling	CCC	NO			Completed	Reduced vehicle emissions	Uptake	Completed	The partnership with British Cycling was supported by public health and included session for children in schools and also outreach in more deprived communities via Family Hubs, where levels of cycling are generally lower. Cycles were provided for the sessions. Mass participation events were not possible due to Covid, but guided rides could still be delivered when restrictions allowed. Event has now finished, however the city now offers 'Cyclefest' (see measure 68 below) in its place
14	Coventry Station Masterplan	Transport Planning and Infrastructure	Public transport improvements -interchanges stations and services	2018	2022	CCC, Network Rail, TfWM	CCC	NO		> £10 million	Implementation	Reduced vehicle emissions	Uptake	Complete	The Coventry Station Masterplan is delivering £82m infrastructure improvements at Coventry Rail Station, including a second station building and new bus interchange. A pedestrian tunnel under Warwick Road as been completed, a new multi storey car park with EV charge points is complete and will improve accessibility between the railway station and bus interchange, providing a step free and traffic free link between bus and rail services. The bus interchange is now open along with a taxi loop. A new secure station cycle hub has been provided with 176 spaces



15	Purchase of 5 AQ Mesh air quality monitoring units	Public Information	Via other mechanisms	2017	2017	CCC	CCC, Defra	YES		£10k - 50k	Completed	Reduced emissions	Data evaluation	Suspended due to faults with units	AQ Mesh units installed in areas of known poor air quality. One is located adjacent to a school in partnership with Public Health. The units are currently undergoing refurbishment with the provider and the manufacturer looking to reinstall the units with improved data capture and accuracy.
16	VMS Project (linking VMS to divert traffic onto less polluted corridors)	Public Information	Via other mechanisms	2019		CCC, Swarco, Siemens	Defra JAQU AQ early measures fund	YES	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions	Reduced congestion	Installation works completed, implementation now moved to UTC traffic control centre and commissioning works (TBC)	A network of Variable Message Signs (VMS) signs have been installed on the gantries of the ring road to improve navigation around the city for motorists, buses and coaches, with signposting to car parks and the ability to change the messages for events or emergencies to manage traffic more effectively along key routes. The project has been completed and has been extremely useful in keeping all road users informed on all corridors including the ring road. Two VMS signs outbound A4600 route and inbound Hinckley Road to inform drivers if air quality is poor and diverts drivers to alternative route Clifford Bridge Rd to avoid Ansty and Walsgrave Roads

17	Real-Time Bay Availability System (aka Appy Parking), 2 additional projects have been funded by Innovate UK and DFT	Traffic Management	UTC, Congestion management, traffic reduction	2019	2019	Appy Parking, CCC DfT C-ITS	Appy Parking, CCC DfT C-ITS	NO			Completed	Reduced vehicle emissions	Uptake, reduced congestion	Project completed in 2019	Council project with AppyParking is a work in progress, but the information it produces may eventually convert kerb side parking from a frustrating source of congestion and pollution into an efficient well managed urban transport market. Currently through the AppyParking app drivers are able to input their destinations, the length of time they want to park, and their expected arrival time. Soon, when they approach their destinations, the guidance system will give them turn-by-turn voice directions to available kerb or off-street parking spaces. The system will then show the best walking route to and from their destination. Following the delivery of the Real-time Bay Sensor project, Coventry City Council has partnered with AppyParking on a new and complementary Innovate UK funded project which will see the implementation of The Parking Platform™ AppyParking's system to collect, aggregate and standardise parking restriction data across councils, creating a UK wide parking dataset.
18	Appy Parking- "Parking Platform" Project	Traffic Management	UTC, Congestion management, traffic reduction	2016	2016	CCC	CCC	NO			Completed	Reduction in vehicle emissions	Digitising traffic regulation orders	Completed	Assisting autonomous vehicles; embedding TRO's within the vehicles and guiding them to available parking areas and reducing congestion and emissions. All TRO's have now been digitised for exploitation for various projects.
19	Appy Parking - "Park AV" Project	Traffic Management	UTC, Congestion management, traffic reduction	2019	2023	CCC	CCC	NO			Implementation	Reduction in vehicle emissions	Autonomous valet parking	Ongoing	Allowing autonomous vehicles to find the nearest available parking space, reducing congestion and improving air quality. Developed the application in partnership with JLR and tried the application at various parking scenarios. Working with TWM for implementation of second stage development. EV charging bays are to be included as scheme progresses

20	UK Connected Intelligent Transport Environment (UK CITE)	Public Information	Other	2016	2018	Led by Travel A.I including CCC / TfWM; Local Authorities Consultancies; TSC and Data Experts Innovate UK	Led by Travel A.I including CCC / TfWM; Local Authorities; Consultancies TSC and Data Experts Innovate UK	NO			Completed	Reduction in vehicle emissions	Project Success	Completed	First trials completed on test-track at Horiba MIRA (Autumn 2016), the second test track scenarios for connect vehicles and autonomous vehicles were completed (Spring 2017). Third closed on-street trials occurred Autumn 2017 with final open road tests at the latter stages of the project in Summer 2018. Principally focused on the vehicle and user experience. Approx. 18 use cases will be tested, using info transmitted from infrastructure - the autonomous vehicle will then determine what to do and how to proceed. To date the trials have been a huge success with large scale publicity and dissemination activities including local, national and international press. Largest trial and budget as part of Innovate UK's 'Introducing Driverless Cars to UK Roads' competition. This project has further been exploited by TfWM for the Midlands Future Transport Zone (MFTZ).
21	Citizen's at the City's Heart (CATCHI)	Public Information	Other	2017	2017	CCC / TfWM	CCC / TfWM	NO			Completed	Reduction in vehicle emissions	Uptake	Completed	Has two parts. One is developing the multimodal journey planner on phone. This will collect data on how people are travelling, and then provide real time information on how long a journey would really take people. The second part focuses on harvesting the data and making this available to policymakers to help plan their policy and plan their networks. CCC in partnership with TfWM – to further develop CATCHI & look at possibilities of integrating with the HoPE project. Project extended for one quarter until March end - completed 2017, findings are available for next 10 years. Findings used for 2021 city of culture visitor experience public transport and tourist attractions, in partnership with TfWM
22	West Midlands Cycle Hire	Transport Planning and Infrastructure	Public cycle hire scheme	2021	2026	WMCA/TfWM	WMCA	NO			Completed	Reduced vehicle emissions	Uptake	Ongoing	West Midlands Cycle Hire Scheme was developed during 2020 and launched in 2021. The scheme covers the West Midlands and Coventry city centre and surrounding area and both University campuses. (This replaces the campus only scheme at University of Warwick). The scheme includes both standard and e-bikes. Scheme is proving very popular.

23	CCC Employee Training	Vehicle Fleet Efficiency	Driver training and ECO driving aids	2016	2016	CCC	CCC	NO			Completed	Reduced fuel use/ vehicle emissions	Staff training	Ongoing training	All employees using City Council vehicles must complete defensive driver training including how to drive to reduce fuel use. Telematic units are currently fitted within all fleet vehicles to allow vehicles to be tracked and optimal routes to be identified – they are also used to encourage more efficient driving.
24	JLR Park & Ride	Alternatives to private vehicle use	Bus based Park & Ride	2018	2018	JLR	JLRE	NO			Completed	Reduced vehicle emissions	Uptake	Ongoing	Private park and ride for JLR staff and visitors. Operates between Birmingham Airport, Coventry Airport and Gaydon Plant Site. 1 Million passenger journeys per year
25	SUITS - Sustainable Urban Integrated Transport Solutions (transferred project management TfWM).	Public Information	Other	2018	2018	Led by Cov Uni inc CCC and a European Consortia Horizon 2020 (TfWM, Keelan WMCA)	Led by Cov Uni inc CCC and a European Consortia Horizon 2020 (TfWM, Keelan WMCA)	NO			Completed	Reduction in vehicle emissions	Uptake	Completed	It will evaluate interventions that will improve Coventry's resilience and ability to deliver on reducing congestion, pollution and the development of inclusive transport measures impacting the quality of life for urban dwellers and commuters. Key outputs will be a validated capacity building program for transport departments, and resource light learning assets, decision support tools to assist in procurement, innovative financing, and engagement of new business partners and handling of open, real time and legacy data. Working with 9 local authorities, Coventry University, European Partners, and TfWM, Stakeholder engagement completed.

26	Safe & Active Travel Campaign	Public Information	Via the Internet	2017	2017	Public Health Cov & Warks	Public Health Cov & Warks	NO			Completed	Reduction in vehicle emissions	Uptake	Ongoing	Active Travel Campaign for Warwickshire and Coventry launched in August 2017 ( <a href="http://www.coventry.gov.uk/activetravel">www.coventry.gov.uk/activetravel</a> ). Officers have developed a website which is an active travel info hub, under the 'Choose how you Move' branding, including journey planners, walking and cycling maps, car share as well linking to air pollution. Interactive map showing NO2 monitoring sites across Coventry and 2016 annual mean NO2 concentrations has been developed. Funding from Early Measures work has included Sustrans using the Choose How You Move branding to promote Active Travel (with a focus on the A4600 corridor. We are also in the early development stage of a digital travel planning platform that will provide users with a choice of travel options and will also act as a ticket for major events.
27	OZEV Funding for Electric Taxi Charging Points	Promoting Low Emission Transport	Public Vehicle Procurement -Prioritising uptake of low emission vehicles	2018	2020	CCC OZEV & ESB, BBLP	Office for Zero Emission Vehicles (OZEV)	NO	Funded	£1 million - £10 million	Completed	Reduction in vehicle emissions	Uptake	Completed	£1.2 million of funding awarded to the council and 39 rapid charge points for electric taxis have been installed around the city. 25% £400K was invested by the EV charge point operator (ESB). These charge points have been provided to encourage uptake of low emissions taxis to reduce emissions and support the local taxi industry/investment in UK Automotive industry. Currently there are 22 electric hybrid Hackney Carriages and 137 electric/electric hybrid private hire vehicles licensed in Coventry
28	OZEV Funding for on street residential charge points scheme	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2019	2022	CCC, OZEV, char.gy & Connected Kerb Ltd BBLP	Office for Zero Emission Vehicles (OZEV)	NO	Funded	£1 million - £10 million	Implementation	Reduction in vehicle emissions	Uptake	Ongoing	Phases 1 to 4 completed in 2020 and £1.42 million funding received from OZEV, installed 403 slow and fast charge points for residents that don't have off street parking facility, to encourage them to own or lease electric vehicles. Phase 5 funding received £706,320 for commencement Jan 2022 and completion by July 2022 which will see additional 260 EV charging bays made available

29	JAQU Funding for AQ Early Measures	Other	Other	2019	2019	CCC	Defra	YES	Funded	£1 million - £10 million	Completed	Reduced emissions	Monitor air pollution	Completed	£2 million of funding was awarded to CCC to deliver projects under the Air Quality Early Measures Scheme. 12 air monitoring sensors have been installed. During high air pollution readings, a warning is sent to the Council's UTMC whereby advisory messages are displayed on the VMS signs with warnings of high air pollution and advise on alternate routes at two identified hot spots in Coventry
30	JAQU Funding for AQ Early Measures [Signal upgrade]	Traffic Management	UTC, Congestion management, traffic reduction	2019	2019	CCC, Siemens & BBLP	JAQU Defra AQ Early measures funding	YES	Funded	£1 million - £10 million	Completed	Improving air quality	Upgrade of traffic signals along the A4600 [an identified AQ hotspot]	Completed	£2 million of funding was awarded to CCC to deliver projects under the Air Quality Early Measures Scheme. 7 traffic signal Junctions along A4600 have been upgraded to facilitate latest technology and bringing it current standards
31	JAQU Funding for AQ Early Measures [4 x LEVC TX leasing]	Promoting Low Emission Transport	Taxi emission incentives	2019	2022	CCC, LEVC	JAQU Defra AQ Early measures funding	YES	Funded	£1 million - £10 million	Completed	Improving air quality	uptake of E-Taxis	Completed	£2 million of funding was awarded to CCC to deliver projects under the Air Quality Early Measures Scheme. A 'try before you buy' scheme was run allowing hackney carriage owners/drivers to try the new LEVC electric taxi with a petrol range extender before committing to purchasing the vehicle. CCC is providing financial incentives through early measures grant fund for promoting uptake of first 60 electric taxis.
32	Burn Right & Ready to Burn Campaigns	Public Information	Via the Internet	2019	2032	CCC	CCC	NO			Completed	Reduction in PM2.5	Project success	Ongoing campaign	Annual campaign educating the public about use of correct fuel in open fires and woodburning stoves with the aim of reducing smoke and PM2.5 emissions. Website advice on "Do's & Don'ts for Wood Burners" and Burn Right materials promoted for Autumn/Winter via Council website, intranet, Council Twitter and Facebook. Promotion activities regularly released ongoing through the cold weather so is not a one-off promotion. Materials updated to publicise new controls around purchase of seasoned wood and correct materials for wood burners

33	Bus Lane Suspension	Traffic Management	Other	2019	2020	CCC, BBLP, Siemens	CCC	NO			Completed	Reduced Vehicle emissions	Reduced congestion on key routes	Completed	Evidence showed congestion in Coventry to be rising faster than almost anywhere else due to the growth of the city and its economy. To tackle the growing congestion issue, an evidence-based bus lane review was carried out in 2017 where several unwanted bus lanes were suspended and continued into 2019 with those suspensions now becoming permanent following evaluation.
34	Intelligent Variable Messaging System (iVMS)	Public Information	Via other mechanisms	2019	2021	"CCC; Siemens Mobility; SGL; Coventry University; Horiba MIRA CWLEP"	"CCC; Siemens Mobility; SGL; Coventry University; Horiba MIRA CWLEP"	NO			Completed	Reduction in vehicle emissions	Uptake	Completed, final report submitted to LEP and approved.	The analysis of the reduced travel times (congestion) at peak periods leads to some improved accessibility for city centre economic activities, especially using the Binley Rd corridor, where at peak times (assuming 6% App penetration rate) congestion is all but removed. Assuming that these savings can be realised over the year on a consistent basis there is a reduction in congestion in all corridors, with a reduced period where free flow is not possible. The most substantial achievement of the iVMS project has been to develop and extend the local test bed environment for vehicle technologies (and related smart city activity) across several dimensions. The Bluetooth technology has helped to inform the new DEFRA funded Early Measures Feasibility Project (from 2018 onwards) especially along the A4600 key route into the city
35	Binley Business Park	Promoting Travel Alternatives	Workplace Travel Planning	2018	2018	CCC, Partners - Binley Business Park, Coventry Building Society, Tsys, St. Gobain, Keogh, Orbit Housing.	CCC, Partners - Binley Business Park, Coventry Building Society, Tsys, St. Gobain, Keogh, Orbit Housing.	NO			Completed	Reduced vehicle emissions	Uptake of sustainable travel	Ongoing	Joint travel plan between several large businesses on Binley Business Park to control traffic management and encourage employees to take up sustainable travel. CCC engaged with businesses in travel planning, engaged with future mobility zones (WMCA). Engagement is continuing along with promotion of Binley cycleway
36	West Midlands Air Quality Improvement Programme (WM-Air)	Policy Guidance and Development Control	Other policy	2019	2022	University of Birmingham	University of Birmingham	NO	Funded	£1 million - £10 million	Implementation	Reduction / mitigation in NOx and PM	Uptake of tools/policy	Ongoing	Led by the University of Birmingham, and supported by £5million of funding from the Natural Environment Research Council (NERC), the project comprises three broad themes which aim to improve understanding of the region's air pollution challenges, to provide new capability to support clean air measures and policy focussed upon the region, and to support the application of these to specific policy scenarios, questions and challenges

37	WM_Air installation new sensors	Other	Other	2020	2021	University of Birmingham	University of Birmingham	NO		£1 million - £10 million	Completed	PM monitoring	Monitoring	Completed	10 new PM2.5 sensors deployed at key locations across city operated by University of Birmingham as part of WM-AIR project in collaboration with CCC. Sensors have now been removed as lack of funding did not allow long term deployment.
38	Friargate Travel Plan	Promoting Travel Alternatives	Workplace Travel Planning	2018	2018	CCC	CCC	NO			Completed	Reduced vehicle emissions and congestion	Uptake	Ongoing	A travel plan has been developed as part of the council's relocation to new offices in a more sustainable location adjacent to the railway station. The building includes cycle parking and changing facilities as well as a fleet of pool bikes and pool cars including electric vehicles to reduce private car use for travel to work and for business journeys. Travel to the office has reduced significantly since the Covid pandemic with majority of staff continuing to work at home for part of the week as improved technology now allows this.
39	UK Autodrive	Promoting Travel Alternatives	Other	2016	2016	Led by Arup managing several partners incl CCC; Axa, Milton Keynes Council, Transport Systems Catapult, Ford, JLR, TMETC, RDM	Led by Arup managing several partners incl CCC; Axa, Milton Keynes Council, Transport Systems Catapult, Ford, JLR, TMETC, RDM	NO			Completed	Reduced vehicle emissions	Project success	Further development TfWM Midlands future mobility zone, link to earlier TfWM. Completed	Has two parts. One is developing the multimodal journey planner on phone. This will collect data on how people are travelling, and then provide real time information on how long a journey would really take people. The second part focuses on harvesting the data and making this available to policymakers to help plan their policy and plan their networks. CCC in partnership with TfWM – to further develop CATCH & look at possibilities of integrating with the HoPE project. After project end TfWM looking at how to utilise the app further
40	The UK Battery Industrialisation Centre (UKBIC)	Vehicle Fleet Efficiency	Other	2017	2021	Funding awarded to consortium of CCC, CWLEP, and WMG, at the University of Warwick. New Business created - UKBIC Ltd	UK Government's Faraday Battery Challenge (Innovate UK) and WMCA Loan	NO	Funded	> £10 million	Completed	Reduction in vehicle emissions and improving air quality	Uptake of electric vehicles	Opened 2021	The UK Battery Industrialisation Centre (UKBIC) is part of the UK Government's Faraday Battery Challenge. A £130million 20000 square metre facility to support electrification of automotive industry, battery development, static energy storage and other industrial applications.



41	Very Light Rail (VLR)	Transport Planning and Infrastructure	Public transport improvements -interchanges stations and services	2018		CCC, WMCA, Black Country LEP, Coventry and Warwickshire LEP, Dudley Metropolitan Council, ERDF	CCC, WMCA, Black Country LEP, Coventry and Warwickshire LEP, Dudley Metropolitan Council, ERDF	NO			Planning	Reduced emissions and congestion	Uptake of service	Ongoing R&D phase	Aim is to create environmentally friendly battery driven hop on hop off mass transit transport system for use in smaller cities and towns at a fraction of the cost of traditional trams. Autonomous vehicles designed to provide reliable high frequency turn up and go service with no overhead cables and track designed to minimise need to relocate underground services. Ongoing R&D with prototype vehicle and track being developed. As of April 2023 as part of a further £72 Million investment by the WMCA will allow further testing and planning & construction of a live demonstration track running through Coventry city centre
42	Micro-Mobility	Promoting Travel Alternatives	Workplace Travel Planning	2020		DfT, TfWM, CCC, Barrel	Self-funding	NO			Implementation	Reduced emissions and congestion	Uptake	Trial complete and new suppliers appointed. To be launched in Birmingham and other LA's to follow	E-scooters have been trialed in and around Warwick University campus as part of a national trial.
43	Earthsense Zephyr Sensors	Traffic Management	UTC, Congestion management, traffic reduction	2018	2019	CCC, EarthSense, Siemens	JAQU Defra, air quality early measures fund	YES	Funded	£1 million - £10 million	Completed	Improving air quality as wider package measures	Monitoring success and evaluation	Ongoing monitoring	Part of the £2 million package of early measures proposals submitted to JAQU, ongoing to achieve compliance with LAQAP. Linked to VMS system to provide early warning of high air pollution and allow traffic to be diverted onto other routes
44	Mobility Credits	Alternatives to private vehicle use	Other	2020	2024	CCC, TfWM	TfWM, future transport zone	NO			Implementation	Reduced emissions	Numbers of vehicles scrapped, volumes of journeys by other transport modes	Pilot scheme until 2024	Vehicle scrappage scheme in specific wards, targeting older, heavily polluting vehicles. Participants receive £3,000 mobility credits upon scrappage, pre-paid allowance (smart card-based) to be spent on alternative transport methods (including bus, train, e-scooter, cycle hire, car club). To date nearly 100 people have signed up and vehicles have been scrapped. The scheme is not currently accepting any further applications, but the council are considering further trials of the scheme in the near future.

45	Demand Responsive Transport	Alternatives to private vehicle use	Other	2021		CCC, TfWM, Warwick Uni	TfWM, future transport zone	NO			Implementation	Reduced emissions	Numbers of journeys, how many journeys have shifted from private car	Pilot scheme, ongoing	Pilot of a bus service with no fixed route or timetable. Instead customers request rides via an App with pick-ups and drop offs 'on demand'. System algorithm works out the optimum route for picking up customers travelling to different multiple using shared transport. Initial pilot scheme focused on trips to and from the University of Warwick campus, but this has recently been expanded to cover approximately half of the city. Long-term aim is to go city-wide with the scheme being self-sufficient financially
46	Kar Share	Promoting Travel Alternatives	Other	2020		CCC & Kar Share	Self-funding	NO			Completed	Improving air quality	Uptake	Ongoing	Peer-to-peer car sharing, enabling vehicles to be shared and used when not being used by the owner. Launched in December 2020 providing 15 vehicles across Coventry.
47	Electric Fleet First EV Trials	Freight and Delivery Management	Other	2020	2020	CCC, Transport Team Whitley Depot	Highways England	NO	Funded	£1 million - £10 million	Completed	Reduction in emissions and congestion	Uptake	Completed	£1.8 million grant allowed purchase of electric vehicles to loan to local businesses and organisations. The Try before you buy scheme includes electric, vans, cars and taxis. The project aims to reduce emissions on the local and strategic road network. Scheme also includes opportunity for learner drivers to test an electric car with the hope they will go on to purchase one in the future. Scheme has now closed and vehicles in council fleet
48	All electric bus city	Promoting Low Emission Transport	Public Vehicle Procurement -Prioritising uptake of low emission vehicles	2020	2025	CCC and TfWM	Dept for Transport	NO	Funded	> £10 million	Implementation	Reduction in emissions and congestion saving 55 tonnes of NO2 per annum	Conversion of fleet to electric buses	Ongoing	CCC and TfWM awarded £50 million of funding by DfT for Coventry to become first all-electric bus city in UK. A further £78 million investment by bus operators will see 297 new electric buses purchased plus installation of necessary charging infrastructure saving 55 tonnes of NO2 each year. 50 new electric buses entered service in 2022 (in addition to an existing 10 electric buses) with another 80 to enter service early in 2023. The remaining new buses will be in service by 2025

49	Electric vehicle charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020	2023	CCC and Connected Kerb	Connected Kerb	NO			Implementation	Reduction in emissions	Installation of EV charging points	Ongoing	Initial trial of 30 new charging points in Holyhead Rd area, followed by agreement to install further 400 charging points funded by Connected Kerb. Charging points host parking sensors and potentially 5G technology including air quality sensors. Coventry has the highest number of EV charging points per head of population outside London and this agreement will take the total number of charging points to 860
50	Active travel funding	Promoting Travel Alternatives	Promotion of cycling	2021	2022	CCC/WMCA	Government Active Travel Fund/WMCA	NO	Funded	£1 million - £10 million	Planning	Reduction in emissions and congestion	Uptake	Ongoing	£1.4 million funding to develop new cycle ways for Warwick University campus. Money will also fund second phase of the Binley Cycle way (existing scheme) running to the University Hospital. Public consultation undertaken in 2021
51	Binley Cycleway Active travel funding	Promoting Travel Alternatives	Promotion of cycling	2021	2023	CCC/WMCA	Government Active Travel Fund/WMCA/ CCC	NO			Implementation	Reduction in emissions and congestion	Uptake	Under construction	£8.6 million funding for 6km segregated cycle route along Binley Rd that will form part of wider 10km East-West connection also linking to new Coundon Cycle route (see below) and will connect the city centre to Binley Business Park and University Hospital. Some sections complete and construction continuing. Data shows that the completed section is already being well used by more than 10,000 users per month.
52	Active travel funding	Promoting Travel Alternatives	Promotion of cycling	2018	2022	CCC	JAQU	YES	Funded	> £10 million	Implementation	Reduction in emissions and congestion	Uptake	Under construction /Ongoing	2.75km fully segregated bi-directional cycle way along Coundon Rd/Barker Butts Rd linking these residential areas to city centre. Funded by JAQU as part of measures in Business Case primary aim is to remove traffic from Holyhead Road and reduce emissions on critical stretch of road. Sections of the cycle way completed and opened in 2021 and the route is now substantially complete
53	Electric Bin Lorry Trial	Promoting Low Emission Transport	Public Vehicle Procurement -Prioritising uptake of low emission vehicles	2020	2020	CCC	Dennis Eagle	NO			Completed	Reduction in emissions	Success of trial	Complete	Electric bin lorry loaned by Dennis Eagle for crews to trial around Coventry to investigate feasibility of future procurement

54	Domestic garden bonfires	Public Information	Via the Internet	2019	2019	CCC	N/A	NO			Completed	Reduction in particulate emissions	Public information campaign	Ongoing publicity	Regular publicity and advice to residents twice yearly feature on alternatives to garden bonfires in Spring/Autumn promoting composting and green waste collections to reduce nuisance and particulates from burning garden waste. There is also permanent information displayed on the council website. Bonfire complaints enforced under Environmental Protection Act 1990
55	Wireless Inductive charging study	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2021	2022	Western Power/CCC/Coventry University/Toyota /Cenex	Ofgem/WPD	NO	Funded	£100k - £500k	Planning	Reduced emissions through promotion of EV	Study into wireless 'on the go' charging for EV's	Ongoing	Partnering with CCC, Western Power leading research project into wireless inductive charging funded by £417,000 Ofgem/WPD grant to assess viability of this charging technology placed under road surfaces with aim of reducing anxiety about battery range and charging. Expected to prove beneficial to HGV and distribution operators removing barrier to uptake of electric vehicles and also reducing high demand periods on the grid such as end of day charging when people return home from work
56	Urban Air Port/Air One	Transport Planning and Infrastructure	Other	2021	2022	Urban Air Port/Air One	Funded by UK Research and Innovation	NO			Implementation	Reduced emissions and congestion	Urban Air Port	Complete	World first airport demonstrating the capabilities of electric vertical take-off and landing aircraft for future air mobility including air taxis and drone technology. Functions could include goods distribution, passenger transport and capability of delivering medical supplies, emergency response and major events. Exhibition facility opened in Coventry city centre in April 2022 and attracted over 15,000 visitors with extensive media coverage. See <a href="https://www.urbanairport.com/airone">https://www.urbanairport.com/airone</a>
57	West Midlands Gigafactory	Promoting Low Emission Transport	Other	2020	2025	CCC/Coventry Airport Ltd	CCC /Coventry Airport Ltd	NO			Planning	Promoting low emissions vehicles	Battery manufacture	Planning application granted	Outline planning permission granted on Coventry Airport site for UK's largest Gigafactory of 530,000 square metres producing up to 60GWh enough to power 600,000 electric vehicles per year and due to open 2025.

58	Climate Change Strategy	Other	Other	2012	2020	CCC	various	NO			Implementation	Reduced emissions	Various measures	ongoing	Key completed measures include: overall 39% reduction in CO2 emissions in city since 2005; Green Business Programme assisting small - medium sized business apply for energy efficiency grants; Sustainability consultants assisting businesses implementing ISO14001 environmental management system; PFI initiative installed over 28,000 new lighting columns that are dimmable achieving 38% energy reduction; Home insulation grant scheme for residents
59	West Midlands Regional Energy System Operator (RESO)	Promoting Low Emission Plant	Other Policy	2021		CCC/WMCA/ University of Birmingham/University of Warwick/ENZEN Global Ltd/Electron Ltd/Western Power Distribution/Camirus Ltd/Cadent Gas/Places in Common	Innovate UK	NO			Implementation	Reduced emissions	Uptake	Ongoing	RESO looks to explore new energy smarter local systems involving low carbon generation, storage and management integrating new mobility assets such as electric vehicles. Avoids need for large infrastructure upgrades by managing energy flows at a local level. Project aim is to design a sustainable RESO for Coventry.
60	Business Support	Environmental Permits	Other			CCC	CCC	NO			Completed	Reduced industrial emissions	Inspections completed	Ongoing	All businesses holding environmental permit inspected for compliance. Businesses also advised on contacting CCC's Business Sustain service (see below)
61	Business Support	Other	Other			CCC	CCC	NO			Completed	Reduced emissions	Uptake	Ongoing	Business Sustain service provides energy efficiency advice, environmental audits, legal compliance registers, grants for energy efficient heating/lighting and ISO14001 environmental management system accreditation/audits all with the aim of reducing environmental impacts of businesses and therefore emissions to air
62	'Our Future Moves'	Public Information	Via other mechanisms	2021	2022	Various	various	No			Implementation	Reduced emissions by promoting low emissions technology	Public exhibition	Completed	Year-long public exhibition at Coventry Transport Museum as part of Coventry City of Culture highlighting the region's work in transport innovation including demonstrations of latest technology including autonomous vehicles, electric and hydrogen vehicles, and very light rail

63	Draft Climate Change Strategy	Other	Other	2023	2030	CCC	CCC	NO			Planning	Draft Strategy	Draft Strategy	Ongoing at consultation stage	New draft strategy issued for consultation early in 2023. The draft strategy has the intention of creating a zero-carbon city with five key priorities which include energy conservation in buildings & use of renewables, to promote active travel and the transition away from fossil fuel based transport and ensure accessibility to zero carbon public transport.
64	WMCA Grant	Other	Other	2023		West Midlands Combined Authority	Defra	YES	Funded	£500k - £1 million	Planning	Reduced emissions	Particulate monitoring/ Reduced emissions /Public awareness	Project at the planning stage with initial discussions with individual local authorities having already commenced	Particulate Matter monitoring and engagement programme to increase awareness and encourage behaviour change towards domestic burning across the region. The key element is the engagement aspect of the grant, the monitoring is there to gather evidence and support the engagement/behaviour change programme. There will be one behaviour change project per constituent LA (the topic and content of which will be decided with the LA and tailored for the area), plus a share of the monitoring.
65	City Centre Improvements	Traffic Management	UTC, Congestion management, traffic reduction	2023	2025	CCC	CCC	NO			Implementation	Reduced vehicles/ congestion	Reduced congestion	Ongoing	New traffic restrictions creating pedestrian and cycle friendly spaces with fewer vehicles. Bus gates will control traffic at Trinity Street, Burges, Hales Street, Palmer Lane, Salt Lane and Little Park Street. 18-month experimental traffic regulation order to allow the council to monitor changes.
66	Urban Forestry Strategy	Other	Other	2022	2032	CCC	CCC/various	NO			Implementation	Improvements in air quality	Success of strategy	Ongoing	City's first tree strategy to help tackle climate change and improve air quality with ambition to plant 360,000 new trees over next 10 years to complement existing stock of council managed trees estimated at 45,000 trees in parks and open spaces and 200,000 in woodlands. Aim of strategy is to help combat climate change, reduce pollution, mitigate urban heat island and strong winds/flooding along with benefits to wildlife & public health and improving the landscape

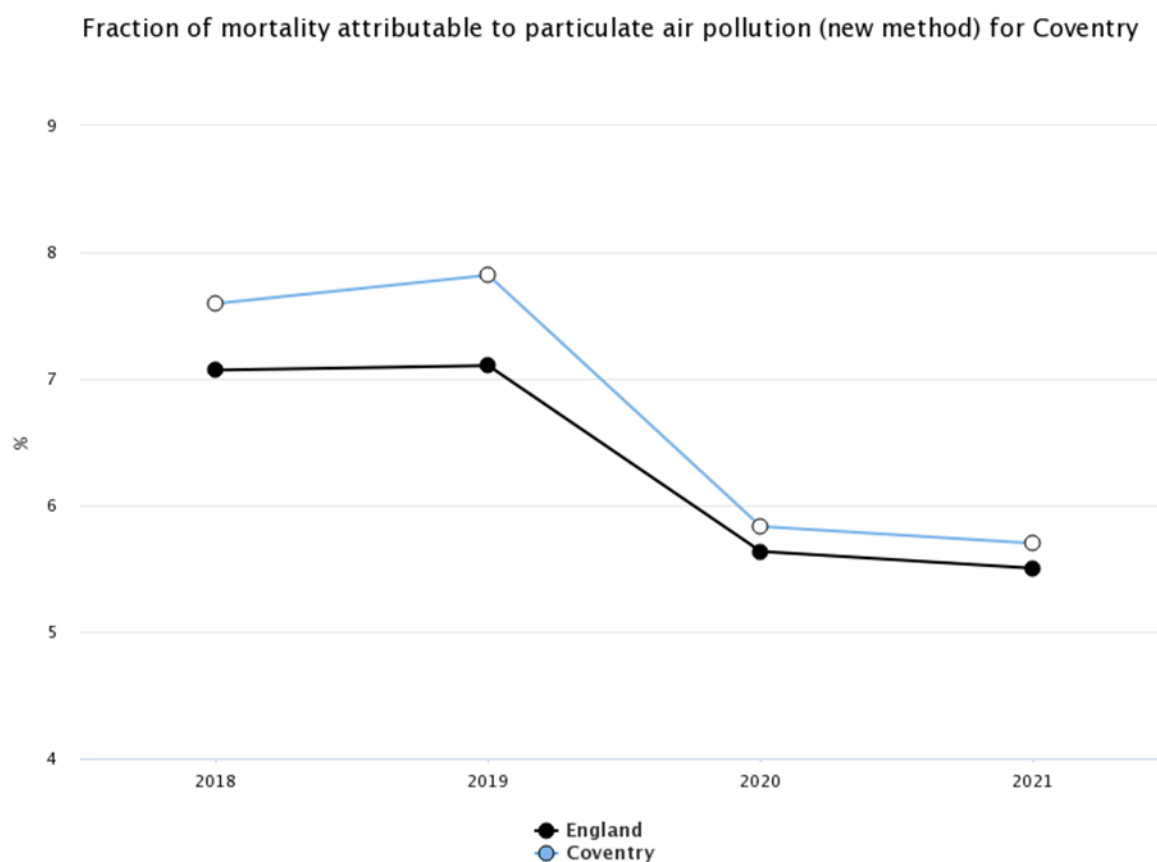
67	New CCC Transport Strategy for 2022 - 2037	Transport Planning and Infrastructure	Other	2022	2037	CCC	CCC	NO			Implementation	Reduced emissions	Reduced emissions and congestion. Uptake of low emissions vehicles and public transport	Ongoing	Strategy sets out council's vision for next 15 years. In the UK, the Government has committed to achieving net zero greenhouse gas emissions by 2050. The West Midlands' target is 2041, and that will need major changes in the way goods and people move around the country. In addition new housing creates extra travel demands which must be met sustainably. Key aspects of the strategy will be improving rail services, network of cycle ways and improved active travel options and low emissions vehicle infrastructure. The strategy can be viewed at <a href="https://www.coventry.gov.uk/transport-strategy-2">https://www.coventry.gov.uk/transport-strategy-2</a>
68	Cyclefest @Motofest	Promoting Travel Alternatives	Promotion of cycling	2023		CCC/Motofest	CCC/Motofest	NO			Implementation	Promotion of cycling - Reduced car use and congestion	Uptake	Annual event/ongoing	The annual Motofest event attracted over 200,000 visitors in 2019 and the 2023 event will include future transport demonstrations and innovations promoting low emissions vehicles. Also as part of the festival weekend is Cyclefest a free event giving cyclists a chance to cycle around the 3.7km Coventry ring road, and will include a cycling expo, bike hire and Dr Bike sessions.
69	Cycle to work scheme	Promoting Travel Alternatives	Promotion of walking	2021		CCC	CCC	NO			Implementation	Reduction in emissions and congestion	Uptake. Reduced car use	Ongoing scheme	Cycle to work allows CCC staff to purchase a new bike at discounted rates via a salary sacrifice scheme with savings of up to 37%. There is secure cycle storage, showers and changing facilities at the Council House and Friargate offices for CCC staff.

70	Liveable Neighbourhood -s	Alternatives to private vehicle use	Other	2022	2024	CCC	WMCA	NO			Implementation	Reduction in emissions	Reduced car use	Ongoing	Two Liveable Neighbourhoods being developed in the city. Liveable neighbourhoods are an important way of encouraging more people to walk, wheel and cycle. Liveable neighbourhoods also improve road safety, help to tackle climate change, improve air quality and improve physical and mental health. The aim of a liveable neighbourhood is to reduce the number of vehicles in residential areas - particularly through or rat-running traffic - while ensuring access to homes and businesses. Once there are fewer vehicles in an area some of the road space can be used to create better and safer opportunities for walking and cycling. This then encourages more active, sustainable travel. An important part of liveable neighbourhoods is its ability to help reduce social isolation, encourage community well-being, support local shops and businesses and boost feelings of safety.
71	Traffic Free School Streets	Traffic Management	Other	2022	2024	CCC	CCC	NO			Implementation	Reduction in emissions	reduced car use and congestion	Ongoing	Traffic Free School Street which works by stopping vehicles from driving in or out of a street during peak periods at the start and end of the school day. Access for residents is maintained whilst the restriction is in operation by the use of permits. The proposal would improve road safety outside schools, together with other benefits including reducing air pollution, reducing congestion, and encouraging people to walk or cycle more. Experimental TRO in place for Templars Primary School from Feb 23 and 4 other schools being looked at.
72	Canley Cycleway	Promoting Travel Alternatives	Promotion of cycling	2022	2023	CCC	WMCA	NO			Implementation	Reduction in Emissions	Uptake	Ongoing	£250,000 grant awarded by WMCA to make a temporary cycle lane running along Charter Avenue from the A45 into a permanent fully segregated cycle lane that will be extended along Lynchgate Road. This new cycle route will link the city centre to University of Warwick campus, Westwood Business Park and Tile Hill station. May also link to plans by Warwickshire County Council to improve cycle links between Leamington, Kenilworth and Coventry. Work commenced early 2023.



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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.



The above figure shows Public Health Fingertips Data for fraction of mortality attributable to particulate air pollution using the Office for Health Improvement & Disparities (OHID)'s new method. OHID define this indicator as the fraction of annual all cause adult mortality attributable to particulate air pollution (measured as fine particulate matter, PM<sub>2.5</sub>).

Coventry's fraction of mortality attributable to particulate air pollution remains higher than England' average. However, the relative difference between the two has reduced from 2018 to 2021. A similar pattern can be seen between Coventry and the West Midlands, with Coventry being only a few percentage points higher than the West Midlands average in 2021.

**Recent trend:** Could not be calculated

Period	Coventry				West Midlands	England	
		Count	Value	95% Lower CI			95% Upper CI
2018	○	-	7.6%	-	-	6.8%	7.1%
2019	○	-	7.8%	-	-	7.3%	7.1%
2020	○	-	5.8%	-	-	5.4%	5.6%
2021	○	-	5.7%	-	-	5.5%	5.5%

Caution is needed when considering apparent trends over time. Trend data should not be overinterpreted for a number of reasons:

1. Concentrations of PM<sub>2.5</sub> vary from year to year due to the weather. This variation is generally greater than the year-to-year variation from changes in emissions.
2. The methods and data inputs for the pollution modelling are continually updated and improved.
3. The 2020 data for this indicator includes the period from March 2020 onwards, the mortality data used in its calculation will reflect effects of the COVID-19 pandemic. Therefore, attributable fractions in this period should be interpreted with caution.

Coventry City Council does not currently generate any reliable PM<sub>2.5</sub> or PM<sub>10</sub> data, Defra mapping has been used to indicate the background annual mean PM<sub>2.5</sub> concentrations within the Local Authority.

In response, the [Coventry and Warwickshire Health Protection Strategy](#) for the period 2017-2021 identifies the need to tackle areas of poor air quality, with a key performance indicator being a reduction in PM<sub>2.5</sub>. This document is currently under review.

Coventry City Council is taking the following measures to address PM<sub>2.5</sub>:

Coventry City Council continues to trial different technologies that are capable of measuring PM<sub>2.5</sub> including AQ Mesh and Zephyr. We have experienced reliability issues with AQ Mesh and are hoping to redeploy these during 2023 following refurbishment and updating of the units by the supplier.

The city council have been working with Birmingham University on the NERC funded WMAir project (Clean Air Science for the West Midlands <https://wm-air.org.uk/>). Part of this work is looking at PM<sub>2.5</sub> emissions and have secured additional monitoring. The project is applying environmental science expertise to support the improvement of air

quality, and associated health, environmental and economic benefits, across the West Midlands. As part of the project 10 new particulate matter sensors were deployed across Coventry during 2021 (delayed from 2020 due to Covid). However due to funding issues these were only deployed for 3 months.

Coventry City Council are concerned about particulates released by wood burning stoves with some studies estimating 38% of local particulate emissions come from wood burning. We are promoting the Defra campaign through our website to educate the public and the 'Ready to Burn' and 'Burn Right' websites, encouraging the use of the correct fuels to reduce emissions from these appliances. A campaign around wood burning stoves and particulate emissions features regularly on the council website. The aim is to educate the public about the correct use of wood burners and fuels promoting the Woodsure and Burnright websites and emphasising concerns about PM<sub>2.5</sub> emissions. A similar campaign was undertaken in respect of garden bonfires promoting alternatives such as home composting and kerbside green waste collections.

West Midlands Combined Authority was recently awarded £1 million for an engagement and behaviour change related project associated with wood burning stoves, raising public awareness about emissions and correct fuels. It is anticipated there will be some monitoring of particulates as part of this project.

The supplementary planning document on air quality, developed with partner authorities from Warwickshire, aims to tackle particulate emissions by providing guidance to developers on reducing construction related emissions of particulate matter by requiring developers to produce construction management plans on controlling dust and dirt, use of Non-Road Mobile Machinery (NRMM) and emissions limits on new biomass plant.

The majority of Coventry is covered by 31 separate smoke control orders made between 1959 and 1984. We are considering the relevance of these historic orders with a view to updating them in future.

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

This section sets out the monitoring undertaken within 2021 and 2022 by Coventry City Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2022 to allow monitoring trends to be identified and discussed.

#### Summary of Monitoring Undertaken

##### 3.1.1 Automatic Monitoring Sites

Coventry City Council no longer undertakes any automatic (continuous) monitoring. However, it is continuing to trial different technologies that are capable of continuously measuring PM<sub>2.5</sub>. More information on the Zephyr technology is available at:

[https://www.earthsense.co.uk/zephyr?gclid=EAlaIQobChMItP\\_QmsTK9glVStPtCh3\\_yQfyEAAYASAAEgJmg\\_D\\_BwE](https://www.earthsense.co.uk/zephyr?gclid=EAlaIQobChMItP_QmsTK9glVStPtCh3_yQfyEAAYASAAEgJmg_D_BwE)

And the AQ Mesh technology at:

<https://www.aqmesh.com>

The AQ Mesh units have recently been refurbished following reliability problems and we are hoping to redeploy these in 2023.

As part of the West Midlands Air Quality Improvement Programme (WMAQIP), led by the University of Birmingham, low cost indicative PM sensors have been designed (<https://wm-air.org.uk>) Altasense PM sensors are calibrated at the Birmingham Air Quality Supersite and corrected for the impact of humidity. Relative Humidity and Air Temperature measurements are taken from the inlet of the sensor for data correction and are only indicative of ambient values. An initial review and calibration of the sensors is available at: <https://www.frontiersin.org/articles/10.3389/fenvs.2021.798485/full> and guidance on using low-cost sensors is available at: <https://wm-air.org.uk/low-cost-sensors-for-air-quality-monitoring/>.

Coventry City Council have collaborated with the University of Birmingham/WM Air project to produce a new advice sheet on the procurement and siting of low cost sensors used for

indicative NO<sub>2</sub> and PM<sub>2.5</sub> monitoring, the paper is available at

[http://epapers.bham.ac.uk/4238/1/LowCostAQSensors\\_Amend2.pdf](http://epapers.bham.ac.uk/4238/1/LowCostAQSensors_Amend2.pdf)

National monitoring results from the AURN site in the Allesley area of the city operated by Defra are available at <https://uk-air.defra.gov.uk/> and results from the second AURN unit known as Coventry Binley Road are available at: <https://uk-air.defra.gov.uk/>

### 3.1.2 Non-Automatic Monitoring Sites

Coventry City Council undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 73 sites during 2021 and 2022. Table A.1 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D and at <https://www.coventry.gov.uk/pollution-1/air-quality/3>. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

## Individual Pollutants

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

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

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

For diffusion tubes, the full 2021 and 2022 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1A and B.1B includes distance corrected values, only where relevant.

The results of diffusion tube monitoring across the city during 2020 show a significant decrease in the tube results compared to 2019 which is attributed to the reduction in traffic levels associated with the Covid-19 lockdowns. As expected, the results in 2021 and 2022 are higher, however the overall trend over the last six years' worth of data, shows a general decline in nitrogen dioxide levels across the city. This is broadly in-line with the trend for nitrogen dioxide levels across England. Appendix A contains graphs which show the trend in nitrogen dioxide tube results for the past six years for five main areas of the city.

In 2021, there was one tube which exceeded the annual mean ( $40 \mu\text{g}/\text{m}^3$ ) once distance corrected to the nearest receptor of a total of 73 tubes. This tube HR1C is located close to the road of a small stretch of the busy Holyhead Road which is on an incline and with a street canyon.

In 2022, there were 2 tubes which exceeded the annual mean ( $40 \mu\text{g}/\text{m}^3$ ) once distance corrected to the nearest receptor of a total of 73 tubes. Tube HR1C is located close to the road and tube HR6 is in close proximity on a residential façade of a small stretch of the busy Holyhead Road which is on an incline and with a street canyon.

Coventry City Council has created an interactive map which shows the locations of the tubes with monitoring results from 2011 to 2021. This is available at:

<https://www.coventry.gov.uk/pollution-1/air-quality/3>

All exceedances occur in an AQMA as the whole of Coventry has been declared as one AQMA.

## Appendix A: Monitoring Results

**Table A.1 – Details of Non-Automatic Monitoring Sites**

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
<b>CC01/1* N</b>	Holyhead Road, Beaumont Court	Roadside	432105	279578	NO <sub>2</sub>	City wide AQMA	4.1	3.1	No	2.8
<b>HR1</b>	Holyhead Road	Roadside	432683	279240	NO <sub>2</sub>	City wide AQMA	0.0	5.8	No	2.7
<b>HR1C</b>	73 Holyhead Road	Roadside	432712	279227	NO <sub>2</sub>	City wide AQMA	4.2	1.8	No	2.5
<b>HR2C</b>	104 Holyhead Road	Roadside	432525	279345	NO <sub>2</sub>	City wide AQMA	0.0	6.1	No	2.1
<b>HR4</b>	89 Holyhead Road	Roadside	432639	279258	NO <sub>2</sub>	City wide AQMA	0.0	7.8	No	3.0
<b>HR5</b>	St Osburg's playing field, Holyhead Road	Roadside	432730	279238	NO <sub>2</sub>	City wide AQMA	3.2	1.8	No	2.5
<b>HR6</b>	75 Holyhead Rd	Roadside	432706	279228	NO <sub>2</sub>	City wide AQMA	0.0	6.0	No	3.0
<b>HR7</b>	opposite 378 Holyhead Road	Roadside	431434	279948	NO <sub>2</sub>	City wide AQMA	14.9	2.1	No	2.7
<b>UHS1</b>	by the footbridge for ring road	Roadside	432844	279291	NO <sub>2</sub>	City wide AQMA	3.3	2.0	No	3.0
<b>CR1</b>	outside 27 Coundon Street	Roadside	432688	279455	NO <sub>2</sub>	City wide AQMA	5.8	1.3	No	2.5
<b>BH1a</b>	Walsgrave Road, Library	Roadside	434987	279209	NO <sub>2</sub>	City wide AQMA	2.9	2.9	No	2.7

<b>BH2b</b>	Walsgrave Road, 161	Roadside	435126	279284	NO <sub>2</sub>	City wide AQMA	2.0	3.1	No	2.8
<b>BH4</b>	Walsgrave Road, 243	Roadside	435331	279358	NO <sub>2</sub>	City wide AQMA	2.2	1.3	No	1.8
<b>BH13</b>	196/198 Walsgrave Road	Roadside	435508	279387	NO <sub>2</sub>	City wide AQMA	0.0	5.2	No	2.5
<b>BH14</b>	238 Walsgrave Road	Roadside	435658	279357	NO <sub>2</sub>	City wide AQMA	8.0	1.6	No	2.5
<b>BH15i</b>	Walsgrave Road, Post Office	Kerbside	435184	279298	NO <sub>2</sub>	City wide AQMA	3.5	1.0	No	2.3
<b>FS1</b>	Fairfax Street, Pool Meadow	Kerbside	433569	279234	NO <sub>2</sub>	City wide AQMA	3.9	1.0	No	3.0
<b>QV1</b>	Lampost outside student block	Roadside	433029	278798	NO <sub>2</sub>	City wide AQMA	2.1	2.0	No	2.6
<b>GF1</b>	Greyfriars Taxi rank	Kerbside	433407	278882	NO <sub>2</sub>	City wide AQMA	0.0	0.5	No	2.6
<b>GS1</b>	Outside Gosford Books	Roadside	433899	278845	NO <sub>2</sub>	City wide AQMA	0.0	9.8	No	2.8
<b>NU1</b>	Outside Squirrel PH	Roadside	433410	278682	NO <sub>2</sub>	City wide AQMA	9.4	2.1	No	2.7
<b>SP1</b>	Outside 33 St Patrick's Road	Roadside	433399	278470	NO <sub>2</sub>	City wide AQMA	5.0	5.0	No	2.5
<b>SBW1</b>	Junction Sky Blue Way and Harnall Row	Kerbside	434297	279023	NO <sub>2</sub>	City wide AQMA	N/A	0.7	No	2.8
<b>STL1</b>	End of Stonehouse Lane	Roadside	436203	275841	NO <sub>2</sub>	City wide AQMA	9.0	12.0	No	2.5
<b>LON8</b>	On no. 703 London Rd	Roadside	436551	275703	NO <sub>2</sub>	City wide AQMA	0.0	17.9	No	2.5
<b>LON12</b>	Lamppost between 76 & 78 London Road	Roadside	434073	278459	NO <sub>2</sub>	City wide AQMA	2.0	2.0	No	2.7



<b>SE1</b>	Spon End, 58a	Kerbside	432084	279042	NO <sub>2</sub>	City wide AQMA	2.6	2.7	No	2.0
<b>SE3</b>	97 Spon End	Roadside	432303	279028	NO <sub>2</sub>	City wide AQMA	0.0	2.3	No	3.1
<b>SE4</b>	Butts Road	Roadside	432701	278716	NO <sub>2</sub>	City wide AQMA	N/A	0.0	No	2.8
<b>SE4A</b>	Butts Road	Roadside	432733	278713	NO <sub>2</sub>	City wide AQMA	N/A	0.0	No	2.8
<b>SE5</b>	Outside no 15	Roadside	432038	279033	NO <sub>2</sub>	City wide AQMA	3.3	6.0	No	2.7
<b>SE6</b>	Outside 26 Spon End	Roadside	432016	279044	NO <sub>2</sub>	City wide AQMA	5.2	5.3	No	2.7
<b>SE7</b>	Outside 108 Spon End	Roadside	432327	279017	NO <sub>2</sub>	City wide AQMA	0.0	2.3	No	2.1
<b>QAV01</b>	Queensland Avenue, Fairytale Flowers	Kerbside	431595	278991	NO <sub>2</sub>	City wide AQMA	0.0	4.9	No	2.5
<b>QAV12</b>	Queensland Avenue, 2	Roadside	431704	278680	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.0
<b>QAV13</b>	Hearsall Lane, 181	Roadside	431763	278657	NO <sub>2</sub>	City wide AQMA	0.0	3.7	No	2.5
<b>R5</b>	Foleshill Road, 275	Roadside	433716	280503	NO <sub>2</sub>	City wide AQMA	1.1	1.7	No	2.8
<b>R6</b>	Foleshill Road, between 181 & 183	Roadside	433609	280246	NO <sub>2</sub>	City wide AQMA	1.8	3.1	No	2.7
<b>R8a</b>	Foleshill Road, outside 411	Roadside	433991	280998	NO <sub>2</sub>	City wide AQMA	0.0	5.6	No	2.5
<b>R9</b>	Foleshill Road, 324	Roadside	434059	281105	NO <sub>2</sub>	City wide AQMA	0.0	4.2	No	2.7
<b>LR1</b>	23 Longford Road	Roadside	434836	283030	NO <sub>2</sub>	City wide AQMA	0.0	8.5	No	2.0
<b>LR2</b>	24 Longford Road	Roadside	434880	283077	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.0
<b>LR3</b>	Longford Road, 139	Roadside	435016	283515	NO <sub>2</sub>	City wide AQMA	0.0	5.5	No	1.5

<b>BRN2</b>	Burnaby Road, 19	Roadside	433605	281965	NO <sub>2</sub>	City wide AQMA	0.0	7.5	No	2.8
<b>BRN5</b>	41 Holbrooks Lane	Roadside	433640	281996	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.0
<b>BA1</b>	Beake Avenue/Radfor d Road	Roadside	432526	280806	NO <sub>2</sub>	City wide AQMA	0.0	3.7	No	3.0
<b>MA1</b>	Outside 71 Moseley Avenue	Roadside	432243	279980	NO <sub>2</sub>	City wide AQMA	7.4	1.6	No	2.6
<b>SS1</b>	Stoney Stanton Road, 154	Roadside	434062	280082	NO <sub>2</sub>	City wide AQMA	0.0	4.5	No	2.5
<b>SS2</b>	Stoney Stanton Road, 155	Roadside	433994	279969	NO <sub>2</sub>	City wide AQMA	1.8	2.0	No	2.5
<b>SS3</b>	R/O 21 Torcastle Close (faces SS Rd)	Roadside	434842	281272	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.5
<b>SS5</b>	Lampost L21CAC	Roadside	433852	279814	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.5
<b>BELL1</b>	16 Hall Green Road	Roadside	435849	282211	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.5
<b>BELL2</b>	314 Bell Green Road	Roadside	435826	282158	NO <sub>2</sub>	City wide AQMA	0.0	2.4	No	2.7
<b>FGS2</b>	Select & Save, Far Gosford Street	Roadside	434450	279001	NO <sub>2</sub>	City wide AQMA	0.0	5.4	No	2.7
<b>FGS3a</b>	On pig in middle café façade	Roadside	434521	279024	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.5
<b>FGS4</b>	Callice Court	Roadside	434203	278892	NO <sub>2</sub>	City wide AQMA	0.0	4.5	No	2.8
<b>GR1</b>	217 Gulson Road	Roadside	434679	278920	NO <sub>2</sub>	City wide AQMA	0.0	4.5	No	2.5
<b>Grange 3</b>	161/163 Grange Road	Kerbside	435791	284285	NO <sub>2</sub>	City wide AQMA	1.4	0.3	No	2.4
<b>SHP1</b>	257 Sir Henry Parkes Road	Roadside	430447	277080	NO <sub>2</sub>	City wide AQMA	4.2	4.6	No	2.4

<b>SHP2</b>	262 Sir Henry Parkes Road	Roadside	430364	277060	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.3
<b>SHP3</b>	Outside 190 Sir Henry Parkes Road	Roadside	430567	277231	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.4
<b>RR1</b>	Opposite Chantry Place	Kerbside	433550	279478	NO <sub>2</sub>	City wide AQMA	N/A	1.4	No	2.0
<b>RR2</b>	Near Junction 1	Kerbside	433525	279502	NO <sub>2</sub>	City wide AQMA	N/A	0.0	No	2.9
<b>RR3</b>	Opposite to RR2	Roadside	433552	279524	NO <sub>2</sub>	City wide AQMA	N/A	0.1	No	2.5
<b>RR4</b>	Ringway Queens East side	Kerbside	433026	278572	NO <sub>2</sub>	City wide AQMA	N/A	0.0	No	2.6
<b>RR5</b>	Ringway Queens West side	Kerbside	432940	278620	NO <sub>2</sub>	City wide AQMA	N/A	1.6	No	2.8
<b>SA1</b>	L12PIP	Roadside	427538	277397	NO <sub>2</sub>	City wide AQMA	0.5	6.0	No	2.5
<b>SA2</b>	Outside 62	Roadside	427624	277863	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	2.5
<b>HL1</b>	Junction with Broad Lane	Roadside	427249	279780	NO <sub>2</sub>	City wide AQMA	6.7	2.7	No	2.8
<b>BS1A</b>	Lampost outside 162 Bennetts Road South	Roadside	431927	282911	NO <sub>2</sub>	City wide AQMA	0.0	8.6	No	3.0
<b>KG1</b>	Outside no 6	Roadside	431956	282113	NO <sub>2</sub>	City wide AQMA	0.0	0.0	No	3.0
<b>EB1</b>	70 Aldermans Green Road	Roadside	435928	283069	NO <sub>2</sub>	City wide AQMA	7.4	1.6	No	2.0
<b>STM1</b>	Outside no 2 Moseley Ave	Roadside	433019	275729	NO <sub>2</sub>	City wide AQMA	17.3	1.8	No	2.6
<b>STM2</b>	Corner Green Lane St Martins Road	Roadside	433158	274766	NO <sub>2</sub>	City wide AQMA	48.0	1.3	No	2.7

GL1	Green Lane - Outside Primary School	Roadside	432818	275321	NO <sub>2</sub>	City wide AQMA	17.3	1.8	No	2.6
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**Notes:**

- (1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).
- (2) N/A if not applicable.

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period 2021 (%) <sup>(1)</sup>	Valid Data Capture 2021 (%) <sup>(2)</sup>	Valid Data Capture for Monitoring Period 2022 (%) <sup>(1)</sup>	Valid Data Capture 2022 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021	2022
<b>CC01/1*N</b>	432105	279578	Roadside	100	100	100	100	36.76	30.4	34.2	25.2	26.8	26.8
<b>HR1</b>	432683	279240	Roadside	91.7	91.7	100	100	<b>52.77</b>	<b>47.1</b>	<b>49.4</b>	33.9	39.7	38.7
<b>HR1C</b>	432712	279227	Roadside	100	100	100	100	<b>79.21</b>	<b>71.5</b>	<b>69.7</b>	<b>46.6</b>	<b>54.6</b>	<b>53.5</b>
<b>HR2C</b>	432525	279345	Roadside	100	100	91.7	91.7	26.93	27.5	28.8	17.4	22.9	23.4
<b>HR4</b>	432639	279258	Roadside	91.7	91.7	100	100	/	<b>46.3</b>	<b>44.1</b>	24.5	28.7	28.5
<b>HR5</b>	432730	279238	Roadside	100	100	100	100	/	<b>53.9</b>	<b>48.4</b>	31.0	38.8	39.5
<b>HR6</b>	432706	279228	Roadside	91.7	91.7	100	100	/	<b>55.5</b>	<b>49.6</b>	33.4	39.1	<b>40.9</b>
<b>HR7</b>	431434	279948	Roadside	100	100	100	100	/	/	/	18.5	22.7	20.1
<b>UHS1</b>	432844	279291	Roadside	100	100	100	100	/	/	/	19.6	21.0	21.4
<b>CR1</b>	432688	279455	Roadside	100	100	100	100	/	/	/	16.8	22.5	18.6
<b>BH1a</b>	434987	279209	Roadside	100	100	91.7	91.7	37.56	33.9	37.1	24.3	29.2	28.7
<b>BH2b</b>	435126	279284	Roadside	100	100	91.7	91.7	/	/	<b>43.0</b>	29.0	37.3	34.6
<b>BH4</b>	435331	279358	Roadside	100	100	100	100	/	<b>41.8</b>	<b>41.7</b>	28.0	35.6	33.7
<b>BH13</b>	435507	279387	Roadside	100	100	100	100	<b>45.27</b>	30.9	33.1	22.9	24.1	24.3
<b>BH14</b>	435655	279356	Roadside	100	100	100	100	34.07	36.3	37.4	24.6	28.9	27.0
<b>BH15i</b>	435184	279298	Kerbside	100	100	100	100	37.50	<b>40.1</b>	40.0	26.4	32.0	31.8
<b>FS1</b>	433569	279234	Kerbside	100	100	100	100	<b>40.86</b>	<b>43.8</b>	<b>44.6</b>	25.3	35.0	33.7
<b>QV1</b>	433029	278798	Roadside	100	100	91.7	91.7	38.65	33.0	37.3	28.0	31.0	28.9
<b>GF1</b>	433407	278882	Kerbside	83.3	83.3	100	100	25.53	34.0	33.6	21.5	25.8	23.7
<b>GS1</b>	433899	278845	Roadside	100	100	100	100	35.30	32.9	34.6	22.1	26.2	27.9
<b>NU1</b>	433410	278682	Roadside	83.3	83.3	100	100	/	/	/	21.5	25.7	26.4
<b>SP1</b>	433399	278470	Roadside	100	100	83.3	83.3	/	/	/	20.0	21.8	21.1
<b>SBW1</b>	434297	279023	Kerbside	100	100	91.7	91.7	/	/	/	26.1	38.0	37.5
<b>STL1</b>	436203	275841	Roadside	100	100	100	100	35.20	31.3	33.6	21.7	23.5	22.4
<b>LON8</b>	436551	275703	Roadside	100	100	100	100	29.97	25.3	25.3	18.0	19.6	18.8
<b>LON12</b>	434073	278459	Roadside	66.7	66.7	83.3	83.3	<b>48.82</b>	<b>43.1</b>	<b>45.8</b>	28.5	30.1	31.6
<b>SE1</b>	432084	279042	Kerbside	100	100	91.7	91.7	35.35	34.0	36.4	23.2	29.0	26.5
<b>SE3</b>	432303	279028	Roadside	100	100	66.7	66.7	36.62	31.9	34.6	21.9	26.7	25.4
<b>SE4</b>	432701	278716	Roadside	100	100	100	33.3	/	/	/	25.6	33.6	28.3
<b>SE4A</b>	432733	278713	Roadside	/	/	100	58.3	/	/	/	/	/	21.3

SE5	432038	279033	Roadside	100	100	100	100	/	/	/	20.3	25.6	24.4
SE6	432016	279044	Roadside	100	100	100	100	/	/	/	18.8	23.6	22.3
SE7	432327	279017	Roadside	/	/	42.9	25	/	/	/	/	/	29.8
QAV01	431595	278991	Kerbside	75	75	100	100	<b>41.90</b>	37.8	40.0	25.5	30.1	30.7
QAV12	431704	278680	Roadside	100	100	91.7	91.7	31.12	32.4	33.8	23.1	26.3	26.0
QAV13	431763	278657	Roadside	100	100	100	100	37.34	33.7	35.2	22.7	27.9	26.3
R5	433716	280503	Roadside	100	100	100	100	<b>40.13</b>	39.5	38.6	22.5	34.4	31.5
R6	433609	280246	Roadside	100	100	100	100	<b>50.72</b>	<b>46.3</b>	<b>48.1</b>	32.2	<b>40.4</b>	37.7
R8a	433991	280998	Roadside	100	100	91.7	91.7	/	/	<b>40.5</b>	26.5	33.3	31.2
R9	434059	281105	Roadside	100	100	100	100	36.86	36.2	37.3	25.0	30.4	29.4
LR1	434836	283030	Roadside	100	100	100	100	37.80	34.9	37.6	24.4	30.6	29.0
LR2	434880	283077	Roadside	100	100	100	100	37.17	38.1	37.8	23.2	30.1	29.2
LR3	435016	283515	Roadside	100	100	100	100	38.71	37.1	35.5	24.8	31.8	29.1
BRN2	433605	281965	Roadside	91.7	91.7	100	100	35.98	34.4	34.5	23.6	27.7	27.5
BRN5	433639	281995	Roadside	100	100	100	100	32.57	35.4	33.8	22.3	28.3	26.3
BA1	432526	280806	Roadside	100	100	100	100	33.75	32.7	31.9	22.6	27.5	26.3
MA1	432243	279980	Roadside	100	100	75	75	/	/	/	23.5	29.5	26.9
SS1	434062	280082	Roadside	100	100	100	100	34.25	34.1	33.3	22.6	27.7	26.2
SS2	433994	279969	Roadside	100	100	100	100	31.27	33.2	33.6	21.9	26.5	25.2
SS3	434842	281272	Roadside	100	100	100	100	36.09	35.3	36.7	24.2	30.5	28.4
SS5	433852	279814	Roadside	100	100	100	100	<b>45.80</b>	<b>44.9</b>	<b>45.8</b>	29.3	36.1	34.7
BELL1	435849	282211	Roadside	100	100	100	100	38.15	36.3	37.5	24.4	28.4	28.1
BELL2	435826	282158	Roadside	100	100	100	100	35.20	33.4	33.5	23.5	27.4	27.6
FGS2	434450	279001	Roadside	100	100	100	100	32.67	32.4	32.9	20.5	26.7	24.6
FGS3a	434521	279024	Roadside	100	100	91.7	91.7	33.78	32.9	32.8	21.2	26.4	27.2
FGS4	434203	278892	Roadside	83.3	83.3	91.7	91.7	/	<b>40.8</b>	36.9	23.0	28.7	29.2
GR1	434679	278920	Roadside	100	100	91.7	91.7	33.45	33.1	32.3	20.5	26.5	21.8
Grange 3	435791	284285	Kerbside	91.7	75	91.7	91.7	35.37	33.1	36.4	23.4	27.9	25.9
SHP1	430447	277080	Roadside	100	100	100	100	/	28.0	27.5	17.1	21.1	20.4
SHP2	430364	277059	Roadside	100	100	100	100	28.58	29.5	27.8	17.5	21.2	20.5
SHP3	430566	277231	Roadside	100	100	100	100	33.98	33.5	31.3	19.3	23.2	21.9
RR1	433550	279478	Kerbside	100	100	91.7	91.7	/	39.1	39.2	22.6	29.5	28.3
RR2	433525	279502	Kerbside	100	100	91.7	91.7	/	38.5	38.2	22.4	28.2	28.3
RR3	433552	279524	Roadside	100	100	100	100	/	<b>47.6</b>	<b>51.6</b>	32.7	37.0	36.5
RR4	433026	278572	Kerbside	83.3	83.3	100	100	/	/	37.2	26.1	28.3	30.1
RR5	432940	278620	Kerbside	100	100	100	100	/	/	<b>41.9</b>	21.4	31.6	28.0

<b>SA1</b>	427538	277397	Roadside	91.7	91.7	80	33.3	/	26.7	24.0	15.4	17.6	16.7
<b>SA2</b>	427624	277863	Roadside	100	100	100	100	/	30.2	27.6	17.1	20.1	19.4
<b>HL1</b>	427249	279780	Roadside	100	100	100	100	/	26.8	25.8	16.6	16.9	16.6
<b>BS1A</b>	431927	282911	Roadside	91.7	91.7	91.7	91.7	/	26.4	23.6	13.8	21.0	20.8
<b>KG1</b>	431956	282113	Roadside	91.7	100	91.7	91.7	/	/	26.9	19.0	24.3	23.0
<b>EB1</b>	435928	283069	Roadside	83.3	83.3	100	100	/	33.4	29.8	21.4	23.5	20.0
<b>STM1</b>	433019	275729	Roadside	100	100	100	100	/	/	/	/	17.0	16.3
<b>STM2</b>	433158	274766	Roadside	100	100	100	100	/	/	/	/	15.8	15.4
<b>GL1</b>	432818	275321	Roadside	100	100	100	100	/	/	/	/	12.0	11.3

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  $\mu\text{g}/\text{m}^3$ .

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

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

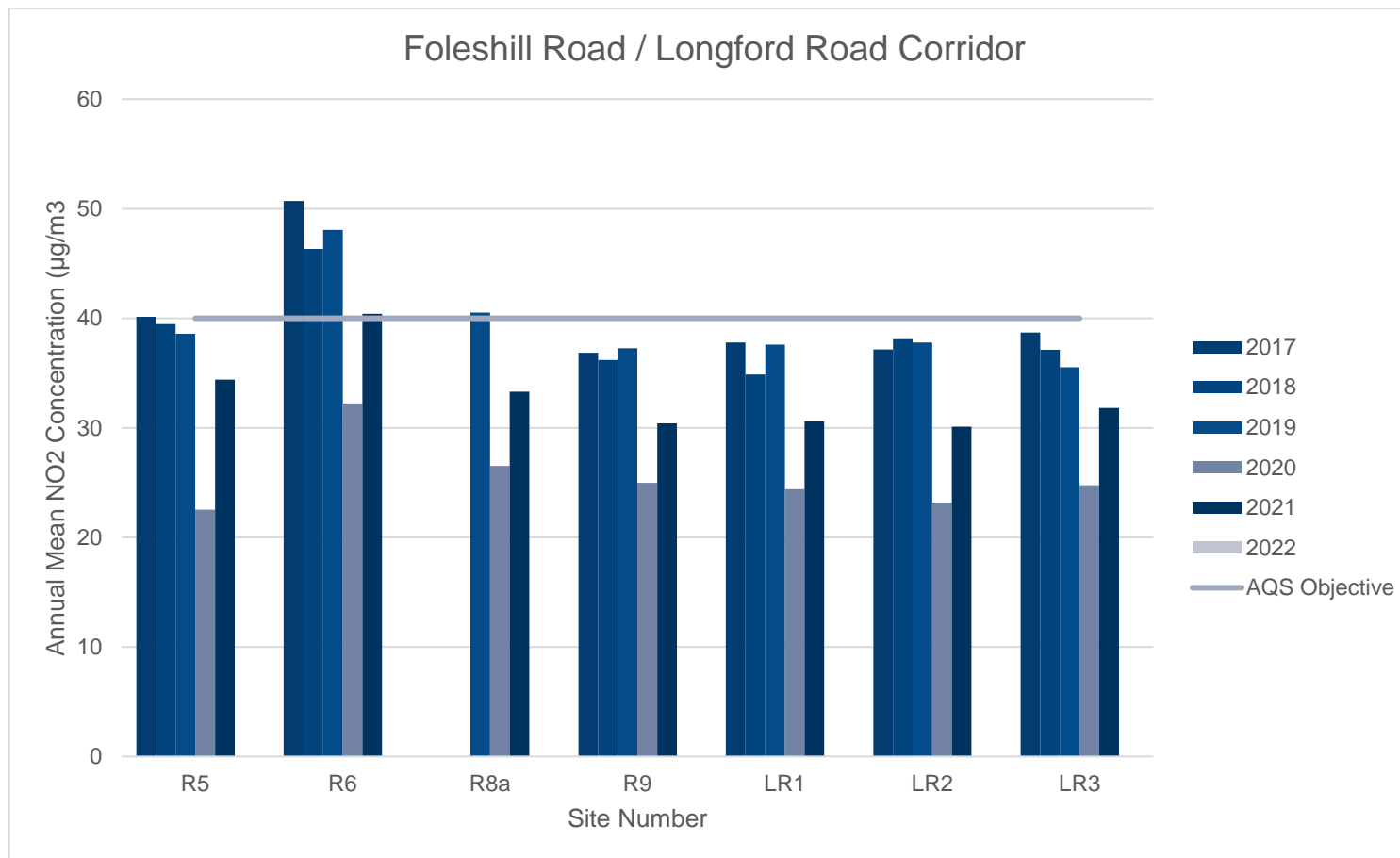
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

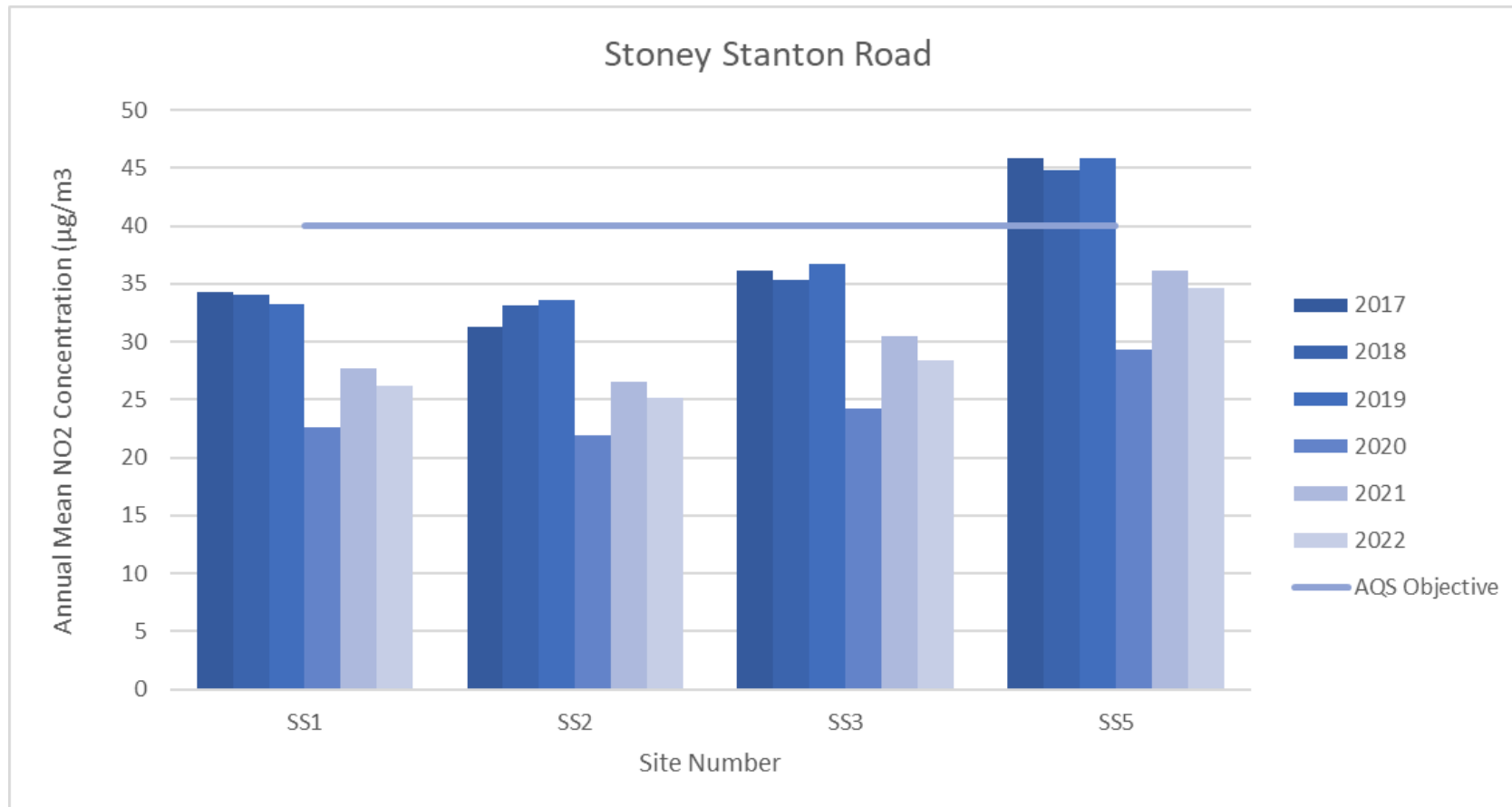
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

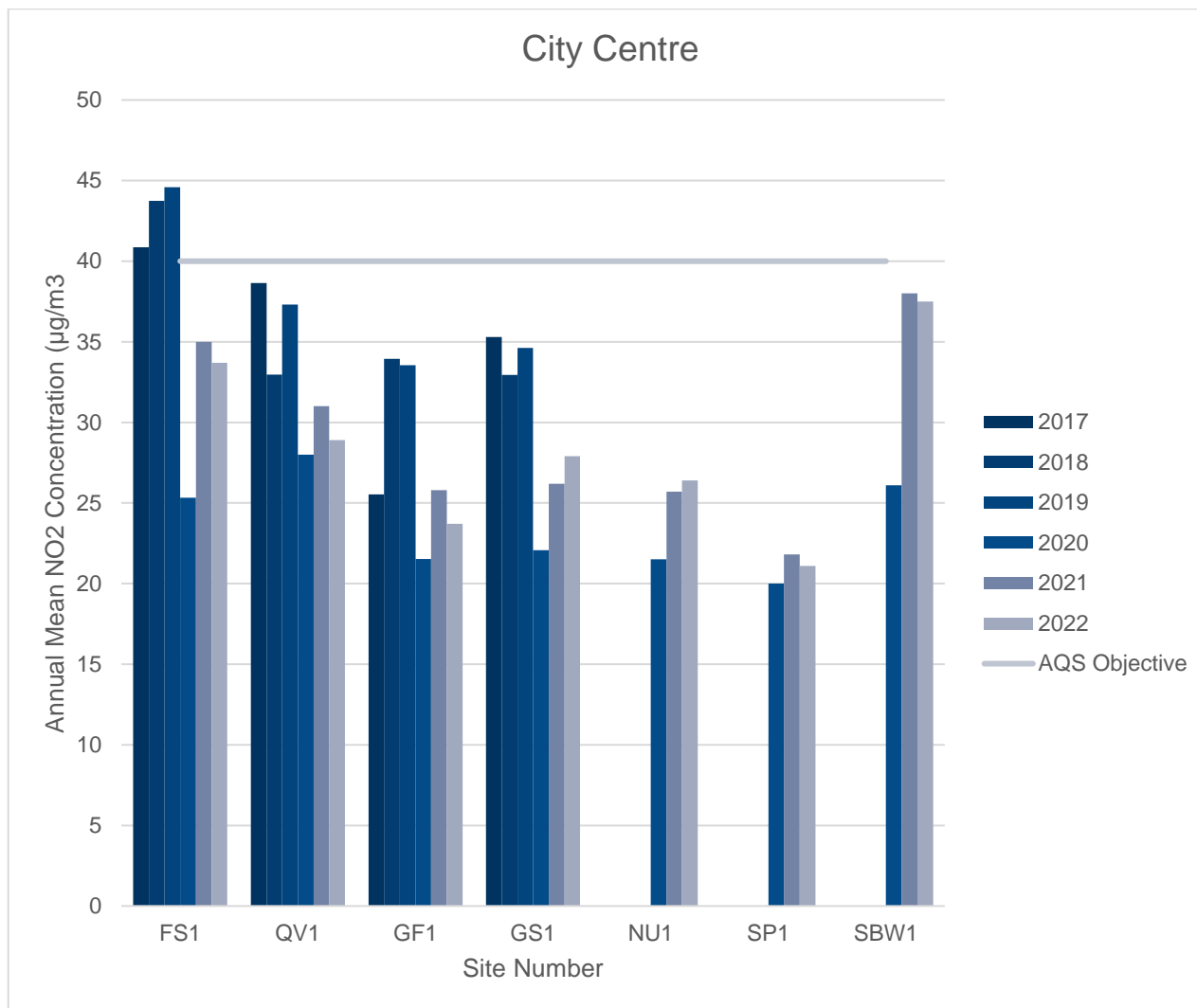
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

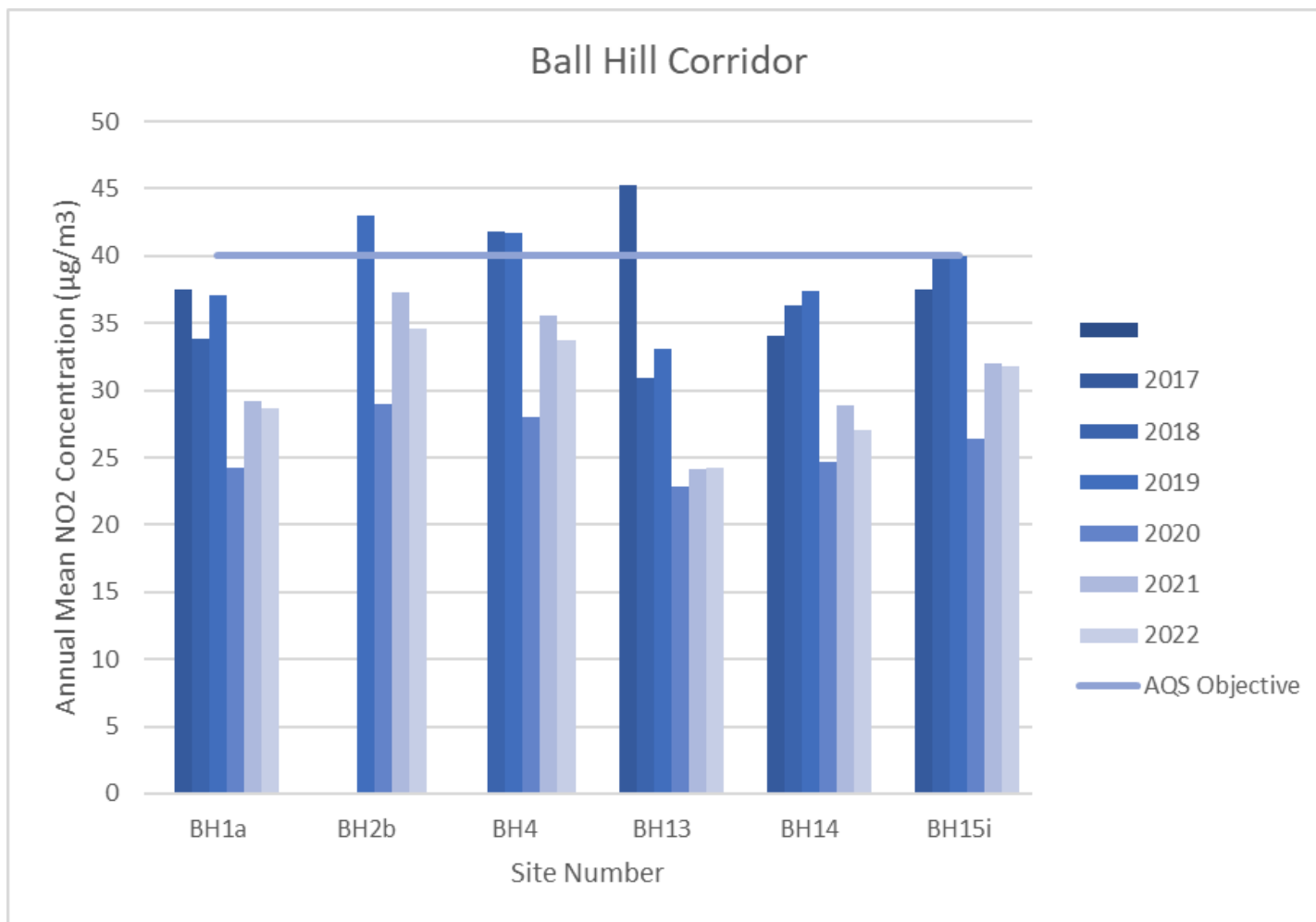
Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations

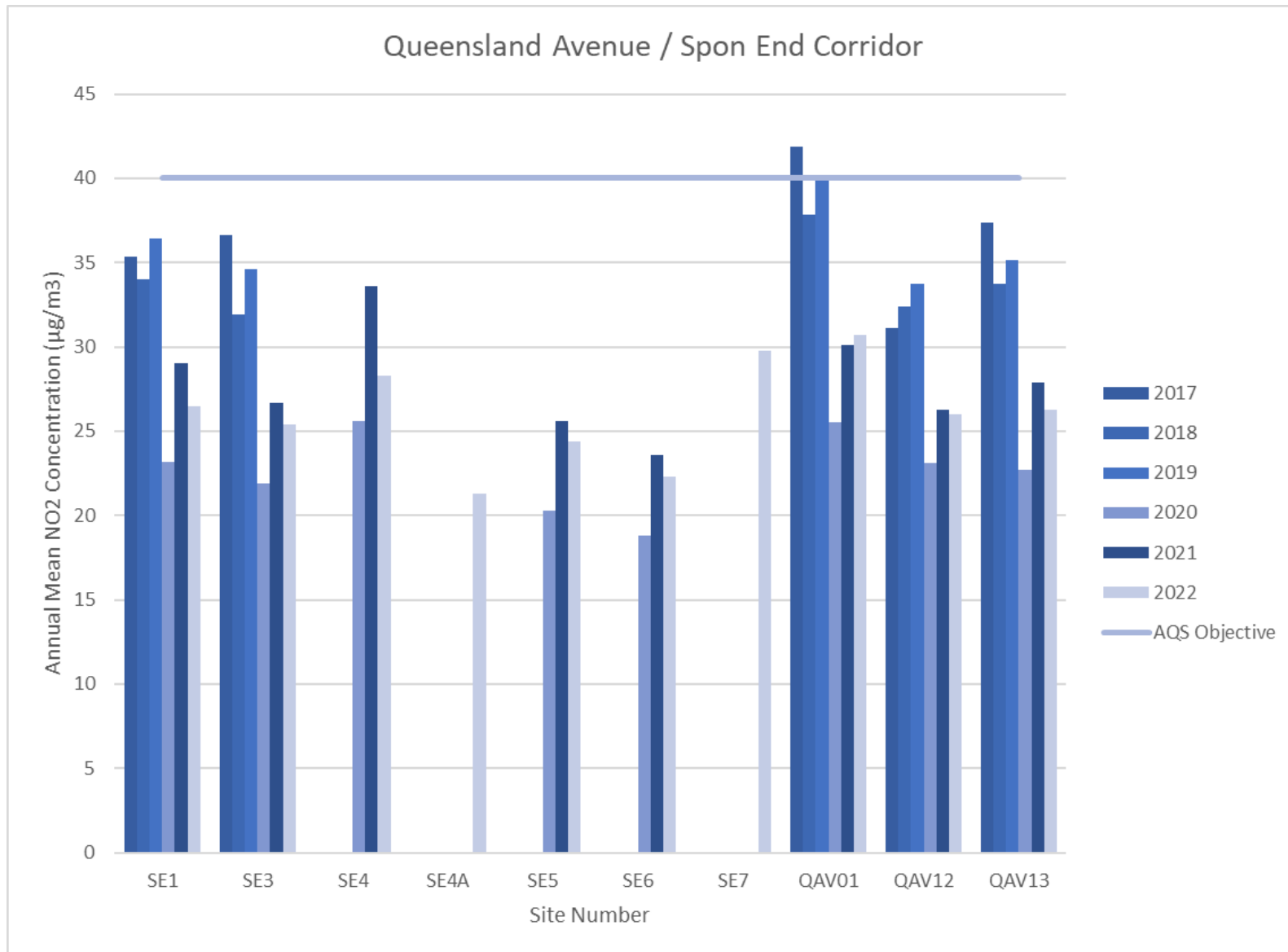


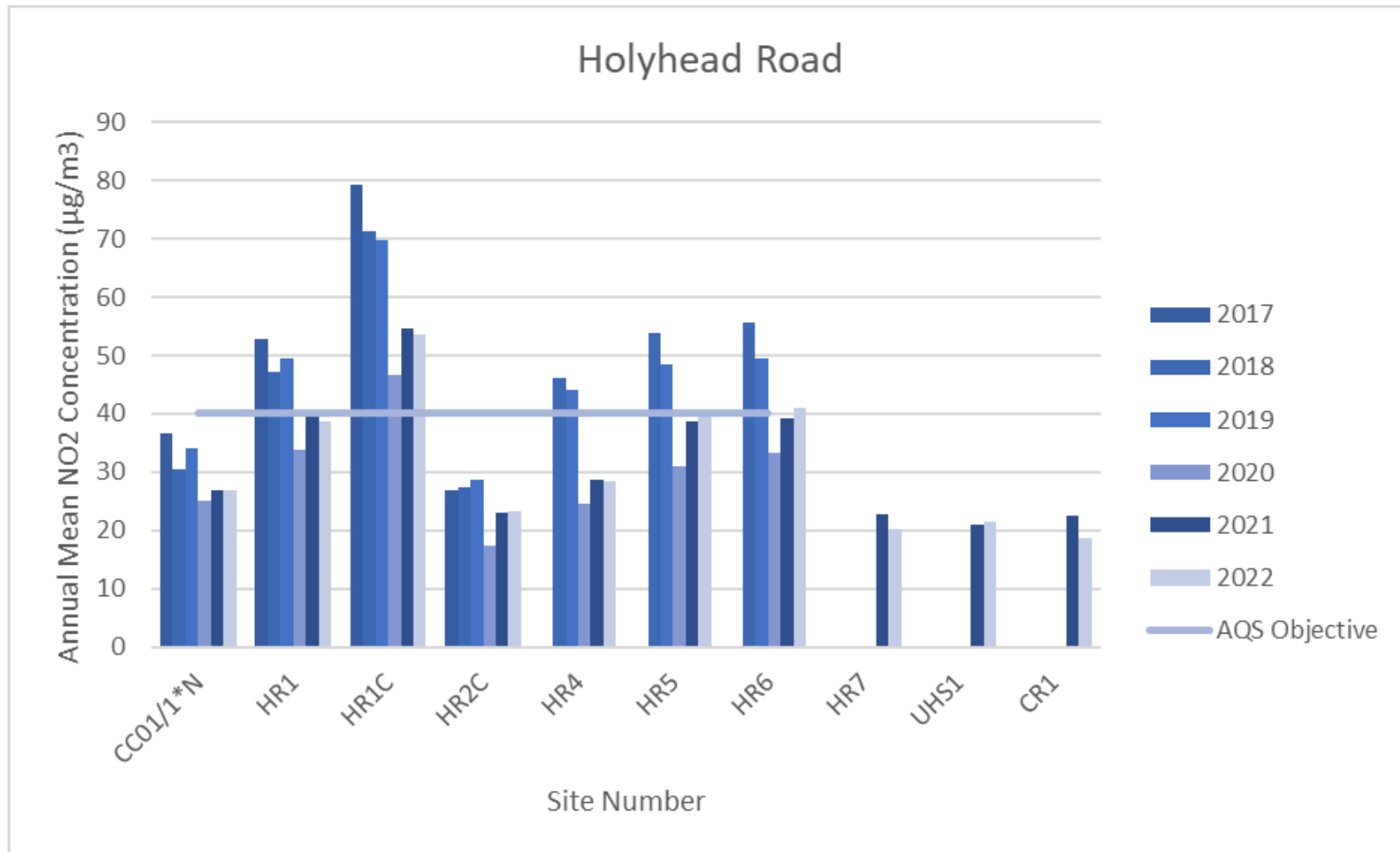














DT ID	X OS Grid Ref (Eastin g)	Y OS Grid Ref (Northing )	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
SS2	433994	279969	39.6	36.0	29.1	33.5	26.5	28.2	25.7	25.6	33.8	33.6	33.5	33.8	31.57	26.5		
SS3	434842	281272	<b>43.5</b>	39.6	33.8	<b>40.2</b>	35.8	34.0	29.2	28.2	38.7	37.0	39.5	36.5	36.33	30.5		
SS5	433852	279814	<b>49.2</b>	<b>40.7</b>	<b>40.7</b>	<b>41.4</b>	<b>40.6</b>	<b>42.7</b>	39.0	39.9	<b>45.3</b>	<b>46.4</b>	<b>47.6</b>	<b>41.6</b>	<b>42.93</b>	36.1	33.9	
BELL1	435849	282211	<b>40.5</b>	36.7	32.1	32.5	34.1	29.6	29.1	25.3	38.8	36.2	32.4	37.8	33.78	28.4		
BELL2	435826	282158	39.7	39.7	29.6	32.6	34.0	29.7	26.6	28.6	33.2	36.2	29.2	32.7	32.65	27.4		
FGS2	434450	279001	<b>40.5</b>	31.3	32.3	33.5	28.9	29.8	25.7	26.3	32.1	32.6	37.3	31.2	31.78	26.7		
FGS3a	434521	279024	<b>41.0</b>	30.5	30.4	36.6	28.5	29.1	24.5	27.4	30.5	29.3	36.6	32.3	31.40	26.4		
FGS4	434203	278892	<b>41.7</b>	33.2			26.4	33.3	29.1	28.9	32.7	36.6	<b>44.9</b>	34.7	34.15	28.7		
GR1	434679	278920	37.6	29.9	33.3	32.8	28.4	28.5	26.7	26.6	31.5	32.4	39.4	31.0	31.52	26.5		
Grange 3	435791	284285	<b>40.7</b>	30.0	32.5	27.4	32.7			28.1	33.1	35.5	39.1		33.25	27.9		
SHP1	430447	277080	27.8	26.2	23.4	25.7	23.0	22.1	19.9	19.5	27.1	30.0	29.8	27.3	25.15	21.1		
SHP2	430364	277060	30.3	27.2	22.7	29.0	22.3	22.9	21.3	22.5	25.2	25.5	27.1	26.6	25.22	21.2		
SHP3	430567	277231	35.0	27.7	27.9	30.7	24.1	25.4	22.0	24.5	26.8	27.0	31.9	27.7	27.57	23.2		
RR1	433550	279478	<b>42.0</b>	37.3	29.1	<b>41.1</b>	31.7	33.2	30.3	29.3	36.4	34.0	39.8	36.5	35.07	29.5		
RR2	433525	279502	<b>42.2</b>	35.9	30.7	39.2	31.2	30.7	26.8	28.1	32.2	30.5	41.4	34.5	33.63	28.2		
RR3	433552	279524	<b>51.6</b>	<b>47.8</b>	39.7	35.8	<b>46.0</b>	<b>40.0</b>	35.2	38.3	<b>46.0</b>	<b>49.5</b>	<b>50.7</b>	<b>47.9</b>	<b>44.05</b>	37.0		
RR4	433026	278572	<b>41.1</b>	38.3	33.5	29.9	33.3	28.6	27.0	27.1	37.3			<b>40.7</b>	33.67	28.3		
RR5	432940	278620	<b>46.0</b>	35.1	37.3	41.6	32.6	36.1	31.8	32.9	39.4	39.5	<b>46.2</b>	33.4	37.66	31.6		
SA1	427538	277397	27.1	24.6	20.8	23.1	19.4		17.5	14.3	19.8	19.1	21.5	23.5	20.97	17.6		
SA2	427624	277863	31.0	27.4	22.8	23.6	20.3	20.8	20.4	18.3	24.0	26.4	26.6	25.6	23.94	20.1		
HL1	427249	279780	24.1	20.2	18.8	19.7	18.4	17.3	18.2	16.3	20.0	21.9	25.7	21.3	20.14	16.9		
BS1A	431927	282911	33.8	25.1	25.9	22.2	22.5	23.0	20.5	21.5	23.6	27.3	29.3		24.97	21.0		
KG1	431956	282113	35.8	35.3	28.3	30.2	27.2	25.2	23.4	24.2	29.0	29.9	28.9	30.1	28.95	24.3		
EB1	435928	283069	33.5	29.5	26.7	28.0	25.4			19.7	26.3	28.0	33.9	28.1	27.92	23.5		
STM1	433019	275729	25.4	23.0	19.5	23.9	17.5	18.0	18.4	17.1	20.8	18.3	24.2	17.1	20.26	17.0		
STM2	433158	274766	24.3	22.4	17.7	20.3	16.0	14.3	14.7	13.8	19.3	20.4	21.7	20.2	18.75	15.8		
GL1	432818	275321	20.4	18.9	14.9	17.1	10.8	12.9	11.3	9.2	12.0	11.5	17.8	14.9	14.31	12.0		

- All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1B.
- 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
- Coventry City Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

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

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

See Appendix C for details on bias adjustment and annualisation.





DT ID	X OS Grid Ref (Easti ng)	Y OS Grid Ref (Nort hing)	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
BRN2	433605	281965	39.6	35.3	36.7	32.0	27.6	30.1	25.6	27.1	31.2	34.6	38.9	39.4	33.2	27.5		
BRN5	433640	281996	40.0	27.2	39.8	35.4	25.8	23.3	26.0	30.0	31.4	30.2	34.9	36.8	31.7	26.3		
BA1	432526	280806	39.8	29.0	33.6	26.9	26.8	28.6	26.3	27.3	30.6	32.0	38.7	40.8	31.7	26.3		
MA1	432243	279980	/	26.7	/	34.7	29.2	32.6	33.8	35.6	36.9	26.8	35.0	/	32.4	26.9		
SS1	434062	280082	42.5	28.2	35.5	31.3	26.4	25.6	28.6	29.4	31.2	30.3	31.5	38.7	31.6	26.2		
SS2	433994	279969	39.3	28.0	38.6	30.8	25.2	25.4	23.6	25.1	27.3	32.5	34.8	33.5	30.3	25.2		
SS3	434842	281272	42.9	34.3	39.5	32.6	28.8	28.0	30.1	31.2	32.4	35.2	36.8	39.0	34.2	28.4		
SS5	433852	279814	55.3	39.1	44.0	40.2	38.3	38.3	36.8	37.6	40.4	38.8	43.8	49.6	41.8	34.7		
BELL1	435849	282211	40.9	32.4	39.4	27.9	28.2	27.6	28.8	28.0	32.0	36.4	43.3	41.3	33.9	28.1		
BELL2	435826	282158	39.6	31.1	35.6	29.6	27.1	29.9	29.3	28.3	31.2	33.7	42.4	41.8	33.3	27.6		
FGS2	434450	279001	40.3	29.9	36.3	27.5	27.6	26.1	25.9	15.0	32.1	27.9	30.4	36.4	29.6	24.6		
FGS3a	434521	279024	46.6	31.4	34.4	33.1	28.6	27.4	30.3	33.7	/	27.9	30.4	37.0	32.8	27.2		
FGS4	434203	278892	44.1	33.7	41.3	29.4	33.4	/	28.9	31.7	33.9	33.5	36.9	40.1	35.2	29.2		
GR1	434679	278920	/	30.9	31.2	29.0	26.8	21.3	16.3	20.5	26.6	23.7	28.6	34.5	26.3	21.8		
Grange 3	435791	284285	43.2	/	32.6	27.5	26.8	28.0	26.2	24.4	29.9	31.4	35.6	38.2	31.3	25.9		
SHP1	430447	277080	32.5	22.7	28.7	21.8	22.8	20.8	21.4	22.3	24.4	24.5	24.9	28.4	24.6	20.4		
SHP2	430364	277060	29.8	20.9	30.7	25.1	20.3	19.1	19.3	22.6	26.1	25.0	26.8	30.9	24.7	20.5		
SHP3	430567	277231	36.9	23.0	30.2	25.0	20.6	21.5	21.5	23.5	25.6	23.6	29.2	35.6	26.4	21.9		
RR1	433550	279478	43.3	24.5	43.1	38.2	/	24.0	30.3	31.4	36.2	30.0	33.8	41.0	34.2	28.3		
RR2	433525	279502	49.4	28.8	46.2	/	28.5	23.8	29.9	32.0	34.8	30.4	32.8	38.5	34.1	28.3		
RR3	433552	279524	56.2	47.5	47.1	37.6	42.6	39.2	38.1	33.3	39.5	46.0	52.9	47.9	44.0	36.5		
RR4	433026	278572	48.1	37.3	38.3	27.4	28.2	26.8	31.5	30.4	37.0	39.6	45.2	45.1	36.2	30.1		
RR5	432940	278620	47.7	29.0	43.1	34.2	29.1	24.8	28.2	28.8	35.9	29.1	33.7	41.0	33.7	28.0		
SA1	427538	277397	31.0	16.9	28.0	/	16.6	/	/	/	/	/	/	/	23.1	16.7		
SA2	427624	277863	26.8	18.0	29.2	21.3	17.6	19.5	19.8	18.9	24.7	26.1	28.2	30.7	23.4	19.4		
HL1	427249	279780	27.4	18.0	23.7	18.0	11.4	14.7	17.9	17.9	21.4	21.0	21.0	27.3	20.0	16.6		
BS1A	431927	282911	/	24.6	26.8	21.1	21.2	22.5	22.3	20.1	25.6	27.5	30.5	32.8	25.0	20.8		
KG1	431956	282113	34.0	24.6	33.1	24.2	22.4	21.6	21.4	23.5	/	29.8	34.1	36.2	27.7	23.0		
EB1	435928	283069	37.1	25.7	30.6	20.2	0.5	19.6	22.5	22.3	24.4	23.2	30.2	33.2	24.1	20.0		
STM1	433019	275729	26.6	12.0	28.3	23.1	13.4	11.5	15.5	18.1	22.2	17.0	19.3	28.8	19.6	16.3		
STM2	433158	274766	24.8	13.2	24.0	16.8	13.7	12.4	14.3	15.5	19.1	18.5	22.6	27.2	18.5	15.4		
GL1	432818	275321	19.8	8.2	22.3	14.1	9.3	7.7	10.4	12.9	14.4	12.5	14.1	17.3	13.6	11.3		

- All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1B.
- 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.
- Coventry City Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

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

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.  
See Appendix C for details on bias adjustment and annualisation.

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

### **New or Changed Sources Identified Within Coventry During 2021 and 2022**

Coventry City Council has not identified any new sources relating to air quality within the reporting year of 2021 or 2022.

One diffusion tube for NO<sub>2</sub> was removed in 2021 along Station Avenue (SA4) due to it regularly going missing thereby generating insufficient usable data.

### **Additional Air Quality Works Undertaken by Coventry City Council During 2021 and 2022**

Coventry City Council has not completed any additional works within the reporting year of 2021 or 2022.

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

The test laboratory currently used by Coventry City Council is Gradko International Ltd. using the 20% TEA in water method of preparation. Gradko participates in several national quality schemes such as the independent AIR-PT scheme operated by LGC Standards, LEAP and Field Intercomparison.

The latest precision summary results are provided by Defra at <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/> and a summary is given below:

## Precision Summary Table

Diffusion Tube Preparation Method	2020 Good	2020 Bad	2021 Good	2021 Bad	2022 Good	2022 Bad
Gradko, 50% TEA in Acetone	19	1	16	0	14	0
Gradko, 20% TEA in Water	27	0	34	0	27	0
ESG Didcot / SOCOTEC, 50% TEA in Acetone	24	0	25	3	26	0
ESG Didcot / SOCOTEC, 20% TEA in Water	6	0	14	1	5	0
Staffordshire Scientific Services	15	0	15	1	12	0
Glasgow Scientific Services	2	7	2	5	3	3
Edinburgh Scientific Services	4	1	6	0	1	0
Milton Keynes Council	4	0	4	0	1	0
Tayside Scientific Services	1	0	1	0	1	0
Lambeth Scientific Services	8	2	8	1	3	1
Aberdeen Scientific Services	7	0	7	0	7	0
South Yorkshire Air Quality Samplers	1	0	1	0	0	0
ESG Glasgow, 50% TEA in Acetone	1	0	0	1	1	0
ESG Glasgow, 20% TEA in Water	1	0	0	1	1	0
Somerset County Council	10	0	11	0	6	0

### Diffusion Tube Annualisation

Diffusion tube results which have a capture rate of less than 75% but greater than 25% have been annualised following the guidance in LAQM TG16. No tubes had a capture rate of less than 25% during 2021 or 2022. The Data Processing Tool provided by Defra was used to generate the annualisation figures for the tubes that had a capture rate of less than 75% in both 2021 and 2022.

**Table C.1A – Annualisation Summary 2021 (concentrations presented in  $\mu\text{g}/\text{m}^3$ )**

Site ID	Annualisation Factor Coventry Allesley	Annualisation Factor Coventry Binley Road	Annualisation Factor Birmingham Acocks Green	Annualisation Factor Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
LON12	0.9394	0.9714	0.0	0.9312	0.9473	37.9	35.9

**Table C.2B – Annualisation Summary 2022 (concentrations presented in  $\mu\text{g}/\text{m}^3$ )**

Site ID	Annualisation Factor Coventry Allesley	Annualisation Factor Coventry Binley Road	Annualisation Factor Birmingham Ladywood	Annualisation Factor Northampton Spring Park	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
SE3	1.0784	1.0243	1.0440	1.0779	1.0562	28.9	30.5
SE4	0.8714	0.8469	0.8260	0.8033	0.8369	40.7	34.1
SE4A	1.0108	1.0617	0.9451	1.0446	1.0156	25.3	25.7
SE7	1.3683	1.3408	1.3863	1.7230	1.4546	24.7	35.9
SA1	0.9088	0.8681	0.8838	0.8204	0.8703	23.1	20.1

### Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 and 2023 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  $\text{NO}_x/\text{NO}_2$  continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Coventry City Council have applied a national bias adjustment factor of 0.84 to the 2021 monitoring data and 0.83 to the 2022 monitoring data. A summary of bias adjustment factors used by Coventry City Council over the past six years is presented in Table C.3.

The bias adjustment figure for 2021 was taken from the April 2022 version of the National Diffusion Tube Bias Adjustment Factor spreadsheet, as Coventry no longer has any automatic monitoring data. There were a total of 32 studies that contributed and therefore the adjustment factor of 0.84 is thought to be representative.

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 09/22				
Follow the steps below in the correct order to show the results of relevant co-location studies										This spreadsheet will be updated at the end of March 2023 LAQM Helpdesk Website	
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods											
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet											
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.											
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.							Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.				
Step 1:		Step 2:		Step 3:		Step 4:					
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		SELECT A Preparation Method from the Drop-Down List		SELECT A Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor <sup>1</sup> shown in blue at the foot of the final column.					
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.		If a year is not shown, we have no data		If you have your own co-location study then see footnote <sup>1</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953					
Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>2</sup>	Bias Adjustment Factor (A) (Cm/Dm)	
Gradko	20% TEA in water	2021	R	Gedling Borough Council	12	32	26	23.1%	G	0.81	
Gradko	20% TEA in water	2021	UB	West Northamptonshire Council	11	14	10	32.1%	G	0.76	
Gradko	20% TEA in water	2021	R	Ards and North Down Borough Council	10	30	22	38.4%	G	0.72	
Gradko	20% TEA in water	2021	R	Birmingham City Council	10	33	25	35.2%	G	0.74	
Gradko	20% TEA in water	2021	R	Cheshire West and Chester	12	34	29	14.1%	G	0.88	
Gradko	20% TEA in water	2021	R	Cheshire West and Chester	12	33	29	12.6%	G	0.89	
Gradko	20% TEA in water	2021	R	Lisburn & Castlereagh City Council	12	25	19	31.9%	G	0.76	
Gradko	20% TEA in water	2021	R	Nottingham City Council	12	32	35	-8.1%	G	1.09	
Gradko	20% TEA in water	2021	R	SOUTHAMPTON CITY COUNCIL	12	34	32	5.2%	G	0.95	
Gradko	20% TEA in water	2021	R	SOUTHAMPTON CITY COUNCIL	12	34	27	28.6%	G	0.78	
Gradko	20% TEA in water	2021	R	Bath & North East Somerset	12	31	27	15.1%	G	0.87	
Gradko	20% TEA in water	2021	R	Bedford Borough Council	11	34	31	7.6%	G	0.93	
Gradko	20% TEA in water	2021	R	Bedford Borough Council	11	19	17	11.7%	G	0.90	
Gradko	20% TEA in water	2021	R	Blackburn with Darwen Borough Council	12	27	20	32.3%	G	0.76	
Gradko	20% TEA in water	2021	R	Brent Council	12	51	46	9.9%	G	0.91	
Gradko	20% TEA in water	2021	R	Gateshead Council	10	23	19	23.8%	G	0.81	
Gradko	20% TEA in water	2021	R	Gateshead Council	12	25	22	13.7%	G	0.88	
Gradko	20% TEA in water	2021	R	Gateshead Council	11	27	25	9.8%	G	0.91	
Gradko	20% TEA in water	2021	R	Gateshead Council	12	31	25	26.6%	G	0.79	
Gradko	20% TEA in water	2021	R	Gateshead Council	12	32	34	-4.1%	G	1.04	
Gradko	20% TEA in water	2021	KS	Marglebone Road Intercomparison	11	53	42	25.0%	G	0.80	
Gradko	20% TEA in Water	2021	R	Monmouthshire County Council	11	35	29	21.8%	G	0.82	
Gradko	20% TEA in water	2021	R	Belfast City Council	12	25	21	20.9%	G	0.83	
Gradko	20% TEA in water	2021	UC	Belfast City Council	11	26	21	25.4%	G	0.80	
Gradko	20% TEA in water	2021	R	Belfast City Council	12	42	36	17.7%	G	0.85	
Gradko	20% TEA in water	2021	R	Belfast City Council	12	38	27	39.4%	G	0.72	
Gradko	20% TEA in water	2021	UB	Dudley MBC	12	20	15	36.0%	G	0.74	
Gradko	20% TEA in water	2021	R	Dudley MBC	12	30	29	4.2%	G	0.96	
Gradko	20% TEA in water	2021	R	Dudley MBC	12	42	40	5.5%	G	0.95	
Gradko	20% TEA in Water	2021	R	Lambeth	10	91	62	46.6%	G	0.68	
Gradko	20% TEA in water	2021	R	Lancaster City Council	13	38	32	18.4%	G	0.84	
Gradko	20% TEA in water	2021	R	Lancaster City Council	13	28	27	4.9%	G	0.95	
Gradko	20% TEA in water	2021	R	Cheltenham Borough Council	12	29	25	13.4%	G	0.88	
Gradko	20% TEA in water	2021	R	Preston City Council	12	24	21	12.2%	G	0.89	
Gradko	20% TEA in water	2021		<b>Overall Factor<sup>1</sup> (34 studies)</b>				<b>Use</b>		<b>0.84</b>	

Figure C1a: A screenshot of the National Diffusion Tube Bias Adjustment Factor spreadsheet, showing the laboratory, preparation method and factor used for 2021

The bias adjustment figure for 2022 was taken from the March 2023 version of the National Diffusion Tube Bias Adjustment Factor spreadsheet, as Coventry no longer has any automatic monitoring data. There were a total of 27 studies that contributed and therefore the adjustment factor of 0.83 is thought to be representative.

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 03/23			
Follow the steps below in the correct order to show the results of relevant co-location studies							This spreadsheet will be updated at the end of June 2023			
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods							LAQM Helpdesk Website			
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet							Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.			
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.										
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.										
<b>Step 1:</b>		<b>Step 2:</b>		<b>Step 3:</b>		<b>Step 4:</b>				
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor shown in blue at the foot of the final column.				
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.		If a year is not shown, we have no data.		If you have your own co-location study then see footnote 4. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953				
Analysed By <sup>1</sup>	Method <sup>2</sup>	Year <sup>3</sup>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>4</sup>	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2022	R	Monmouthshire County Council	12	35	28	23.8%	G	<b>0.81</b>
Gradko	20% TEA in water	2022	KS	Marlybone Road Intercomparison	12	52	42	22.8%	G	<b>0.81</b>
Gradko	20% TEA in water	2022	UB	Plymouth City Council	12	18	18	3.2%	G	<b>0.97</b>
Gradko	20% TEA in water	2022	UC	Belfast City Council	12	26	20	30.7%	G	<b>0.76</b>
Gradko	20% TEA in water	2022	R	Belfast City Council	12	47	36	26.1%	G	<b>0.78</b>
Gradko	20% TEA in water	2022	R	Belfast City Council	12	25	22	14.0%	G	<b>0.88</b>
Gradko	20% TEA in water	2022	R	Belfast City Council	12	36	28	29.0%	G	<b>0.78</b>
Gradko	20% TEA in water	2022	R	Brighton & Hove City Council	10	37	23	62.8%	G	<b>0.61</b>
Gradko	20% TEA in water	2022	UB	Hertsmere Borough Council	12	16	15	7.1%	G	<b>0.93</b>
Gradko	20% TEA in water	2022	R	Southampton City Council	12	36	28	30.6%	G	<b>0.77</b>
Gradko	20% TEA in water	2022	UC	Southampton City Council	12	28	24	15.4%	G	<b>0.87</b>
Gradko	20% TEA in water	2022	R	Southampton City Council	12	34	31	6.4%	G	<b>0.92</b>
Gradko	20% TEA in water	2022	R	Worcestershire	11	13	12	4.2%	G	<b>0.96</b>
Gradko	20% TEA in water	2022	R	Lancaster City Council	13	34	27	25.8%	G	<b>0.79</b>
Gradko	20% TEA in water	2022	R	Lancaster City Council	12	28	24	15.2%	G	<b>0.87</b>
Gradko	20% TEA in water	2022		<b>Overall Factor<sup>5</sup> (27 studies)</b>					<b>Use</b>	<b>0.83</b>

Figure C1b: A screenshot of the National Diffusion Tube Bias Adjustment Factor spreadsheet, showing the laboratory, preparation method and factor used for 2022

Table C.3 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.83
2021	National	09/22	0.84
2020	National	09/21	0.81
2019	National	03/20	0.92
2018	National	06/19	0.92
2017	National	06/18	0.87

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

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

automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table B.1.

in 2021, sites HR1C, HR5, BH2b, R6 and SS5 all required distance correcting to the nearest receptor as the annual mean concentration at the monitoring site was greater than 36µg/m<sup>3</sup>. Once distance corrected, only tube HR1C exceeded the annual limit of 40µg/m<sup>3</sup>.

in 2022, sites HR1C, HR5 and R6 required distance correcting to the nearest receptor as the annual mean concentration at the monitoring site was greater than 36µg/m<sup>3</sup>. After distance correction, sites HR1C and HR6 exceeded the annual limit of 40µg/m<sup>3</sup>. These tubes are located in close proximity to each other on Holyhead Road.

**Table C.4A – NO<sub>2</sub> Fall off With Distance Calculations 2021 (concentrations presented in µg/m<sup>3</sup>)**

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
HR1c	1.8	6.0	54.6	17.00176	<b>44.2</b>	
HR5	1.8	5.0	38.8	17.00176	33.7	
BH2b	3.1	5.1	37.3	16.73078	34.6	
R6	2.05	4.25	40.4	18.40353	36.6	
SS5	2.0	3.8	36.1	21.81579	33.9	

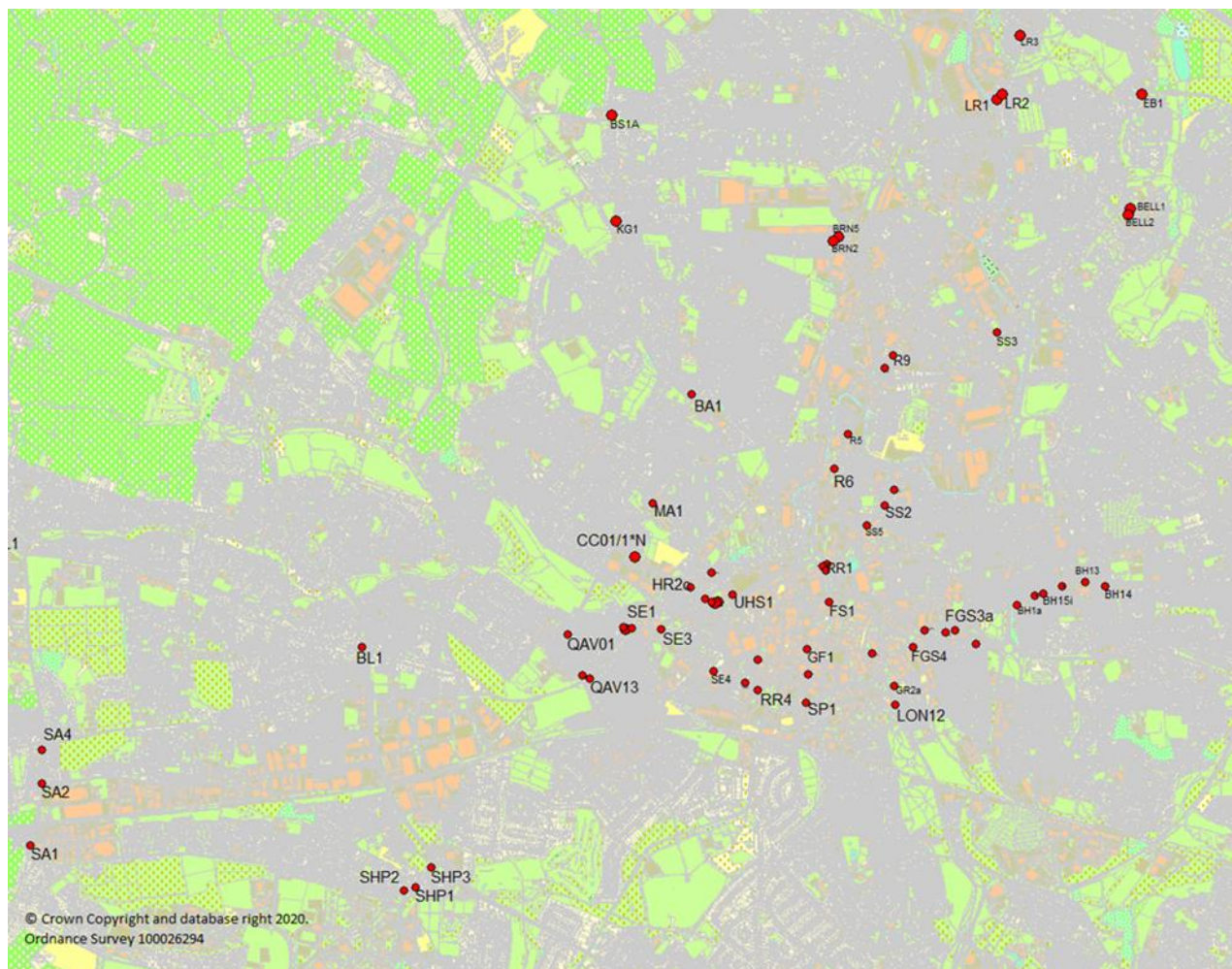
**Table C.5B – NO<sub>2</sub> Fall off With Distance Calculations 2022 (concentrations presented in µg/m<sup>3</sup>)**

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
HR1C	1.8	6.0	53.5	20.0	<b>44.3</b>	
HR5	1.8	5.0	39.5	20.0	34.9	
R6	3.1	4.9	37.7	17.82413	35.3	

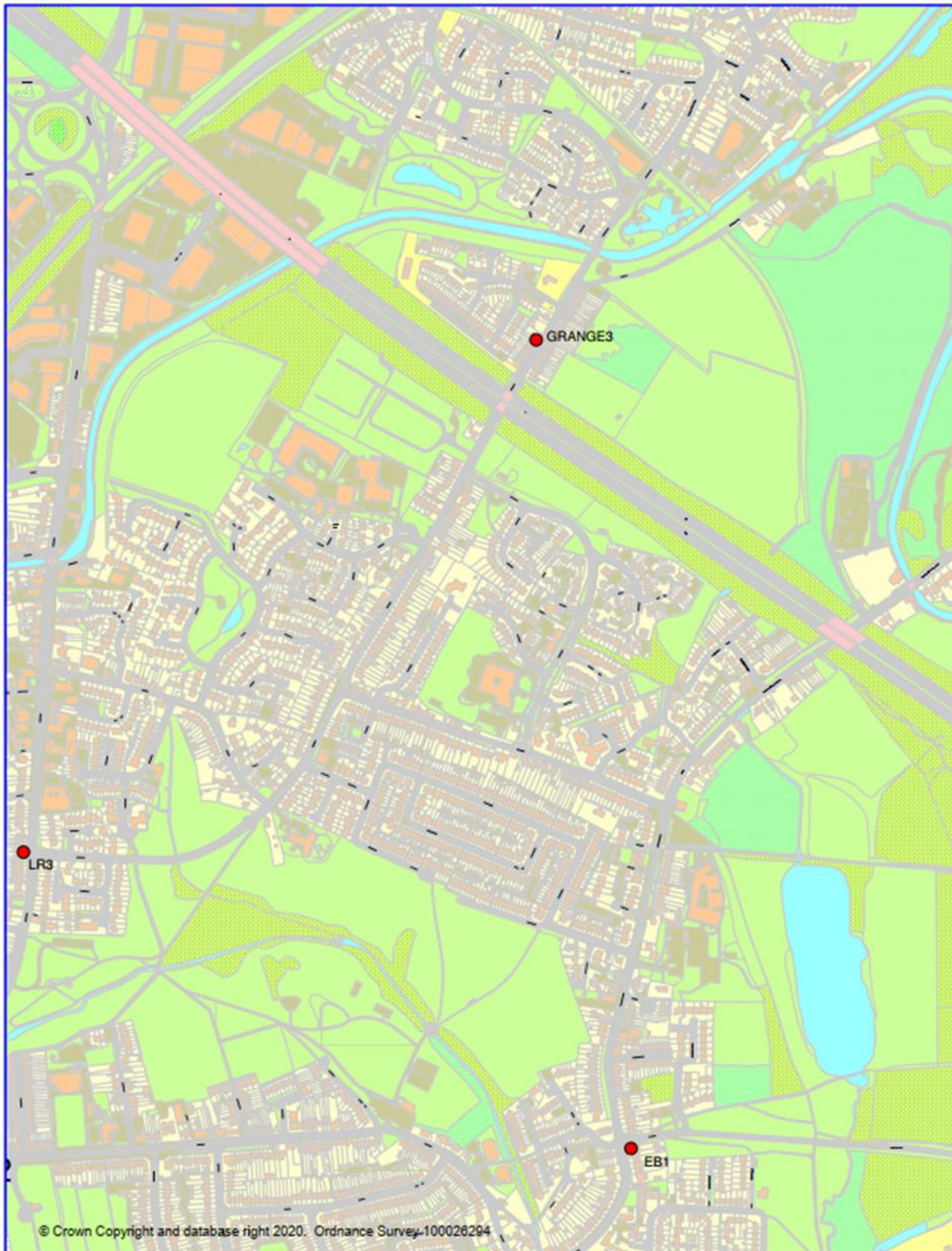


## Appendix D: Map(s) of Monitoring Locations and AQMAs

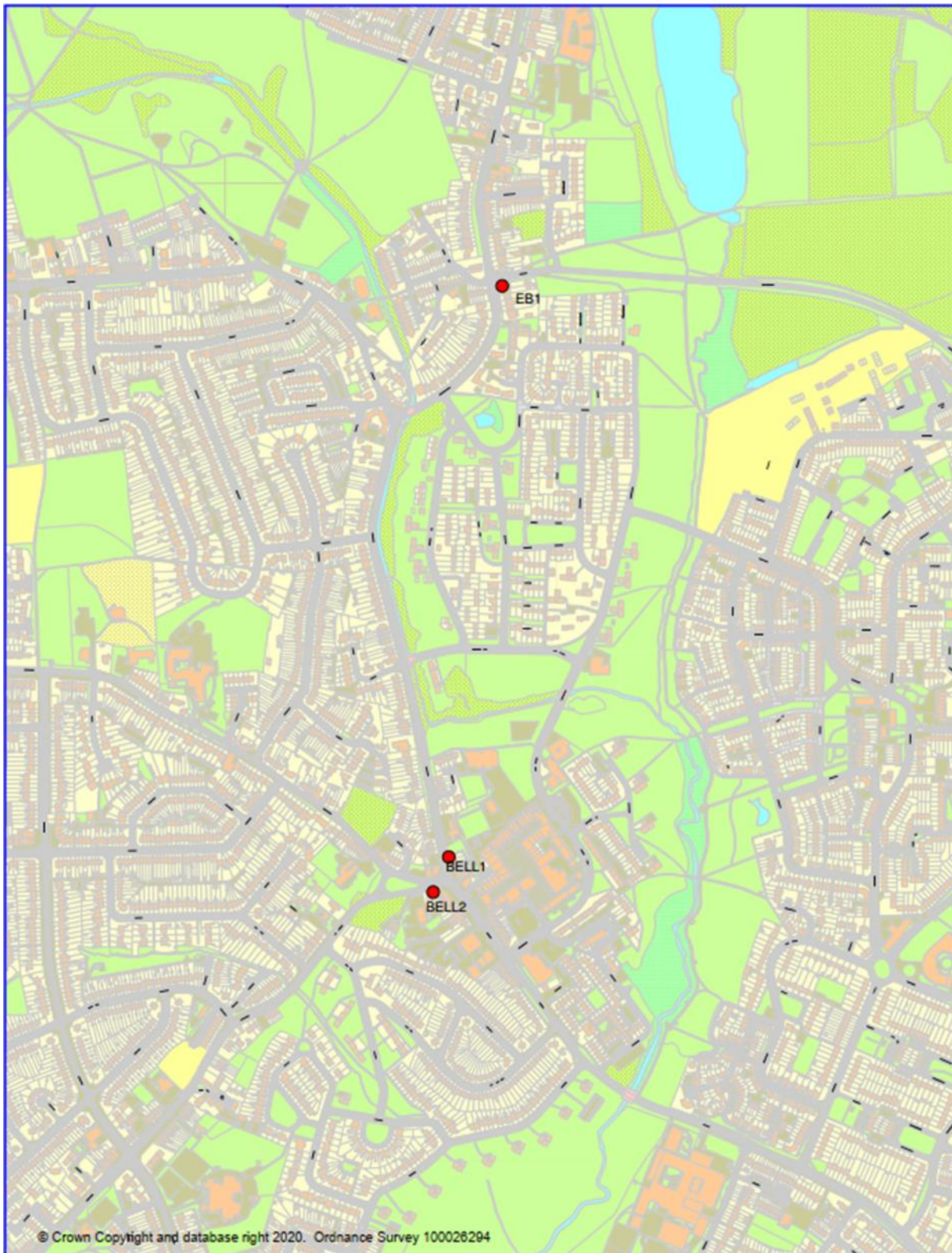
Figure D.1 – Maps of Non-Automatic Monitoring Site



Tubes Grange3, EB1 and LR3



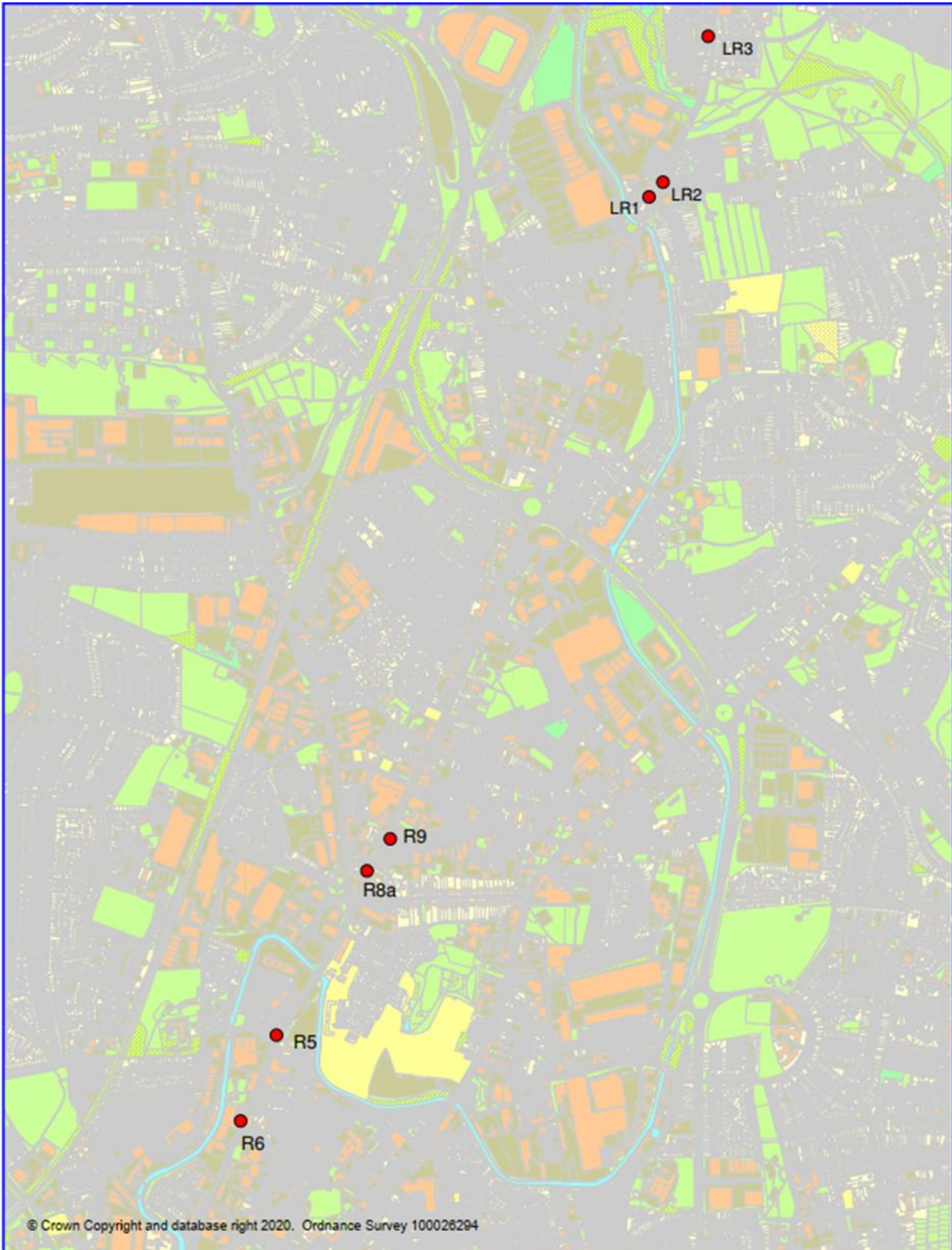
Tubes EB1, BELL1 and BELL2



Tubes BS1A, KG1 and BRN



Foleshill Road / Longford Road Tubes



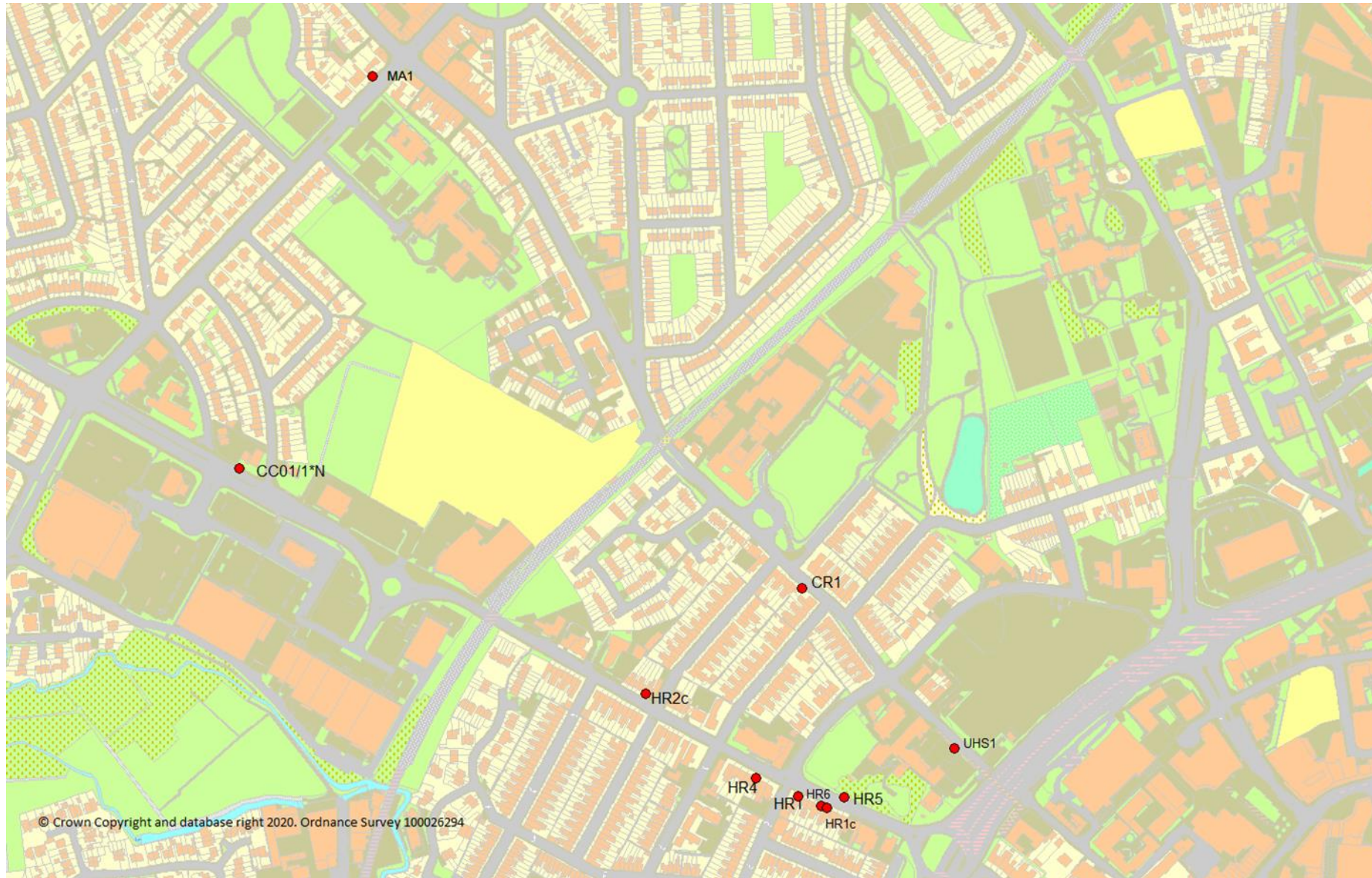
Stoney Stanton Road Tubes



Burnaby Road and Beake Avenue Tubes



### Holyhead Road and Moseley Avenue Tubes





City Centre and RR4 & RR5



### Far Gosford Street and City Centre Tubes



Queensland Avenue / Spon End Tubes



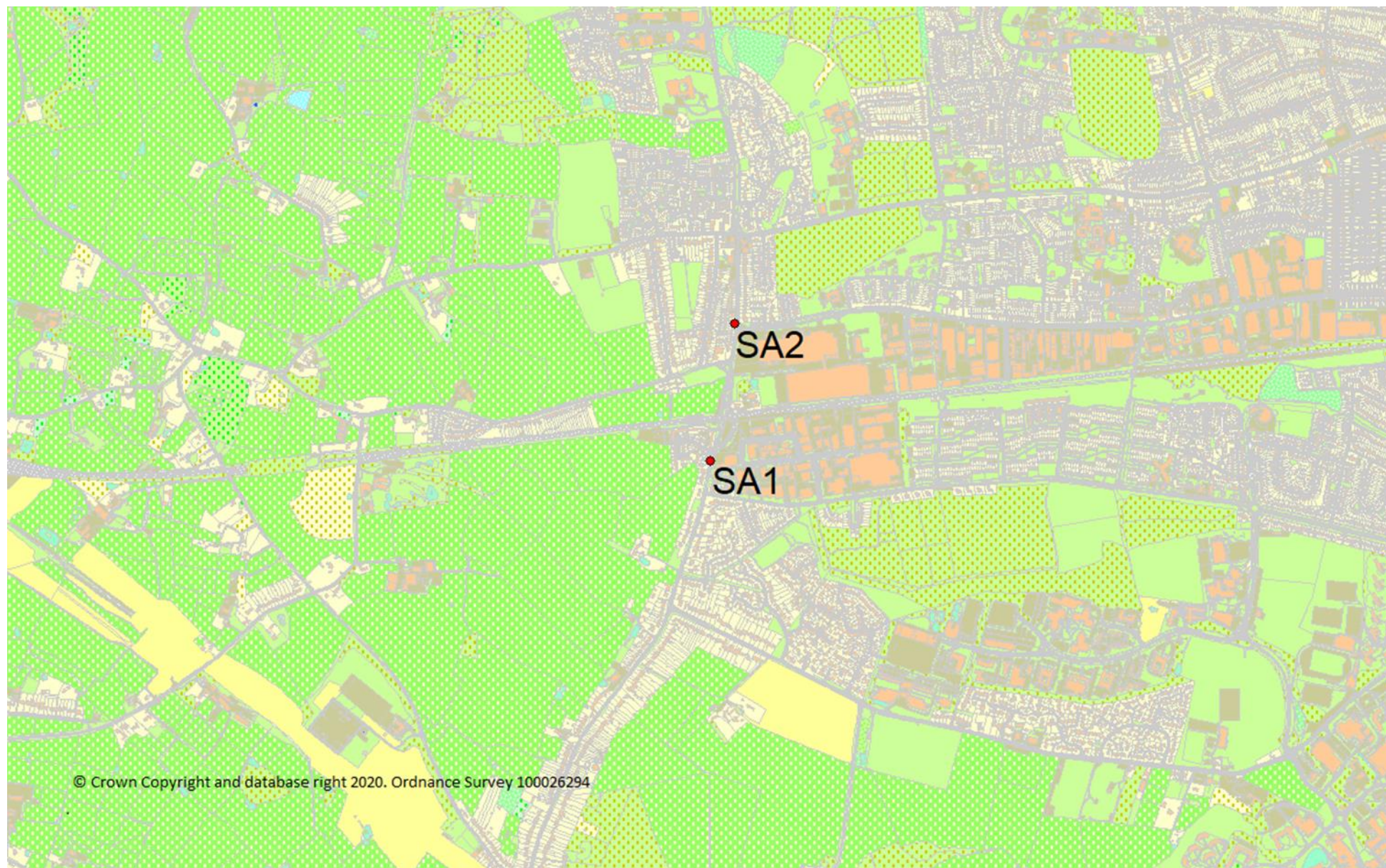
### Sir Henry Parkes Road Tubes



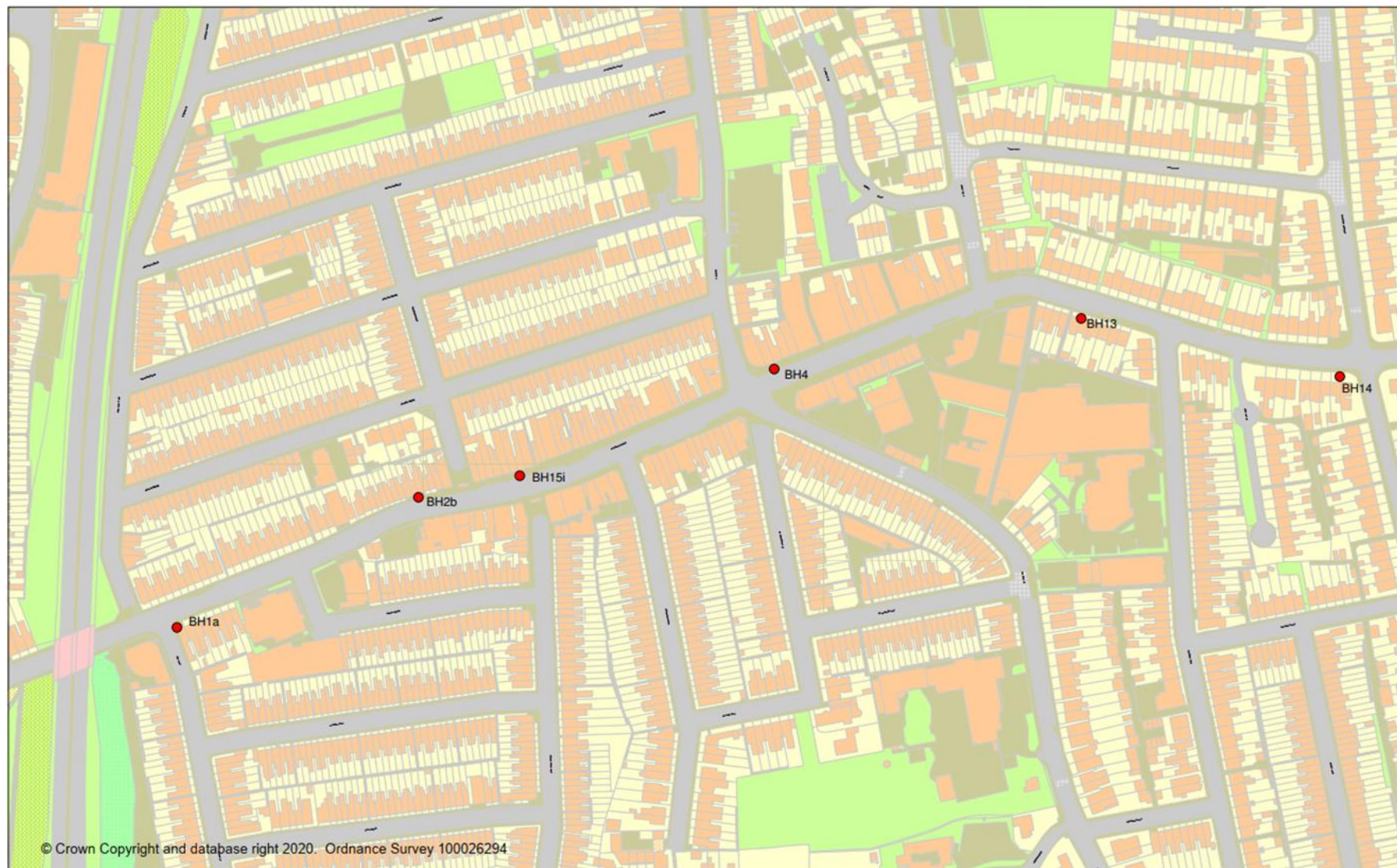
St. Martin's Road and Green Lane Tubes



Station Avenue Tubes



Ball Hill Tubes



London Road Tubes





### Hockley Lane Tube



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

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

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

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

## Glossary of Terms

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

## 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.