



# Birmingham City Council Air Quality Action Plan

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## Birmingham City Council

Local Authority Officer	Paul Burns
Department	Environmental Health, Regulation & Enforcement Division
Address	Environmental Health, Ashted Lock, PO Box 16977, Birmingham, B2 2AE
Telephone	0121 303 9938
E-mail	<a href="mailto:pollution.team@birmingham.gov.uk">pollution.team@birmingham.gov.uk</a>
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## Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality in Birmingham between 2021 and 2026.

This action plan replaces the previous action plan which ran from July 2011. Projects delivered through the past action plan include: the extension of the red route network (red routes have been implemented on 6 major routes into and out of the city centre), increase in the number and use of Park and Ride schemes (Longbridge now operational), improvement of the bus fleet within Birmingham (support of CENTRO's Environment Strategy 2014-2019) and an improvement in the city's taxi fleet (a project to retrofit taxis to LPG and the overall replacement of the taxi fleet).

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>3</sup>. Birmingham City Council is committed to reducing the exposure of people in Birmingham to poor air quality in order to improve health. A Clean Air Zone, which will discourage the most polluting vehicles from central Birmingham, will be implemented in 2021. This represents a major intervention, including all vehicle types and is likely to have a major impact on air quality, not only within the zone, but more widely as vehicle fleets have a more rapid turnover.

This Action Plan incorporates the Clean Air Zone, but provides a wider set of actions. We have developed seven broad actions that will be refined and focused on specific areas, as ongoing work identifies where exceedances outside of the Clean Air Zone area persist.

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

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

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

## **Birmingham City Council**

Our priorities are to implement the Clean Air Zone and mitigation measures, support and implement strategic transport improvements, promote behaviour change away from single occupancy vehicle use, promote alternatively fuelled vehicles and develop policies to support better air quality. In addition, specific measures will be identified once locations where exceedances persist outside of the CAZ area have been identified, and industrial and domestic emissions will also be controlled; as transport related emissions reduce, the relative importance of these sources will increase.

In this AQAP we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are a large number of air quality policy areas that are outside of our influence (such as vehicle emissions standards agreed in Europe), but for which we may have useful evidence, and so we will continue to work with regional and central governments on policies and issues beyond Birmingham City Council's direct influence.

## **Responsibilities and Commitment**

This AQAP was prepared by the Environmental Health service of Birmingham City Council with the support and agreement of key officers, in particular the sub-programme leads on the Brum Breathes programme.

This AQAP will be subject to an annual review, appraisal of progress and reported to the relevant Cabinet Member and to the Licensing & Public Protection Committee.

Progress each year will be reported in the Annual Status Reports (ASRs) produced by Birmingham City Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Environmental Protection at:

Address: Environmental Health, 1-3 Ashted Lock, PO Box 16977, Birmingham, B2 2AE

Email: [Pollution.Team@birmingham.gov.uk](mailto:Pollution.Team@birmingham.gov.uk)

# Table of Contents

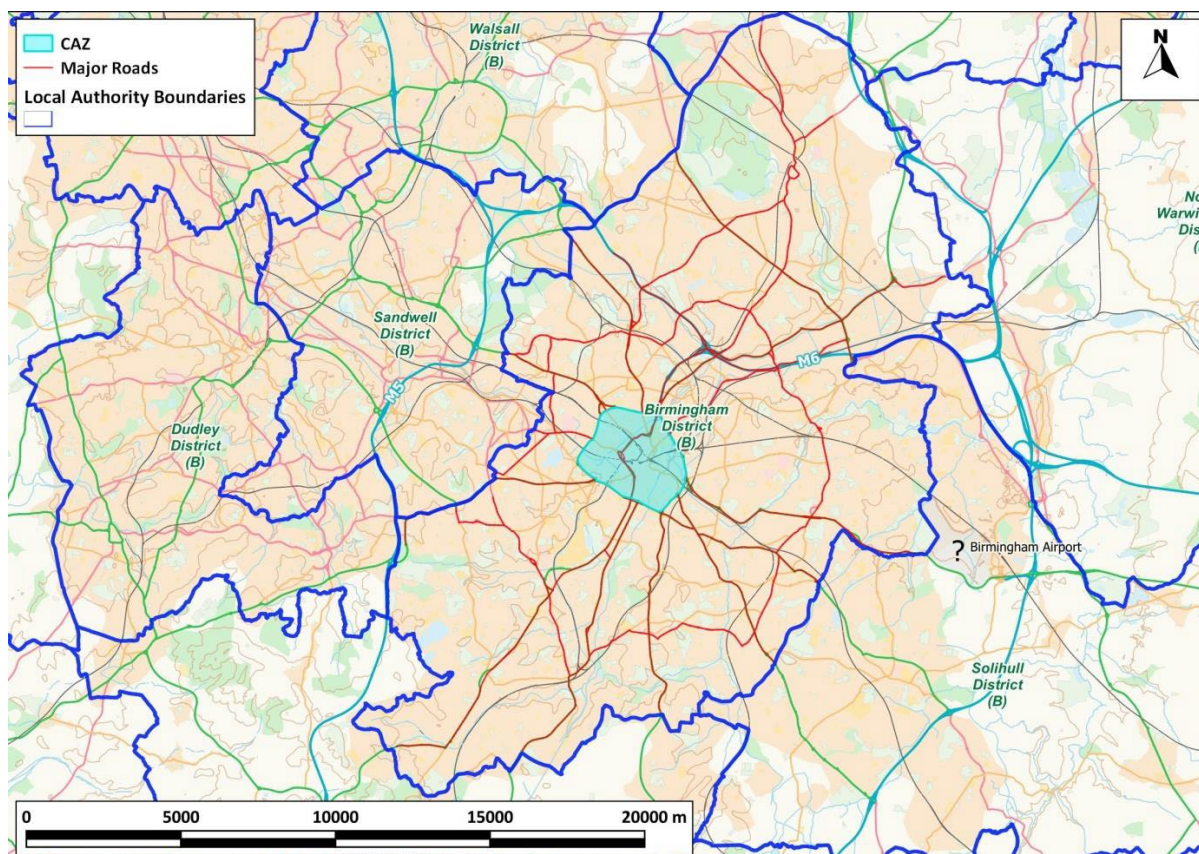
## Contents

<b>Executive Summary</b> .....	<b>i</b>
Responsibilities and Commitment .....	ii
<b>Table of Contents</b> .....	<b>iii</b>
<b>1. Introduction</b> .....	<b>1</b>
<b>2. Summary of Current Air Quality in Birmingham</b> .....	<b>4</b>
<b>3. Birmingham’s Air Quality Priorities</b> .....	<b>6</b>
3.1. Public Health Context .....	6
3.1.1. Air pollution & health .....	6
3.1.2. Impact from the COVID pandemic.....	6
3.1.3. COVID and air pollution.....	7
3.2. Planning and Policy Context.....	8
3.2.1. National Level Policy .....	8
3.2.2. Local Policy .....	11
3.3. Work to inform the identification of exceedance areas.....	16
3.4. Source Apportionment.....	17
3.5. Key Priorities.....	19
<b>4. Development and Implementation of Birmingham City Council’s AQAP 20</b>	
4.1. Consultation and Stakeholder Engagement.....	20
4.2. Steering Group .....	21
<b>5. AQAP Measures</b> .....	<b>22</b>
<b>Appendix A: Response to Consultation</b> .....	<b>32</b>
<b>Appendix B: Reasons for Not Pursuing Action Plan Measures</b> .....	<b>33</b>
<b>Appendix C: Details of Monitoring Locations</b> .....	<b>34</b>
<b>Glossary of Terms</b> .....	<b>43</b>
<b>References</b> .....	<b>45</b>

# 1. Introduction

Birmingham City Council (BCC) is the largest urban local authority in the UK and the largest council in Europe with 101 councillors representing 69 wards. It has a population of over 1 million residents spread over an area of approximately 26,777 hectares (103 square miles). It has a population density of 36.5 persons per hectare, which makes it the most densely populated of the West Midlands local authorities. The city has a very complex road network with about a dozen major radial roads and two ring roads traversing the city. In addition there are four heavily trafficked motorways M5, M6, M6 Toll, and M42 forming a box around the city with a section of the A38M running through the city. Figure 1.1 shows the Birmingham City Council area including major roads and the extent of the Clean Air Zone.

**Figure 1.1 Map of the Birmingham City Council area**



## Birmingham City Council

BCC declared itself an Air Quality Management Area in respect of Nitrogen Dioxide (NO<sub>2</sub>) in 2010. The Council has recognised the importance of public health for many years and has a specific commitment in the Council Plan to tackle air pollution<sup>4</sup>.

This report outlines the actions that Birmingham City Council, in association with others, will deliver between 2021-2026 in order to reduce concentrations of air pollutants and exposure to air pollution, thereby positively impacting on the health and quality of life of residents and visitors to the local authority's administrative area.

It has been developed in recognition of the legal requirement on the local authority to work towards the Air Quality Strategy (AQS) objectives under Part IV of the Environment Act (1995) and relevant regulations made under that part, and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

It should be noted that whilst air quality objectives (under the Environment Act 1995) and limit values (under Directive 2008/50/EC Ambient Air Quality and Cleaner Air for Europe) are numerically the same: 40 µg/m<sup>3</sup> for annual mean nitrogen dioxide concentrations, there are important differences in how they are assessed and reported, and where they apply. Compliance with the Limit Values is largely determined via the national monitoring network and the national model (the Pollution Climate Mapping (PCM) model) and reported to the EU by the competent authority, which in England is the Secretary of State for the Environment. In locations such as Birmingham, where Clean Air Zone feasibility work has been undertaken, local modelling has been used to assess against the Limit Value and generally uses a proxy of assessing receptors 4m from the kerb and 2m in height as being equivalent to the PCM model. Air quality objectives, by comparison, apply only where there is exposure relevant to the averaging period. In this case, for an annual mean objective, they apply at facades of residential properties and schools and would usually be applied at 1.5m height. There are clearly large overlaps between the two systems, and both are designed to improve public health, but throughout this report the term 'objectives' is used to denote the criteria under the Environment Act 1995, while the term 'Limit Value' is used to denote the criteria under Directive 96/62/EC.

This action plan is intended to complement the substantial amount of work which has been undertaken in relation to the Clean Air Zone (CAZ), which is due to come into force in 2021. It is intended that the Action Plan will implement measures to reduce

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<sup>4</sup> [https://www.birmingham.gov.uk/info/20011/your\\_council/237/council\\_plan\\_and\\_budget\\_2018\\_to\\_2022](https://www.birmingham.gov.uk/info/20011/your_council/237/council_plan_and_budget_2018_to_2022)

## **Birmingham City Council**

concentrations in locations outside of the CAZ, and will complement the CAZ process.

This Plan will be reviewed every five years as a minimum, and progress on measures set out within this Plan will be reported on annually within Birmingham City Council's air quality ASR.



## 2. Summary of Current Air Quality in Birmingham

Annual average nitrogen dioxide (NO<sub>2</sub>) concentrations exceed air quality objectives on several road links in and around Birmingham City Centre, and this remains a challenge for Birmingham City Council. Birmingham is currently compliant with legal limits for particulate matter (PM). However, further reductions are needed (especially to PM<sub>2.5</sub> levels<sup>5</sup>) to protect human health. This Action Plan, by definition, is focussed on reducing nitrogen dioxide, but care will be taken to ensure that any measures implemented do not worsen PM concentrations.

The area of Birmingham City Centre where annual average nitrogen dioxide concentrations exceed the legal limit is expected to decrease by 2020, due to anticipated reductions in background concentrations, the ongoing upgrade of the local vehicle fleet and other local interventions. However, modelling indicates that if nothing further is done, concentrations will continue to exceed the limit on some major roads in and around the City Centre, including the A38, A38M, A4400, A452 and A4540.

Birmingham City Council maintains an air quality monitoring network to allow the Council to understand the quality of the air within its area. The current network is included in Appendix C, which shows all monitoring locations both within and outside of the CAZ area, both real time (automatic) analysers and passive monitoring locations.

Historic modelling had suggested that the areas of exceedance / likely areas of exceedance were contained within the areas influenced by the incoming CAZ and monitoring was therefore focussed to assess concentrations in these locations. In the intervening years since that modelling was undertaken there have been significant changes, including to the emission factors on which air pollution models are based, including national models such as the PCM. This has resulted in a need to revisit and reassess pollution concentrations in areas outside of the city centre.

Whilst Birmingham's monitoring network has been focused on the city centre area, outside of the city centre it is not sufficient to identify which locations, with relevant exposure, that may be exceeding the nitrogen dioxide annual mean objective. With

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<sup>5</sup> This relates to pollutant particles with an aerodynamic diameter 2.5 microns where 1 micron equals 1 millionth of a metre

## **Birmingham City Council**

the imminent introduction of the CAZ to deliver improvements within the city centre area, the Council has adopted an intelligence-led approach to identify any areas of exceedance outside the city centre, and this is based on an existing model and analysis of traffic data, with areas of public exposure in close proximity. This AQAP will therefore be amended as the outcomes from this process provide evidence as to where the AQAP should be targeted. It should therefore be considered a living document.

## **3. Birmingham's Air Quality Priorities**

### **3.1. Public Health Context**

#### **3.1.1. Air pollution & health**

Air pollution is a major public health risk ranking alongside cancer, heart disease and obesity. A review by the World Health Organization concluded that long-term exposure to air pollution reduces life expectancy by increasing the incidence of lung, heart and circulatory conditions. The Department of Health and Social Care's advisory Committee on the Medical Effects of Air Pollutants (COMEAP) has estimated that long-term exposure to man-made air pollution in the UK has an annual impact on shortening lifespans, equivalent to 28,000 to 36,000 deaths (COMEAP, 2018). Poor air quality can affect health at all stages of life. Those most affected are the young and old. In the womb, maternal exposure to air pollution can result in low birth weight, premature birth, stillbirth or organ damage. In children there is evidence of reduced lung capacity, while impacts in adulthood can include diabetes, heart disease and stroke. In old age, a lifetime of exposure to air pollution can result in reduced life-expectancy and reduced wellbeing at end of life. There is also emerging evidence for a link between air pollution and an acceleration of the decline in cognitive function (Defra, 2019).

Poor air quality disproportionately affects the poorest and most vulnerable in our communities including children. Public health not only aims to improve health, but also reduce health inequalities by using an evidence-based approach to make recommendations on the delivery of health and wellbeing services. As such, this Action Plan will support work underway within the public health arena.

#### **3.1.2. Impact from the COVID pandemic**

During 2020 the world experienced the Coronavirus (COVID) pandemic and the UK was significantly impacted by the virus with over 100,000 deaths attributed to the virus and many more people made ill.

The main symptoms attributed to COVID are high temperature, new and continuous cough, loss or change to sense of taste or smell, although many other symptoms in younger or elderly populations may occur. These acute symptoms may be as far as the disease progresses in some people, but in others COVID can have a more significant and serious acute impact, and in some cases can be fatal. It is also known that a significant proportion of positive cases are asymptomatic.

Some people experience symptoms of COVID-19 that last weeks or months after the infection has passed. This is commonly known as 'long-COVID' or post-COVID-19 syndrome. The chances of having long-term symptoms does not seem to be linked to how ill people are when they first get the infection ([www.nhs.uk](http://www.nhs.uk)).

### 3.1.3. COVID and air pollution

Many conditions, diseases and health states attributable to COVID are included in the current lists, but some are also likely to be associated/exacerbated by/partially attributable to poor air quality including severe lung conditions (e.g. severe asthma or severe COPD), serious heart attack as well as non-severe lung conditions (e.g. asthma, COPD, emphysema, bronchitis) and heart disease.

Many studies are ongoing, but emerging evidence suggests there may be a significant positive association between long term air pollution exposure and severity of COVID-19 infection.

An early population-weighted study in Germany identified a significant positive association between exposure to air pollution (NO<sub>2</sub>) and COVID-19 incidence. The study identified that a 1 microgram increase in long-term exposure to NO<sub>2</sub> increases the COVID-19 incidence rate by 5.58% (95% CI: 3.35%, 7.86%)<sup>1</sup>.

A US study that adjusted for multiple confounders found that an increase of 1µg/m<sup>3</sup> in long-term PM<sub>2.5</sub> exposure was associated with an 8% increased risk of COVID-19 mortality (estimated mortality ratio 1.08, 95%CI 1.02-1.15)<sup>2</sup>.

A UK Officer for National Statistics (ONS) study has also looked at associations between COVID-19 mortality rates and long-term air pollution exposure. The ONS concludes there are positive associations between the variables, but the effects may be smaller than early studies suggested, and the report also points out some confounders that will need further study<sup>3</sup>.

“there is significant collinearity between ethnicity and air pollution, making it impossible to entirely separate the effects of these covariates...”

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<sup>1</sup> Huang G, Brown PE. Population-weighted exposure to air pollution and COVID-19 incidence in Germany. *Spatial statistics* [Internet]. 2021 Mar [cited 2021 Jan 6];41:100480.

<sup>2</sup> Uy Hoang, Nicholas R Jones. is there an association between exposure to air pollution and severity of COVID-19 infection? [internet] April 2020 [cited 2021 Jan 6].

<sup>3</sup> Adam Dutton. Coronavirus (Covid-19) related mortality rates and the effects of air pollution in England. ONS. [Internet] August 2020[cited 2021 Jan 6]

The authors suggest that it has become clear over the course of the pandemic that socioeconomic and demographic factors are strongly associated with COVID-19 mortality rates, and these are also associated with higher long-term exposure to PM2.5 and NO2.

It is too early to conclude with certainty what the magnitude of the observed associations between poor air quality and COVID-19 mortality are, and whether the relationships are causative.

## **3.2. Planning and Policy Context**

### **3.2.1. National Level Policy**

#### **Air Quality Strategy**

The Air Quality Strategy (Defra, 2007) published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA), and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

#### **National Air Quality Plan**

Defra has produced an Air Quality Plan to tackle roadside nitrogen dioxide concentrations in the UK (Defra, 2017); a supplement to the 2017 Plan (Defra, 2018a) was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. Alongside a package of national measures, the 2017 Plan and the 2018 Supplement require those identified English Local Authorities (or the GLA in the case of London Authorities) to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include

## **Birmingham City Council**

the implementation of a Clean Air Zone (CAZ). Birmingham City Council was in the first tranche of 5 local authorities named in the 2017 plan, and subsequent work identified that a Clean Air Zone including all vehicles (known as a CAZ D) is required. This is due to be in place in 2021.

### **National Planning Policy**

The National Planning Policy Framework (NPPF) (2019a) sets out planning policy for England in one place. It places a general presumption in favour of sustainable development, stressing the importance of local development plans, and states that the planning system should perform an environmental role to minimise pollution.

One of the twelve core planning principles notes that planning should be to “contribute to...reducing pollution”. To prevent unacceptable risks from air pollution, planning decisions should ensure that new development is appropriate for its location. The NPPF states that the “effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account”.

More specifically the NPPF makes clear that:

*“Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan”.*

### **Regional level policy**

The West Midlands Combined Authority (WMCA) is made up of seven metropolitan constituent authorities, ten non-constituent local authorities in the wider region and three Local Enterprise Partnerships. The West Midlands Mayor Chairs the WMCA Board.

WMCA, and its transport arm TfWM are delivering improvements to air quality in line with TfWM’s strategic transport plan “Movement for Growth”.

**West Midlands Strategic Local Transport Plan ‘Movement for Growth’**

Movement for Growth sets out the long term transport strategy for the West Midlands based on achieving policies which include:

“Policy 9 To significantly improve the quality of the natural and historic environment and create attractive local environments”

“Policy 13 To assist with the reduction of health inequalities in the West Midlands Metropolitan Area”.

The overall approach of the strategy plan is set out in the following bullet points:

- More effective use of existing capacity with smarter choice initiatives supporting capital improvements
- New transport capacity to meet new travel demand – very much based on additional public transport capacity (rail and rapid transit, integrated with bus), cycling infrastructure and key walking routes
- Better integration of transport through a smart mobility approach with public transport, car clubs, park and ride, cycle hire and use of powered two wheelers (motorbikes and mopeds)
- Transport improvements to unlock development and help businesses grow, including limited new highway capacity and more attractive centre environments
- Better walking conditions
- Better cycling, including a high quality metropolitan cycle network
- Smart motorways/ improved junctions
- Asset management
- Smart technology (for example, better Urban Traffic Control, cashless payments for public transport use and better travel information)
- Acceleration of the uptake of ultra-low emissions vehicles through the co-ordinated planning and delivery of ULEV (Ultra Low Emission Vehicle) infrastructure
- A metropolitan area parking policy co-ordinated with improvements to sustainable modes of walking, cycling and public transport

## **Birmingham City Council**

### **2026 Delivery Plan for Transport**

Supporting the Movement for Growth Strategic Transport Plan is a ten year high-level delivery plan which contains many sustainable transport projects and schemes of TfWM and West Midlands local authorities. These support improved air quality in Birmingham and include:

- Increased suburban rail capacity – new rolling stock
- New suburban rail stations at Moseley, Kings Heath and Hazelwell
- New Metro extensions : Birmingham Westside, Eastside and East Birmingham to Solihull
- SPRINT Bus Rapid Transit: A34 and A45
- Local bus network improvements, including vehicle fleet upgrades and corridor bus priority measures
- Strategic cycle network key links
- Area- wide 20 mph residential streets
- District and city centre public realm improvements

### **3.2.2. Local Policy**

#### **Birmingham City Council Plan: 2018-2022**

Birmingham City Council Plan outlines a number of outcomes it wishes to achieve, including being an entrepreneurial city to live, work and invest in; an aspirational city to grow up in; a fulfilling city to age well in; a great city to live in; and to ensure that Birmingham residents gain the maximum benefit from hosting the Commonwealth Games. One of the priorities of the Council plan is to improve the environment and specifically to tackle air pollution.

#### **Clean Air Zone**

The results of the traffic and air quality modelling undertaken have demonstrated that implementation of a charging 'Class D' CAZ plus associated additional measures, exemptions and mitigations is the route to compliance with the EU Limit Value for NO<sub>2</sub> in the shortest possible time, predicted to be 2022. The CAZ is due to be implemented in 2021.

The implementation of a CAZ is more than just putting into place an access restriction for vehicles; this would simply constitute a Low Emission Zone (LEZ). In principle, a CAZ should deliver wider benefits, supporting economic growth and accelerating the transition to a low emission economy by raising public awareness and providing financial incentives to accelerate transition.



### **Brum Breathes Programme**

Brum Breathes is an overarching communications and engagement programme and contains a number of sub-programmes, each of which have a number of discreet projects, all related to air pollution / air quality. The sub-programmes comprise:

- Early Measures designed to deliver infrastructure improvements in advance of the Clean Air Zone;
- The CAZ programme itself;
- Developing Infrastructure focusing on the deployment of alternate vehicle power train / refuelling technologies to enable a shift from fossil fuel usage;
- Air Quality Policy Environment which contains policy based projects to enable the Council to have air quality embedded within a wider range of decision making processes e.g. planning, HR;
- Behaviour Change comprises a range of projects which seek to engender and promote shifts from car usage to alternate modes of transportation;
- Mitigations and Exemptions focuses on delivering those items to which commitments were made within the CAZ business case, to support businesses and individuals in adapting to the CAZ;
- Communications is a monitoring sub-programme which seeks to ensure that suitable governance processes and communications are identified and followed by all other sub-programme projects.

### Clean Air Strategy

This is a strategy sitting within the Air Quality Policy Environment sub-programme. The Clean Air Strategy (CAS) seeks to deliver air quality benefits across the entire city and will seek to consider those items that either go beyond legislative duties or pick up items for which no such duty exists, and includes six pledges made by the Council to improve air quality. For each pledge, there are a number of different, albeit related, actions within each. The strategy explains what has been done already, what is within the Councils power to change and be accountable for, and what else is required. It also identifies who the Council needs to work with in order to support the pledge. The pledges are:

- *We will introduce a Clean Air Zone in Birmingham City Centre;*
- *We will continue to deliver a world class transport system which prioritises public transport, cycling and walking;*
- *We will identify schools which are exposed to air pollution problems and work with the school to identify intervention strategies to reduce the exposure of the children;*
- *We will expand our air quality monitoring network, incorporating new technologies and through partnership working with educational institutions and citizen science projects we will make the results readily available to all;*
- *We will further develop our approaches to tackling emissions from both existing buildings and proposed developments;*
- *We will work with key partners and stakeholders throughout the West Midlands region to help inform our own work and provide leadership where required.*

A further important focus of the CAS is to maximise the synergies between the clean air (air quality) and carbon (global warming) agendas so as to avoid or mitigate any disbenefits arising from the result of actions.

## Birmingham City Council

### **Birmingham Connected**

Birmingham Connected<sup>6</sup> covers all transport planning activity and is built on the Birmingham Connected White Paper, BCC's 20 year transport strategy. The goal is *"to create a transport system for everyone; one that puts people first, and delivers better connections for citizens and businesses. We want to improve daily lives by making travel more accessible, more reliable, safer and healthier"*.

Delivering this vision means investment in transport infrastructure: railways, roads and cycling and walking routes. Within this scheme, many of the Council's transport projects are focused on reducing pollution emissions and enabling more sustainable modes of transport. Birmingham Cycle Revolution aims to make cycling an everyday way to travel in Birmingham over the next 20 years. Two new, high quality cycle routes have been constructed, linking the city centre to Selly Oak and Perry Barr.

Birmingham is creating Green Travel Districts with less congestion, less pollution, fewer accidents, and healthier, safer, more productive communities. In densely populated residential areas, the aim is to create an environment where residents, workers and visitors can safely walk, cycle or take public transport as their preferred travelling option. Alongside the CAZ, the Council is reviewing and extending parking controls in and around the city centre.

### **Local Transport Plan**

The West Midlands Local Transport Plan 3 (Centro, 2011) states that the West Midlands Metropolitan area *"will aim to develop infrastructure which, wherever practicable, enhances the natural environment (biodiversity/habitats, air quality, water, landscape) or mitigates adverse effects"*. It will also aim to improve local air quality in pursuit of UK standards and European Directive limits.

### **Local Plan**

In January 2017 Birmingham City Council adopted the Birmingham Development Plan for the period 2011 to 2031 (Birmingham City Council, 2017). It sets out a spatial vision and strategy for the sustainable growth of Birmingham, and to inform decisions on planning, development and regeneration.

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<sup>6</sup>[https://www.birmingham.gov.uk/info/20013/roads\\_travel\\_and\\_parking/498/birmingham\\_connected](https://www.birmingham.gov.uk/info/20013/roads_travel_and_parking/498/birmingham_connected)

## Birmingham City Council

Policy TP36 on health states that:

*“The City Council is committed to reducing health inequalities, increasing life expectancy and improving quality of life by...Seeking to improve air quality and reduce noise within the City”.*

While, regarding transport, Policy TP38 states:

*“The development of a sustainable, high quality, integrated transport system, where the most sustainable mode choices also offer the most convenient means of travel, will be supported. The delivery of a sustainable transport network will require:*

- *The facilitation of modes of transport that reduce carbon emissions and improve air quality.*
- *Building, maintaining and managing the transport network in a way that reduces CO<sub>2</sub>, addresses air quality problems and minimises transport’s impact on the environment.”*

### **Joint Strategic Needs Assessment (JSNA)**

The Joint Strategic Needs Assessment (JSNA) addresses current and future health and social care needs that could be met by the Local Authority, CCGs, or NHS England. The Strategic overview (2017/18) recognises that air quality can be linked to cardiovascular disease, Chronic Obstructive Pulmonary Disease and asthma, and that children, pregnant women, older adults and those with pre-existing conditions are most vulnerable to adverse effects. It also states that almost 900 deaths per year are linked to air pollution.

### **Health and Wellbeing Strategy**

The Health and Wellbeing Strategy addresses some of the critical challenges Birmingham faces and requires input from many organisations across the city. In January 2017 the Board agreed to a set of updated priorities which includes ‘Making Birmingham a Healthy City’, with one of the two associated ambitions of improving air quality.

### **Other Projects undertaken to improve air quality**

BCC’s proposed policy on emission standards for taxis and private hire vehicles means that these vehicles will need to reach increasingly stricter emission standards. Under the Birmingham NOx Reduction Champions’ project, emissions from 65 of Birmingham’s Hackney carriages (black cabs) have been reduced by fitting LPG (liquefied petroleum gas) fuelled engines. These engines are Euro 6 (category N1, class III) compliant, meaning they would not be charged to enter the CAZ.

## **Birmingham City Council**

Additional funding has been awarded by the Office for Low Emission Vehicles (OLEV) to introduce 197 electric taxi charging points, all of which will offer fast or rapid charging facilities for Hackney carriages and private hire vehicles. Electric vehicles are also exempt from charging as part of the CAZ.

### **Low Emissions Towns and Cities Programme (LETCP)**

The Low Emissions Towns and Cities Programme is a partnership comprising the seven West Midlands local authorities, (Birmingham City Council, Coventry City Council, Dudley MBC, Sandwell MBC, Solihull MBC, Walsall Council and Wolverhampton City Council) working together to improve air quality and reduce emissions from road transport.

Originally funded through a Defra Air Quality Grant, the intention is to promote the uptake of low emission fuels and technologies, establishing and sharing best practice policies, and developing various tools and resources. The objectives of the programme are to investigate and produce various regional strategies designed to improve air quality, with a view to meeting national air quality objectives.

### **3.3. Work to inform the identification of exceedance areas**

Despite ongoing work on the Clean Air Zone, it is currently unclear whether there may be locations exceeding the air quality objectives outside of the CAZ area. It is therefore proposed, that in tandem with the drafting of this Action Plan, work is undertaken to identify these areas. BCC has devised a methodology for this work, which will be undertaken within the resources available to the City Council (i.e. without any additional modelling at this stage).

Initially, a geographic information system (GIS) approach was used to identify road links where the traffic flow was greater than 25,000 AADT and there was residential exposure within 20 metres of the centre-line of the road. The location of the residential exposure was based on address point data from the Local Land and Property Gazetteer (LLPG), which does not largely represent building facades. This information was then overlaid on an existing local air quality model displaying concentrations of nitrogen dioxide (NO<sub>2</sub>) in micrograms per cubic metre (µgm<sup>3</sup>).

A desktop exercise was undertaken to identify three tranches of sites that could be assessed on a hierarchical basis, with tranche one representing the highest risk.

## Birmingham City Council

- Tranche one comprised sites where there are roads with greater than 25,000 AADT, with relevant exposure within 20 metres, and the existing model indicated concentrations above 40  $\mu\text{g}\text{m}^{-3}$ .
- Tranche two comprised sites where there are roads with greater than 25,000 AADT, with relevant exposure within 20 metres, and the existing model indicated concentrations between 36 and 40  $\mu\text{g}\text{m}^{-3}$ .
- Tranche three comprised sites where the existing model indicated concentrations above 40  $\mu\text{g}\text{m}^{-3}$  but the roads have less than 25,000 AADT, or there is no relevant exposure within 20 metres.

This approach was taken to allow a further, more detailed assessment of the sites before any air quality monitoring is undertaken. The detailed assessment will check that the traffic flows are accurate and that the building facades are close enough to give relevant exposure. A monitoring strategy will then be put in place (diffusion tubes at worst case locations of relevant exposure) for a minimum period of 6 months.

These data will be used to determine whether that particular location requires continued monitoring, or whether the site can be safely discounted from requiring any specific action.

Because of this ongoing work, it has not been possible to target actions at specific locations, but instead, a suite of actions are included in this Action Plan, which, once specific locations have been identified, will be specifically targeted.

### 3.4. Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within Birmingham City Council's area. The most recent work on source apportionment was undertaken as part of the CAZ feasibility work, and, by definition covers locations within the CAZ. However, the results show that in 2020 (without the CAZ) contributions are predominantly from diesel cars and LGVs, with variable contributions from buses depending on location. This is likely to be applicable at any locations targeted by this Action Plan; however, following the implementation of the CAZ it is likely that the proportion of diesel cars in Birmingham as a whole may decrease. Table 3.1 includes data reported in the Birmingham Clean Air Zone Feasibility Study reported in 2018 (Full Business Case Air Quality Modelling Report) for a 'Do Minimum' Scenario in 2020.

## Birmingham City Council

**Table 3.1 – Source Apportionment for a 2020 ‘Do Minimum’ in Birmingham City Centre**

Site Location	% Contribution from Diesel Cars	% Contribution from Petrol Cars	% Contribution from Diesel LGVs	% Contribution from Rigid HGVs	% Contribution from Articulated HGVs	% Contribution from Buses & Coaches
A4400 Suffolk St. Queensway	53	6	25	14	2	0
A38 Corporation Street	54	6	22	13	2	3
A4540 Lawley Middleway – Garrison Circus	42	5	21	28	4	0
A4100 Moat Lane, Digbeth	25	3	8	13	2	49

### **3.5. Key Priorities**

Based on the evidence provided above, the following issues need to be considered when deciding on which measures are likely to be effective:

- Identify any locations outside of the CAZ which have persistent exceedances of the nitrogen dioxide air quality objectives;
- Prioritise measures which will reduce emissions from road transport, especially diesel vehicles (cars, LGVs and HGVs, with some locations relevant for buses);
- Ensure that other sources (industrial and domestic) are also controlled (either through permitting or the planning system).



## 4. Development and Implementation of Birmingham City Council’s AQAP

### 4.1. Consultation and Stakeholder Engagement

In developing/updating this AQAP, we have worked with other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995 requires local authorities to consult the bodies listed in Table 4.1, which was done through the consultation held on the Be Heard website, the consultation hub for Birmingham. A consultation draft version of this document was also made available on the website.

The Public consultation ran from 21/09/2020 to 02/11/2020. Details and a summary of the responses received can be found at

<https://www.birminghambeheard.org.uk/place/air-quality-action-plan/>.

**Table 4.1 – Consultation Undertaken**

Yes/No	Consultee
Yes	the Secretary of State
Yes	the Environment Agency
Yes	the highways authority
Yes	neighbouring local authorities
Yes	other public authorities as appropriate, such as Public Health officials (PHE)
Yes	bodies representing local business interests and other organisations as appropriate

## **4.2. Steering Group**

No Steering Group has been formed to take this Air Quality Action Plan forward, but there are a number of existing groups within Birmingham City Council who regularly meet and discuss issues in relation to air quality, particularly through the feasibility study, and now the implementation of the Clean Air Zone. In relation to the measures within the Action Plan, meetings have been held with key members of staff within Birmingham City Council, and discussions have also been held with all sub-programme leaders within the Brum Breathes programme, in order to ensure that all these processes align and complement each other. This engagement will continue as the Action Plan requires monitoring and evaluation, which will run alongside that for the Clean Air Zone and be monitored through the Brum Breathes programme.

## 5. AQAP Measures

The following section outlines the Birmingham City Council AQAP measures, which are summarised in Table 5.1. Table 5.1 contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action
- estimated cost of implementing each action (overall cost and cost to the local authority)
- expected benefit in terms of pollutant emission and/or concentration reduction
- the timescale for implementation
- how progress will be monitored

Future ASRs will include regular annual updates on implementation of these measures.

The following groups of measures, as outlined by Defra and categorised for reporting to the EU, have been considered. A brief overview of this consideration is included in the table below:

EU Measure Category	Current practice
Alternatives to Private Vehicle Use	Rail based Park and Ride already in operation. Birmingham's previous Action Plan had a measure to increase the number and use of park and ride schemes in partnership with CENTRO.
Environmental Permits	Work to ensure that all industrial installations are permitted and visits etc. are up to date. Not likely to be a significant issue in the locations which the AQAP will target.
Freight and Delivery Management	As part of the CAZ programme, mitigation for HGVs and coaches includes measures funded by the compliance fund.
Policy Guidance and Development Control	As part of the BRUM Breathes programme, there is a sub-programme which covers all air quality policy and incorporates measures to implement a Clean Air Strategy for Birmingham, more sustainable HR policies, procurement policies, planning and transport policies. These policies will also be directly relevant for this Air Quality Action Plan.
Promoting Low Emission Plant	Birmingham's developing Clean Air Strategy recognises that although Birmingham City Council is focussing on transport, other sectors such as domestic and small plant should also be considered.

EU Measure Category	Current practice
Promoting Low Emission Transport	<p>The Council will implement a Clean Air Zone in 2020 covering the most polluted area of the city. The CAZ will charge higher polluting vehicles, with the Council seeking to encourage their owners to replace them or avoid entering the zone. The zone will cover all vehicle types and therefore promote low emission transport across all vehicle types. A linked project has sought to convert diesel powered ‘black’ taxis in Birmingham to run on LPG. In 2016, 63 cabs were converted, (and will therefore be permitted to run in the CAZ without charge).</p>
Promoting Travel Alternatives	<p>Birmingham is committed to deliver a world class transport system to support additional growth in the city. It is estimated that the growth in the city’s population will result in 1.2 million additional daily trips across the network by 2031. In the short term there are examples of local initiatives, for example: From 23 September 2019, six Birmingham schools were the first in the city to pilot a pioneering scheme where roads around the schools will be closed to motorised traffic at the start and end of the school day (Car Free School Streets) BCC Travel Plan (BB programme behaviour change)</p>
Public Information	<p>Birmingham aims to support citizen science projects, not only to build a more detailed picture of pollution concentrations across the city, but also to disseminate this information across the city. Through the work on the CAZ, the public is receiving more information about air quality, via various mechanisms. Brum Breathes includes extensive community engagement as part of the behaviour change sub-programme, including projects such as school NOx monitoring, Clean Air Cops (training programme for school engagement), Business Travel Network, community engagement with voluntary, faith groups and local residents and Make Every Contact Count (training for health professionals and others).</p>
Traffic Management	<p>It is likely that once specific locations have been identified as exceeding air quality objectives, traffic management is likely to be a useful tool, for example at congested locations, and at busy junctions.</p>
Transport Planning and Infrastructure	<p>In the summer of 2019 the A34 and A38 cycle routes were completed. The new A38 route from Selly Oak offers a 4 km two-way segregated cycle route for people cycling into the city centre from the South West of the city. The route is highly visible with a blue aggregate surface to make it stand out to all road users. This new route is part of a much bigger programme of new and upgraded cycle infrastructure delivered across the city over the last 5 years as part of the Birmingham Cycle Revolution (BCR) programme. This includes over 50km of canal towpaths improved with an all-weather cycling surface, over 25km of new or upgraded green routes through parks and open spaces and another largely segregated route along the A34 into the city centre from Heathfield Road, Birchfield.</p>

EU Measure Category	Current practice
Vehicle Fleet Efficiency	One of the main aims of the CAZ is to ensure fleet turnover occurs more quickly, and hence improve vehicle fleet efficiency.

As discussed previously, at the time of writing this document, it is unknown where any exceedance areas are located outside of the city centre. Work is therefore underway to identify priority locations for monitoring, which will be implemented as soon as resources allow. Hence these measures will need to be refined (for example to ensure that specific geographical locations are covered), and potentially enhanced, as information on where exceedances persist becomes available.

The actions are as follows:

**Action 1: Implement Clean Air Zone and Mitigation Measures**

A Clean Air Zone (CAZ) is an area where targeted action is taken to improve air quality, in particular by discouraging the most polluting vehicles from entering the zone. No vehicle is banned in the zone, but those which are non-compliant with the emissions standards will have to pay a daily charge if they travel within the area. The Clean Air Zone will cover all roads within the A4540 Middleway Ring Road (but not the Middleway itself) and will be implemented during 2020. Further information about the zone, including how to avoid paying to drive in the zone and exemptions and additional support, can be found at:

[https://www.birmingham.gov.uk/info/20076/pollution/1763/a\\_clean\\_air\\_zone\\_for\\_birmingham](https://www.birmingham.gov.uk/info/20076/pollution/1763/a_clean_air_zone_for_birmingham)

The CAZ is likely to have a positive impact on any locations identified as exceeding the air quality objective outside of the CAZ area, unless the CAZ diverts non-compliant vehicles to these areas (to avoid payment). This Action Plan supports the implementation of the CAZ and its supporting mitigation measures.

**Funding Source:** Government

**Cost:** £14.2 million has been allocated from the implementation Fund, and £38 million from the Clean Air Fund to support a package of mitigation measures to support businesses and individuals likely to be impacted by the introduction of a CAZ.

### **Action 2: Support and Implement Strategic Transport Improvements**

The Birmingham Development Plan (BDP) sets out Birmingham's strategy for jobs and growth, meeting housing need and sustainable progress. Birmingham Connected links to the strategies and policies of the BDP and sets a bold new direction for the next 20 years that will see funding increased and new infrastructure delivered. The vision is to complete a £1.2bn integrated public transport network within 20 years which will allow people to travel across the city in high-quality vehicles, feeling safe and secure, and enable rapid movement through some of the most congested sections of the network. This will include a minimum of three more Metro lines and up to nine cross-city bus rapid transit lines. As part of a city centre masterplan, a strategy will be developed for the long-term future and role of the A38 through the city centre, recognising the potential economic and social benefits which could be realised by removing structures, closing the existing tunnels, and redirecting through traffic on to a substantially upgraded ring road. Rail routes to Moseley and Kings Heath, Sutton Coldfield via Walmley and Tamworth via new stations at Fort Parkway and Castle Vale will be reopened and upgraded, supporting new housing and jobs in these areas. Up to £400 million will be used to upgrade Snow Hill Station, providing another gateway to the city. Green Travel Districts will be established which will enable packages of measures in specific locations to help achieve less than 50% single occupancy car mode share.

**Funding Source:** Government (Local Growth Fund), Highways England, Network Rail, Community Infrastructure Levy, Section 106,

**Cost:** £4 billion over 20 years

### **Action 3: Promote Behaviour Change away from Single Occupancy Private Vehicle Use**

When considering solutions to reduce the environmental impacts of transport, it is important to first ascertain what drives transport demand. Access to efficient public transport will be of high importance in reducing demand for cars, including the provision of buses and bus priority measures in urban areas. Achieving change in travel mode choice can be an effective strategy to manage transport demand and so reduce NOx emissions. Changes in travel mode may come about through incentivisation, public engagement or a regulatory scheme (such as the CAZ which will have an impact on modal choice). Measures to provide information on alternative ways of travelling or encouraging lift sharing can be implemented relatively quickly compared to provision of transport infrastructure or the development and introduction

## Birmingham City Council

of cleaner vehicles, and in many cases can be a more cost-effective approach. Birmingham Connected is a long term programme of investment which aims to increase the number of people travelling by an active mode. The vision is to establish walking and cycling as default modes across the city, and work on these aspects is already underway. Birmingham is one of five UK cities awarded the status of 'Walking City' by the Department of Health and Department for Transport. The city is already making significant investment to increase levels of cycling through the Birmingham Cycle Revolution (BCR). A £24 million injection has enabled the development and start-up of the BCR programme which is making it easier and safer for both new and experienced cyclists to travel to schools, shops and places of work, or simply to cycle for pleasure or fitness. To complement the Birmingham Cycle Revolution Programme, a successful £250,000 funding bid was made for a Walking Cities Project which will be undertaken by the Third Sector Organisation Living Streets; which can be used as an example project which could be rolled out to other areas of the city.

**Funding Source:** Combination of bids to Government, planning contributions and internal budgets.

**Cost:** £24 million injection to BCR programme, other bids to cover specific schemes

### **Action 4: Promote the use of Alternatively Fuelled Vehicles**

The primary objective of promoting a switch to low emission vehicles is the reduction of carbon and air pollutant emissions from transport. However, it does not have additional benefits such as congestion reduction, or increased levels of physical activity that are generated by measures to encourage active travel modes. Provision of suitable infrastructure to support low emission vehicles is critical to their introduction. For commercial vehicle operators the financial case for investing in electric vehicles is strongly dependent on ensuring high vehicle usage. Vehicle retrofit consists of the implementation of an on-board device that allows vehicles to comply with more stringent standards by reducing the emission of pollutants through technical measures. Retrofit measures are usually either Exhaust Gas Recirculation (EGR) or Selective Catalytic Reduction and Urea technology (SCR and Urea).

Birmingham has led the way in many of these technologies, the following projects being examples of the work underway.

## Birmingham City Council

- Business Breathes (<https://businessbreathes.co.uk/>) is a website designed to support business operators transition to cleaner vehicle technology in light of the incoming CAZ and supporting fleet transition beyond compliance towards zero emissions.
- The City Council has utilised OLEV funding (£500k) to retrofit 65 hackney carriage taxis from diesel to LPG. This involved developing the technology, establishing the supply chains, ensuring the technology is CVRAS accredited to be utilised in CAZ areas, and ensuring transferability of the technology from beyond hackney carriages to other vehicles e.g. VW Transporters.
- Birmingham presently has 18 EV chargers with 36 charge points. To encourage wider uptake of EV technology and in particular to support the changes to the taxi licensing policy the Council has leveraged OLEV funding (£2.92m) to draw in additional funding (£4.6m) from the private sector to increase the charging network to 197 chargers holding 394 rapid / fast charge points. Installation will commence in 2020.
- A new refuelling hub for commercial vehicles, known as the Tyseley Energy Park, is being developed. This will provide for a taxi charging hub, hydrogen refuelling infrastructure for buses and a transition point for existing Euro VI commercial vehicles through biodiesel and CNG. Funding has come from a range of sources including OLEV and FCHJU as well as from the private sector (over £7m in total).
- Working in partnership with Cadent at Gravelly Hill, Erdington, the Council is establishing a CNG station for commercial vehicles accessing the city centre from the north and the M6. This opens in April and is funded via Cadent with policy / planning permissions advice and support provided by the City Council.
- Working with TfL and Aberdeen City Council, Birmingham have set up a procurement framework to procure a number of hydrogen buses. Funded through OLEV, FCHJU, the LEP and the City Council (combined £11m), the intention is to purchase 20 buses with delivery expected by the end of March 2021. This is expected to incentivise the market for further development.

**Funding Source:** Where specified, in the paragraphs above

**Cost:** Where specified, in the paragraphs above



### **Action 5: When locations are identified as having an exceedance of the air quality objectives, assess traffic management options relevant to the location**

Traffic management can be used to improve air quality by reducing numbers of vehicles, smoothing traffic flow, or potentially holding queues/ congestion away from relevant exposure locations. The associated reduction in braking, acceleration and stop-start driving improves the emissions performance of vehicles. Particulate emissions from brake and tyre wear may also be reduced as a result. Traditional control systems use traffic lights to control the flow of vehicles across a road network. These are widely used at key road junctions to reduce congestion and increase traffic flow. What specific measure will be most effective will depend on the particular location; hence, when locations are identified which exceed the air quality objectives, traffic management schemes will be assessed in conjunction with Birmingham City Council transport planners.

**Funding Source:** Local Transport Plan or Section 106 agreements

**Cost:** Dependant on specific scheme

### **Action 6: Develop Policies to Support Better Air Quality**

There are a number of policies already in place which will help support air quality. The Clean Air Strategy makes a number of pledges to improve air quality in the short to longer term. Most of these policies cannot be quantified in terms of the impact on pollutant concentrations at specific locations (which is the aim of this Action Plan), but they will lead to an overall reduction in emissions across Birmingham.

The appropriate regulatory framework is in place to guide new and existing developments to minimise emissions. All new developments will be required to implement or support actions that make a positive contribution to improving air quality, for example by reducing travel demand and opening up possibilities for cycling and walking.

Central Government will be lobbied to ensure that future policy is fit for purpose and tightens existing regulatory frameworks.

HR policy will be used to formulate a 'staff travel and expenses' policy to incentivise / simplify access to low emission transport options.

When resources allow, it is the aim to implement a system to reduce emissions from construction, by reducing emissions of dust and particulate matter from construction and demolition activities and manage emissions of NO<sub>x</sub> from construction and demolition machinery by way of controls through the planning system on Non Road

## Birmingham City Council

Mobile Machinery (NRMM).

**Funding Source:** Mainly from existing budgets. Planning system could generate funding for measures within this Action Plan.

**Cost:** unknown, but mainly staff time

### **Action 7: Control Industrial and Domestic Emissions**

In order to ensure that industrial and domestic emissions are controlled, joint working with the Environment Agency and industries permitted by Birmingham City Council will be undertaken to ensure that permits are enforced. At the start of the 2019/20 financial year the City Council's Environmental Protection team regulated 219 such industries including the car manufacturing plant Jaguar Land Rover, four crematoria, various solvent coating plants, cement batching plants and a range of other processes.

In order to assist homeowners with decisions around wood burning stoves (to ensure they are in line with the current regulatory framework), guidance has been provided for residents introducing new appliances. This guidance is available through BCC's website<sup>7</sup> which has been updated to provide up to date guidance on 'Ready to Burn' and 'Woodsure' schemes. In addition, BCC will continue to respond to Government consultations on this issue and lobby for a revision of legislation to assist in dealing with these sources.

**Funding Source:** From existing budgets

**Cost:** Unknown but staff time only

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<sup>7</sup> [https://www.birmingham.gov.uk/info/20076/pollution/1277/what\\_causes\\_air\\_pollution/4](https://www.birmingham.gov.uk/info/20076/pollution/1277/what_causes_air_pollution/4)

Table 5.1 – Air Quality Action Plan Measures

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Implement a Clean Air Zone and Mitigation Measures	Promoting Low Emission Transport	Low Emission Zone or Clean Air Zone	Birmingham City Council	2018-2020	Summer 2020	Evaluation Plan to be undertaken (locally and at national level)	Achievement of Limit Values by 2022 within CAZ area	Feasibility work undertaken, scheme accepted and funded	2020 for implementation. Ongoing evaluation	
2	Support and Implement Strategic Transport Improvements	Transport Planning and Infrastructure	Bus route improvements, cycle network, public transport improvements – interchanges stations and services	Birmingham City Council	2019-2020	Ongoing for the next 20 years	Level of modal shift	n/a at this stage	Ongoing improvements in cycle network, walking provision and public transport	2040	Long term measure, rather than a quick achievement of air quality objectives, although strategic transport improvements could be focussed on locations of exceedance when identified
3	Promote Behaviour Change away from Single Occupancy Private Vehicle Use	Promoting Travel Alternatives	Encourage/facilitate home working, Personalised Travel Planning, Promotion of Cycling, Promotion of Walking, School Travel Plans, Workplace Travel Planning	Birmingham City Council	Ongoing	Ongoing	Level of modal shift	n/a at this stage	A number of projects already underway such as 'Walking City' and the Birmingham Cycle Revolution	Ongoing	
4	Promote the use of alternatively fuelled vehicles	Promoting Low Emission Transport	Company Vehicle Procurement. CAZ, Priority Parking for LEVs, Procuring alternative refuelling infrastructure, taxi emission incentives	Birmingham City Council	Ongoing	Ongoing	Proportion of local fleet which is low emission	n/a at this stage	Lots of projects already underway for example retrofitting taxis to LPG, hydrogen buses, refuelling infrastructure	Ongoing throughout the lifetime of the CAZ	

## Birmingham City Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5	When locations are identified as having an exceedance of the air quality objectives, assess traffic management options relevant to the location	Traffic Management	Could be any of the measures within Traffic Management	Birmingham City Council	2020 onwards (once outcomes of monitoring at specific locations is available)	Unknown	Unknown until specific schemes are decided on	n/a at this stage	n/a at this stage	n/a at this stage	
6	Develop policies to support better air quality	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance, Low emission strategy, other policy, regional groups, sustainable procurement guidance	Birmingham City Council	2020	2020-2025		n/a at this stage	Birmingham Clean Air Strategy published, regulatory framework in place for new developments	Ongoing	
7	Control Industrial and Domestic emissions	Promoting Low Emission Plant	Regulations for fuel quality for stationary and mobile sources	Birmingham City Council	n/a	Ongoing		Unlikely to reduce pollution within specific locations identified	Guidance provided for residents through website	Ongoing	

## Appendix A: Response to Consultation

Table A.1 – Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

Consultee	Category	Response
Defra	Statutory	No response received.
Environment Agency	Statutory	No response received.
Highways Authority	Statutory	No response received.
Neighbouring local authorities	Statutory	No response received.
Public Health	Statutory	No response received.
Bodies representing local businesses and other organisations as appropriate.	Statutory	Responses received from several organisations including Transport for West Midlands and University of Birmingham.
Residents		Public consultation ran from 21/09/2020 to 02/11/2020. Details can be found at <a href="https://www.birminghambeheard.org.uk/place/air-quality-action-plan/">https://www.birminghambeheard.org.uk/place/air-quality-action-plan/</a> .

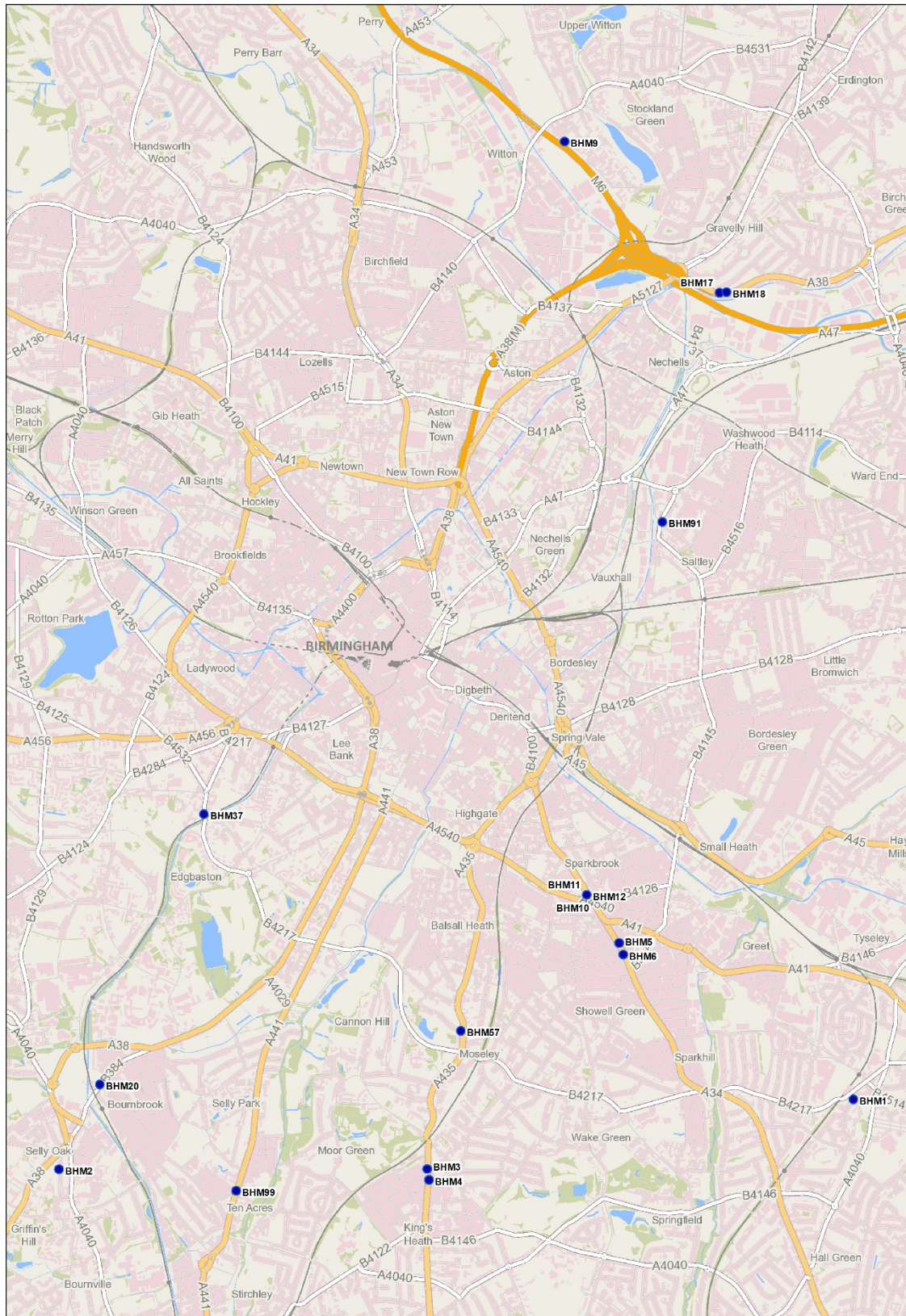
## Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Currently no actions specifically <i>not</i> being pursued		

## Appendix C: Details of Monitoring Locations

# Diffusion Tube Monitoring Locations (City Wide)



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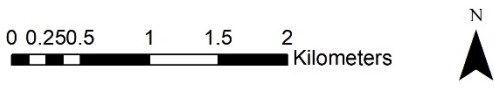
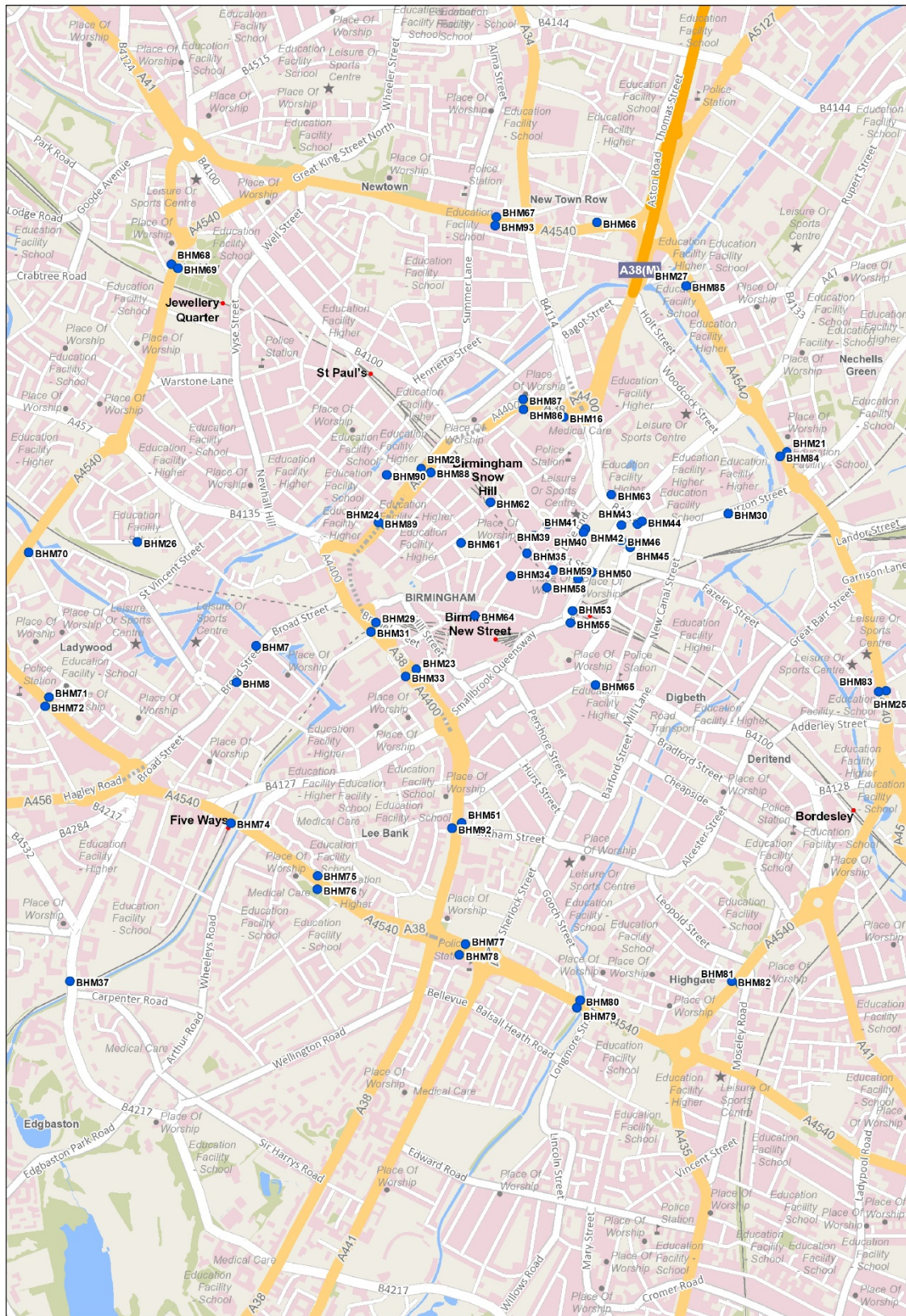




Table C1.1. City Wide Diffusion Tube Monitoring Locations

Diffusion Tube Site Reference	Location
BHM1	Fox Green Crescent, Acocks Green.
BHM2	Langleys Road, Selly Oak
BHM3	High Street, Kings Heath
BHM4	High Street, Kings Heath
BHM5	Stratford Road, Sparkhill
BHM6	Stratford Road, Sparkhill
BHM9	Shelley Drive, Stockland Green
BHM10	Stratford Road, Sparkhill
BHM11	Stratford Road, Sparkhill
BHM12	Stratford Road, Sparkhill
BHM17	Tyburn Road, Erdington
BHM18	Tyburn Road, Erdington
BHM20	Bristol Road, Selly Oak
BHM37	Church Road, Edgbaston
BHM57	Chantry Road, Moseley
BHM91	Adderley Road, Saltly
BHM99	Pershore Road, Stirchley

# Diffusion Tube Monitoring Locations (City Centre)



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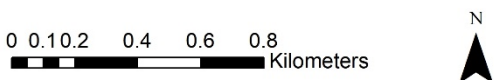


Table C1.2. City Centre Diffusion Tube Monitoring Locations

Diffusion Tube Site Reference	Location
BHM7	Broad Street, City Centre
BHM8	Broad Street, City Centre
BHM16	Childrens Hospital, City Centre
BHM21	Lawley Middleway, City Centre
BHM23	Lower Severn Street, City Centre
BHM24	Great Charles Street, City Centre
BHM25	Watery Lane Middleway, City Centre
BHM26	St Marks Crescent, Ladywood
BHM27	Dartmouth Middleway, City Centre
BHM28	Great Charles Street, City Centre
BHM29	Suffolk Street Queensway, City Centre
BHM30	Curzon Street, City Centre
BHM31	Holliday Street, City Centre
BHM33	Severn Street, City Centre
BHM34	Corporation Street, City Centre
BHM35	Corporation Street, City Centre
BHM36	Corporation Street, City Centre
BHM37	Church Road, Edgbaston
BHM39	Corporation Street, City Centre
BHM40	Priory Queensway, City Centre
BHM41	Priory Queensway, City Centre
BHM42	Masshouse Queensway, City Centre
BHM43	Park Street, City Centre
BHM44	Park Street, City Centre

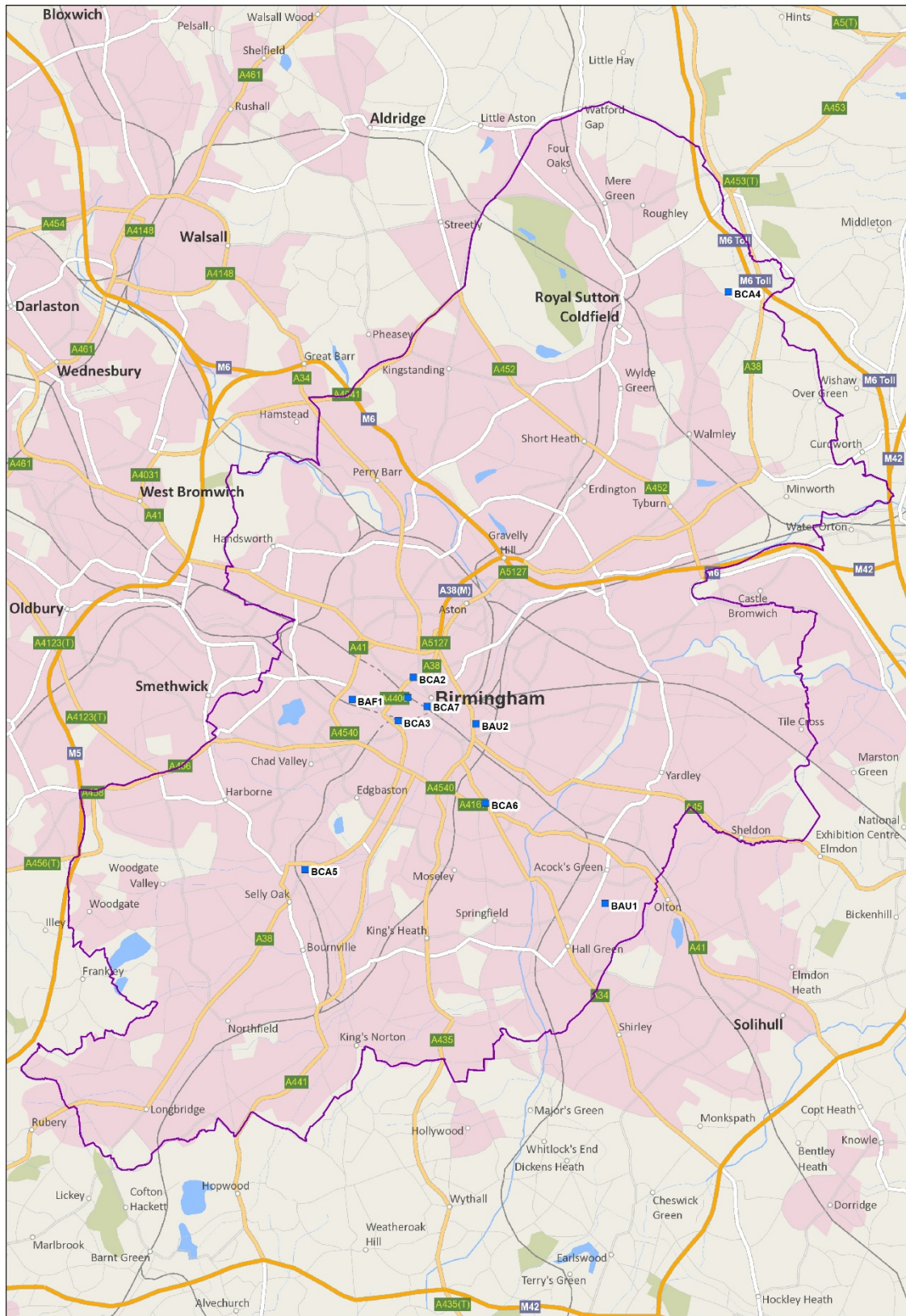
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<b>Diffusion Tube Site Reference</b>	<b>Location</b>
BHM45	Masshouse Lane, City Centre
BHM46	Masshouse Lane, City Centre
BHM50	Moor Street Queensway, City Centre
BHM51	Moor Street Queensway, City Centre
BHM53	Moor Street Queensway, City Centre
BHM55	Moor Street, City Centre
BHM56	New Meeting Street, City Centre
BHM58	High Street, City Centre
BHM59	Lower Bull Street, City Centre
BHM61	Colmore Row, City Centre
BHM62	Snow Hill Plaza, City Centre
BHM63	Chapel Street, City Centre
BHM64	Stephenson Street, City Centre
BHM65	Moat Lane, Digbeth
BHM66	Newtown Middleway, City Centre
BHM67	New John Street, City Centre
BHM68	Icknield Street, Jewellery Quarter
BHM69	Icknield Street, Jewellery Quarter
BHM70	Ledsam Street, Ladywood
BHM71	Rann Close, Ladywood
BHM72	Leyburn Road, Ladywood
BHM73	Islington Row, Five Ways
BHM74	Islington Row, Five Ways
BHM75	Lee Bank Middleway, City Centre

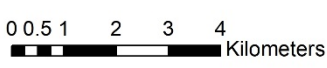
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<b>Diffusion Tube Site Reference</b>	<b>Location</b>
BHM76	Lee Bank Middleway, City Centre
BHM77	Bellgrave Middleway, Highgate
BHM78	Bellgrave Middleway, Highgate
BHM79	St Lukes Road, Highgate
BHM80	Bellgrave Middleway, Highgate
BHM81	Moseley Road, Highgate
BHM82	Highgate Middleway, Highgate
BHM83	Watery Lane Middleway, Bordesley
BHM84	Lawley Middleway, City Centre
BHM85	Dartmouth Middleway, City Centre
BHM86	St Chards Queensway, City Centre
BHM87	St Chards Queensway, City Centre
BHM88	Great Charles Street, City Centre
BHM89	Great Charles Street, City Centre
BHM90	Lionel Street, City Centre
BHM92	Bristol Street, City Centre
BHM93	New John Street Middleway, Ladywood

# Automatic Monitoring Site Locations



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**Table C1.1. Automatic Monitoring Site Locations**

<b>Automatic Monitoring Site Reference</b>	<b>Location</b>
BAU1	School Road, Acocks Green
BAU2	Watery Lane Middleway, Bordesley
BAF1	St Marks Crescent, Ladywood
BCA1	Colmore Row, City Centre
BCA2	St Chads Queensway, City Centre
BCA3	Lower Severn Street, City Centre
BCA4	New Hall Cemetary, Lindridge Road, Sutton Coldfield
BCA5	Bristol Road, Selly Oak
BCA6	Stratford Road, Sparkhill
BCA7	Moor Street Queensway, City Centre

## Glossary of Terms

Abbreviation	Description
AADT	Annual Average Daily Traffic
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
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
BCC	Birmingham City Council
BCR	Birmingham Cycle Revolution
BDP	Birmingham Development Plan
CAZ	Clean Air Zone
CENTRO	West Midlands Passenger Transport Executive, now Transport for West Midlands
COMEAP	Committee for the Medication Effects of Air Pollution
Defra	Department for Environment, Food and Rural Affairs
EGR	Exhaust Gas Recirculation
EU	European Union
GIS	Geographical Information System
HGV	Heavy Goods Vehicle
JSNA	Joint Strategic Needs Assessment
LAQM	Local Air Quality Management
LETCP	Low Emissions Towns and Cities Programme
LGV	Light Goods Vehicle
LLPG	Local Land and Property Gazetteer



Abbreviation	Description
LPG	Liquefied Petroleum Gas
MfG	Movement for Growth Strategic Transport Plan
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
NPPF	National Planning Policy Framework
NRMM	Non-Road Mobile Machinery
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
SCR	Selective Catalytic Reduction
WMCA	West Midlands Combined Authority

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