Birmingham City Council

Sustainability & Transport Overview and Scrutiny Committee

21 December 2023

Subject:	Brum Breathes Clean Air Strategy update
Report of:	Stephen Arnold, Head of Clean Air Zone
Report author:	Stephen Arnold, Head of Clean Air Zone

1 Purpose

1.1 The purpose of this report is to provide the Sustainability & Transport Overview and Scrutiny Committee with an update on the key deliverables of the Brum Breathes Clean Air Strategy, which includes the Clean Air Zone.

2 Recommendations

2.1 That the Committee note the updates provided in this report.

3 Any Finance Implications

3.1 There are no direct financial implications arising from this update report.

4 Any Legal Implications

4.1 There are no direct legal implications arising from this update report. Any net surplus revenues from the Clean Air Zone must be used to fund local transport initiatives and be allocated in accordance with Part 3 of the Transport Act 2000. Schedule 12, paragraph 8 of that Act requires that net proceeds of a charging scheme shall be applied by a local authority "for the purpose of directly or indirectly facilitating the achievement of local transport policies of the authority.

5 Any Equalities Implications

5.1 The Council has a Public Sector Equality Duty under the Equality Act (2010) to have due regard to the need to:

5.1.1 eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under the Act;

5.1.2 advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;

5.1.3 foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

5.2 The Committee should ensure that it addresses these duties by considering them during work programme development, the scoping of work, evidence gathering and making recommendations. This should include considering: How policy issues impact on different groups within the community, particularly those that share a relevant protected characteristic; Whether the impact on particular groups is fair and proportionate; Whether there is equality of access to services and fair representation of all groups within Birmingham; Whether any positive opportunities to advance equality of opportunity and/or good relations between people are being realised.

5.3 The Committee should ensure that equalities comments, and any recommendations, are based on evidence. This should include demographic and service level data and evidence of residents/service-users views gathered through consultation.

6 Appendices

Appendix 1: Air Quality Action Plan (2021)

Appendix 2: Brum Breathes Clean Air Strategy (January 2022)

Appendix 3: Clean Air Zone air quality and road traffic update report (October 2023)

Appendix 4: Approved allocations of Clean Air Zone net surplus revenues (as at March 2023)

Appendix 5: List of schools with air quality sensors (phase 1)

Appendix 6: Approved applications to the Brum Breathes Fund

BRUM BREATHES CLEAN AIR STRATEGY

Update and next steps

Report to: Sustainability & Transport Overview and Scrutiny Committee

Report of: Stephen Arnold, Head of Clean Air Zone

21 December 2023

1. PURPOSE

1.1. The purpose of this report is to provide the Sustainability & Transport Overview and Scrutiny Committee with an update on the key deliverables of the Brum Breathes Clean Air Strategy, which includes the Clean Air Zone.

1.2. In particular the report provides updates on the following areas of activity:

1.2.1. Progress of the Clean Air Zone in reducing the levels of the air pollutant nitrogen dioxide to within the legal limit in the shortest possible.

1.2.2. Uses of the net surplus revenues generated from the scheme.

1.2.3. The rationale for the expansion of the vehicle scrappage and mobility credit scheme

1.2.4. Initiatives that build awareness and action at a local level

1.2.5. Plans to build awareness and action at a regional level

2. EXECUTIVE SUMMARY

2.1. The health impacts from poor air quality are significant and poor air quality disproportionately impacts people living in deprivation, the very young and the old.

2.2. The Council's Brum Breathes Clean Air Strategy builds upon the legal duties that apply to local authorities under the Environment Act.

2.3. The main issue for Birmingham has been nitrogen dioxide (NO_2) but as the levels of this pollutant fall attention must focus on other pollutants such as particulate matter where road traffic is not the dominant source. Similarly, more needs to be done to better understand the sources and impacts of indoor air pollution. It is critical that this work is aligned to the Route to Zero programme in order to deliver the maximum possible benefits.

2.4. The Clean Air Zone is making a significant contribution to a reduction in the levels of nitrogen dioxide in the city centre but there are two areas with ongoing exceedances in the Zone and three locations on the Middleway. Work is underway to better understand the source (or sources) of these exceedances.

2.5. Net surplus revenues from the Clean Air Zone are being used to support upgrades to the transport system of the city. At a more local level these revenues are being used to build awareness around the sources and impacts of poor air quality and to support locality-based actions (through initiatives such as air quality monitors for schools, the Brum Breathes Fund, expansion of Safe School Streets etc)

2.6. Community and city-wide level activity is complemented at a regional level through the recently published Air Quality Implementation Framework (West Midlands Combined Authority). The immediate priorities of this framework cover the next two years and provide a longer-term framework for collaboration to tackle this issue at a regional level.

3. BACKGROUND

3.1. Poor air quality remains the single biggest environmental risk to public health. The health impacts from poor air quality are significant and include: bronchitis, asthma, kidney disease, diabetes, dementia, and stunted lung development in children[1]. Poor air quality also disproportionately impacts people living in deprivation, the very young and the old. Therefore, everyone has an obligation to take action to reduce the sources of this pollution so that the people of the city and region can realise their full potential.

3.2. The Local Air Quality Management (LAQM) statutory guidance sets out what local authorities should do and the legal duties that they must comply with under the Environment Act 1995 (as amended by the Environment Act 2021) to improve local air quality.

3.3. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

3.4. The main air quality issue for Birmingham has been elevated levels of nitrogen dioxide (NO_2), particularly within the city centre, due primarily to road traffic emissions, which resulted in a city wide AQMA being declared by the Council in 2005.

3.5. The most recent AQAP was produced by the Council's Environmental Health Service, and adopted, in 2021. It sets out seven broad measures that are being undertaken across the Council to improve air quality between 2021 and 2026 (See Appendix 1 for further information).

3.6. As part of supporting the existing AQAP and to help raise awareness and engagement around air quality, the Council launched its Brum Breathes Clean Air Strategy (CAS) in January 2022 (See Appendix 2). This strategy specifies

[1] Chief Medical Officer's annual report 2022: air pollution

the actions being taken to improve air quality and sets out an ambition for improved air quality that goes above and beyond statutory obligations and legal limits.

3.7. The Strategy is the starting point for a programme of work that will evolve and develop over time to reflect changing statutory obligations, emerging evidence around the impacts of poor air quality from the public health community, world health organisation (WHO), and others.

3.8. It is also the case that any future programme of work will be developed in collaboration with services and colleagues from across the Council, residents, members, partners and other organisations.

3.9. The Clean Air Zone continues to be the single biggest intervention by the Council to address the issue of poor air quality – specifically NO_2 – and this scheme appears to be discouraging vehicles that do not meet its emissions standard from entering the Zone. This change is contributing to an overall reduction in the levels of NO_2 in the city centre.

3.10. The other key deliverable of the strategy was air quality monitoring and awareness raising for schools across Birmingham. The first phase of this programme has been completed and preparations are underway for a second phase of activity where the intention is to offer all schools in Birmingham an indicative air quality sensor. A significant increase in the number of indicative sensors across the city will support another deliverable of the strategy which is to increase air quality monitoring and to share this data through online interactive dashboards.

3.11. The AQAP and CAS focus on air pollution caused by road traffic as this is the dominant source of air pollution in Birmingham. However, air pollution from other sources such as: biomass boilers, firework displays, diesel generators, demolition and construction, bonfires, wood burners, industrial emissions will require different solutions and more coordinated action within the Council, city, region and, in some cases, the UK. Similarly, indoor air pollution is becoming an increasing proportion of the problem as improvements in outdoor air quality occur.

3.12. There are far fewer studies of indoor air quality when compared with outdoor air quality, and pollution that affects indoor air quality is not from indoor sources alone, such as cooking and stoves, it may also be due to outdoor pollutants.

3.13. It is also true that some indoor sources emit pollutants that are found outdoors, such as particulate matter (PM) and NO_2 from woodburning stoves and open fires. Indoor air quality is also impacted by works to reduce heat loss from buildings and we need to ensure that important steps to improve the energy efficiency of our built environment incorporate appropriate ventilation. This is particularly vital in older homes. On that basis there are clear co-benefits in aligning actions to improve air quality with actions that seek to reduce carbon emissions and vice versa.

3.14. The CAS sets out a framework for shaping the definition and delivery of future actions. It highlights the need to identify who needs to own a specific pledge or action, where support or collaboration may be required and reinforces the need for engagement and communication. It is also anticipated that any updates to the CAS will need to identify actions that seek to better understand the sources and impacts of air pollution generated above and beyond those generated by road traffic. This is true for outdoor and indoor air pollution.

4. BRUM BREATHES CLEAN AIR STRATEGY

A CLEAN AIR ZONE FOR THE CITY CENTRE

4.1. In October 2023 the Council published its latest progress report on the Clean Air Zone, which was an update on the interim report published in March 2022. The interim report made use of provisional data, which has since been ratified and any updates were reflected in the latest progress report (See Appendix 3).

4.2. The key points of this progress report were:

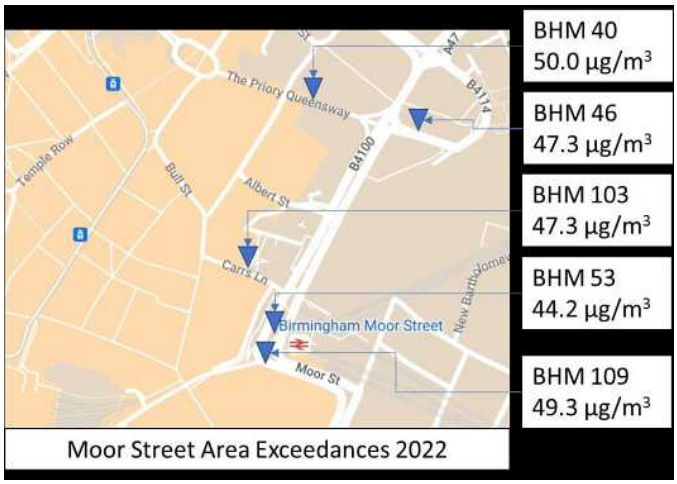
- In 2022 the levels of nitrogen dioxide in the Clean Air Zone had reduced by an average of 17% when compared to 2019 (pre Covid) results.
- When compared to the 2016 baseline there has been a reduction of 37%. It should be noted that the number of monitoring locations has significantly increased since 2016.
- Non-compliance vehicle rates at the launch of the Clean Air Zone in June 2021 were recorded at 15.2%, which had improved to 6.0% as of June 2023, an improvement of 9.2 percentage points, a change of 60.5%.
- Compliance for passenger cars has improved from 85.3% in June 2021 to 94.2% in June 2023.
- Compliance for Light Goods Vehicles (LGV) has improved from 68.6% in June 2021 to 85.7% in June 2023.
- Compliance for Heavy Goods Vehicles (HGV) has improved from 92.2% in June 2021 to 97.8% in June 2023.
- Bus and Coach compliance rates have remained consistently high from 99.3% in June 2021 to 99.4% in June 2023.
- The overall trend in the number of daily average unique vehicles entering the zone appears to indicate comparable trends in 2021, 2022 and 2023 which fluctuate between a low of 88,609 and a high of 109,438 vehicles. Between June 2021 and June 2022 an average of 98,112 daily unique vehicles were recorded. Between June 2022 and June 2023 this stood at 102,392.
- Based upon Unique Vehicle Traffic Data the vehicle fleet is dominated by cars comprising approximately 80% of the total, Light Goods Vehicles (LGVs) 8.3%, HGVs 1.1%, with buses/coaches making less than 0.6%.

- The remainder is made up of exempt and unrecognised / undetermined vehicles.

4.3. The report also highlighted two areas of the city centre with ongoing exceedances of the legal limit, and three locations on the A4540 Middleway.

AREAS OR LOCATIONS WITH ONGOING EXCEEDANCES OF THE LEGAL LIMIT

Moor Street Queensway



4.4. The Moor Street area shown in the map is dominated by high volumes of bus traffic. Carrs Lane, Bull Street, and Priory Queensway are bus and taxi routes only, with Moor Street having a bus gate that limits private vehicle access through the area.

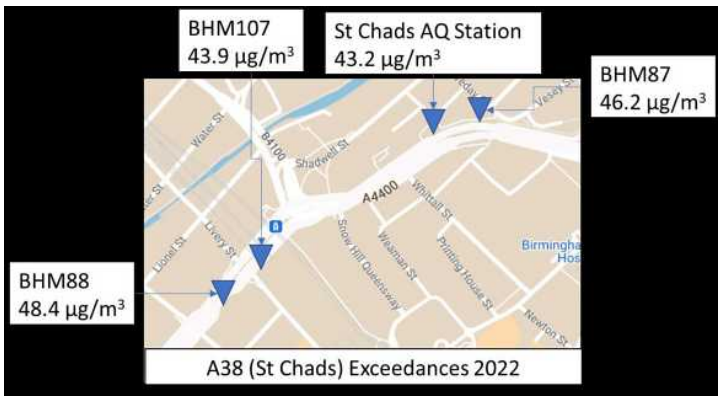
4.5. Carrs Lane can be defined as a 'street canyon' due to the relatively narrow width of the street flanked on both sides by high buildings that have a height that is greater than the road width. This leads to vortices and re-circulation of air flow that can trap pollutants and restrict dispersion.

4.6. It is clear that a number of the exceedances of 40µg/m^3 are being generated via the high volume of bus traffic, with other vehicle categories (cars, HGVs, LGVs) being relatively small.

4.7. From the vehicle compliance rates bus /coach compliance stand at 99.4% as of June 2023, which is based on unique vehicles that enter the Clean Air Zone. The emissions standard for diesel buses / coaches is based on Euro VI engines. The Clean Air Zone emissions standards allows for the retrofitting of older Euro Class vehicles to a Euro VI equivalent. The Euro Class results indicate the bus fleet comprise of a range of Euro Classes. Therefore, it is assumed that the majority of sub Euro V vehicles have been retrofitted.

4.8. A detailed study of the area is underway to fully understand the reasons for the exceedances in the area which will help develop options for further improvements to air quality in this area.

The A38 (St Chads Queensway)



4.9. The A38 (St Chads) exceedances surround the complex road system between the A38 and the A4400 which is formed of eight lanes of traffic, slip-roads and tunnels. The monitoring locations BHM88 and BHM107 are located at the entrances / exit of the A38 tunnels. St Chads air quality station and BHM87 are located adjacent to a bend in the road system.

4.10. It should be noted that in this section of the A38 (St Chads) there is a significant gradient which would put additional pressure on vehicle engines. Furthermore, there are a number of large buildings along the road length that may contribute to a 'street canyon' effect, thereby preventing the dispersal of pollutants.

4.11. All of these factors play a part in causing the elevated levels of NO_2 in this area. A detailed study of the area is underway with the use of ANPR cameras to ascertain the reasons for the exceedances which will help inform an options appraisal.

The A4540 Middleway

4.12. There are three recorded exceedances on the ring road as shown in the diagram above, all of which are outside of the Clean Air Zone. The Clean Air Zone ANPR cameras detect vehicles that enter the zone, however there are no cameras on the ring road, therefore it is unknown if the ring road has a higher proportion of non-compliant vehicles compared to the Clean Air Zone.

4.13. A detailed study of the cause of these exceedances is underway. This includes an ANPR survey to better understand vehicle split and Euro class, and

ultimately the comparison of Euro Class of the Clean Air Zone to the Ring Road. This data will be used to inform an options appraisal.

ONGOING INVESTMENT IN UPGRADES TO PUBLIC TRANSPORT AND SUPPORTING LONG TERM BEHAVIOUR CHANGE

4.14. In addition to the contribution of the Clean Air Zone to improvements in air quality in the city centre the revenues generated by the scheme are supporting a number of transport-related strategies and policies. The scheme was never intended as a revenue generating measure however it does generate revenue from two sources. The first is the daily fee that applies to any vehicle that enters the Zone and that does not meet its emission standards. The second source of revenue is from penalty charges which apply if the relevant daily fee for a journey into the Zone is not paid within the 13-day payment window.

4.15. The use of revenues generated from the scheme have to be used in very specific ways. The first call on any revenues generated by the scheme is towards its operating costs. Any net surplus revenues must be used to fund local transport initiatives and be allocated in accordance with Part 3 of the Transport Act 2000. Schedule 12, paragraph 8 of that Act requires that net proceeds of a charging scheme shall be applied by a local authority "for the purpose of directly or indirectly facilitating the achievement of local transport policies of the authority".

4.16. At the same time, the Clean Air Zone Charging Order (April 2021), which establishes the legal framework for the operation and enforcement of the scheme, sets out the high-level spending priorities for any net surplus revenues in the following order:

- supporting the delivery of the ambitions of the Scheme and promoting cleaner air;
- supporting active travel and incentivising public transport use;
- supporting zero emission and sustainable infrastructure and actions in and around the city to improve air quality.

4.17. At the end of March 2023 the scheme had generated net surplus revenues of £54.598m. Up to the same period approved allocations of net surplus revenues totalled £57.149m. It should be noted that the scheme continues to generate revenues therefore all approved allocations can be supported. Appendix 4 sets out the full list of approved allocations, including revenues placed in reserves to cover the expected decommissioning costs of the scheme and operating costs if revenues generated in its final year of operation are insufficient to cover its operating costs.

EXPANSION OF THE VEHICLE SCRAPPAGE AND MOBILITY CREDIT SCHEME

4.18. On 14 November 2023 Cabinet approved a report recommending the expansion of the current vehicle scrappage and mobility scheme to include residents of the

Clean Air Zone. The scheme is currently only available to people who work in the Zone, earn less than £30,000 p.a. and own a non-compliant vehicle.

4.19. The recommendation to expand the existing scheme was based on the results of a survey of residents who held an exemption from the Clean Air Zone daily fee when that temporary exemption ended on 31 May 2023.

4.20. The survey results indicated that just under a third (29%) of permit holders had already switched to a compliant vehicle or planned to do so in the next 6 – 12 months. Close to half of the respondents (46%) were considering switching to a compliant vehicle but may need support to do so. Finally, a quarter (25%) of respondents indicated that they planned to continue using their current vehicle and pay the daily fee.

4.21. Within all three groups around half or more of the respondents indicated that they may face additional barriers to change – including mobility issues and/or are in receipt of one or more benefits.

4.22. It is anticipated that incentivising residents of the Clean Air Zone with non-compliant vehicles to replace them sooner rather than later could help accelerate the rate of change in the overall fleet. This is especially important for a group of people that may face additional barriers to change and 68% of all survey respondents indicated they used their vehicle, on average, four days or more per week.

4.23. The updated and expanded scheme will offer applicants the following options:

- Scrap a non-compliant vehicle:
  TOTAL GRANT: £2,000
- Scrap a non-compliant vehicle and receive single mobility credit:
  Scrappage grant £1,600 + mobility credit: £1,500
  TOTAL GRANT: £3,100
- Scrap a non-compliant vehicle and receive two mobility credits:
  Scrappage grant £1,000 + mobility credit 2 x £1,500 (£3,000 in total)
  TOTAL GRANT: £4,000

4.24. The current scheme offers applicant two options upon the scrappage of a non-compliant vehicle: £2,000 towards the cost of a compliant vehicle or £2,000 for a mobility credit.

4.25. The new grant options will be made available to all eligible applicants i.e. residents of the Clean Air Zone and low income workers.

5. BUILDING AWARENESS AND ACTION AT A LOCAL LEVEL

The rollout of air quality sensors to schools in Birmingham

5.1. Raising awareness of air quality and the steps individuals can take to reduce their pollution footprint and exposure to air quality is considered a critical step for Birmingham to become a greener and healthier place. Pledge 2 of the CAS aims to improve air quality around schools.

5.2. This activity should be seen as part of a broader range of initiatives such as the: safe schools streets programme, Modeshift Stars and Clean Air Cops. The schools air quality monitoring project aims to capitalise on these measures by raising awareness of air quality around schools through the provision of an indicative real-time air quality sensor that is capable of monitoring NO_2 and Particulate Matter (PM).

5.3. The first phase of this programme was completed in mid-2023. This initial phase of the programme had the objective of providing a school in every ward with an indicative air quality sensor.

5.4. At the end of Phase 1 70 sensors had been installed (69 in schools with an additional sensor co-located with an existing air quality monitoring station). The second phase of the scheme aims to offer a sensor to every school in Birmingham (a total of 445 schools minus the schools covered in Phase 1).

5.5. The sensors for Phase 1 were supplied by Airly (https://airly.org/en/). The Airly sensors have a visual display which indicates the level of air pollution using a coloured index from green to red. The use of a visual display in real-time has been very useful for the schools to engage with the subject matter and has helped build awareness and engagement with actions that encourage the adoption of the more sustainable forms of travel.

5.6. The full list of schools with an indicative sensor is available in Appendix 5. It should be noted that not all wards have a school with a sensor. The reasons for this vary. For example, one ward only has one school, which has been unable to gain the agreement of its maintenance agents to install a sensor.

5.7. The second phase of the programme will be supported with £1.000m of Clean Air Zone net surplus revenues.

5.8. There have been several delays to the implementation of the second phase of the programme. And there remains the need to complete the procurement of a partner to support this work. The current expectation is that this procurement can be completed by mid-2024 with the aim of starting the rollout of sensors to schools in the second half of 2024.

Launch of the Brum Breathes Fund

5.9. The Brum Breathes Fund was launched in June 2023 and makes use of just over £4m of net surplus revenues from the Clean Air Zone. The Fund provides every ward in the city with an allocation of either £20,000p.a. (for a single member ward) or £40,000p.a. (for a two-member ward) over two years.

5.10. The Fund was created to provide support for projects across Birmingham. These projects should deliver a clear reduction in air pollution, encourage behaviour change that contributes to a reduction in air pollution and/or help raise awareness of the impact of poor air quality on health.

5.11. Any project supported by the scheme should also create some kind of tangible asset and be self-sustaining.

5.12. There has been a reasonable level of interest in the Fund from Councillors and community groups. However, there have been delays in reviewing and approving applications due to the introduction of the spend controls introduced to the Council in September 2023 following the publication of the section 114 notice.

5.13. The Clean Air Zone team now has approval from the section 151 spend control board to implement the scheme so has started to process applications to the Fund.

5.14. The list of approved applications to the Fund are included in Appendix 6

5.15. Any project delivered by one of the Council's teams may be subject to further spend control approvals if there is a need for ongoing maintenance. And, where this is the case, the approvals process is likely to take longer than originally anticipated.

5.16. An opportunity to review the Fund after 12 months was included in the full business case and this will provide an opportunity to make any adjustments to processes and/or criteria for the scheme.

6. COLLABORATION ACROSS THE REGION

WEST MIDLANDS COMBINED AUTHORITY AIR QUALITY FRAMEWORK

6.1. On 17 October 2023 the West Midlands Combined Authority adopted its Air Quality Framework and Implementation Plan (AQFIP).

6.2. An Air Quality Options Paper was taken to the WMCA Board in February 2022. This paper outlined the challenges the region is facing in relation to air pollution. The paper also highlighted the inequality of exposure to poor air quality across the region and drew attention to the need to address pollution from particulate matter (PM) with more urgency.

6.3. The options paper outlined 122 possible interventions that could be adopted to improve regional air quality. These were taken from the literature and work undertaken by Public Health England (now the UK Health Security Agency) and recognised that a more detailed piece of work would be needed to develop these further, or to add any additional interventions.

6.4. The options paper and AQFIP recognise the work of constituent local authorities of the WMCA to improve air quality. This is being done through measures identified in Air Quality Action Plans (as per the situation in Birmingham) or, in the case of Solihull MBC, an Air Quality Strategy. The focus of these plans is largely the reduction of NO_2, which is produced (and can be reduced) locally. PM2.5 is different because it stays in the atmosphere for longer and spreads further – this means that regional approaches may be more appropriate in addressing it.

6.5. Since the Air Quality Options Paper was produced, DEFRA has published the national air quality targets (following on from the Environment Act 2021) and the National Air Quality Strategy.

6.6. The latest targets are as follows:

- NO_2 40 µg m^{-3} [this is a retained target]
- PM2.5 20 µg m^{-3} [new Environment Act: 10 µg m^{-3} (by 2040)]

6.7. The Air Quality Framework considers all of the options outlined within the initial Air Quality Options Paper, and other key sources (such as from DEFRA), were considered at the outset. In preparing the Air Quality Framework, all options outlined within the initial Air Quality Options Paper, and other key sources (such as from DEFRA), were considered at the outset

6.8. These were supplemented with additional options identified at the initial consultation stage of the Framework development with Transport for West Midlands (TfWM), constituent local authorities and partners such as WM-Air (at the University of Birmingham). Any options which were clearly outside of the Framework scope, or were unlikely to be in the future, were excluded from the long list. All options which may be at all feasible or within the scope of the Framework were carried forward.

6.9. The Air Quality Framework provides us with an extensive list of measures that could be put in place to address poor air quality across the region. To make a start on delivery a focused list of Framework priorities has been developed into a two-year Air Quality Framework Implementation Plan, which will be overseen by an Air Quality Framework Delivery Group

6.10. In terms of the measures, and delivery, there is no proposition to change roles and responsibilities for local authorities. The AQFIP assumes that this work will continue as previously, although there may be opportunities to bring economies of scale/benefits from collaboration.

6.11. In addition, the AQFIP assumes that actions related to TfWM, and its governance and actions, will continue to be delivered through existing routes.

6.12. The outputs of this work are the Air Quality Framework (November 2023) (www.wmca.org.uk/what-we-do/environmentand-energy/air-quality/).

6.13. The priorities of the AQFIP for the next two years are as follows:

Priority work programme for 2024 – 2026
Priorities 1-3 are funded through a DEFRA air quality grant

- Installation of a regional low-cost sensor network with capability of measuring PM2.5.
- A website to collate and publicise data from new and existing sensors.
- Behaviour change and air quality literacy delivery, specifically looking to reduce PM2.5 and its impact.

Priorities 4-8 will need to be funded through the re-prioritisation of existing WMCA budgets.

- Identify stretch targets for air quality
- Full air quality communications package, including a region-wide alert system for high levels of air pollution.
- Regional school engagement and accreditation programme.
- Regionwide planning and design guidance for air quality to ensure consistency across the WMCA area.
- Business case for speed limit reduction on high-speed roads and for lowering speed limits in urban centres.

6.14. There is clear alignment between the immediate priorities of the WMCA and the Council. Ensuring there is ongoing coordination and collaboration will be critical. On that basis the Clean Air Zone team has recruited an Air Quality Policy Manager. This role will help ensure that the corporate ambition of clean air for everyone in Birmingham is understood and shared by the various services of the organisation. This role will also work alongside the Environmental Protection team to ensure alignment between the ambitions of the Brum Breathe Clean Air Strategy and Council's statutory obligations in respect of air quality. Finally, this role will lead the development of the next iteration of the Brum Breathes Clean Air Strategy.

ENDS

Table 5.1 – Air Quality Action Plan Measures

Measure No.	Measure	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	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	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	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	

Birmingham City Council

Measure No.	Measure	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4	Promote the use of alternatively fuelled vehicles	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	
5	When locations are identified as having an exceedance of the air quality objectives, assess traffic management options relevant to the location	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	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	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	

Birmingham City Council
Air Quality Action Plan

Publication Version

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

2021

Local Authority Officer	Paul Burns
Department	Environmental Health, Regulation & Enforcement Division
Address	Environmental Health, Ashtead Lock, PO Box 16977, Birmingham, B2 2AE
Telephone	0121 303 9938
E-mail	pollution.team@birmingham.gov.uk
Report Reference number	J2818/1/Final
Date	February 2021

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 2021and 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 taxi's 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[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3]. 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.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

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

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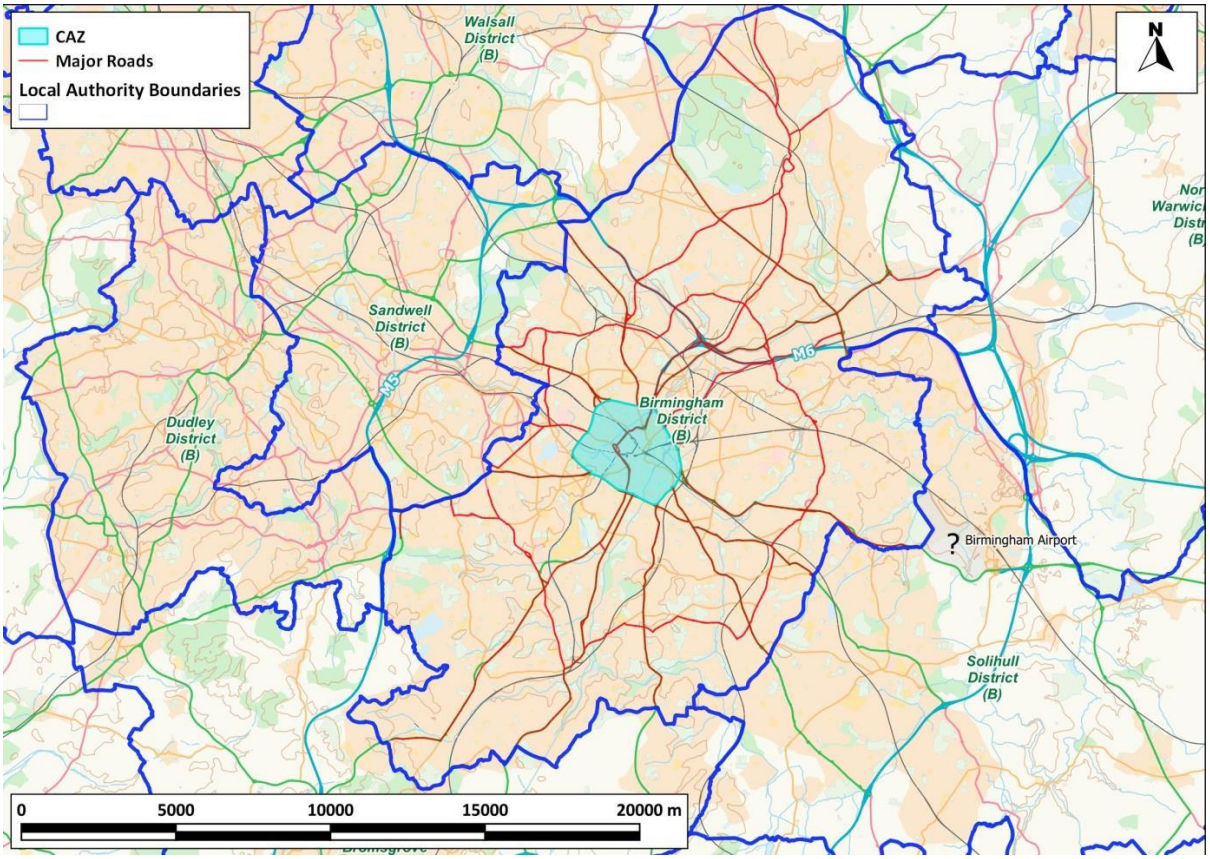
1. Introduction

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



BCC declared itself an Air Quality Management Area in respect of Nitrogen Dioxide (NO_2) 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[4].

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^3 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

[4] https://www.birmingham.gov.uk/info/20011/your_council/237/council_plan_and_budget_2018_to_2022

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_2) 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 $PM_{2.5}$ levels[5]) 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

[5] This relates to pollutant particles with an aerodynamic diameter 2.5 microns where 1 micron equals 1 millionth of a metre

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).

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 (NO2) and COVID-19 incidence. The study identified that a 1 microgram increase in long-term exposure to NO2 increases the COVID-19 incidence rate by 5.58% (95% CI: 3.35%, 7.86%)[1].

A US study that adjusted for multiple confounders found that an increase of 1µg/m3 in long-term PM2.5 exposure was associated with an 8% increased risk of COVID-19 mortality (estimated mortality ratio 1.08, 95%CI 1.02-1.15)[2].

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[3].

> "there is significant collinearity between ethnicity and air pollution, making it impossible to entirely separate the effects of these covariates…"

[1] 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.

[2] 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].

[3] 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

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 it's 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

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_2 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.

Birmingham City Council

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[6] 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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[6] https://www.birmingham.gov.uk/info/20013/roads_travel_and_parking/498/birmingham_connected

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_2, 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.

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_2) in micrograms per cubic metre (μgm^3).

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.

- 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 μgm^{-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 μgm^{-3}.
- Tranche three comprised sites where the existing model indicated concentrations above 40 μgm^{-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.

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	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).
Promoting Travel Alternatives	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)
Public Information	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).
Traffic Management	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.
Transport Planning and Infrastructure	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.

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

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

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 polices 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 NOx from construction and demolition machinery by way of controls through the planning system on Non Road

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[7] 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

[7] 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 Manageme nt	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 Developme nt 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 buisnesses and other organistions 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 https://www.birminghambeheard.org.uk/place/air-quality-action-plan/.

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 *not* being pursued		

Appendix C: Details of Monitoring Locations

Diffusion Tube Monitoring Locations (City Wide)

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)

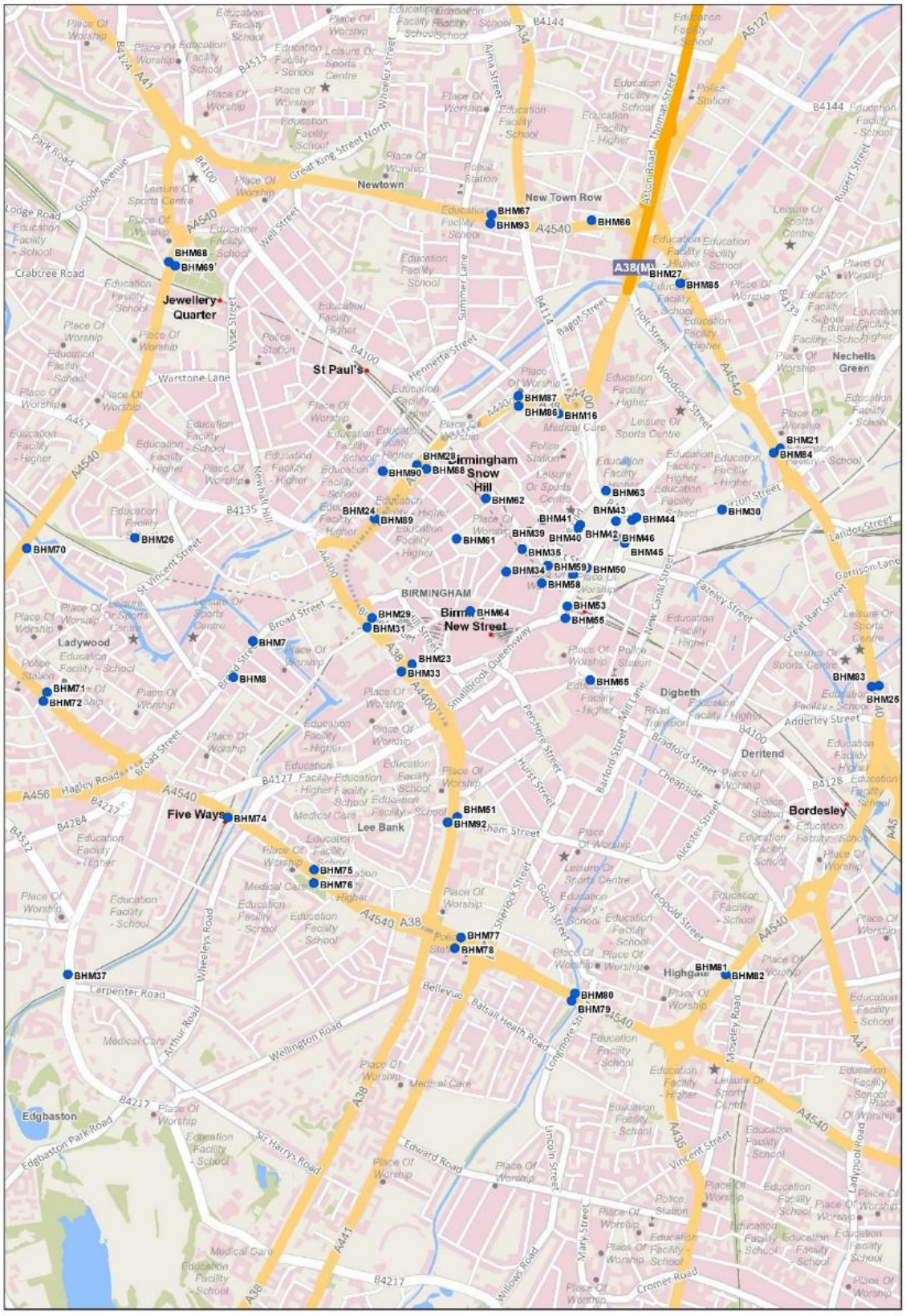

Table C1.2. City Centre Diffusion Tube Monitoring Locations

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

Diffusion Tube Site Reference	Location
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

Diffusion Tube Site Reference	Location
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

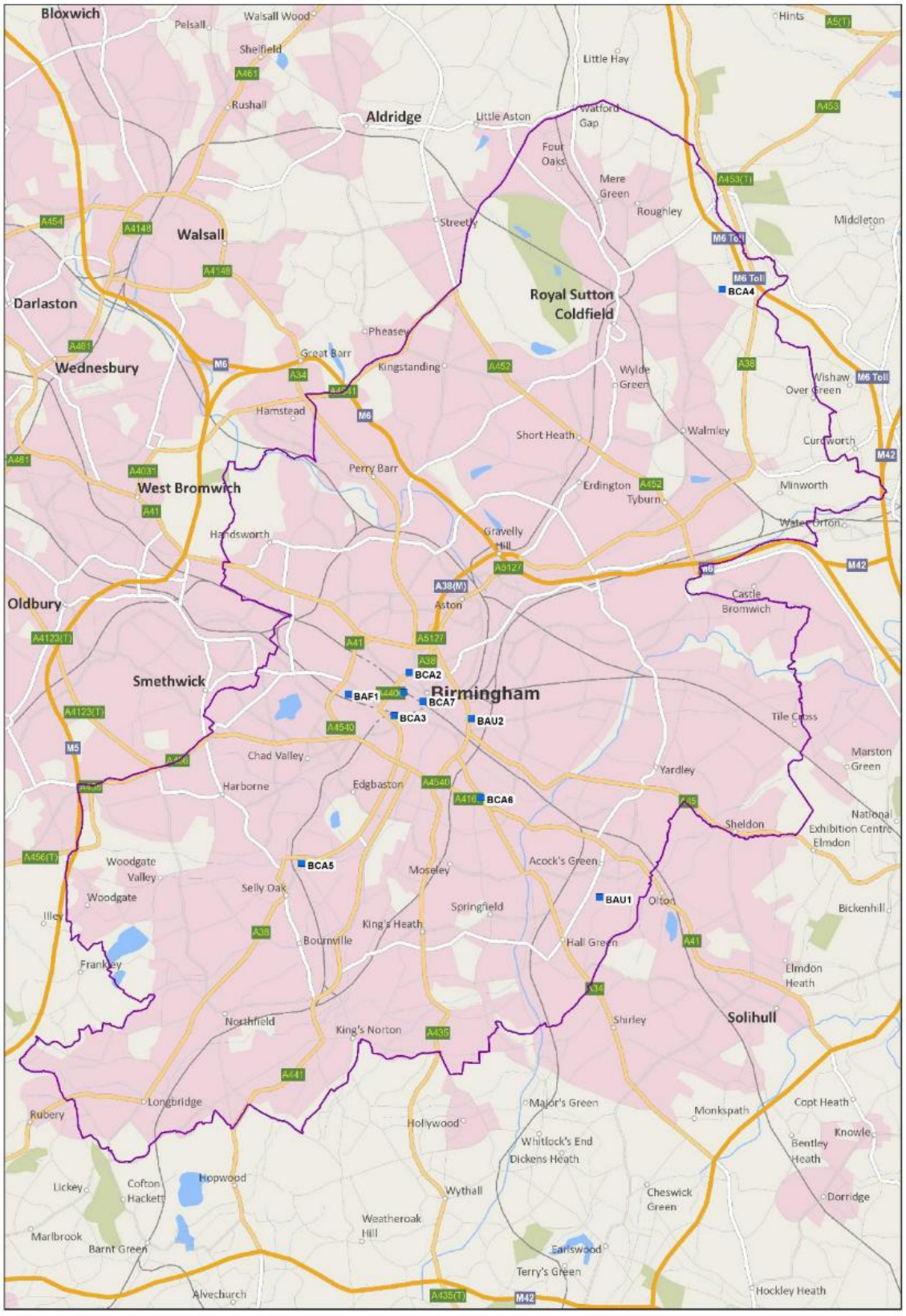

Table C1.1. Automatic Monitoring Site Locations

Automatic Monitoring Site Reference	Location
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_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPPF	National Planning Policy Framework
NRMM	Non-Road Mobile Machinery
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	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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BRUM BREATHES

Birmingham's journey to clean air 2022

#BrumBreathes

A BOLDER GREENER BIRMINGHAM

CONTENTS

CLEAN AIR STRATEGY - ACTIONS

Actions speak louder than words. Listed below are the actions we will pursue to improve air quality over the next 12 months and beyond. The list is by no means exhaustive, it is only constrained by the available resources and what we need to focus upon and complete first. This **Clean Air Strategy** will complement our existing **Air Quality Action Plan**, which will include targeted actions in areas that have the most pressing need to improve air quality. These are usually areas of congested traffic with houses in close proximity to the road for which there is no escape from the worst effects of air pollution.

Progress on the actions will be published on **BrumBreathes.co.uk**, with a full review every 12 months. This is where we would like to hear from you, your ideas to improve air quality. We encourage you to continue to submit your ideas for actions in the updated **Clean Air Strategy for 2023**.

CLEAN AIR STRATEGY ACTIONS 2022

1. **Clean Air Zone** see **BrumBreathes.co.uk** for further details.
2. Encouraging ongoing feedback from the public to improve air quality to feed into this **Clean Air Strategy**.
3. Clear accessible data (air quality and traffic) made accessible via online interactive dashboards. (current air quality data is available at **birminghamairquality.co.uk**).
4. Increased air quality monitoring, in the form of automatic stations, indicative sensors and diffusion tubes.
5. Air quality monitoring and awareness for schools across Birmingham.
6. Investigate ways to reduce emissions from **Non-Road Mobile Machinery** (NRMM) such as diesel generators.
7. Increase awareness of the impact of wood burners, fireworks and bonfires.
8. Anti idling campaign.

FOREWORD

Poor air quality contributes to thousands of early deaths and the worsening of a range of health conditions, disproportionately impacting people living in deprivation, the very young and the old.

The health impacts include bronchitis, asthma, kidney disease, diabetes, dementia, and stunted lung development in children, the list goes on.

In Birmingham road traffic emissions are the dominant source of air pollution. Other sources of air pollution include biomass boilers, firework displays, diesel generators, demolition and construction, bonfires, wood burners, industrial emissions, to list but a few.

Significant progress has already been made by supporting improvements to the public transport system across the city and wider region. These include the extension of the Metro network, reallocating road space to buses, supporting the adoption of more environmentally-friendly fuels such as hydrogen and significant expansion of the **Electric Vehicle** (EV) charging network. However, much more needs to be done to improve the city's air quality.

By understanding the sources of air pollution, along with the health, legal and financial consequences, we can set out priorities and take practical steps in the form of pledges that will guide the city towards cleaner, greener growth and clean air. Finally, focused targeted actions will be pursued as quickly as possible. These actions are critical to ensure the aim of the strategy can be fulfilled. If you have ideas to improve air quality, we would like to hear from you via an online platform that we are developing that will be launched later in 2022. Your ideas will feed directly into future updates of the **Clean Air Strategy for 2023**.

Most importantly this is a **Clean Air Strategy** that builds on the benefits to be gained from the introduction of a **Clean Air Zone** (CAZ) and sets out a framework for future priority setting and decision making. It will be informed by the outputs of the **Air Quality Action Plan** (AQAP) revision[1], so that future initiatives are evidence-based.

Taking action to improve air quality also benefits the **Route to Zero Programme**[2] that will enable the changes required to near carbon neutral in 2030. Transport is a big contributor to carbon emissions, housing however is a far bigger, more expensive challenge but not for this document. By working together and supporting the change, our vision for a cleaner, greener Birmingham has a stronger chance of becoming a reality.

Councillor Waseem Zaffar MBE
Cabinet Member for Transport and Environment

1 http://62.65.40.208/birmingham//Reports/2021_Birmingham_City_Council_Air_Quality_Action_Plan_2021.pdf
2 https://www.birmingham.gov.uk/info/20015/environment/2026/climate_emergency

INTRODUCTION

Imagine a city where air pollution is a thing of the past. Cars no longer dominate our city with more people choosing to walk and cycle (especially for shorter journeys) and there is a world class integrated public transport network that can get you where you want to go, quickly and efficiently. Air pollution from biomass boilers, firework displays, diesel generators, demolition and construction, bonfires, wood burners, and industrial emissions no longer damages our health and the environment. Our homes are well insulated. Our energy needs are met by low carbon, low pollution, renewable energy sources[3]. Waste is minimal and recycling is commonplace.

In the post Covid-19 world, there is now a unique opportunity to link the economic recovery to a greener, cleaner way of living, changing the fabric of the city for good.

This 'clean growth' means growing our economy whilst tackling air pollution, protecting the natural environment, and cutting greenhouse gas emissions, future-proofing our city as we look ahead to a better future for all of us and generations to come. In this Strategy we present one simple aim:

Make a positive difference for everyone who lives and works in Birmingham by tackling the causes of poor air quality.

YOUR VIEWS

In 2019 the Council ran a public consultation on a draft **Clean Air Strategy**. Your feedback made it clear that you wanted an improvement in air quality. You want a strategy that is accessible and clearly sets out the challenges and opportunities for improvements. You also wanted the Council to say what it would do and what others would need to do to realise the goal of cleaner air.

From the consultation the key messages were clear, and we have acted upon them -

- You wanted to see a stronger link between air quality and transport policies and improvements. We have brought together planning and highways policies in one pledge: **Planning for the Future** - to show how better design can lead to improved air quality.
- You wanted more information about the **Clean Air Zone** and clarity on where the revenue would be spent. We have answered your concerns in the pledge: implementing a **Clean Air Zone** which provides more detail and sign posting to the relevant information.
- You want to make sure the most vulnerable and less able amongst us are not forgotten in the changes that we need to implement. We have introduced a new pledge: **Inclusivity and Protecting the Vulnerable** to ensure this voice is clearly heard.
- You wanted our pledge focused on schools to be stronger. We have strengthened our pledge on schools to reflect your views and ideas.

3 https://www.birmingham.gov.uk/info/20015/environment/2026/climate_emergency

Taking on board your views we have adapted the strategy to make it as accessible and adaptable as possible. The strategy is now formed of four sections:

1. **Understand** the problem, explaining the dominant types and sources of air pollution, the health impacts, the financial impacts and the legal context.
2. **Priorities** that are focused on the dominant sources of air pollution and limit our exposure. These priorities will be used to guide decision making in the short, medium and long term.
3. **Pledges** based on what an organisation can contribute to improving air quality. Whilst this strategy has been produced by **Birmingham City Council**, it is hoped that other organisations will be able to contribute additional pledges. This will clearly demonstrate how we, as a city, intend to change for the greater good.
4. **Action** on focused goals that will be worked upon as quickly as possible. Once an action is completed a new action will be added. We are keen to hear new ideas, please feel free to share them with us. Your ideas will be taken forward in future updates of this **Clean Air Strategy**.

By working together, we can improve the air we breathe. The Council has made the first pledges, the next steps will need your support. Ask yourself, how can you, your community, your business, your organisation contribute to the vision of a cleaner, greener Birmingham? And what pledges can you make or contribute towards?

1. UNDERSTAND

WHAT IS AIR POLLUTION & WHERE DOES IT COME FROM?

The **World Health Organisation** (WHO) defines air pollution as

> ***"Substances put into the air by the activity of mankind in concentrations sufficient to cause harmful effects to health, property, crop yield or to interfere with the enjoyment of property"***

There are many substances that make up air pollution, however for Birmingham those currently of concern are:

Nitrogen Dioxide – is a gas that comes from the burning of fossil fuels. In urban areas such as Birmingham levels of Nitrogen Dioxide can be 10 times higher compared to areas with the 'cleanest' air in the UK. The dominant source is road traffic emissions, making up two thirds (66%) of all the pollution in our air[4]. Other significant sources include factory emissions, gas boilers, wood burners, biomass burners, bonfires, construction plant and diesel generators.

Particulate Matter – covers numerous substances that are basically tiny bits of dust so small you cannot see them. There are several subgroups of Particulate Matter each denoted by the letters PM followed by a number e.g. PM10. The number refers to the aerodynamic diameter of the particle size in microns (μ), where a micron is one millionth of a metre. The smaller the number, the smaller the particle size and the deeper into the lungs it can get. The dominant source of Particulate Matter comes from domestic solid fuel burning. Other significant sources include road traffic emissions, tyre wear, brake pads, diesel generators, bonfires, factory emissions, demolition and construction, road salting and fireworks. It can also come from natural sources such as Saharan sands.

WHAT ARE THE HEALTH IMPACTS?

When air pollutants enter the body, they can have effects on various organs and systems, and they have a number of short-term and long-term effects:

- **Short-term effects**: exacerbation of asthma, exacerbation of COPD, cough, wheezing and shortness of breath, increased admissions to hospital and mortality.
- **Long-term effects**: Stroke, lung cancer, respiratory conditions, cardiovascular disease and reduced life expectancy

New evidence also suggests that air pollution may affect the brain and may be linked to dementia and cognitive decline and may be associated with low birth weight and Type 2 diabetes.

Air pollution can affect everyone at every stage of life, including the gestation period before babies are born. When air pollution has impacts in early life these effects can have lifelong impacts and impacts that may not be obvious until decades later.

Those with pre-existing respiratory and heart conditions, the elderly and children are particularly vulnerable. Individuals from socially and economically disadvantaged backgrounds are more likely to be exposed to higher levels of air pollution and suffer from the associated health impacts, in addition to other existing health inequalities that these communities often experience. This means that some groups in the population experience increased negative health impacts than others.

Small changes can make a big difference – just a 1μg/m3 reduction in PM2.5 concentrations this year could prevent 50,000 new cases of coronary heart disease and 9,000 new cases of asthma nationwide.

There is early emerging evidence of an association between air quality and COVID-19 spread / susceptibility[5].

4 The Clean Air Zone study suggested that in 2016 road traffic accounted for 66% of nitrogen oxide emissions at key sites.
5 https://www.ons.gov.uk/releases/airpollutionandcovid19mortalityrates

The WHO advises that no level of air pollution is safe, although laws often define levels of air pollution that should not be exceeded. This means that even air pollutants at levels just below the legal level are still having negative impacts on health. Some air pollutants are unavoidable, but because there is no safe level it is important to reduce man-made air pollutants as far as possible. There are negative health effects of gaseous and particulate air pollutants so all should be considered to maximise improved health.

WHAT ARE THE FINANCIAL IMPLICATIONS?

Air pollution impacts our health, and this has financial implications for our health service and to the economy through the loss of working ability. A report in 2019 by Kings College London[6] commissioned by UK100 on the financial impact of air pollution for the Birmingham area calculated the burden as being between £190 - £470 million on average per year.

The costs to society from poor air quality are borne across all sectors. With the increasing focus on the NHS in the current Covid19 impacted world it is concerning to note that the total cost to the NHS and social care through to 2025 arising from air pollution is estimated to be £60.8 million for nitrogen dioxide (NO2) and £1.5 billion for fine particulate matter (PM2.5). These figures rise to £2.7 billion and £2.8 billion respectively when diseases with less robust evidence are included[7].

WHAT DOES THE LAW SAY?

A pragmatic approach has been taken in setting air quality standards / objectives which have been written into UK law[8].

Under UK law, all Local Authorities are responsible for monitoring air quality[9]. Where the air quality is found to be in breach of the legal limits an **Air Quality Management Area** (AQMA) must be declared and the Local Authority produce an **Air Quality Action Plan** that sets out the measures that the authority seeks to implement to improve air quality to the point of compliance.

In the early 2000's Birmingham declared an AQMA for Nitrogen Dioxide (NO2), followed by an **Air Quality Action Plan** (2006 and revised in 2011). The air quality action plan has now been updated in 2021[10].

There is also a national assessment undertaken by Government using a computer model called the **Pollution Climate Mapping** (PCM Model). This assessment has identified Birmingham city centre as a hot spot of air pollution. Being identified means Birmingham must take action to reduce air pollution in the shortest possible time and this has led to the introduction of the **Clean Air Zone**.

7 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/708855/Estimation_of_costs_to_the_NHS_and_social_care_due_to_the_health_impacts_of_air_pollution_-_summary_report.pdf
8 https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update.pdf
9 http://www.legislation.gov.uk/ukpga/1995/25/contents
10 https://www.birmingham.gov.uk/downloads/download/4061/birmingham_city_council_air_quality_action_plan_2021-2026

2. PRIORITIES

Road traffic emissions are the dominant source of pollution in Birmingham (as discussed in section 1). Knowing this, the following priorities have been developed to challenge our thinking and decision making[11]. Rather than choosing a single priority that reinforces our current thinking, it is important to view these priorities as a whole. With every decision it may not be possible to provide a benefit to every priority. A balanced view should be taken to ensure the overall aim of the strategy (to improve air quality) is not compromised.

1. **Improve the Fleet**[12]: Discouraging the most polluting vehicles (private and public) from our city will lead to an overall reduction in air pollution.

HOW CAN WE SUPPORT THIS CHANGE?

2. **Improve the Flow**: Smoother and faster journeys that help reduce congestion will help reduce emissions [this applies to active travel routes, public transport as well as private vehicles]. Traffic congestion creates a bubble of air pollution with idling vehicles wasting fuel, wasting money and generating unnecessary carbon emission.

HOW CAN WE IMPROVE THE FLOW OF JOURNEYS?

3. **Reduce the Volume**: Fewer vehicles = less pollution. By moving from private car use to walking, cycling, public transport or working from home can all reduce the number of vehicles on our streets.

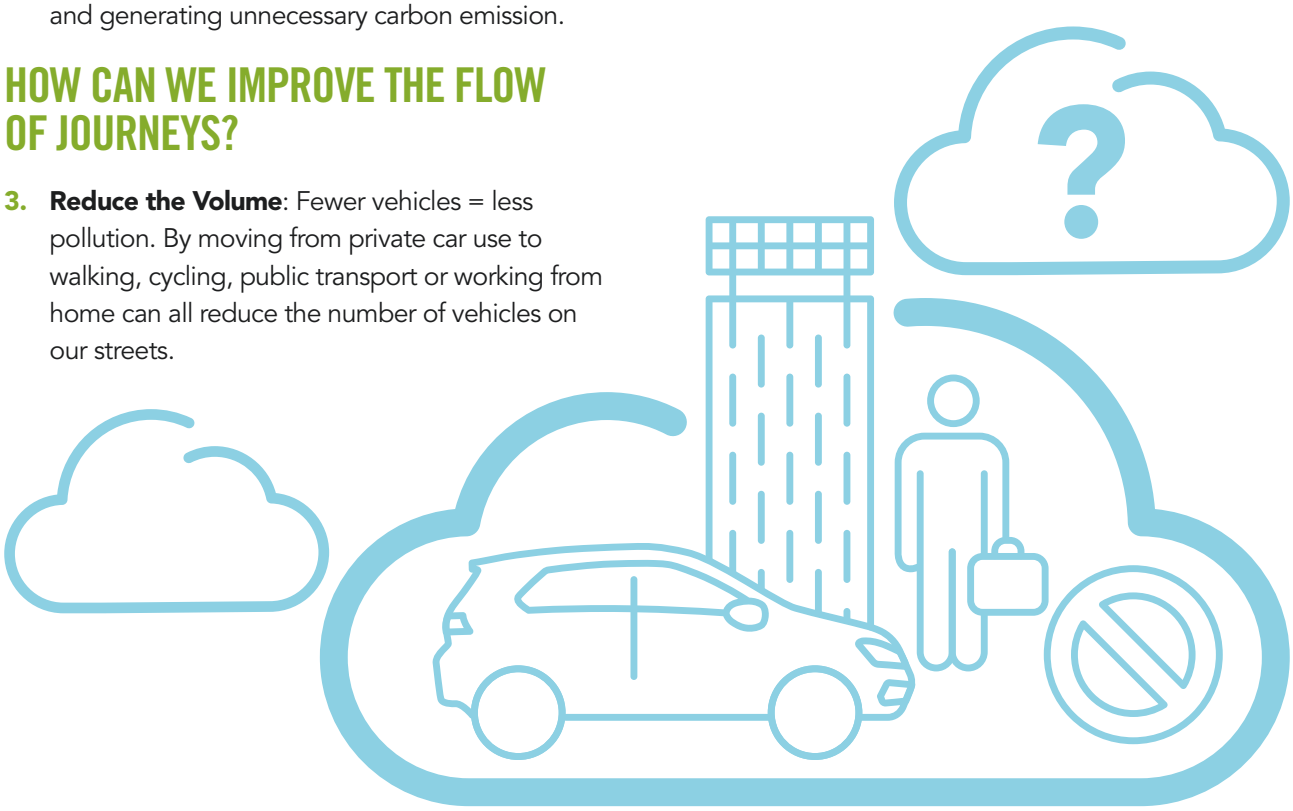
HOW CAN WE SUPPORT THIS CHANGE?

4. **Reduce Sources & Exposure**: By reducing the sources of air pollution and our exposure to poor air quality, we reduce the likelihood of poor health and damage to the environment. We should limit the sources of air pollution and our exposure where we work, travel, live, play or study, especially for the most vulnerable.

HOW CAN WE REDUCE THE SOURCES OF AIR POLLUTION AND OUR EXPOSURE?

5. **Empowering Behaviour Change**: To encourage and support individual behaviour change to improve air quality by embedding into our culture (businesses, organisations, local communities, the council etc) the policies, guidance and capability to be less polluting.

HOW CAN YOU AND/OR YOUR ORGANISATION EMPOWER AN INDIVIDUAL TO POLLUTE LESS?



11 These Priorities link with the Urban Transport Group – Air Quality City Regions Transport Toolkit (2014) of Reduce, Shift and Improve which has been incorporated into the Draft West Midlands Air Quality Action Plan.
12 Fleet – all the vehicles that are traveling on our roads (buses, cars, HGVs etc).

3. PLEDGES

The following pledges are designed to put the priorities into action in a number of targeted ways. The format of these pledges follows the structure of:

DESCRIPTION
What the pledge is about?

SUPPORT
How others can be involved to support the pledge?

PRIORITIES
What priorities can it fulfil?

COMMUNICATE
How will the actions of the pledge be communicated?

LEAD
Who owns the pledge and champions its actions?

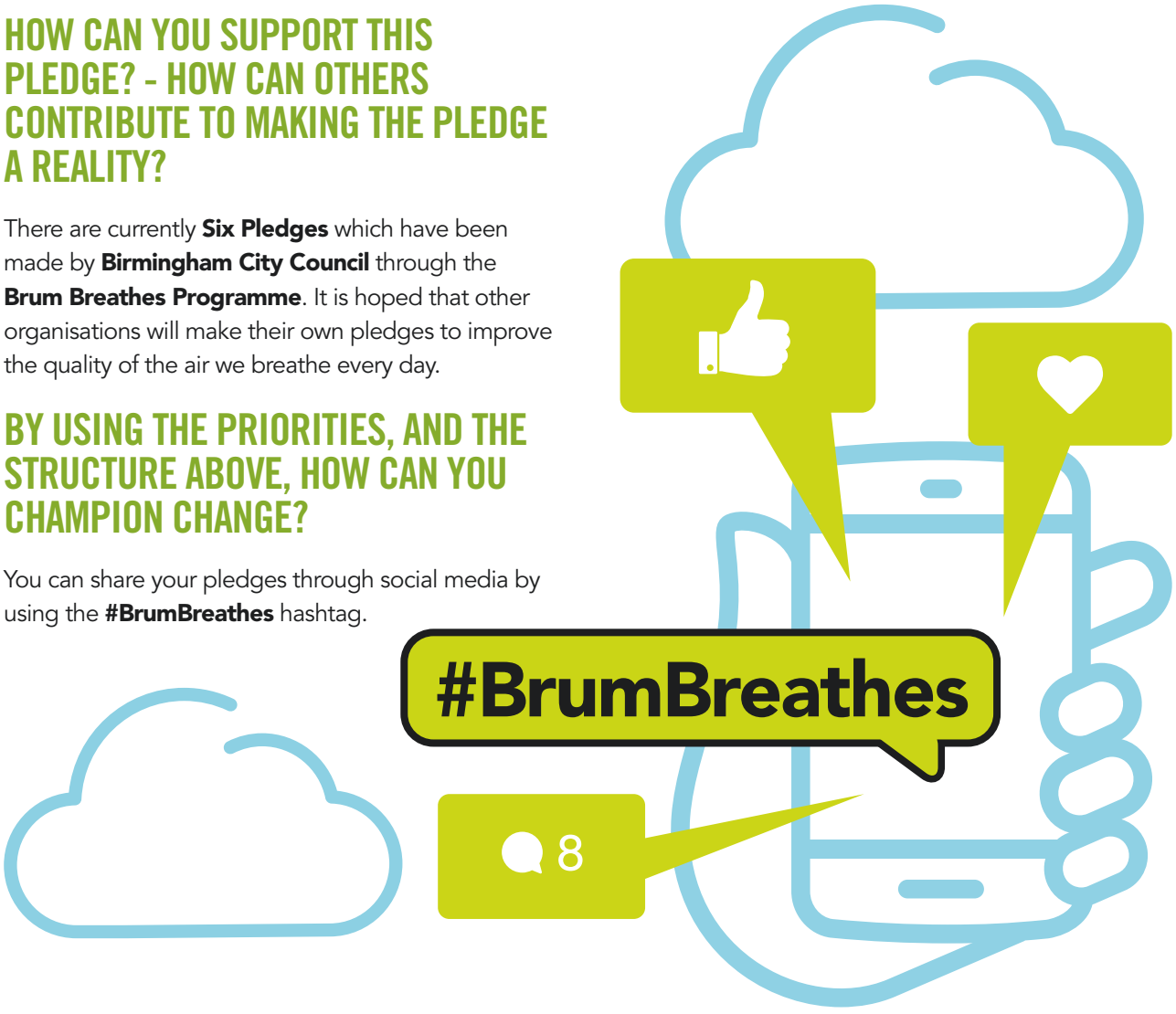
COLLABORATE
Who are the key stakeholders that will be involved?

HOW CAN YOU SUPPORT THIS PLEDGE? - HOW CAN OTHERS CONTRIBUTE TO MAKING THE PLEDGE A REALITY?

There are currently **Six Pledges** which have been made by **Birmingham City Council** through the **Brum Breathes Programme**. It is hoped that other organisations will make their own pledges to improve the quality of the air we breathe every day.

BY USING THE PRIORITIES, AND THE STRUCTURE ABOVE, HOW CAN YOU CHAMPION CHANGE?

You can share your pledges through social media by using the **#BrumBreathes** hashtag.



PLEDGE ONE
COLLABORATION

The support of many is required to deliver the change needed to improve air quality. No single organisation can carry the burden alone. We need to work together to change the city for the benefit of all. For example, the Council can install cycle lanes, but if they have limited use, they do not meet their potential. Businesses can be supported to encourage employees to use cycling as a real alternative. This can also be backed up by strategic policies and the implementation of the regional on street bike hire scheme and E-Scooters. Projects like this can only be successful by collaboration and listening to each other. A few of the key partner organisations are listed below.

- **WM-Air the West Midlands Air Quality Improvement Programme**: a joint initiative led by the **University of Birmingham** comprising a range of regional stakeholders (Inc. **Birmingham City Council**). WM-Air seeks to improve understanding of pollution sources and levels of exposure. This can facilitate an improved capability to predict air quality, health and economic impacts. It will support the application to specific case studies across the West Midlands, ranging from major infrastructure projects such as **HS2** through to more locally based schemes e.g. **Low Traffic Neighbourhoods** (LTN) **wm-air.org.uk**
- **The Rail Safety Standards Board** (RSSB) are responsible for the rail network and have made efforts to reduce air pollution at train stations and rolling stock, guided by their **Air Quality Strategic Framework**[13]. With Birmingham being a national Rail Hub the city is likely to benefit from a number of national schemes. **rssb.co.uk/en/research-and-technology/sustainability/Air-quality**
- **Highways England** are responsible for **Motorways** & **Major A-Roads**, and have a duty to help reduce air pollution. There are four motorways in the Birmingham area, along with the **Spaghetti Junction**, one of the largest road traffic interchanges in Europe. **highwaysengland.co.uk/our-work/air-quality**
- **Transport for West Midlands** (TfWM) **tfwm.org.uk** is the transport arm of the **West Midlands Combined Authority** (**wmca.org.uk**). TfWM is responsible for the public transport network across the West Midlands area, and provides insight into travel behaviours **tfwm.org.uk/strategy/data-insight**

Priorities – Through greater collaboration and referral back to the priorities the efforts of partner organisations will be better harmonised to improve air quality.

Lead – For Birmingham, **The Brum Breathes Programme** run by **Birmingham City Council** will lead the way to share, promote and provide ideas and resources. **BrumBreathes.co.uk**

Support – Regional Policy such as the **West Midlands Regional Action Plan** (Draft) can support our Birmingham air quality policy and guidance, whilst partnership projects such as WM-Air can demonstrate the effectiveness of collaborative working. It can also filter down into many aspects of local policy as shown in this **Clean Air Strategy**.

Communicate – if we do not discuss with each other what the solutions are and the barriers we face as a collective we will fail to deliver the change required. **Brum Breathes** will provide a platform to disseminate news, information, ideas, events, tools and help with funding. However, communication is a two-way process and we need to hear from you on what you have done to encourage change, the barriers you face and how we can work together.

Collaborate – This is the heart of this pledge; we all need to work together to deliver a world future generations can be proud of. We will collaborate with national, regional and local organisations to maximise the opportunities to change for the better.

HOW CAN YOU SUPPORT THIS PLEDGE?

Visit the **BrumBreathes.co.uk** and see what support is available to you to make a change for the better. If you have any ideas on how air quality can be improved, please get in touch to let us know.

13 https://www.rssb.co.uk/en/research-and-technology/sustainability/Air-quality

PLEDGE TWO
CLEAN AIR FOR SCHOOLS

The next generation deserve the best start in life we can provide. There is clear evidence that children in areas of high air pollution are four times more likely to have reduced lung function when they reach adulthood. Journeys to school by car can cause a spike in local congestion, and increase air pollution at the school gates, exposing children to poor air quality.

Priorities – The priorities should be used as a guide to help inform projects associated with schools.

Lead – School streets are places where we put children and families first and keep them safe and healthy by encouraging walking, scooting and cycling to school. Encouraging active travel to school helps reduce the number of cars on the roads – and is the best way to make the air cleaner for everyone. The **Brum Breathes Programme** already works with a number of schools through **Modeshift STARs** (the national award scheme supporting schools to create a travel plan promoting safer, greener healthier travel). The scheme has seen the development of a range of campaign resources designed to support cleaner air including:

- **Switch-Off School Streets** – A toolkit with resources to help schools to run an 'anti-idling' campaign.
- **Car-Free School Streets** – Roads outside schools are closed to traffic at the start and end of the school day, helping to reduce congestion and improve air quality at the school gates.
- **Clean Air Cops** – An educational resource to teach children, and their families about air pollution, its causes and impacts and how it can be reduced.
- **Air Quality Monitoring Programme** for Schools.

We plan to build on this foundation to promote the benefits of better air quality.

Support – Championing the change will be fostered within the school culture, from teachers, students, pupils and parents; they all have a part to play. Taking ownership of the local issues and identifying where change needs to occur works best from the ground upwards.

Communicate – a clear consistent message backed up with easily accessible resources will be made available. To ensure the local voice is heard, each school will be encouraged to collect and share ideas with the wider group. We have already made a start and encourage all schools to join us!

- **Mode Shift Stars**: birmingham.gov.uk/modeshiftstars
- **Switch off School Streets**: birmingham.gov.uk/switchoffschoolstreets
- **Clean Air Cops** birmingham.gov.uk/info/20163/safer_greener_healthier_travel/1852/safer_greener_healthier_school_travel/4

Collaboration is key to this pledge - parents, teachers, pupils, the council and the local community - We will all need to work together to ensure we can provide clean air for our schools.

HOW CAN YOU SUPPORT THIS PLEDGE?

The good news is that small changes can make a big difference – and we can all play our part. That is why we are calling on all schools in Birmingham to take action by joining us on the journey to cleaner air. If you go to school, teach at school, or are a parent/guardian, see what you can do to support and encourage an improvement in air quality and sustainable travel. Your actions really can change the air that people breathe.

PLEDGE THREE
INCLUSIVITY & PROTECTING THE VULNERABLE

Poor air quality can significantly impact the most vulnerable amongst us. Road traffic is the primary cause of air pollution. A heavily congested road often blights the local area. In deprived areas the issue is further compounded due to the prevalence of other health and wellbeing factors associated with deprivation. Care Homes, shelters and hospitals home some of the most vulnerable members in our community. These facilities should be given priority to ensure that poor air quality does not contribute to poor health of the residents.

It is important to ensure that the needs of all are considered when implementing change and that no one group is significantly disadvantaged. Furthermore, by improving one area there is a concern that the problem may simply move to another area and increase health inequalities. The priorities outlined in section 2 of this strategy are designed to help reduce this potential risk, with the aim of providing a net benefit for all.

It is important that everyone can engage, understand and support the changes to improve air quality across the city. All efforts will be made to engage with the wide variety of communities across the city to share information, views and ideas on how to improve air quality. This is particularly important in areas of high deprivation where improvements will have the greatest impact.

Priorities – The priorities should be used as a guide to ensure that an overall improvement of air quality is achieved, avoiding displacement (where possible).

Lead – **Birmingham City Council** will identify areas of high air pollution that may be the cause of compounding existing health and wellbeing issues. By championing the voice of the most vulnerable and ensuring that change does not disadvantage one group over another an overall air quality benefit will be achieved

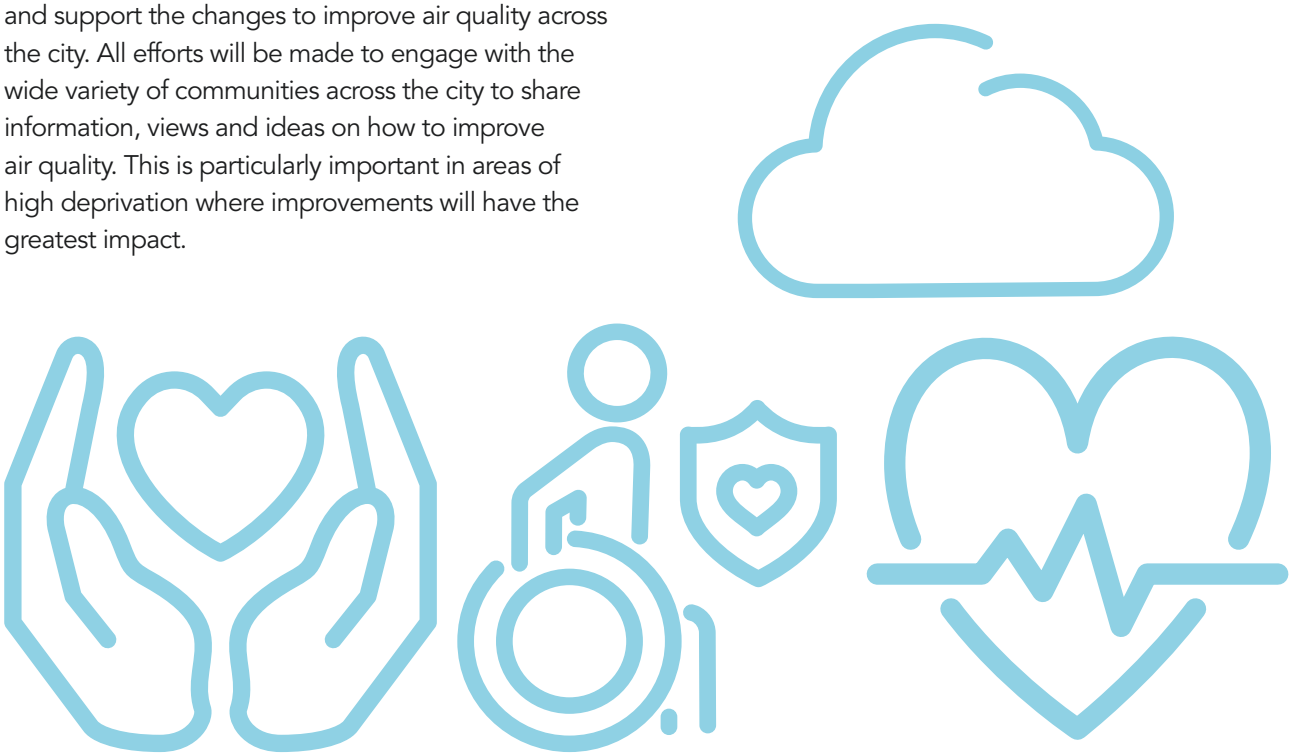
Support – by **Public Health England**, **Birmingham Public Health** and similar organisations that have strong connections with these groups.

Communicate – the location of air pollution hotspots and the need for change will be communicated internally within the council, and externally to stakeholders and the wider community.

Collaborate – with others to ensure the benefits and opportunities for change are maximized to their full potential.

HOW CAN YOU SUPPORT THIS PLEDGE?

Visit the **BrumBreathes.co.uk** and see what support is there for you to make a change for the better.



PLEDGE FOUR
PLANNING FOR THE FUTURE

In the 1960s the city prioritised the car, and now we live with the consequences of road traffic emissions polluting our air, resulting in damage to our health and the environment. In 21st Century Birmingham our priorities have clearly changed. We need to combat air pollution, reduce carbon emissions and adapt to climate change. To do this we will continue to deliver a world class transport system that will prioritise walking, cycling and public transport instead of the car. Future developments will need to be designed to complement sustainable travel and minimise pollution. Road traffic emissions are the main contributor to poor air quality, however other sources of air pollution should not be forgotten, such as wood burners which contribute significant volumes of PM2.5.

By 2031 the city is projected to grow by an additional 15,000 people resulting in 1.2 million additional daily trips across the network. It is not possible or indeed desirable to accommodate all of these by private car.

Priorities – The priorities can be used as a simple but effective assessment tool to guide decision making.

Lead - The fabric of our city is made of buildings and roads; **Birmingham City Council** is best placed to lead the way in implementing planning and highway strategies, guidance and policy that prioritises human health and the environment.

Planning: **The Birmingham Development Plan** (BDP) 2031[14] sets out the spatial vision and strategy for the sustainable growth of Birmingham with the objective of providing an enterprising, innovative and greener city.

The local plan provides a strong commitment to ensuring new development supports the delivery of vibrant and healthy living and working environments. There is also an appreciation to limit exposure to areas of high pollution and to avoid generating new pockets of poor air quality. The recently drafted **Birmingham Parking Supplementary Planning Document** that sets out a new approach to parking space allocations in the new developments[15] supports this aim.

The emerging **Development Management in Birmingham** (DMB) (2019)[16] provides detailed development management policies. **Section 2: Environment** sets policies which seek to ensure new developments over their lifetime contribute towards improvements in the quality of life in Birmingham. **DM1: Air Quality** – sets out the councils proposed policies to improve air quality by taking a proactive approach to planning, regeneration and new development, ensuring air quality is considered during the planning process and appropriate mitigation is implemented.

Transport: **Birmingham Transport Plan 2031**[17]- The four big moves in the strategy encapsulate the change in decision making that this **Clean Air Strategy** supports. N.B. due to Covid-19 **Birmingham City Council** has instigated a **Draft Emergency Transport Plan**[18] that will fast track some of the proposed measures

Reallocating Road Space - The allocation of road space will shift from single occupancy private cars to support the delivery of a public transport system fit for a global city, fundamentally changing the way that people and goods move around the city.

Transforming the City Centre - The city centre of Birmingham will be transformed through the creation of a network of pedestrian-only streets and public spaces integrated with public transport services and cycling infrastructure. Access to the city centre for private cars will be limited with no through trips. This includes looking at different options for the central section of the A38 including re-routing it to an upgraded ring road.

14 https://www.birmingham.gov.uk/downloads/file/5433/adopted_birmingham_development_plan_2031
15 https://www.birmingham.gov.uk/info/20109/parking/2045/draft_birmingham_parking_supplementary_planning_document_consultation
16 https://www.birmingham.gov.uk/info/20054/planning_strategies_and_policies/1861/development_management_in_birmingham_submission
17 https://www.birmingham.gov.uk/info/20013/roads_travel_and_parking/2032/draft_birmingham_transport_plan
18 https://www.birmingham.gov.uk/emergencytransportplan

Prioritising Active Travel in Local Neighbourhoods - Active Travel (walking and cycling) will become how most people get around their locality most of the time. Cars will no longer dominate street life around home and schools. A limit of 20mph will be standard on all roads. Residential neighbourhoods and local centres will be places where people are put first. This is further supported by **Birmingham Walking and Cycling Strategy**[19] that is aimed to raise levels of cycling to 5% of all trips by 2023 and 10% of all trips by 2033.

Managing Demands through Parking Measures - Parking will be used as a means to manage demand for travel by car through availability, pricing and restrictions. Where development potentially exists, land currently occupied by car parking will be put to a more productive use.

Alongside the physical changes policies, funding and guidance will continue to be developed to support the charging network for electric vehicles, on streetcar hire (car clubs) and access to cycling such as on street bike hire etc.

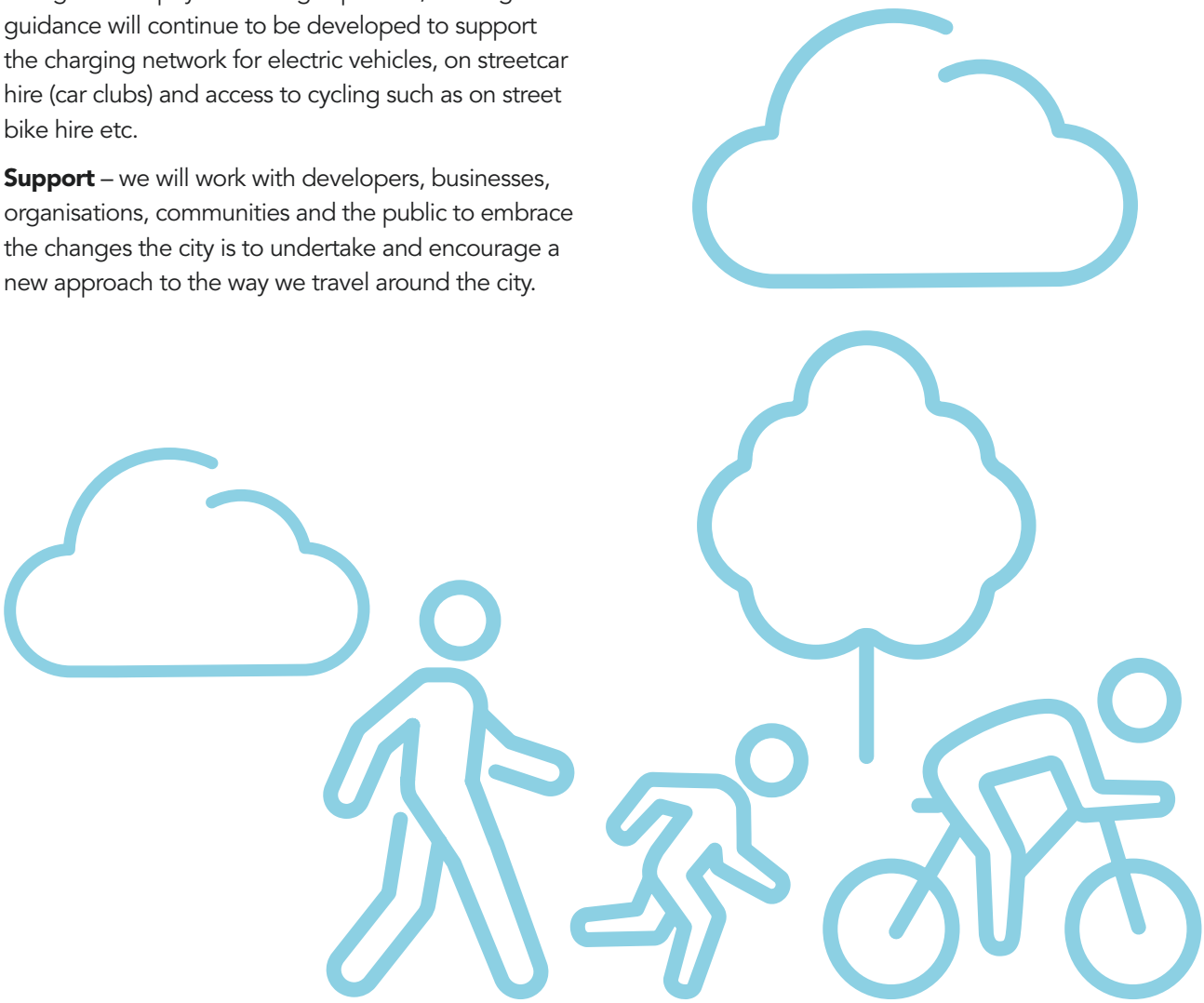
Support – we will work with developers, businesses, organisations, communities and the public to embrace the changes the city is to undertake and encourage a new approach to the way we travel around the city.

Communicating - a common vision for the city is key to ensure we all aim in the same direction.

Collaboration between Council departments, developers, businesses, organisations and the wider community can foster a greater understanding of the issues around air quality and help generate and implement innovative solutions.

HOW CAN YOU SUPPORT THIS PLEDGE?

You can help by considering how you travel and if you really need to – even one or two changes a week can add up to a significant difference across the network. Businesses and schools can support this pledge by implementing travel plans, for example joining the **Mode Shift Stars** scheme **modeshiftstars.org**



19 https://www.birmingham.gov.uk/info/20013/roads_travel_and_parking/1942/walking_and_cycling_strategy_and_infrastructure_plan

PLEDGE FIVE
CLEAN AIR ZONE (CAZ) FOR BIRMINGHAM'S CITY CENTRE

A **Clean Air Zone** (CAZ) is a method of incentivising a change to less polluting forms of travel. Due to the excessive level of Nitrogen Dioxide a **Clean Air Zone** has been implemented for Birmingham City Centre contained within the inner ring road[20] . The CAZ charges the most polluting types of vehicle and provide financial support to citizens to encourage modal shift to less polluting vehicles and alternative modes of travel (bus, train, metro, cycle, walk) or to upgrade their private vehicle to one that is less polluting. For more information please see **brumbreathes.co.uk**

Class D Clean Air Zone – which means if your vehicle (including private cars) produces too much pollution it will be charged. To see if your vehicle complies with the **Clean Air Zone** there is a free online tool - **www.gov.uk/check-clean-air-zone-charge**

Priorities – The CAZ will continue to aim to meet the priorities in conjunction with many other highways / active travel schemes that are being pursued.

Lead – **Birmingham City Council** will take the lead in implementing the **Clean Air Zone**.

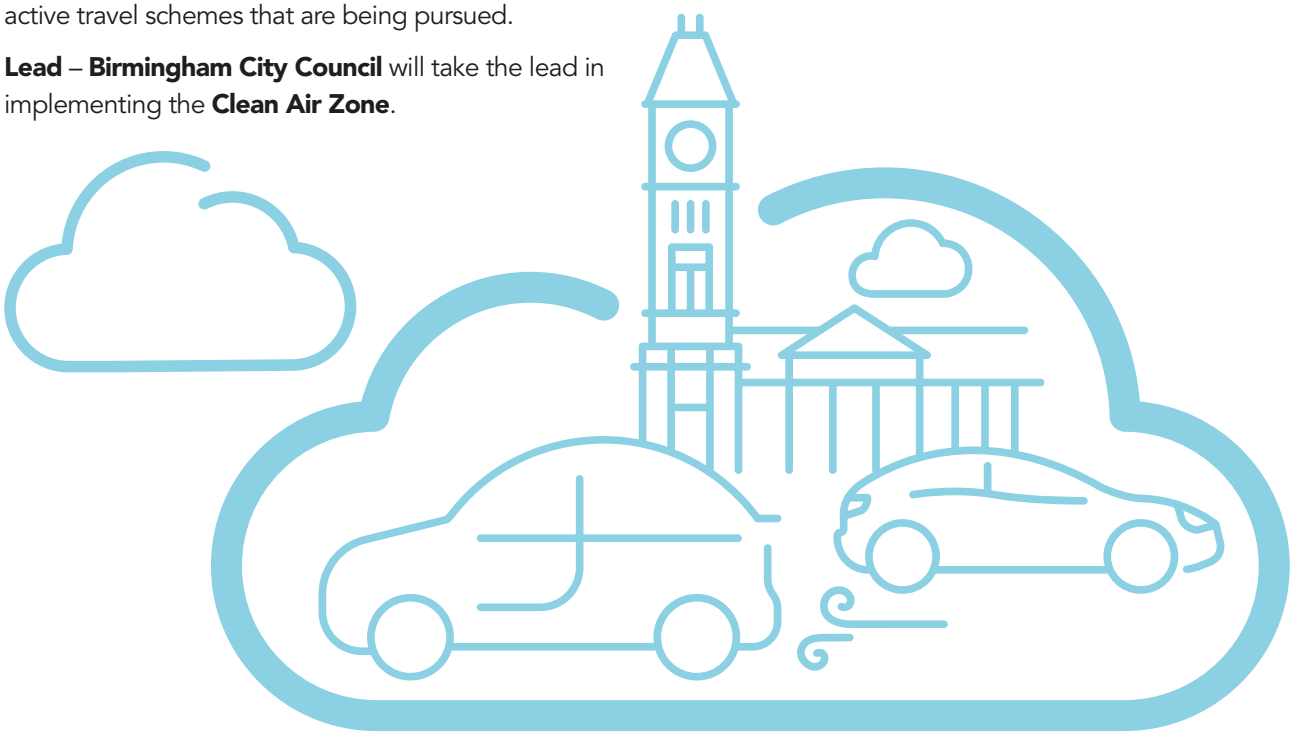
Support – It is understood the **Clean Air Zone** will have a financial impact on citizens and businesses. To help with the transition there are several incentives including financial support that will smooth the transition to a low polluting fleet of vehicles. Revenue generated by the CAZ will be reinvested into the other pledges in this Strategy, and reported upon via **brumbreathes.co.uk**

Communicate – every step of the way the **Clean Air Zone** (CAZ) has been discussed through public consultations and supporting evidence[21].

Regular updates will be provided through the **brumbreathes.co.uk** website, social media and signage.

HOW CAN YOU SUPPORT THIS PLEDGE?

We would like to see businesses and citizens consider their future journeys in the light of whether they are necessary or whether they can be undertaken by a different route or mode. The CAZ is not only about charging the most polluting vehicles, it is about supporting a change to a less polluting world. You may qualify for support, please see **brumbreathes.co.uk**



20 https://maps.birmingham.gov.uk/webapps/brum/mybrummap/ [Layers – Transportation]
21 https://www.birmingham.gov.uk/info/20076/pollution/1763/a_clean_air_zone_for_birmingham/5

PLEDGE SIX
MEASURING PROGRESS

Without measuring the air pollution, we will have no way of telling if things are improving. Fortunately, for many years the City Council has collected a wealth of air quality data. Continued effort will be made to maintain and expand our monitoring network implementing new technologies as they become available.

Data will be shared in a format that is accessible, interactive and understandable. But air quality data is only one aspect, the growth of electric charging points, the use of public transport, the implementation of cycle routes are all indicators that can be quantified to demonstrate how our city is changing for the better. A number of useful links are provided at the end of this strategy, including:

- **birminghamairquality.co.uk**: Birmingham City Councils Air Quality Data
- **wm-air.org.uk**: WM Air

Priorities – Without a solid understanding of the problem it is impossible to determine if our actions are working for the betterment of air quality. This will be the primary benchmark to show an improvement.

Lead – **Birmingham City Council** will continue to maintain, expand and adapt the monitoring network to ensure it stays relevant to the ever-changing cityscape.

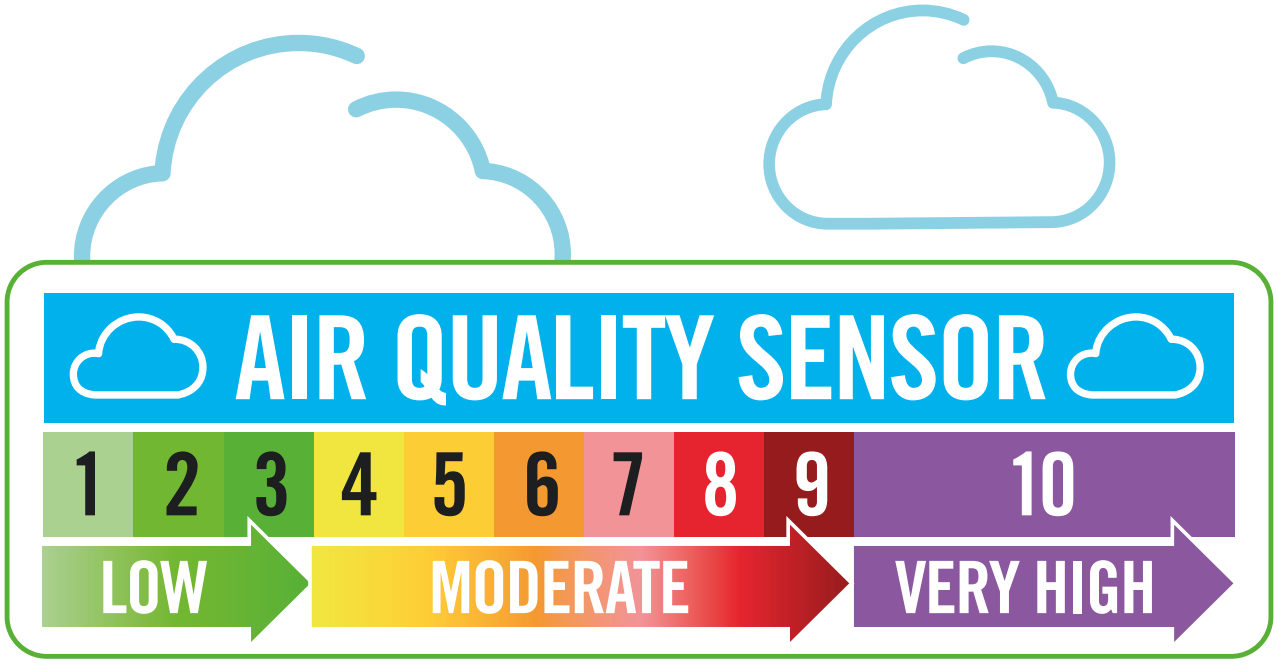
Supported by others who have an interest in monitoring air quality, such as **University of Birmingham**. We will also work through citizen science projects to encourage a wider understanding of how air pollution is monitored and what it means.

Communicating clear, reliable, easily accessible, understandable data is key to this pledge and we will support and encourage the sharing of consistent reliable data.

Collaboration will be key to ensure that duplication of efforts and misinformation is avoided. This can only be achieved in collaboration with multiple stakeholders to ensure an accurate picture of our air quality is provided that can be understood by all.

HOW CAN YOU SUPPORT THIS PLEDGE?

By being aware of the resources available and seeing the progress for yourself. Only by looking back on where we were to where we are going can we demonstrate the change for better.



USEFUL LINKS

- **Clean Air Zone**
  www.BrumBreathes.co.uk
- **Birmingham City Council Air Quality Data**
  www.BirminghamAirQuality.co.uk / www.BirminghamAirPollution.co.uk
- **Birmingham City Council Air Quality Pages**
  www.birmingham.gov.uk/info/20076/pollution/1276/air_pollution
- T**ransport for West Midlands Insight Team**
  www.tfwm.org.uk/strategy/data-insight
- **WM-Air**
  wm-air.org.uk
- **Birmingham Urban Observatory**
  www.birminghamurbanobservatory.com
- **Rail Safety and Standards Board** (Railway network air quality)
  www.rssb.co.uk/en/research-and-technology/sustainability/Air-quality
- **Highways England**
  www.highwaysengland.co.uk/our-work/air-quality
- **Sustrans**
  www.sustrans.org.uk

Birmingham City Council

#BrumBreathes

Clean Air Zone

Air Quality and Road Traffic Update Report

Published October 2023

KEY FINDINGS

Birmingham City Council launched a Class D[1] Clean Air Zone on the 1st June 2021. This report covers the period from launch to June 2023 and is an update to the interim report published in March 2022. It should be noted that the interim report made use of provisional data, which has since been ratified and is reflected in this latest progress report.

- In 2022 the levels of nitrogen dioxide in the Clean Air Zone reduced by an average of 17% when compared to 2019 (pre Covid) results. When compared to the 2016 baseline there has been a reduction of 37%. It should be noted that the number of monitoring locations has significantly increased since 2016.
- Non-compliance vehicle rates at the launch of the Clean Air Zone in June 2021 were recorded at 15.2%, which has improved to 6.0% as of June 2023, an improvement of 9.2 percentage points, a change of 60.5%.
- Compliance for passenger cars has improved from 85.3% in June 2021 to 94.2% in June 2023.
- Compliance for Light Goods Vehicles (LGV) has improved from 68.6% in June 2021 to 85.7% in June 2023.
- Compliance for Heavy Goods Vehicles (HGV) has improved from 92.2% in June 2021 to 97.8% in June 2023.
- Bus and Coach compliance rates have remained consistently high from 99.3% in June 2021 to 99.4% in June 2023.
- The overall trend in the number of daily average unique vehicles entering the zone appears to indicate comparable trends in 2021, 2022 and 2023 which fluctuate between a low of 88,609 and a high of 109,438 vehicles. Between June 2021 and June 2022 an average of 98,112 daily unique vehicles were recorded. Between June 2022 and June 2023 this stood at 102,392.

[1] A Class D Clean Air Zone allows for charging of buses, taxis, PHVs, HGVs, LGVs and private vehicles which do not comply with the euro class standard. For more information on Clean Air Zones please see https://www.gov.uk/government/publications/air-quality-clean-air-zone-framework-for-england and https://www.gov.uk/clean-air-zones to check if your vehicle is compliant.

Compliance data for the Clean Air Zone can be found at Clean Air Zone data | Brum Breathes

- Based upon Unique Vehicle Traffic Data the vehicle fleet is dominated by cars comprising approximately 80% of the total, Light Goods Vehicles (LGVs) 8.3%, HGVs 1.1%, with buses/coaches making less than 0.6%. The remainder is made up of exempt and unrecognised / undetermined vehicles.

1.0 – SUMMARY

There has been a reduction in the levels of nitrogen dioxide (NO_2) within the Clean Air Zone (on average 17%) when comparing diffusion tube data for the baseline year of 2019 to 2022.

Within the interim Clean Air Zone report published in March 2022 a provisional bias adjustment factor of 0.81 was used for the 2021 data set. This was derived from the factor used for 2020. This has now been adjusted to 0.84 following release of the national factor which was not available at the time.

This has resulted in a slight adjustment to the results reported in the interim Clean Air Zone report with the updated values noted in this report. This report also corrects for any omissions made in the interim report published in March 2022. This includes an update to tables 1-4 of the interim report due to an error in processing 2016 diffusion tube results, this in turn impacted upon table 5 of the interim report which summarised the percentage change in the Clean Air Zone, Ring Road and Wider City.

Since the launch of the Clean Air Zone in June 2021 there has been a steady improvement in vehicle compliance rates in all vehicle categories that are subject to the charge. The rate of overall vehicle compliance improvement is approximately 0.4% per month.

Assuming this trend is maintained it is likely that the modelled rates of vehicle compliance, as per the full business case agreed in March 2019, may be met in 2024, however this is a hypothetical assumption and not a prediction.

It is also important to note that while improvements to the rate of compliance in the vehicle fleet provide an indication that the desired change is taking place the primary objective of the scheme is to reduce the levels of nitrogen dioxide to within the legal limit in the shortest possible time. Therefore, improvements in the rates of compliance for each of the vehicle categories, and overall, should be considered as lead indicators of change rather than an end in themselves. And improvements to air quality are critical to the delivery of the predicted health benefits.

Furthermore, achieving compliance with the legal limits for nitrogen dioxide is critical to being able to demonstrate success to the Government's Joint Air Quality Unit (JAQU) against the plan approved by the Government in 2019.

Prior to the launch of the Clean Air Zone there was a potential risk that its introduction would result in a 'displacement' of vehicles from within the city centre to the ring road. Based on the vehicle numbers observed, this risk does not appear to have been realised.

Similarly, the Clean Air Zone does not appear to have caused a reduction in the overall volume of vehicles entering the Zone albeit that the composition of that fleet has changed with fewer 'non-compliant' vehicles, for all vehicle categories, entering the Zone. On that basis the scheme appears to be having the desired effect of discouraging non-compliant vehicles from entering the zone.

Of the exceedances of nitrogen dioxide recorded in 2022 within and around the Clean Air Zone, these can be grouped into three distinct areas –

- **Moor Street** (and surrounding area) – Exceedances have been recorded within the area of Moor Street, Carrs Lane, Masshouse Lane and Priory Queensway. The majority of these roads are dominated by bus traffic. For example, Carrs Lane is designated a bus/taxi/access only and recorded a level of 47.3 µg/m^3 in 2022 (legal limit 40µg/m^3). Table 1 provides a summary of the diffusion tube results in the Moor Street Area which has demonstrated an improvement since 2016.
  A detailed ANPR survey of the location has been undertaken in early 2023 and is being used to develop an options appraisal in line with the principles of the Council's Clean Air Strategy.

Year	BHM40	BHM41	BHM42	BHM43	BHM44	BHM45	BHM46	BHM50	BHM53	BHM58	BHM59	BHM103	BHM109
2016	55.0	58.0	46.0	47.0	48.0	47.0	67.0	60.0	55.0	-	-	-	-
2019	47.4	50.4	39.8	39.5	39.0	35.5	50.0	44.7	50.0	36.6	37.2	-	-
2020	43.8	41.8	32.3	43.5	30.3	39.4	42.3	41.1	46.6	28.8	30.0	-	-
2021	50.0	50.9	32.8	32.7	32.4	40.7	50.3	41.1	51.2	34.4	34.0	55.1	-
2022	50.0	35.0	32.3	31.0	30.2	32.4	47.3	36.8	44.2	31.0	34.8	47.3	49.3

Table 1 Moor Street Area diffusion tube results expressed in µg/m^3.

- **A38 (St Chads)** - Exceedances have been recorded in 2021 and 2022 within the complex road layout of the A38 / A4400. This comprises of eight lanes of traffic that include slip roads, tunnels and changes in gradient. The A38 transects the city northeast to southwest with high traffic volumes. Table 2 provides a summary of the nitrogen dioxide diffusion tube results in the A38(St Chads) area, for which there has been an improvement since 2016. To understand the exceedances in this area a detailed ANPR survey has been undertaken in early 2023 which will inform an options appraisal in line with the principles of the Council's Clean Air Strategy.

Year	BHM16	BHM28	BHM86	BHM87	BHM88	BHM107	St Chads AQ Station
2016	49.0	60.0	-	-	-	-	-
2019	31.0	44.7	33.7	59.6	58.1	-	51.0
2020	23.7	38.5	28.7	46.5	50.6	-	37.1
2021	22.7	39.3	33.2	48.6	50.2	47.3	40.3
2022	24.5	35.6	32.5	46.2	48.4	43.9	43.2

Table 2 A38 (St Chads) nitrogen dioxide diffusion tube results and St Chads air quality station results expressed in µg/m³

- **Ring Road** – Three exceedances have been recorded in 2021 and 2022 at different locations on the ring road as shown in Table 3 below. The Middleway is not covered by the Clean Air Zone however a detailed ANPR survey has been commissioned to better understand the fleet composition and Euro Class of the vehicles in these locations. The data from these surveys will inform an options appraisal in line with the principles of the Council's Clean Air Strategy.

Year	BHM21	BHM25	BHM27	BHM66	BHM67	BHM68	BHM69	BHM70	BHM71	BHM72	BHM73	BHM74	BHM75	BHM76	BHM77
2016	62.0	-	48.0	-	-	-	-	-	-	-	-	-	-	-	-
2019	48.5	38.0	34.7	33.2	31.8	32.4	37.6	25.4	25.4	22.8	-	52.6	34.0	24.8	30.6
2020	37.4	36.0	30.7	29.2	24.9	29.6	27.5	-	21.2	17.5	-	43.0	29.2	20.5	26.4
2021	39.8	37.9	32.0	30.4	28.2	33.8	30.7	-	22.3	19.3	30.3	45.2	32.1	22.9	29.6
2022	38.3	34.2	30.1	30.2	27.1	30.8	34.1	-	21.6	18.7	31.8	46.0	30.9	21.2	26.5

	BHM78	BHM79	BHM80	BHM81	BHM82	BHM83	BHM84	BHM85	BHM93	BHM102	BHM108
2016	-	-	-	-	-	-	-	-	-	-	-
2019	31.7	27.7	35.5	41.3	28.6	61.0	38.3	48.0	40.8	-	-
2020	25.3	22.0	25.9	23.7	35.1	50.6	31.9	40.6	44.5	-	-
2021	28.6	26.0	30.0	24.4	32.9	52.0	36.7	46.0	36.4	-	-
2022	26.4	24.5	30.1	-	21.3	55.5	-	38.7	36.7	55.8	30.1

Table 3 Ring Road nitrogen dioxide diffusion tube results expressed in µg/m³.

2.0 – BACKGROUND

What is a clean air zone?

A Clean Air Zone is an area where targeted action is taken to improve air quality, by discouraging the most polluting vehicles from entering the zone.

The Government has stipulated by a Ministerial Direction that Birmingham must improve the level of nitrogen dioxide (NO_2) in the shortest possible time. As road traffic is the greatest source of nitrogen dioxide a Clean Air Zone has been introduced to reduce the level of nitrogen dioxide to the legal standard of 40µg/m^3 annual average in the shortest possible time. The area (as shown in Figure 1) to be encompassed by the scheme has been determined through an extensive technical exercise and public consultation.

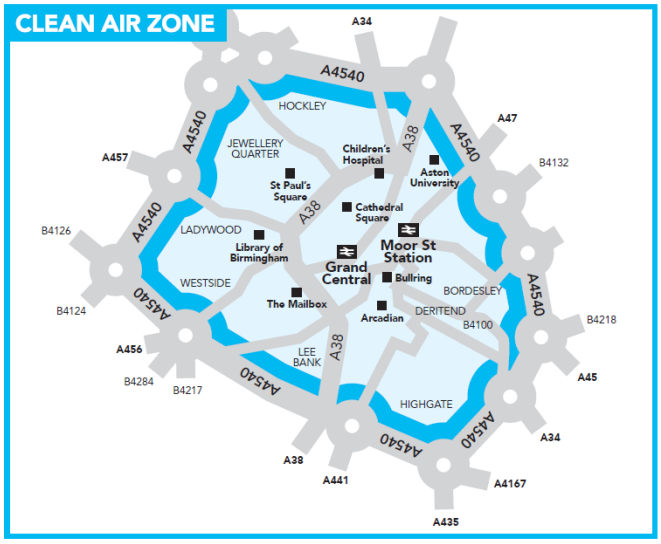


Figure 1 Map of the Birmingham Class D Clean Air Zone.

Birmingham's Class D Clean Air Zone launched on 1st June 2021 and operates in the central Birmingham area within the A4540 Middleway, but not on the ring road itself. The Clean Air Zone operates 24-hours a day, 365 days of the year. Vehicles that do not meet the emissions standards below are subject to a daily fee:

- Euro 4 or better for petrol cars and vans
- Euro 6 or better for diesel cars and vans
- Euro VI or better for lorries, buses and coaches

The fee that applies to the different vehicle types is:

- Cars and light goods vehicles (vans) - £8 per day
- Coaches and HGVs - £50 per day

Further information on the Clean Air Zone can be found at: BrumBreathes Website

The Full Business Case for the Clean Air Zone can be found at: Clean Air Zone full business case

The air quality and traffic modelling reports for the Clean Air Zone can be found at: Clean Air Zone Air Quality and Road Traffic Model

The impact of the Clean Air Zone will be assessed using a range of different metrics including:

- Air quality monitoring data (nitrogen dioxide)
- Number of vehicles and compliance rates
- Traffic flow data

Definitions:

Vehicle compliance - refers to the number of vehicles that comply with the emission standards of the Clean Air Zone as described above.

Non-compliant vehicles - are vehicles that do not meet the emission standards as described above. However, a number of exceptions were put in place at the launch of the Clean Air Zone to lessen the financial burden on residents / workers within the Zone. Commercial and worker exemptions came to an end in May 2022. The remaining exemptions for residents in the Zone came to an end in May 2023.

Unique Vehicles – every vehicle that enters the zone is identified by a network of cameras. Once a vehicle has been identified it is classed a unique vehicle irrespective of whether it is compliant or not. Once identified the vehicle can travel in and out of the zone for that particular day (midnight to midnight). Much of the data reported in here relies upon unique vehicle data rather than the volume of journeys.

Covid19

The Clean Air Zone was launched following the third national 'lockdown' due to the Covid pandemic in early 2021. Data leading up to the launch of the scheme was heavily influenced by local and national lockdowns. When the zone launched in June 2021 no restrictions were in place. However, on the 8th December 2021 the Government implemented its 'plan B', as part of its response to the spread of the Omicron variant. The implementation of 'plan B' included encouraging people to work from home once again but no business was required to close. Since March 2021 all Covid restrictions have been removed.

3.0 – HOW HAS AIR QUALITY CHANGED?

The purpose of the Clean Air Zone is to reduce the levels of the air pollutant nitrogen dioxide (NO_2) and, as per the ministerial directions placed on the Council in 2017 and 2019, to do so in the shortest possible time.

Nitrogen Dioxide is predominantly generated by the combustion of fossil fuels and in urban areas the primary source of this air pollutant is road traffic. Therefore, reducing the number of the most polluting vehicles entering the zone is expected to reduce the level of nitrogen dioxide. in the shortest possible time.

Nitrogen dioxide air pollution concentrations are also affected by many different factors including the weather and regional contributions outside of Birmingham, as well as the impact of other highway improvement schemes.

It should also be noted that there have been a number of additional highway schemes that have progressed since the introduction of the Clean Air Zone. These could have also had an influence on traffic flows and air quality.

Further details can be found at Transport Measures

Air Quality Monitoring

Nitrogen Dioxide is monitored across the city using:

- **Diffusion tubes** are small plastic test tubes that are installed on structures such as lampposts. Birmingham City Council manages a network of over 100 diffusion tubes that are changed every month and provide a monthly average of nitrogen dioxide. The monthly average is then averaged over the year to provide an annual average. Following this a correction factor known as a bias adjustment is then applied to the result in line with DEFRA guidance[2] to provide a final annual average.
- **Automatic analysers** (or Chemiluminescent analysers) provide hourly averages of nitrogen dioxide readings in real-time. Birmingham City Council manages a network of 15 analysers that have been strategically placed across the city.
- **Indicative Air Quality Sensors** bridge the gap between diffusion tubes and automatic analysers. These can be deployed on lampposts and provide real time results. However, they currently do not meet the accreditation standard set out by DEFRA for nitrogen dioxide, and as such they cannot be relied upon for formal reporting purposes. Accordingly, they have not been included in this report.

[2] https://laqm.defra.gov.uk/documents/LAQM-TG16-April-21-v1.pdf

All of the air quality data from the Council-managed network is available online via Birmingham Air Quality which provides access to the diffusion tube data and live feeds from the automatic stations. A snapshot of the website is provided in Figure 2.

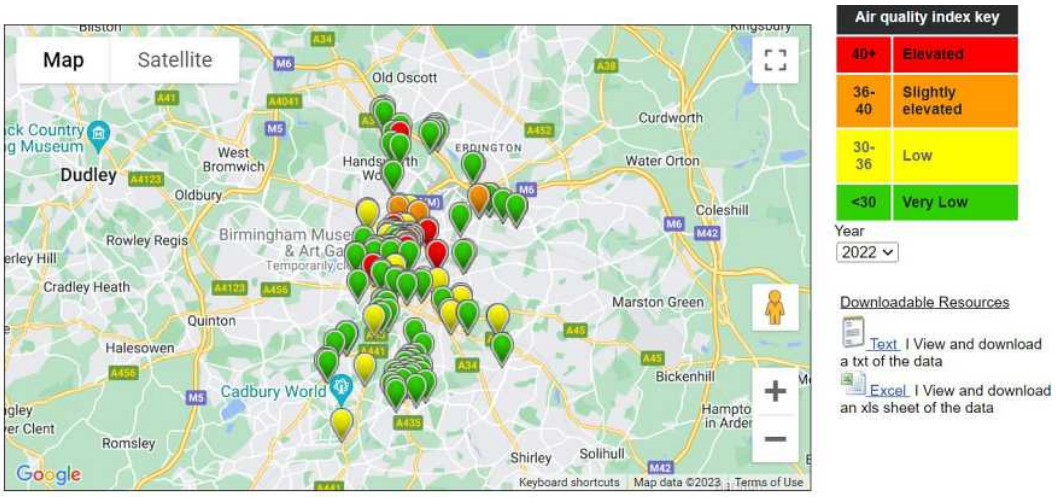


Figure 2 Snapshot of the www.Birminghamairquality.co.uk website.

UPDATE OF THE INTERIM CLEAN AIR ZONE REPORT

The diffusion tube results comprise twelve months of raw data to which a correction factor needs to be applied, this process being known as bias adjustment. The bias adjustment factor is normally provided in April of each year. Within the Interim Clean Air Zone report a provisional bias adjustment factor of 0.81 was used for the 2021 data set. This was due to the national factor not being available at the time the report was produced. The bias adjustment factor has now been adjusted to 0.84 using the national factor. The bias adjustment factor for 2022 has been confirmed as 0.83. All data used in this report makes use of the confirmed national correction factor for that year.

This report also corrects for any errors made in the interim report published in March 2022. In particular table 1-4 incorrectly processed the 2016 diffusion tube results, this in turn impacted upon table 5 of the interim report which summarised the percentage change in the Clean Air Zone, Ring Road and Wider City.

The following tables provide the annual average results for 2016, 2019, 2020, 2021 and 2022. Using 2016 as a baseline (this was the year used for the original modelling in the Clean Air Zone Full Business Case) it is evident that there has been a marked improvement in all locations across the city. However, this is based on a relatively small number of monitoring sites for 2016.

On that basis 2019 has been used as a more consistent baseline as there is less variation in monitoring locations. 2019 is also used as a baseline, rather than the immediate year before the launch of the scheme (2020) due to the impacts of the COVID-19 restrictions on travel behaviours and a significant reduction in the levels of nitrogen dioxide.

Unlike the Clean Air Zone Interim Report, the following tables provide all diffusion tube data for 2016, 2019, 2020, 2021 and 2022.

Table 4 provides the diffusion tube results for monitoring locations within the Clean Air Zone. Table 5 provides the diffusion tube results for monitoring locations on the Ring Road (A4400). Table 6 provides the diffusion tube results for monitoring locations in the wider city.

Within the tables, data that is shaded in orange is used to identify concentrations above the legal limit for the tube and year in question. Data that is shaded yellow shows an upward trend in concentrations across the years specified. An upwards trend does not always indicate concentrations above the legal limit.

Also presented are Figures 3, 4 and 5, which show the locations of tubes presenting exceedances during 2022. These have been geographically defined into three distinct areas; Moor Street, the A38 (St Chads) and the Ring Road.

Clean Air Zone	2016	2019	2020	2021	2022	2016 to 2022	2019 to 2020	2019 to 2021	2019 to 2022
BHM7	49.0	31.0	23.7	22.7	24.5	-50%	-24%	-27%	-21%
BHM8	48.0	34.8	22.2	20.2	20.6	-57%	-36%	-42%	-41%
BHM16	54.0	40.8	34.7	32.7	31.5	-42%	-15%	-20%	-23%
BHM22	33.0	-	-	-	-	-	-	-	-
BHM23	-	39.6	34.4	37.0	30.7	-	-13%	-7%	-22%
BHM24	49.0	37.8	33.0	31.8	31.0	-37%	-13%	-16%	-18%
BHM26	25.0	22.9	16.9	17.9	17.6	-30%	-26%	-22%	-23%
BHM28	60.0	44.7	38.5	39.3	35.6	-41%	-14%	-12%	-20%
BHM29	55.0	43.2	-	-	-	-	-	-	-
BHM30	-	34.4	26.7	-	-	-	-22%	-	-
BHM31	52.0	35.1	28.3	31.1	30.9	-41%	-19%	-11%	-12%
BHM33	52.0	36.1	26.9	29.2	29.3	-44%	-25%	-19%	-19%
BHM34	32.0	26.3	23.2	23.0	22.2	-31%	-12%	-12%	-16%
BHM35	36.0	28.3	24.2	26.1	24.0	-33%	-14%	-8%	-15%
BHM36	47.0	31.9	28.6	29.0	22.4	-52%	-10%	-9%	-30%
BHM39	47.0	36.8	30.5	33.6	-	-	-17%	-9%	-
BHM40	55.0	47.4	43.8	50.0	50.0	-9%	-7%	+6%	+6%
BHM41	58.0	50.4	41.8	50.9	35.0	-40%	-17%	+1%	-31%
BHM42	46.0	39.8	32.3	32.8	32.3	-30%	-19%	-17%	-19%
BHM43	47.0	39.5	32.5	32.7	31.0	-34%	-18%	-17%	-22%
BHM44	48.0	39.0	30.3	32.4	30.2	-37%	-22%	-17%	-23%
BHM45	47.0	35.5	39.4	40.7	32.4	-31%	+11%	+15%	-9%
BHM46	67.0	50.0	42.3	50.3	47.3	-29%	-15%	+1%	-5%
BHM48	50.0	-	-	-	-	-	-	-	-
BHM49	47.0	-	-	-	-	-	-	-	-
BHM50	60.0	44.7	41.1	41.1	36.8	-39%	-8%	-8%	-18%
BHM51	-	35.4	27.6	31.2	30.7	-	-22%	-12%	-13%
BHM52	62.0	-	-	-	-	-	-	-	-
BHM53	55.0	50.0	46.6	51.5	44.2	-20%	-7%	+3%	-12%
BHM54	59.0	-	-	-	-	-	-	-	-
BHM55	65.0	52.0	51.9	51.8	-	-	-0.2%	-0.5%	-
BHM56	48.0	33.3	27.1	28.9	28.9	-40%	-19%	-13%	-13%
BHM58	-	36.6	28.8	34.4	31.0	-	-21%	-6%	-15%
BHM59	-	37.2	30.0	34.0	34.8	-	-19%	-9%	-6%
BHM60	46.0	-	-	-	-	-	-	-	-
BHM61	38.0	29.7	25.8	23.5	23.0	-39%	-13%	-21%	-23%
BHM62	43.0	33.4	26.4	27.2	27.5	-36%	-21%	-19%	-18%
BHM63	36.0	28.4	25.0	25.5	24.0	-33%	-12%	-10%	-16%
BHM64	51.0	33.6	32.9	34.8	-	-	-2%	+3%	-
BHM65	56.0	37.0	29.7	31.9	28.8	-49%	-20%	-14%	-22%

Clean Air Zone	2016	2019	2020	2021	2022	2016 to 2022	2019 to 2020	2019 to 2021	2019 to 2022
BHM86	-	33.7	28.7	33.2	32.4	-	-15%	-2%	-4%
BHM87	-	59.6	46.5	48.6	46.2	-	-22%	-18%	-23%
BHM88	-	58.1	50.6	50.2	48.4	-	-13%	-14%	-17%
BHM89	-	39.4	32.7	33.2	32.6	-	-17%	-16%	-17%
BHM90	-	27.2	21.4	24.4	21.9	-	-21%	-10%	-19%
BHM92	-	40.2	31.4	35.4	34.9	-	-22%	-12%	-13%
BHM100	-	-	-	36.3	37.2	-	-	-	-
BHM103	-	-	-	55.1	47.3	-	-	-	-
BHM104	-	-	-	33.9	32.6	-	-	-	-
BHM106	-	-	-	30.8	28.3	-	-	-	-
BHM107	-	-	-	47.3	43.9	-	-	-	-
BHM109	-	-	-	-	49.3	-	-	-	-

Table 4 Nitrogen dioxide diffusion tube results 2016, 2019, 2020, 2021 and 2022 for the Clean Air Zone with the percentage change compared to 2016 and 2019 baseline.

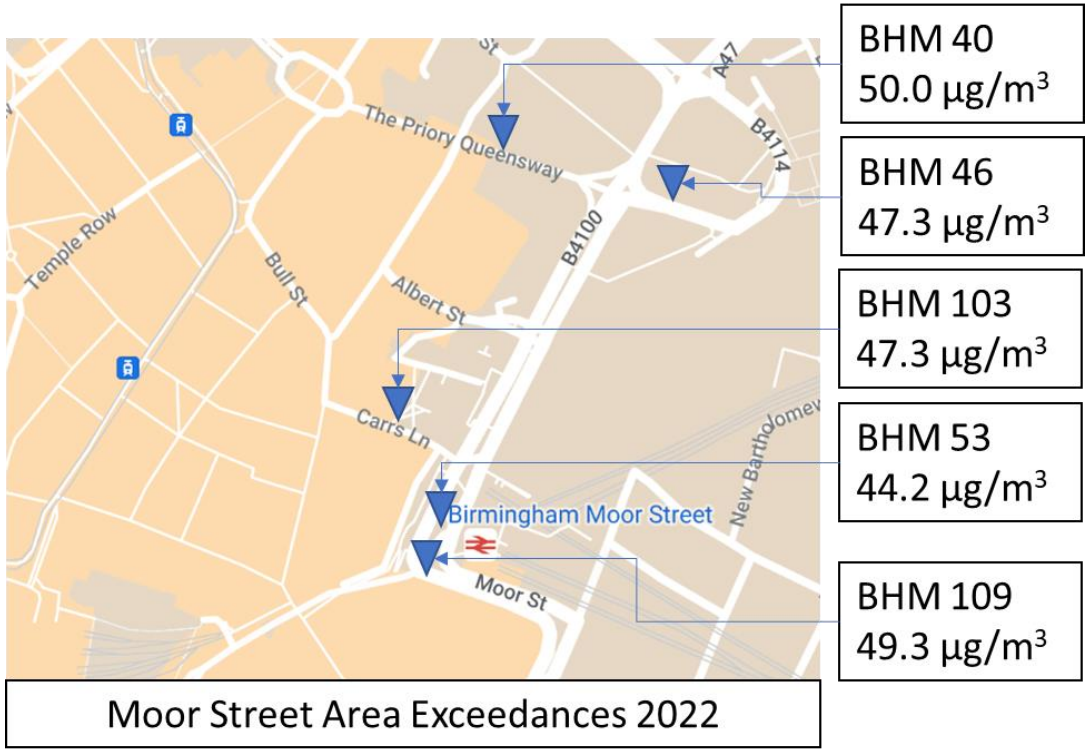


Figure 3 2022 Exceedances within the Clean Air Zone - Moor Street Area.

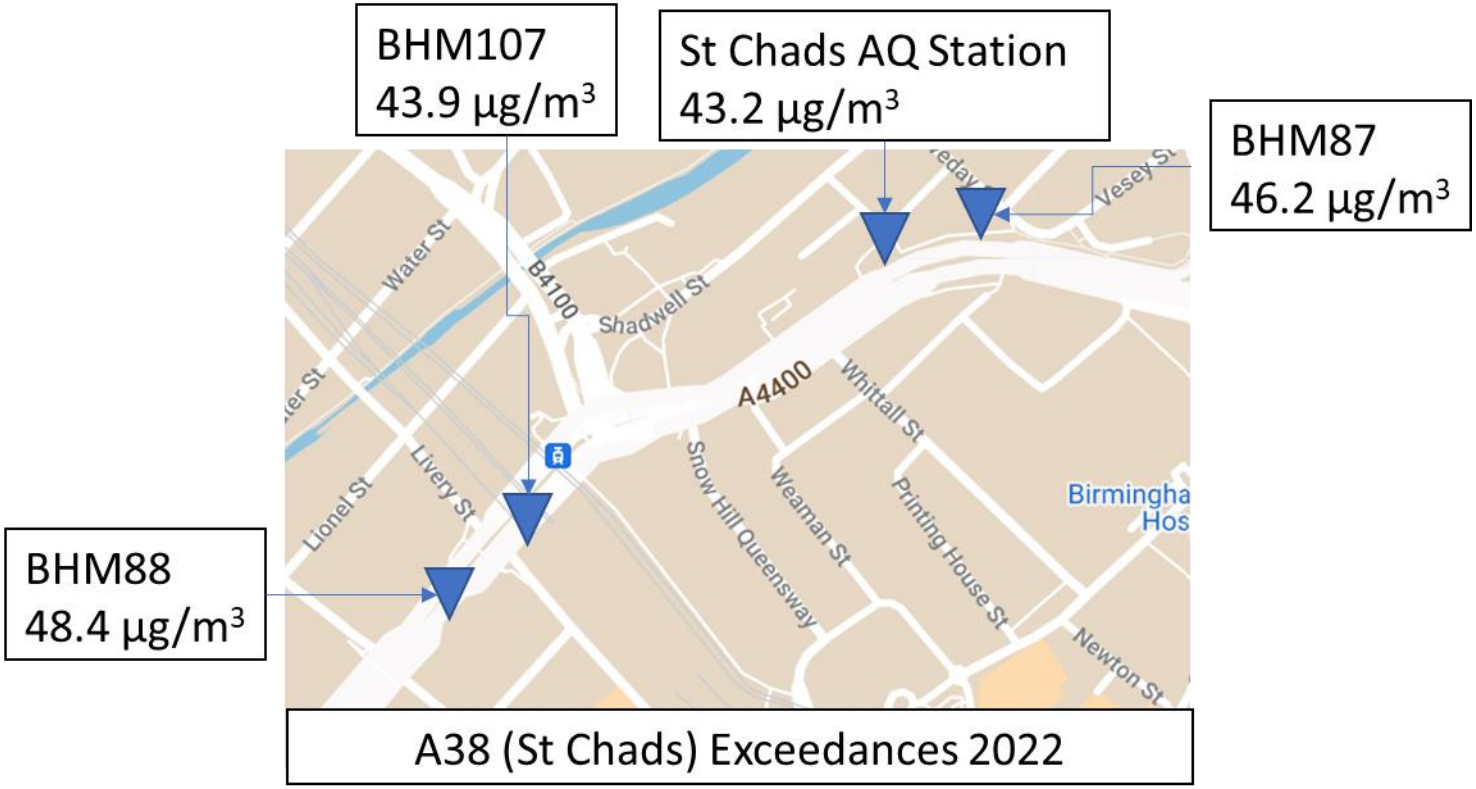


Figure 4 2022 Exceedances within the Clean Air Zone - A38 (St Chads).

Ring Road	2016	2019	2020	2021	2022	2016 to 2022	2019 to 2020	2019 to 2021	2019 to 2022
BHM21	62.0	48.5	37.4	39.8	38.3	-38%	-23%	-18%	-21%
BHM25	-	38.0	36.0	37.9	34.2	-	-5%	-0.2%	-10%
BHM27	48.0	34.7	30.7	32.0	30.1	-37%	-11%	-8%	-13%
BHM66	-	33.2	29.2	30.4	30.2	-	-12%	-8%	-9%
BHM67	-	31.8	24.9	28.2	27.1	-	-22%	-11%	-15%
BHM68	-	32.4	29.6	33.8	30.8	-	-9%	+4%	-5%
BHM69	-	37.6	27.5	30.7	34.1	-	-27%	-18%	-9%
BHM70	-	25.4	-	-	-	-	-	-	-
BHM71	-	25.4	21.2	22.3	21.6	-	-16%	-12%	-15%
BHM72	-	22.8	17.5	19.3	18.7	-	-23%	-16%	-18%
BHM73	-	-	-	30.3	31.8	-	-	-	-
BHM74	-	52.6	43.0	45.2	46.0	-	-18%	-14%	-13%
BHM75	-	34.0	29.2	32.1	30.9	-	-14%	-6%	-9%
BHM76	-	24.8	20.5	22.9	21.2	-	-17%	-8%	-15%
BHM77	-	30.6	26.4	29.6	26.5	-	-14%	-3%	-13%
BHM78	-	31.7	25.3	28.6	26.4	-	-20%	-10%	-17%
BHM79	-	27.7	22.0	26.0	24.5	-	-20%	-6%	-11%
BHM80	-	35.5	25.9	30.0	30.1	-	-27%	-16%	-15%
BHM81	-	41.3	23.7	24.4	-	-	-43%	-41%	-
BHM82	-	28.6	35.1	32.9	21.3	-	+23%	+15%	-25%
BHM83	-	61.0	50.6	52.0	55.5	-	-17%	-15%	-9%
BHM84	-	38.3	31.9	36.7	-	-	-17%	-4%	-
BHM85	-	48.0	40.6	46.0	38.7	-	-15%	-4%	-19%
BHM93	-	40.8	44.5	36.4	36.7	-	+9%	-11%	-10%
BHM102	-	-	-	-	55.8	-	-	-	-
BHM108	-	-	-	-	30.1	-	-	-	-

Table 5 Nitrogen dioxide diffusion tube results 2016, 2019, 2020, 2021 and 2022 for the ring road with the percentage change compared to 2016 and 2019 baseline.

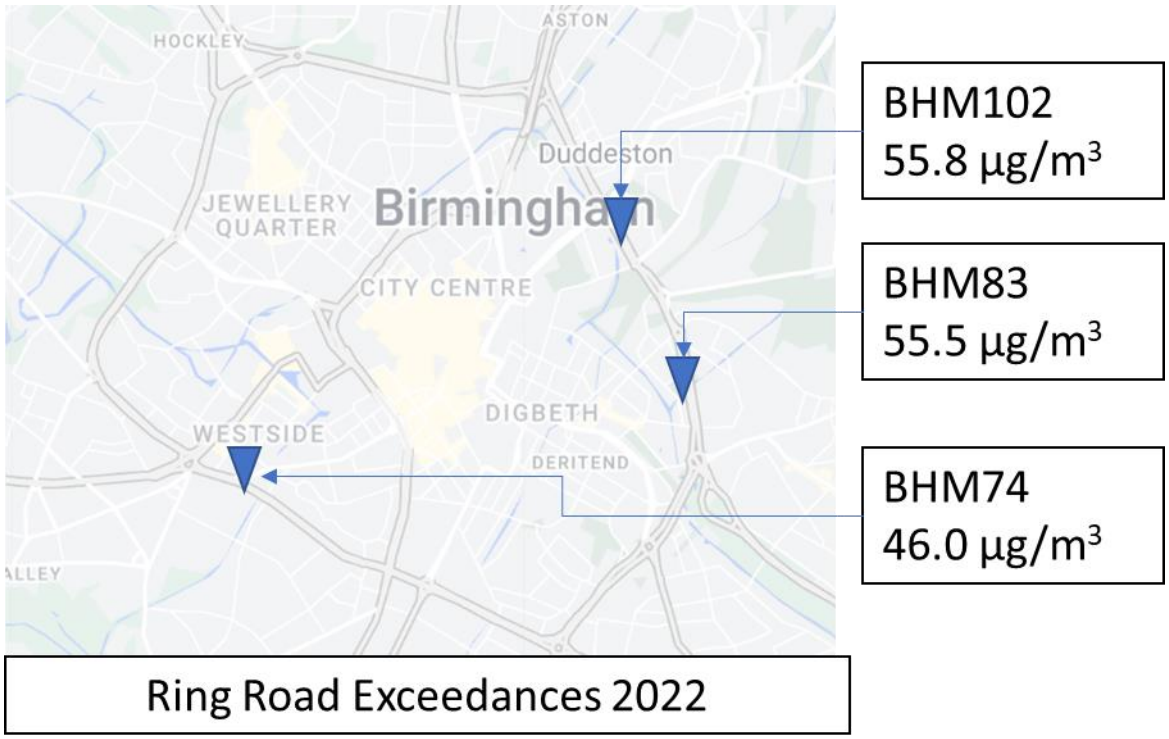


Figure 5 2022 Diffusion tube exceedances on the Ring Road.

Wider City	2016	2019	2020	2021	2022	2016 to 2022	2019 to 2020	2019 to 2021	2019 to 2022
BHM1	15.0	15.1	12.7	14.7	14.3	-5%	-16%	-3%	-6%
BHM2	17.0	14.4	12.0	12.9	11.8	-31%	-17%	-10%	-18%
BHM3	39.0	28.8	26.4	29.2	27.5	-29%	-8%	+1%	-4%
BHM4	41.0	32.8	27.8	27.9	27.8	-32%	-15%	-15%	-15%
BHM5	41.0	34.0	29.3	31.3	29.2	-29%	-14%	-8%	-14%
BHM6	56.0	39.2	34.5	34.7	33.7	-40%	-12%	-12%	-14%
BHM9	40.0	32.3	28.6	29.1	28.4	-29%	-11%	-10%	-12%
BHM10	37.0	31.9	26.1	27.3	26.7	-28%	-18%	-14%	-16%
BHM11	36.0	31.2	26.1	27.3	26.7	-26%	-16%	-12%	-14%
BHM12	37.0	31.5	26.1	27.3	26.7	-28%	-17%	-13%	-15%
BHM13	29.0	-	-	-	-	-	-	-	-
BHM14	30.0	-	-	-	-	-	-	-	-
BHM15	29.0	-	-	-	-	-	-	-	-
BHM17	48.0	34.0	30.4	30.5	29.1	-39%	-10%	-10%	-14%
BHM18	47.0	35.3	31.3	32.5	30.9	-34%	-11%	-8%	-13%
BHM19	-	38.2	32.9	34.3	32.7	-	-14%	-10%	-14%
BHM20	39.0	30.4	22.2	23.8	23.9	-39%	-27%	-22%	-21%
BHM37	-	26.3	20.4	23.7	21.0	-	-23%	-10%	-20%
BHM38	54.0	-	-	-	-	-	-	-	-
BHM57	-	28.1	20.5	22.1	21.3	-	-27%	-21%	-24%
BHM91	-	27.1	24.4	27.4	26.2	-	-10%	+1%	-3%
BHM99	-	40.0	32.1	36.1	32.4	-	-20%	-10%	-19%
LTNKH001S	-	-	-	14.5	13.5	-	-	-	-
LTNKH002S	-	-	-	14.4	13.7	-	-	-	-
LTNKH003S	-	-	-	16.5	16.0	-	-	-	-
LTNKH004S	-	-	-	12.6	12.2	-	-	-	
LTNKH005S	-	-	-	13.8	13.4	-	-	-	-
LTNKH006S	-	-	-	13.8	12.9	-	-	-	-
LTNKH007S	-	-	-	12.7	12.2	-	-	-	-
LTNKH008	-	-	-	13.3	12.5	-	-	-	-
LTNKH009	-	-	-	12.6	12.2	-	-	-	-
LTNKH010	-	-	-	19.7	18.3	-	-	-	-
LTNKH011	-	-	-	16.0	14.9	-	-	-	-
LTNKH012	-	-	-	27.2	25.8	-	-	-	-
LTNKH013	-	-	-	17.5	16.3	-	-	-	-
LTNKH014	-	-	-	15.0	15.0	-	-	-	-
LTNKH015	-	-	-	14.3	13.7	-	-	-	-
LTNKH016	-	-	-	16.3	17.4	-	-	-	-
LTNKH017	-	-	-	14.9	13.8	-	-	-	-

Wider City	2016	2019	2020	2021	2022	2016 to 2022	2019 to 2020	2019 to 2021	2019 to 2022
LTNKH018	-	-	-	26.1	25.1	-	-	-	-
LTNKH019	-	-	-	15.8	15.4	-	-	-	-
LTNKH020	-	-	-	16.5	16.4	-	-	-	-
LTNKH021	-	-	-	17.2	17.2	-	-	-	-
LTNKH022	-	-	-	16.1	16.2	-	-	-	-
LTNKH023	-	-	-	18.8	17.8	-	-	-	-
LTNKH024	-	-	-	18.5	18.5	-	-	-	-
LTNKH025	-	-	-	18.7	19.3	-	-	-	-
BHMPB1	-	-	25.6	28.0	25.0	-	-	-	-
BHMPB2	-	-	19.4	21.3	19.9	-	-	-	-
BHMPB3	-	-	26.0	32.6	34.9	-	-	-	-
BHMPB4	-	-	32.5	35.5	41.1	-	-	-	-
BHMPB6	-	-	30.8	32.1	29.7	-	-	-	-
BHMPB7	-	-	-	28.3	26.4	-	-	-	-
BHM200	-	-	-	-	34.2	-	-	-	-
BHM201	-	-	-	-	29.0	-	-	-	-
BHM202	-	-	-	-	30.2	-	-	-	-
BHM203	-	-	-	-	32.5	-	-	-	-
BHM204	-	-	-	-	29.7	-	-	-	-
BHM205	-	-	-	-	33.4	-	-	-	-
BHM206	-	-	-	-	25.2	-	-	-	-
BHM207	-	-	-	-	32.2	-	-	-	-
BHM208	-	-	-	-	20.2	-	-	-	-
BHM209	-	-	-	-	21.6	-	-	-	-
BHM210	-	-	-	-	30.5	-	-	-	-
BHM211	-	-	-	-	22.8	-	-	-	-
BHM212	-	-	-	-	25.5	-	-	-	-
BHM213	-	-	-	-	21.3	-	-	-	-
BHM214	-	-	-	-	21.8	-	-	-	-
BHM215	-	-	-	-	25.9	-	-	-	-
BHM216	-	-	-	-	28.2	-	-	-	-
BHM217	-	-	-	-	28.9	-	-	-	-
BHM218	-	-	-	-	27.4	-	-	-	-
BHM219	-	-	-	-	40.2	-	-	-	-
BHM220	-	-	-	-	34.8	-	-	-	-
BHM221	-	-	-	-	22.5	-	-	-	-
BHM222	-	-	-	-	26.5	-	-	-	-
BHM223	-	-	-	-	27.5	-	-	-	-
BHM224	-	-	-	-	28.9	-	-	-	-
BHM225	-	-	-	-	24.3	-	-	-	-

Wider City	2016	2019	2020	2021	2022	2016 to 2022	2019 to 2020	2019 to 2021	2019 to 2022
BHM226	-	-	-	-	37.9	-	-	-	-
BHM227	-	-	-	-	33.1	-	-	-	-
BHM228	-	-	-	-	29.6	-	-	-	-
BHM229	-	-	-	-	36.9	-	-	-	-
BHM230	-	-	-	-	27.9	-	-	-	-
BHM231	-	-	-	-	24.2	-	-	-	-
BHM232	-	-	-	-	26.3	-	-	-	-
BHM233	-	-	-	-	30.4	-	-	-	-
BHM234	-	-	-	-	31.1	-	-	-	-
BHM236	-	-	-	-	22.1	-	-	-	-
BHM240	-	-	-	-	30.7	-	-	-	-
BHM241	-	-	-	-	24.9	-	-	-	-
BHM242	-	-	-	-	26.1	-	-	-	-
BHM243	-	-	-	-	28.3	-	-	-	-

Table 6 Nitrogen dioxide diffusion tube results 2016, 2019, 2020, 2021 and 2022 for the wider city with the percentage change compared to 2016 and 2019 baseline.

Table 7 below presents the average percentage change in the levels of nitrogen dioxide in three broad areas, the Clean Air Zone, the Ring Road and the Wider City. When using 2016 as a baseline compared to 2022 there has been a 37% reduction in the levels of nitrogen dioxide within the Clean Air Zone, however this is based on a smaller set of monitoring locations. By comparison 2019 to 2020, 2019 to 2021 and 2019 to 2022 indicate an improvement in all three areas.

It should be noted that the Interim Report suggested a provisional improvement of 13% between 2019 to 2021 within the Clean Air Zone. Now that the data has been ratified and the confirmed national bias adjustment correction factor for 2021 has been applied the average reduction in nitrogen dioxide is 11%. Between 2019 to 2022 for the Clean Air Zone a 17% reduction in nitrogen dioxide has been recorded based on ratified results. It should be noted that between 2019 and 2022 the greatest change in nitrogen dioxide has been recorded in the Clean Air Zone compared to the ring road and the wider city.

	2016 to 2022	2019 to 2020	2019 to 2021	2019 to 2022
Clean Air Zone	-37%	-16%	-11%	-17%
Ring Road	-38%	-15%	-10%	-14%
Wider City	-30%	-16%	-10%	-14%

Table 7 Average reduction in Nitrogen Dioxide for the Clean Air Zone, Ring Road and Wider City.

AIR QUALITY AUTOMATIC ANALYSERS

From the launch of the Clean Air Zone in June to December 2021 five automatic air quality units were operational within the zone. These include Lower Severn Street, Moor Street, St Chads, Colmore Row and Ladywood. A further unit, run by third parties on behalf of Defra, is located on the ring road (A4540). Four Council run stations are also operating in the wider city. Data from the stations is available at Birmingham Air Quality. In November 2021 a further six additional stations were installed within the zone and on the ring road, specifically to help inform the impact from the CAZ.

Table 8 provides the nitrogen dioxide annual averages of the stations within the zone and the ring road and the wider city. In 2020 there were no recorded exceedances primarily due to the impact of Covid. In 2021 and 2022 one station at St Chads has recorded a level above the legal limit (nitrogen dioxide 40µg/m^3), although it should be noted this was returning a higher concentration in the pre-Covid years and before the launch of the CAZ than presently.

Station ID			Station Name	2019	2020	2021	2022
BCA2	CAZ	Kerbside	St Chads	51.0	37.1	40.3	43.2
BCA1	CAZ	Roadside	Colmore Row	35.0	31.9	26.7	27.6
BAF1	CAZ	Background	Ladywood	-	15.0	16.0	17.0
BCA3	CAZ	Roadside	Lower Severn St	43.0	23.7	26.2	29.2
BCA7	CAZ	Roadside	Moor Street	-	-	32.0	33.4
BCA11	CAZ	Roadside	Bristol Street (A38)	-	-	34.2	28.6
BAU2	Ring Road	Roadside	A4540	32.0	29.0	32.0	32.0
BCA8	Ring Road	Roadside	New John Street West	-	-	26.2	25.2
BCA9	Ring Road	Roadside	Dartmouth Middleway	-	-	34.3	32.9
BCA10	Ring Road	Roadside	Camp Hill	-	-	28.7	33.4
BCA12	Ring Road	Roadside	Lee Bank Middleway	-	-	37.2	29.6
BCA13	Ring Road	Roadside	Ladywood Middleway	-	-	23.9	18.9
BCA5	Wider City	Roadside	Selly Oak	28.0	19.0	21.3	22.1
BAU1	Wider City	Background	Acocks Green	19.0	14.0	14.0	-
BCA6	Wider City	Roadside	Stratford Road	36.0	18.3	24.0	23.1
BCA4	Wider City	Background	New Hall	19.0	11.3	12.9	16.8

Table 8 Nitrogen dioxide annual averages from the automatic air quality stations within the Clean Air Zone, ring road and wider city expressed in units of µg/m^3.

4.0 – HOW HAS FLEET COMPOSITION CHANGED?

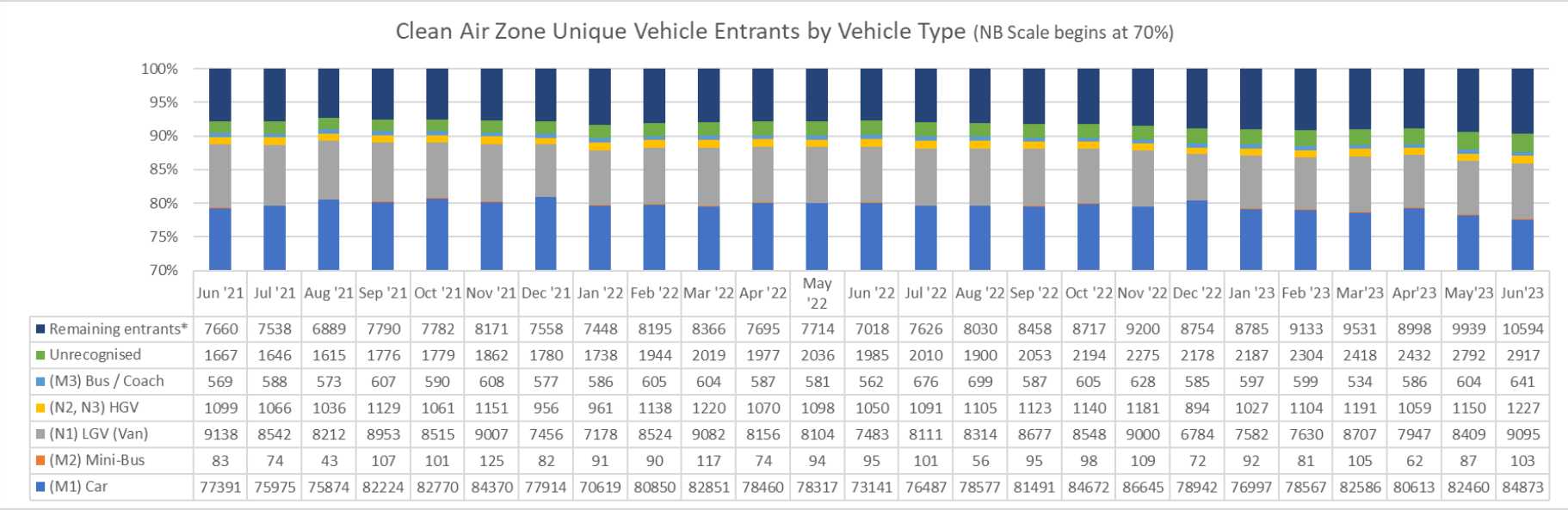
The fleet mix within the Clean Air Zone indicates that cars dominate the fleet composition, which account on average 79.6% of all unique vehicles entering the zone.

The next largest group of vehicles within the zone are Light Goods Vehicles (LGV), which account for approximately 8.3% of the fleet, Heavy Goods Vehicles (HGVs) comprise of approximately 1.1% and bus/coach comprise of 0.6% as shown in Tables 9 and 10.

Fleet composition for HGVs and Buses / Coaches is stable at 1.1% and 0.6% respectively, Whereas the LGV fleet appears to have decreased from 8.6% down to 8.0%. The proportion of private cars has also decreased from 80.2% down to 78.6%. During the same period the number of remaining entrants which comprise of non-chargeable, exempt and undetermined has risen from 7.7% to 9.2%, the reason for this change is unclear.

	2021 (Jun - Dec)	2022 (Jan - Dec)	2023 (Jan - Jun)	Average
(M1) Car	80.2%	79.8%	78.6%	79.6%
(M2) Mini-Bus	0.1%	0.1%	0.1%	0.1%
(N1) LGV (Van)	8.6%	8.2%	8.0%	8.3%
(N2, N3) HGV	1.1%	1.1%	1.1%	1.1%
(M3) Bus / Coach	0.6%	0.6%	0.6%	0.6%
Unrecognised	1.7%	2.0%	2.4%	2.1%
Remaining entrants*	7.7%	8.2%	9.2%	8.3%
(M1) Car	79503	79254	103058	100177
(M2) Mini-Bus	88	91	81016	79747
(N1) LGV (Van)	8546	8163	88	89
(N2, N3) HGV	1071	1089	8228	8286
(M3) Bus / Coach	587	609	1126	1093
Unrecognised	1732	2026	594	599
Remaining entrants*	7627	8102	2508	2059
Total Unique Entrants	99154	99334	9497	8304

Table 9 Unique vehicle average fleet composition June to December 2021, January to December 2022 and January - June 2023.
***Remaining entrants comprise of non-chargeable, exempt and undetermined.**



	Jun '21	Jul '21	Aug '21	Sep '21	Oct '21	Nov '21	Dec '21	Jan '22	Feb '22	Mar '22	Apr '22	May '22	Jun '22	Jul '22	Aug '22	Sep '22	Oct '22	Nov '22	Dec '22	Jan '23	Feb '23	Mar'23	Apr'23	May'23	Jun'23
Remaining entrants*	7660	7538	6889	7790	7782	8171	7558	7448	8195	8366	7695	7714	7018	7626	8030	8458	8717	9200	8754	8785	9133	9531	8998	9939	10594
Unrecognised	1667	1646	1615	1776	1779	1862	1780	1738	1944	2019	1977	2036	1985	2010	1900	2053	2194	2275	2178	2187	2304	2418	2432	2792	2917
(M3) Bus / Coach	569	588	573	607	590	608	577	586	605	604	587	581	562	676	699	587	605	628	585	597	599	534	586	604	641
(N2, N3) HGV	1099	1066	1036	1129	1061	1151	956	961	1138	1220	1070	1098	1050	1091	1105	1123	1140	1181	894	1027	1104	1191	1059	1150	1227
(N1) LGV (Van)	9138	8542	8212	8953	8515	9007	7456	7178	8524	9082	8156	8104	7483	8111	8314	8677	8548	9000	6784	7582	7630	8707	7947	8409	9095
(M2) Mini-Bus	83	74	43	107	101	125	82	91	90	117	74	94	95	101	56	95	98	109	72	92	81	105	62	87	103
(M1) Car	77391	75975	75874	82224	82770	84370	77914	70619	80850	82851	78460	78317	73141	76487	78577	81491	84672	86645	78942	76997	78567	82586	80613	82460	84873

Table 10 Unique vehicle fleet composition by month from June 2021 to June 2023 NB scale begins at 70% *Remaining entrants comprise of non-chargeable, exempt and undetermined.

5.0 – HOW HAS TRAFFIC VOLUME AND COMPLIANCE RATES CHANGED?

ROAD TRAFFIC VOLUME

Figure 6 provides the monthly average unique vehicles entering the Clean Air Zone. The overall volume of unique entrants has fluctuated from a low of 88,609 daily unique vehicle entrants in January 2022 to a max of 109,438 daily unique entrants in June 2023. On average 100,166 unique vehicles enter the zone every day. In 2021 (June - December) the average unique vehicle entrants was recorded at 99,154, in 2022 (January - December) this stood at 99,316, 2023 (January - June) recorded a level of 103,047 unique vehicle entrants. By years of operation of the Clean Air Zone - June 2021 to June 2022 the number of unique entrants stood at 98,112 average per day, for June 2022 to June 2023 this stood at 102,392 daily average unique entrants.

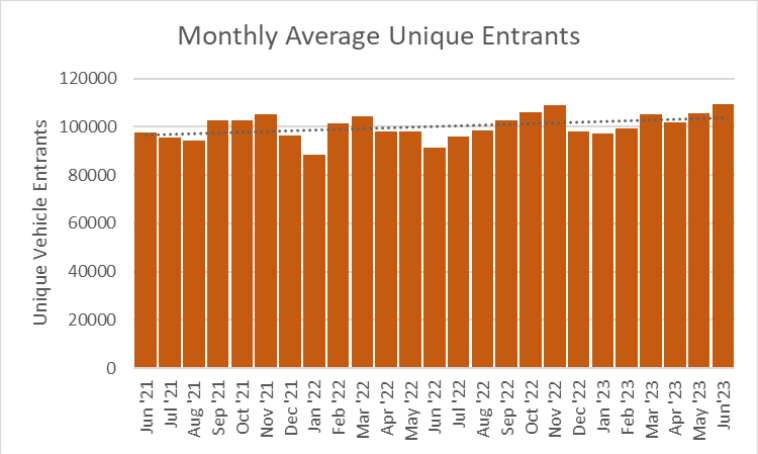


Figure 6 Monthly Average Unique Entrants into the Clean Air Zone.

During Covid road traffic volumes decreased significantly compared to pre-Covid levels. Figure 7 provides a comparison of Clean Air Zone vs Ring Road annotated with the various lockdowns and the launch of the Clean Air Zone. Since the end of the Covid pandemic restrictions have been lifted (March 2021) with road traffic volumes appearing to have settled to pre-pandemic levels.

When the Clean Air Zone launched there was a reduction in vehicle numbers detected in the inner city. However, this was not reflected by a corresponding increase on the ring road which suggests that a significant displacement of traffic from the Clean Air Zone to the ring road did not occur.

A year on there still does not appear to be a significant level of displacement from the Clean Air Zone to the Ring Road with the overall current vehicle numbers being comparable to pre-pandemic levels.

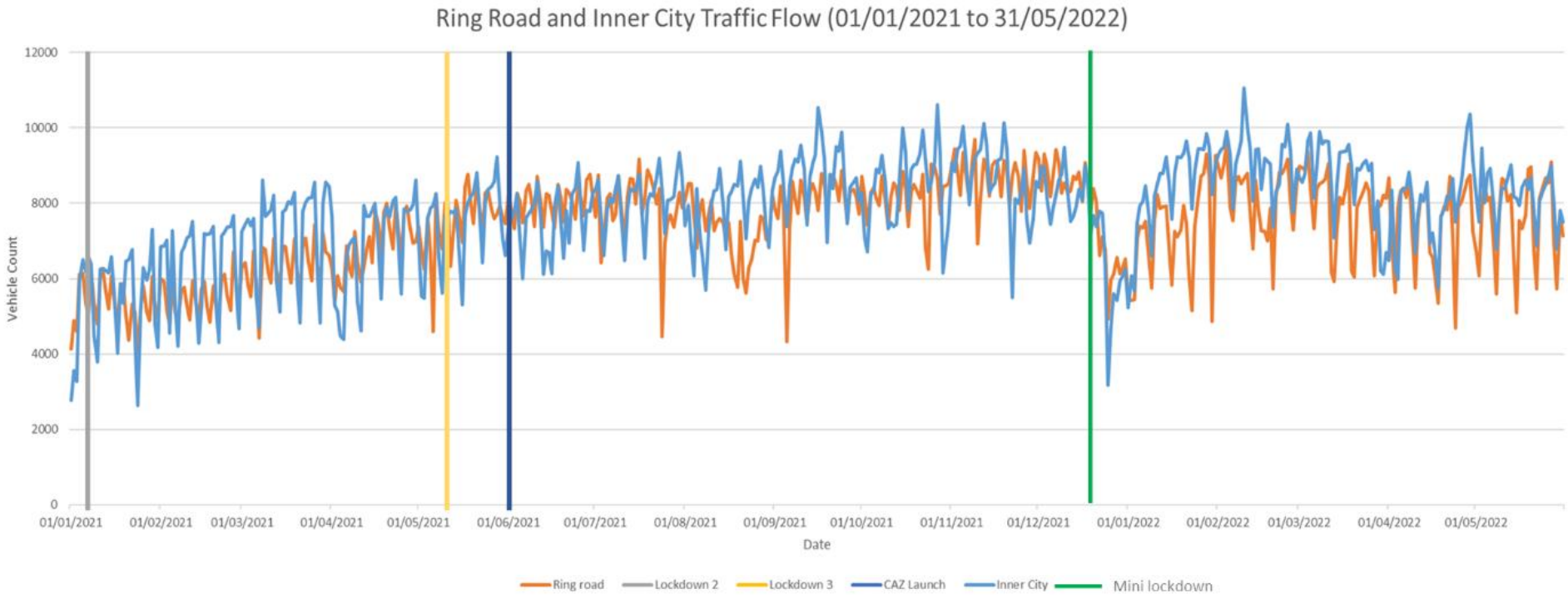


Figure 7 Ring Road and Inner City (Clean Air Zone) traffic flows from January 2021 to May 2022.

OVERALL COMPLIANCE RATES

The Clean Air Zone is enforced via a network of Automatic Number Plate Recognition Cameras (ANPR) which capture the registration number of the vehicles that pass by. Vehicles that enter the zone are checked against the DVLA database to determine whether they comply with the relevant emission standard, along with the vehicle category (Car, Van, Bus, HGV etc).

As of June 2021, the underlying overall rate of compliance was 77.2% which has steadily increased to 84.5% in June 2023, an improvement of 9.5% as shown in Figure 8. Over the same period the rate of non-compliance in June 2021 was recorded at 15.2% which has since reduced to 6.0% as of June 2023, a change of 60.5%.

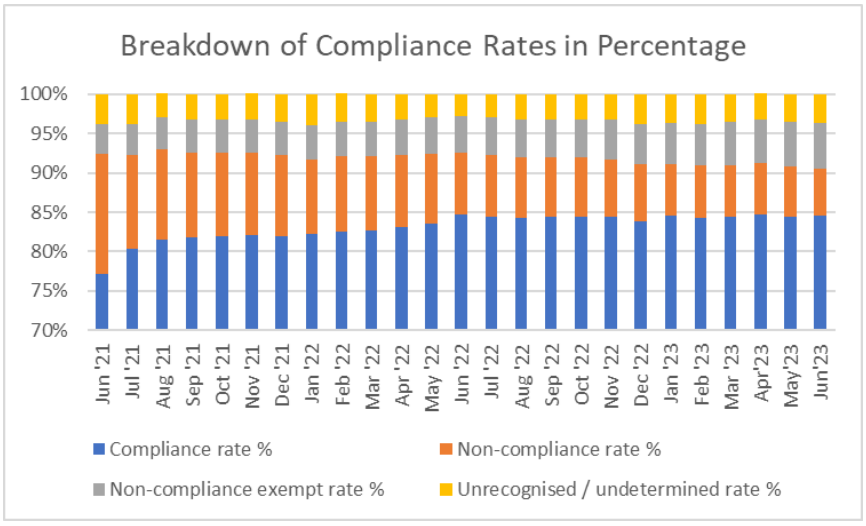


Figure 8 Overall vehicle compliance rates. It should be noted that for June 1-13th June the Clean Air Zone was launched but non-charging. Charging came into force on the 14th June 2021.

The Clean Air Zone full business case outlined a targets for vehicle compliance for 2022, on the basis of a launch date of 1 January 2020.

Due to delays in the implementation of the Clean Air Zone the originally modelled year of compliance (2022) is unlikely to be achieved, however the target values are still valid, and will continue to be used as a guide for when compliance with the legal limit for nitrogen dioxide (40µg/m^3 annual average) might be achieved. Significant progress towards compliance appears to be taking place, albeit that there are three areas where we have exceedance points (Moor Street Area, A38 (St Chads) and the ring road).

The following sections will discuss each vehicle category to better understand the nuances of the traffic composition and the rates of compliance.

Assuming the rate of change continues at a constant rate Table 11 below provides an estimate of when modelled vehicle compliance levels that were set out in the Clean Air Zone Business Case may be realised. It should be noted that modelled vehicle compliance may not directly correlate to compliance of the air quality standard for nitrogen dioxide. Therefore, the table below should be seen as an indication that the desired change is taking place, but the absolute test of compliance or success is achieving the desired reduction in the levels of nitrogen dioxide.

Vehicle Category	Modelled Target	Compliance June 2021	Percentage between compliance June 2021 and modelled target	Percentage point difference between compliance June 2021 and modelled target	Compliance June 2023	Percentage between compliance June 2023 and modelled target	Percentage point difference between compliance June 2023 and modelled target	Percentage difference between compliance June 2023 and June 2021	Percentage point difference between June 2023 and June 2021	Average monthly rate of change over 24 months June 2021 – June 2023	Average monthly rate of percentage point change over 24 months June 2021 to June 2023
Cars (M1)	98.0%	85.3%	13.0%	12.7%	94.2%	3.9%	3.8%	10.4%	8.9%	0.4%	0.4%
Bus / Coach (M3)	100%	99.3%	0.7%	0.7%	99.4%	0.6%	0.6%	0.1%	0.1%	0.0%	0.0%
LGV (N1)	82.7%	68.6%	17.1%	14.1%	85.7%	+3.6%	+3.0%	+24.9%	17.1%	1.0%	0.7%
Lorry (N2) & HGV (N3)	98.5%	92.2%	6.4%	6.3%	97.8%	0.7%	0.7%	6.1%	5.6%	0.3%	0.2%

Table 11 Trends of compliance rates from June 2021 to June 2023 compared to modelled target.

CARS (M1) COMPLIANCE RATE

Figure 9 provides the average daily unique passenger car entrants into the zone from June 2021 to June 2023. Compliance rates for passenger cars has steadily increased from 85.3% in June 2021 to 94.2% in June 2023, with the target rate of compliance of 98%. There is also a variation in weekday vs. weekend compliance rate for passenger vehicles as shown in Figures 9 and 10.

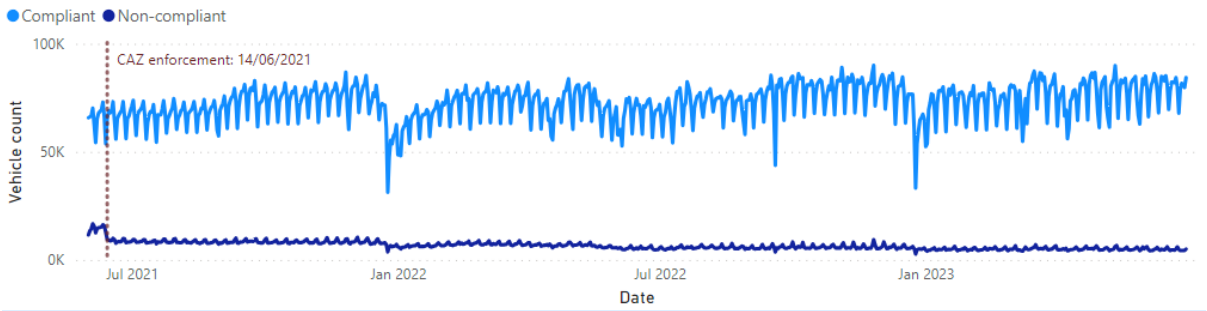


Figure 9 Unique Daily car entrants into the Clean Air Zone, compliant vs non-compliant.

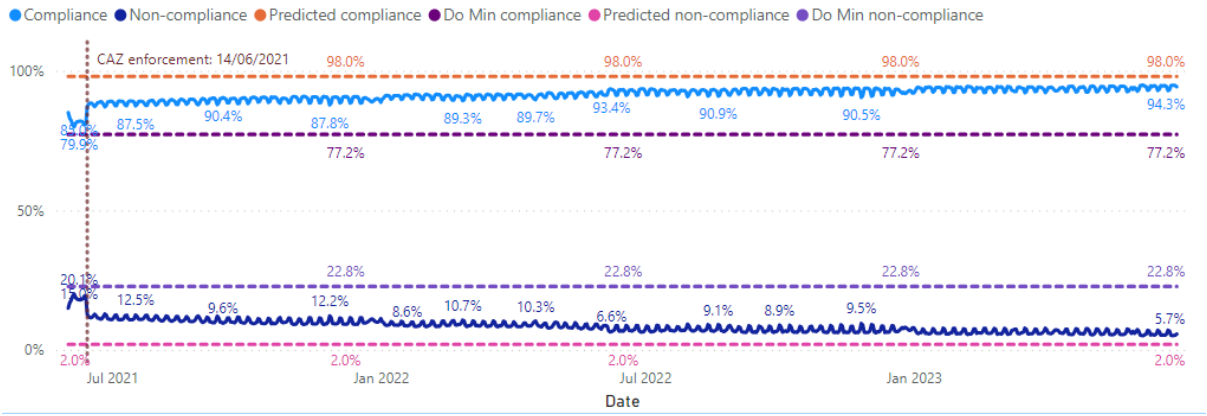


Figure 10 Daily car percentage compliant and non-compliant vs predicted (excluding exempt and unrecognised).

CAR EURO CLASS

Quarterly snapshots have been taken from the Clean Air Zone ANPR cameras. This data is then processed to provide Euro Class split. Unlike the compliance rates which are based on unique vehicles, the ANPR snapshots are based on vehicle trips. For both petrol and diesel cars there has been a marked uptake of Euro 6 vehicles, which is more pronounced in the diesel car fleet. During the same period there has been a decline in Euro 5 and 4 vehicles as shown in Figures 11 and Figure 12.

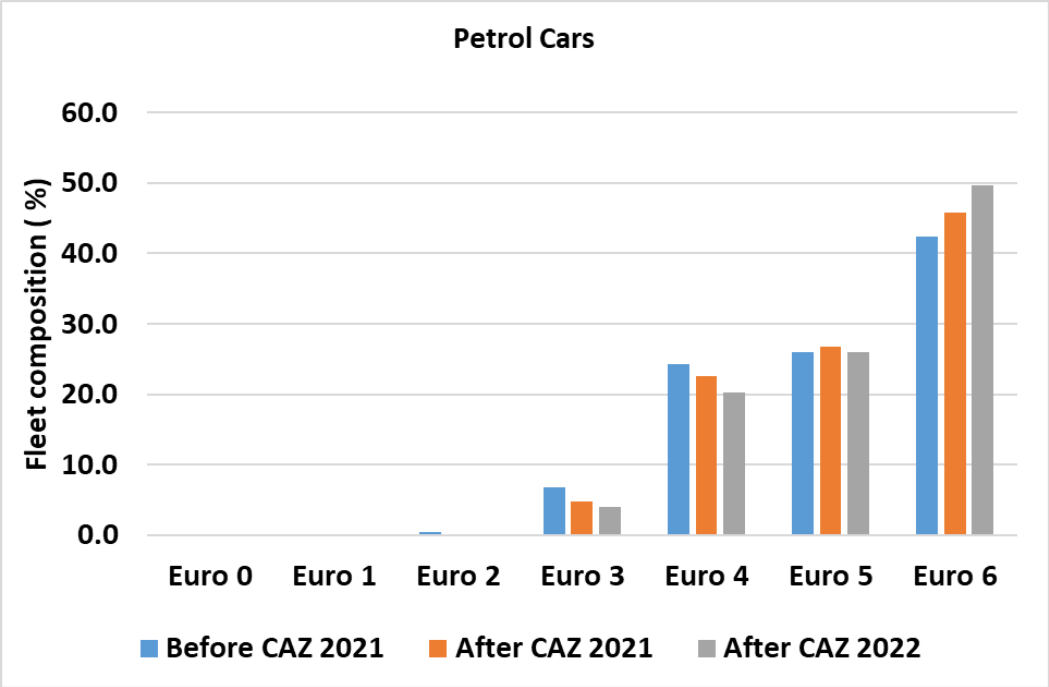


Figure 11 Petrol car Euro Class change over time (Thanks to WM-Air for processing the data)

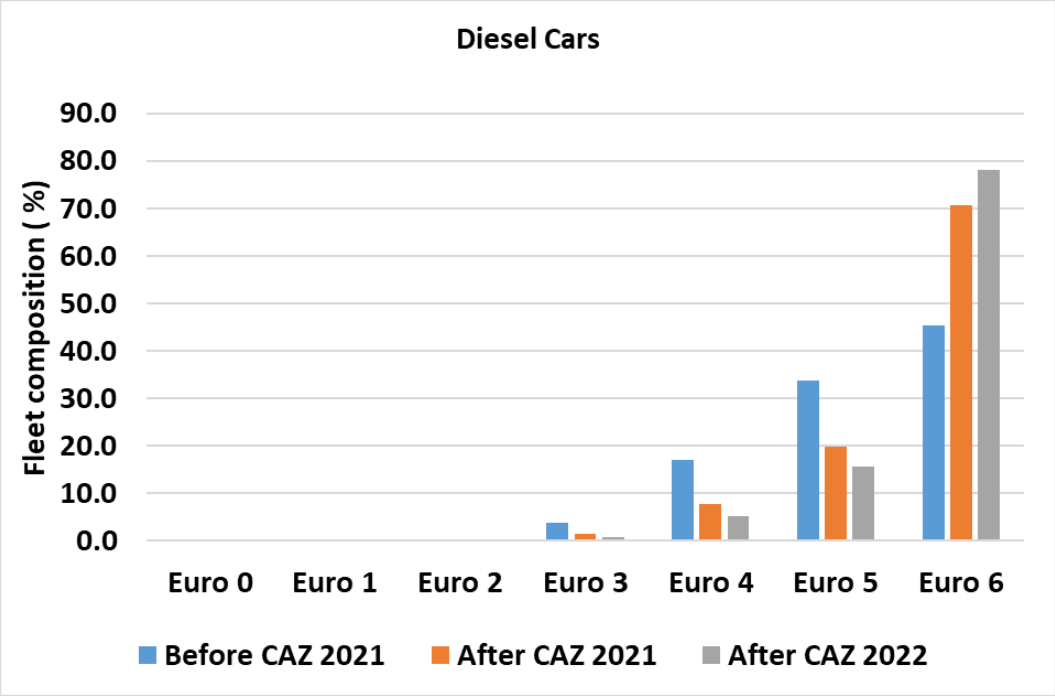


Figure 12 Diesel car Euro Class change over time (Thanks to WM-Air for processing the data).

LIGHT GOODS VEHICLES (LGV [N1])

Figure 13 below covers Light Goods Vehicles (LGV) [N1] and shows a significant variation of weekday vs. weekend in vehicle volume. This is also reflected in the compliance rates with the weekends seeing a greater percentage of non-compliant vehicles compared to weekdays. At the launch of the Clean Air Zone LGV compliance rates stood at 68.6% which has increased to 85.7% as of June 2023. The business case for the Clean Air Zone aim for LGVs is a compliance rate of 82.7%, as shown in Figure 14. If the variation in weekday/weekend compliance rates is discounted the compliance rates for LGVs has met the target.

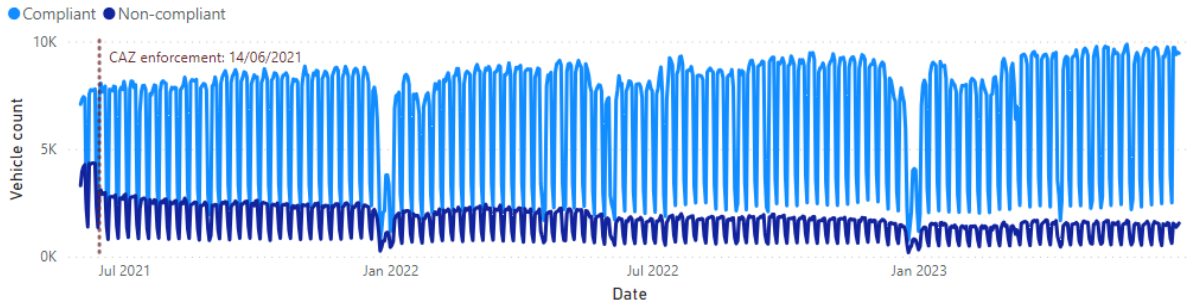


Figure 13 Light Goods Vehicles (LGV) daily unique entrants, compliant vs non-compliant.

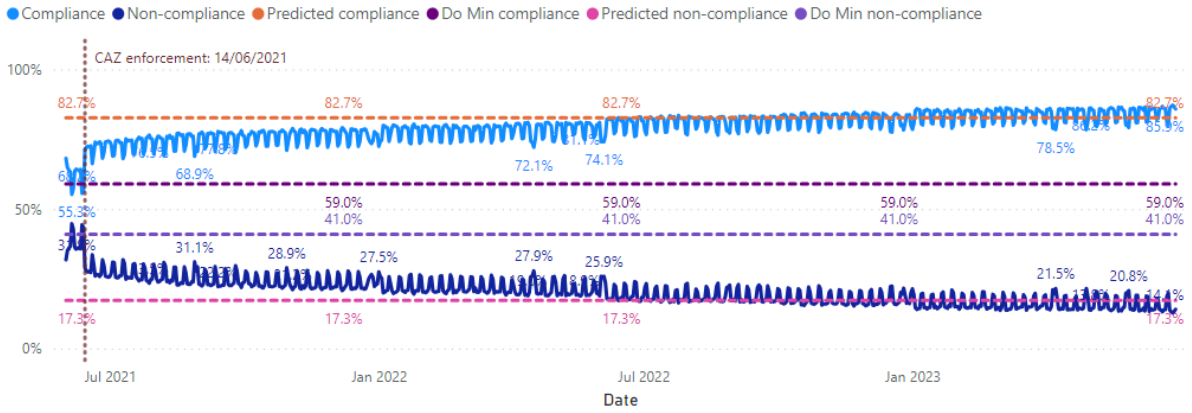


Figure 14 Daily percentage compliant, non-compliant Light Goods Vehicles (LGV) vs predicted (excluding exempt and unrecognised).

LGV EURO CLASS

Quarterly snapshots have been taken from the Clean Air Zone ANPR cameras. This data is then processed to provide Euro Class split. Unlike the compliance rates which are based on unique vehicles, the ANPR snapshots are based on vehicle trips. For LGVs there has been a marked uptake of Euro 6 vehicles. During the same period there has been a decline in Euro 5 and 4 vehicles as shown in Figure 15.

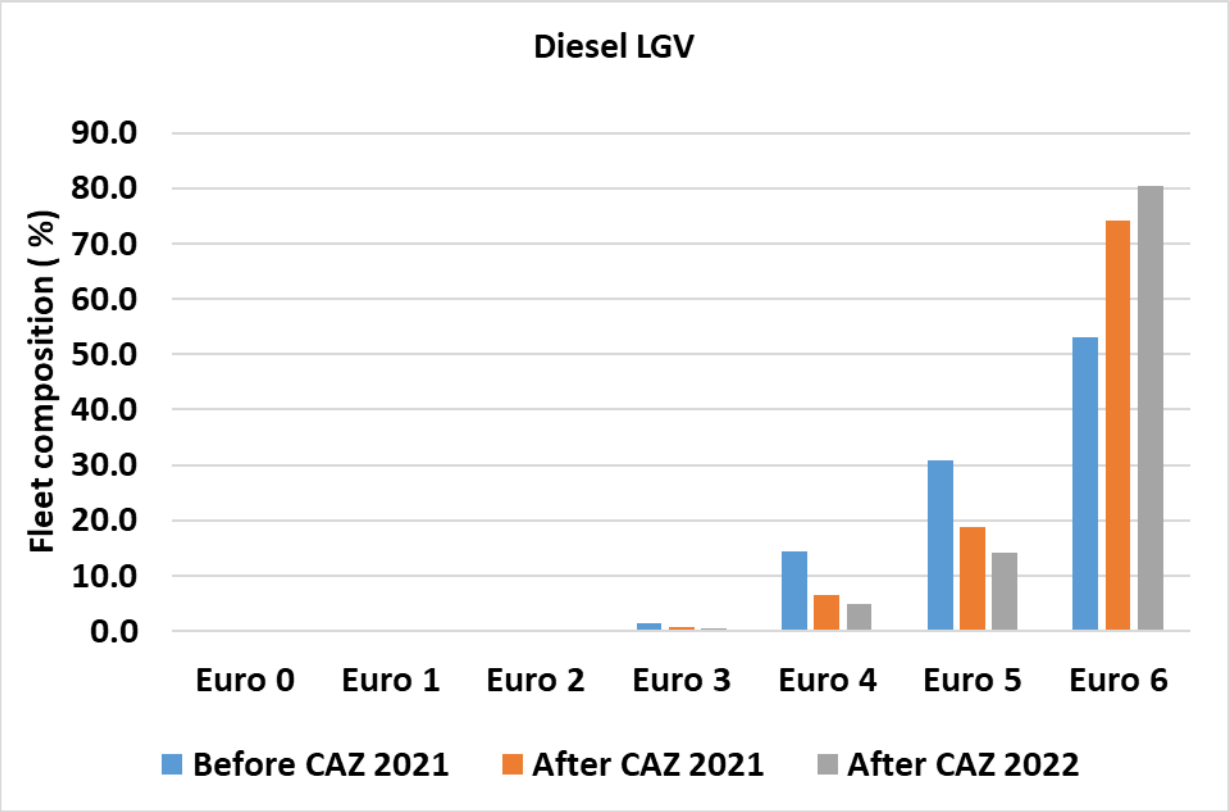


Figure 15 Diesel LGV Euro Class change over time (Thanks to WM-Air for processing the data)

HEAVY GOODS VEHICLES (HGVS [N2, N3])

Figure 16 provides the unique daily entrants of Heavy Goods Vehicles (HGV) which indicates a significant variation in the volume of HGVs during the weekday compared to the weekend. Compliance rates have shown a steady improvement in since the introduction of the Clean Air Zone, in June 2021 compliance stood at 92.2%, which has improved to 97.8% in June 2023 as shown in Figure 17, which is close to the target rate of compliance at 98.5%

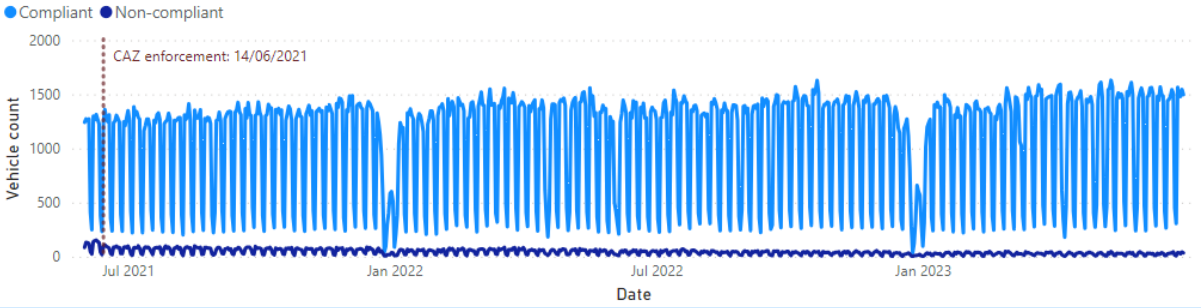


Figure 16 Heavy Goods Vehicles (HGV) daily unique entrants, compliant vs non-compliant.

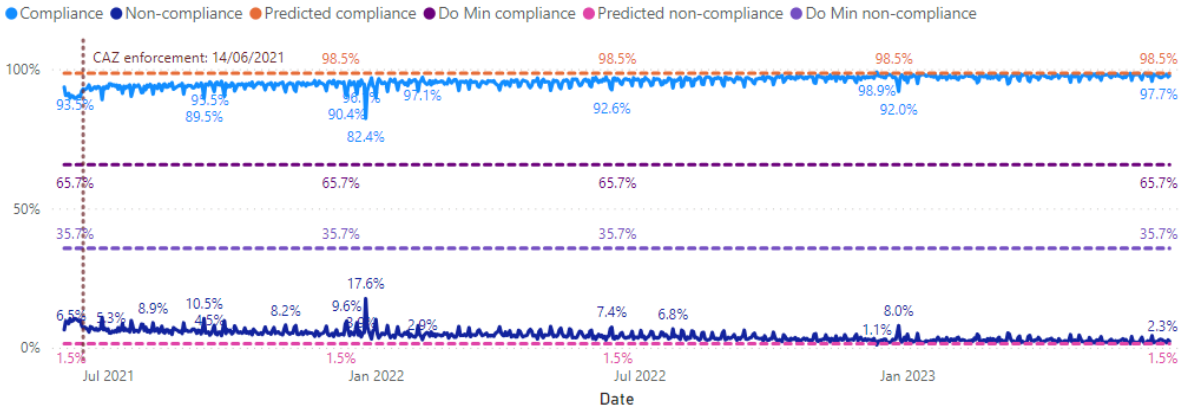


Figure 17 Heavy Goods Vehicles (HGV) compliant, non-compliant percentage vs predicted (excluding exempt and unrecognised)

HGV EURO CLASS

Quarterly snapshots have been taken from the Clean Air Zone ANPR cameras. This data is then processed to provide Euro Class split. Unlike the compliance rates which are based on unique vehicles, the ANPR snapshots are based on vehicle trips. For HGVs there has been a marked uptake of Euro VI vehicles. During the same period there has been a decline in Euro V and IV vehicles. Analysis of the subset of HGVs (articulate vs rigid) indicates the improvement is more pronounced in rigid HGVs compared to articulated as shown in Figures 18 and 19.

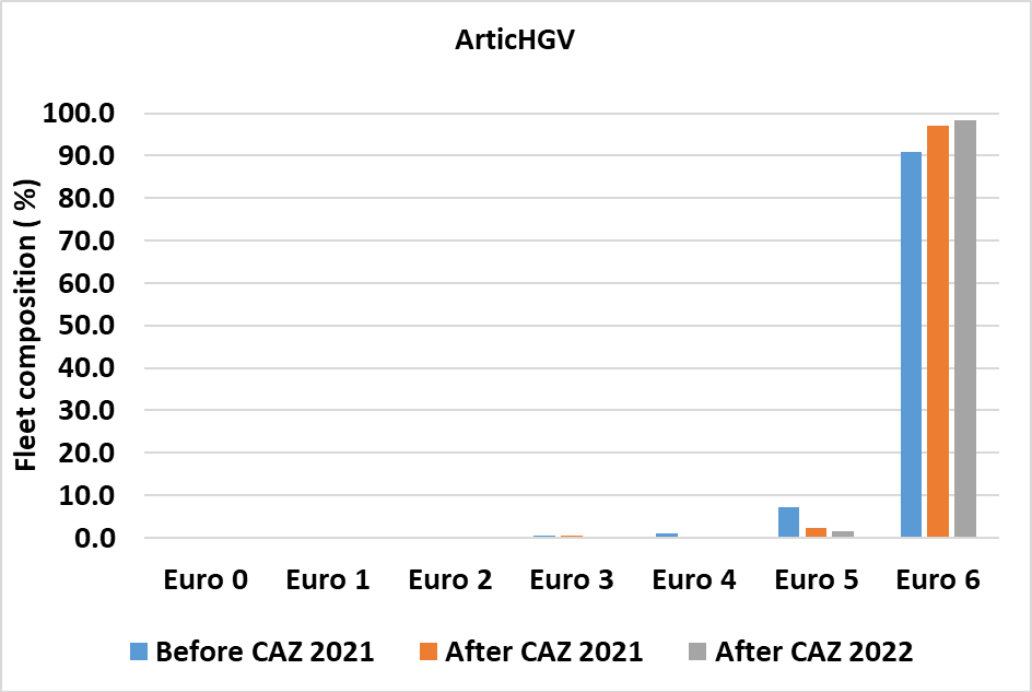


Figure 18 Articulated HGV Euro Class change over time (Thanks to WM-Air for processing the data).

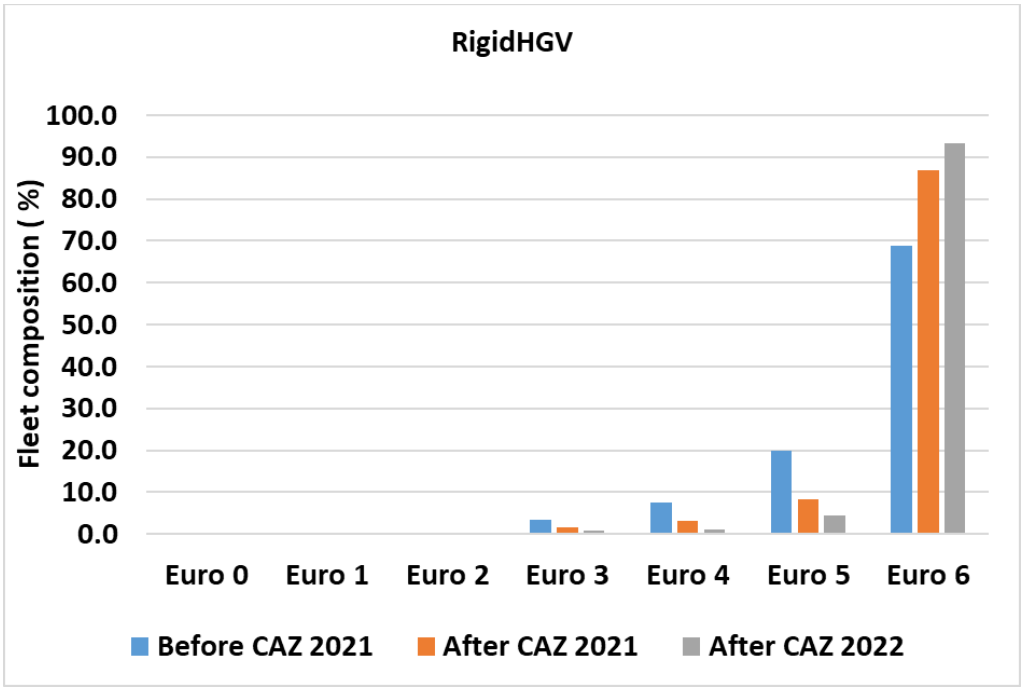


Figure 19 Rigid HGV Euro Class change over time (Thanks to WM-Air for processing the data).

BUSES / COACHES [M3]

The bus / coaches fleet indicates a fluctuation between weekdays and weekends as shown in Figure 20. Figure 20 also indicates a peak in unique bus/coaches in July/August 2022, which is likely caused by the Commonwealth Games, doubling the number of unique vehicles to approximately 1,000. A dip has also been recorded in March 2023 due to the industrial action that impacted the operation of the bus network.

Figures 21 shows the compliance rates of bus / coaches which has indicated little change since the launch of the Clean Air Zone in June 2021. The compliance target for the bus / coach fleet is 100%, which is virtually met with the compliance rate in June 2023 being recorded as 99.4%.

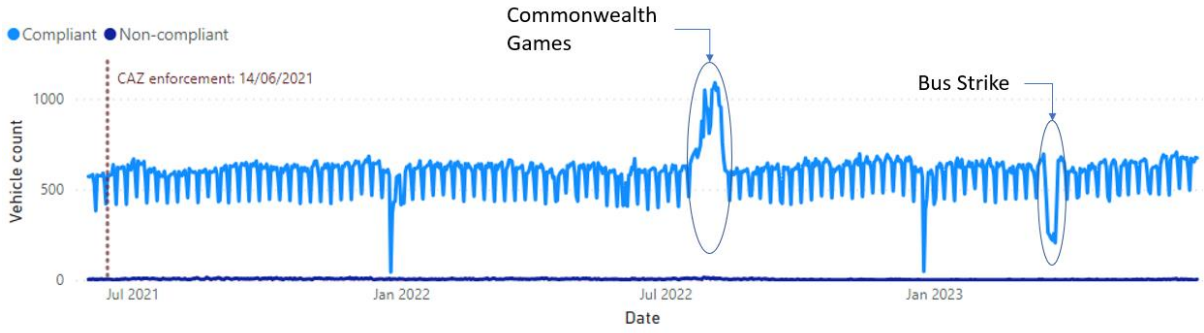


Figure 20 Bus / Coach daily unique entrants, compliant vs non-compliant. The peak observed in July/August 2022 can be attributed to the Commonwealth Games and the dip in late March 2023 can be attributed to industrial action that impacted the bus network.

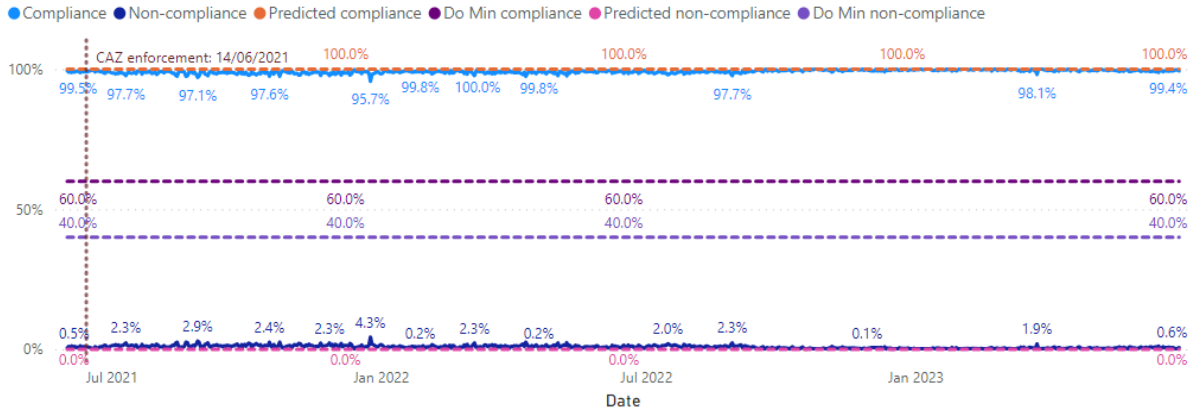


Figure 21 Bus / Coach compliant, non-compliant percentage vs predicted (excluding exempt and unrecognised).

BUSES / COACHES EURO CLASS

Quarterly snapshots have been taken from the Clean Air Zone ANPR cameras. This data is then processed to provide Euro Class split. Unlike the compliance rates which are based on unique vehicles, the ANPR snapshots are based on vehicle trips. For buses / coaches there has been an improvement to Euro VI as shown in Figure 22. It should be noted that a proportion of the bus/coach fleet has been retrofitted to be compliant with the Clean Air Zone. Figure 22 indicates a range of Euro Classes; it is assumed that vehicles which are sub-Euro 6 have been retrofitted to be compliant with the Clean Air Zone.

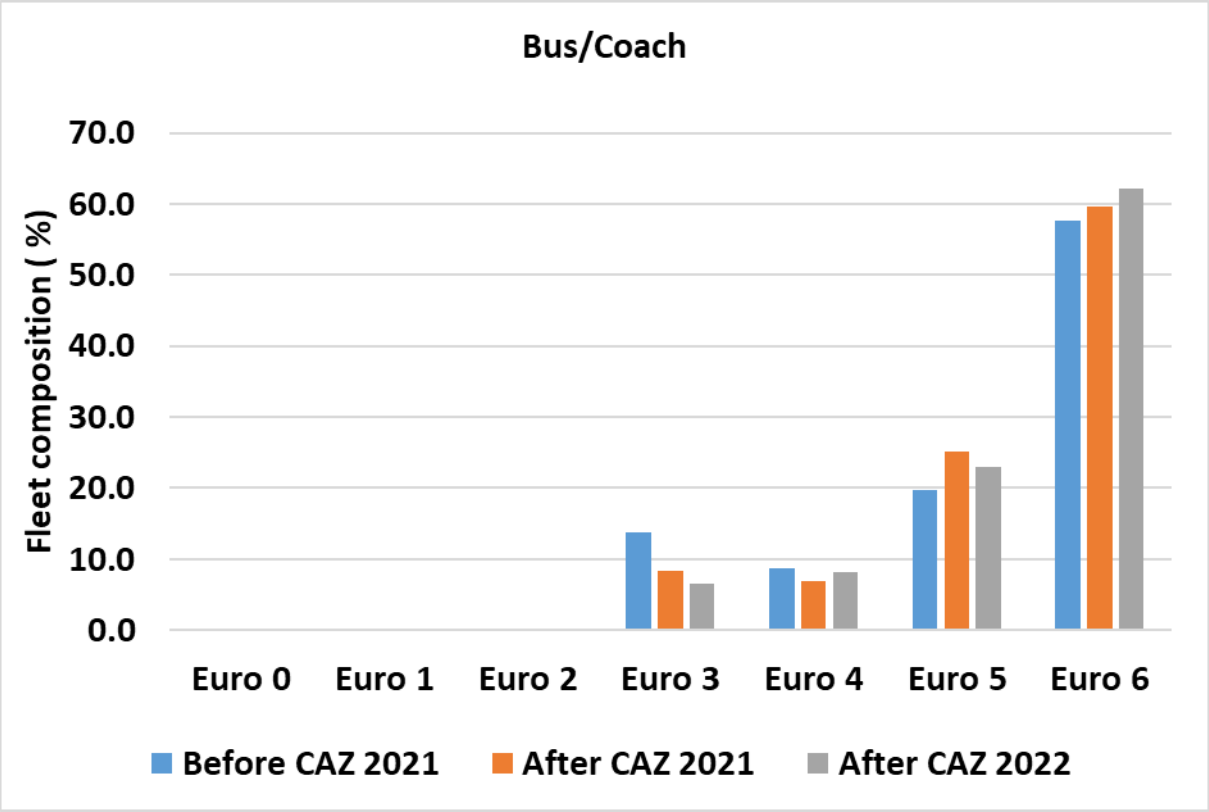


Figure 22 Bus / Coach Euro Class change over time. (Thanks to WM-Air for processing the data)

5.0 – DISCUSSION

The air quality data suggests there has been an improvement since 2019. Road traffic compliance rates have improved since the lauch of the Clean Air Zone. However, it is evident from the air quality data there are locations which continue to be exceed the legal limit for nitrogen dioxide. With regards to the Clean Air Zone these can be grouped into three general areas:

1. Moor Street Area
2. A38 / A4400
3. Ring Road

Each area will be discussed in turn to determine what factors may influence the recorded concentrations.

1 – MOOR STREET AREA

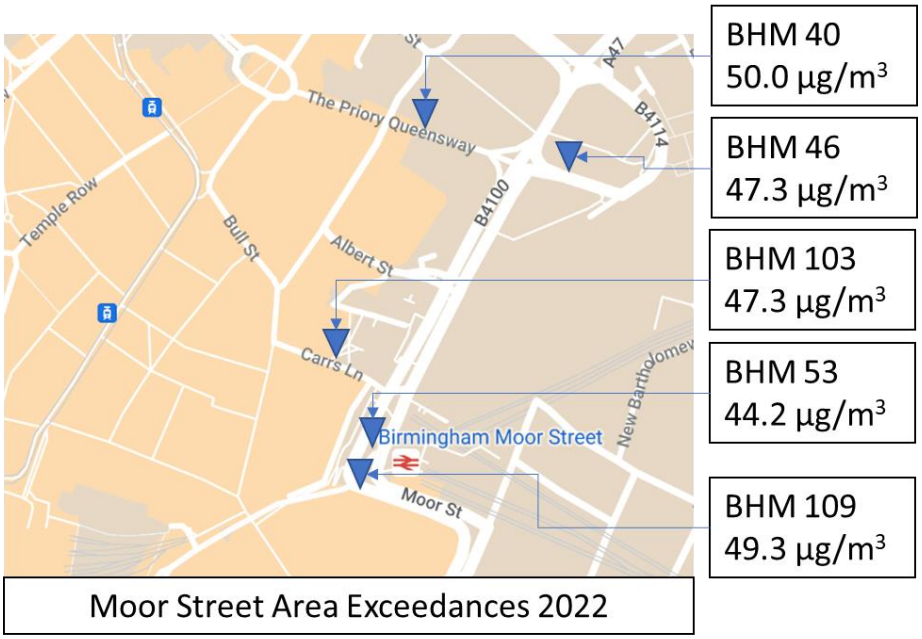


Figure 23 Moor Street Area Exceedances 2022

The Moor Street area shown in Figure 23 is dominated by high volumes of bus traffic. Carrs Lane, Bull Street, and Priory Queensway are bus and taxi routes only, with Moor Street having a bus gate that limits private vehicle access through the area.

Carrs Lane can be defined as a street 'canyon' due to the relatively narrow width of the street flanked on both sides by high buildings that have a height that is greater than the

road width. This leads to vortices and re-circulation of air flow that can trap pollutants and restrict dispersion.

It is clear that a number of these exceedances of 40µg/m^3 are being generated via the high volume of bus traffic, with other vehicle categories (cars, HGVs, LGVs) being relativley small.

From the vehicle compliance rates bus /coach compliance stand at 99.4% as of June 2023 which is based on unique vehicles that enter the Clean Air Zone. As mentioned earlier in this report compliance of buses / coaches is based on Euro VI engines. However the Clean Air Zone also allows for retrofitting of older Euro Class vehicles to a Euro VI equivalent. The Euro Class results indicate the bus fleet comprise of a range of Euro Classes. Therefore it is assumed that the majority of sub Euro V vehicles have been retrofitted.

A detailed study of the area is underway to fully understand the reasons for the exceedances in the area which will help develop options for further improvements to air quality in this area.

2 – A38 (ST CHADS) / A4400

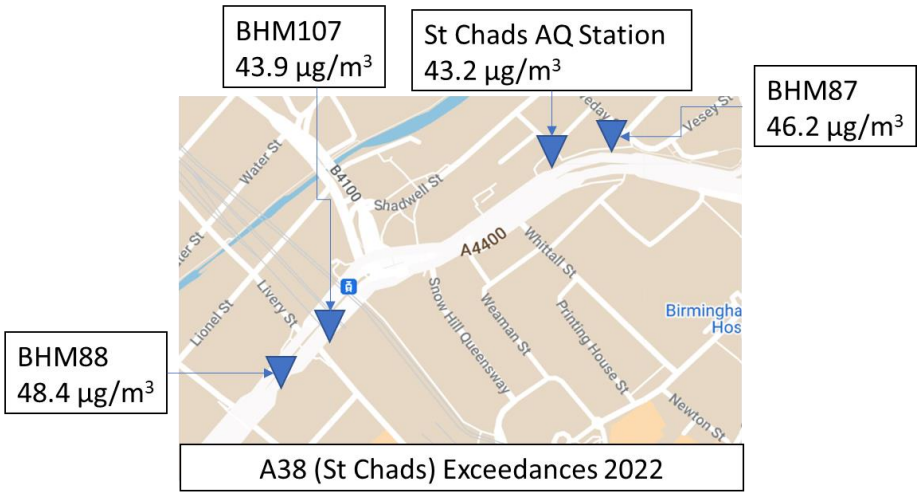


Figure 24 A38(St Chads) exceedances of nitrogen dioxide in 2022.

The A38 (St Chads) exceedances surround the complex road system between the A38 and the A4400 which is formed of eight lanes of traffic, sliproads and tunnels. BHM88 and BHM107 are both located at the entrances / exit of the A38 tunnels. St Chads Air quality station and BHM87 are located adjacent to a bend in the road system.

It should also be noted that in this section of the A38 (St Chads) a signficant gradient is present which would put additional pressure on vehicle engines. Furthermore there are a

number of large buildings along the road length that may contribute to a street canyon effect, thereby preventing the ready dispersal of pollutants.

All of these factors play a part in causing the elevated levels of nitrogen dioxide and the ultimate exceedence in this area. A detailed study of the area is underway with the use of ANPR cameras to assertain the reasons for the exceedances which will help inform an options appraisal.

3 – RING ROAD

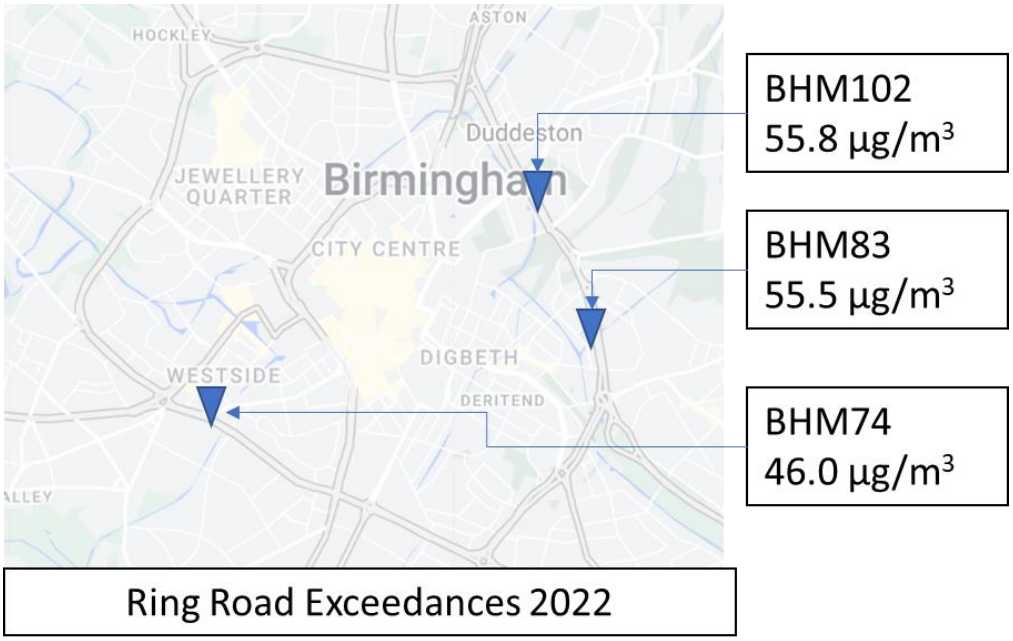


Figure 25 Ring Road exceedances of nitrogen dioxide in 2022.

There are three recorded exceedances on the ring road as shown in Figure 25 all of which are outside of the Clean Air Zone. The Clean Air Zone ANPR cameras only detect vehicles that enter the zone. There are no cameras on the ring road, therefore it is unknown if the ring road has a higher proportion of non-compliant vehicles compared to the Clean Air Zone.

A detailed study of the cause of these exceedances is underway, which includes an ANPR survey to better understand vehicle split and Euro class, and ultimately the comparsion of Euro Class of the Clean Air Zone to the Ring Road. This data will be used to inform an options appraisal.

APPENDIX A

April 2021	Petrol Cars	Diesel Cars	Diesel LGV	Rigid HGV	Artic HGV	Bus / Coach
Euro 0	0.1	0.0	0.0	0.0	0.0	0.0
Euro 1	0.1	0.0	0.1	0.1	0.0	0.0
Euro 2	0.4	0.1	0.1	0.2	0.1	0.1
Euro 3	6.7	3.8	1.4	3.5	0.6	13.8
Euro 4	24.3	17.1	14.4	7.7	1.1	8.6
Euro 5	25.9	33.7	30.9	19.8	7.2	19.8
Euro 6	42.4	45.3	53.1	68.7	91.0	57.7

Clean Air Zone - Euro Class breakdown in percentage April 2021

October 2021	Petrol Cars	Diesel Cars	Diesel LGV	Rigid HGV	Artic HGV	Bus / Coach
Euro 0	0.0	0.0	0.0	0.0	0.0	0.0
Euro 1	0.0	0.0	0.0	0.0	0.0	0.0
Euro 2	0.1	0.0	0.0	0.0	0.0	0.1
Euro 3	4.8	1.5	0.7	1.5	0.4	8.3
Euro 4	22.5	7.8	6.4	3.1	0.1	6.8
Euro 5	26.8	19.9	18.7	8.4	2.4	25.2
Euro 6	45.7	70.7	74.1	87.0	97.0	59.6

Clean Air Zone - Euro Class breakdown in percentage October 2021

October 2022	Petrol Cars	Diesel Cars	Diesel LGV	Rigid HGV	Artic HGV	Bus / Coach
Euro 0	0.1	0.0	0.0	0.1	0.0	0.0
Euro 1	0.0	0.0	0.0	0.0	0.0	0.0
Euro 2	0.1	0.0	0.0	0.1	0.2	0.1
Euro 3	3.9	0.9	0.4	1.0	0.0	6.6
Euro 4	20.2	5.3	4.8	1.1	0.1	8.1
Euro 5	26.0	15.6	14.2	4.6	1.4	23.0
Euro 6	49.7	78.2	80.5	93.3	98.3	62.1

Clean Air Zone – Euro Class breakdown in percentage October 2022

Air quality data can be sourced from Birmingham Air Quality

Clean Air Zone - approved allocations as at end of March 2023

				Total
				£000
No	CAZ Ref	CAZ Reserves & Non-CAZ Projects - Possible Funding Priorities	CAZ Reserve - Actual & Estimated	(54,598)
		CAZ Reserves:		
		Non-CAZ Projects		
1	CAZ001	Hydrogen Buses	Actual Spend	**3,289**
2A	CAZ002	City Centre Pedestrianisation / City Centre Public Realm Phase 1	Phase 1 Total £7,395,273 (22/23 to 24/25)	**7,395**
2B	CAZ003	City Centre Pedestrianisation / City Centre Public Realm Phase 2	Phase 2 Total £8,082,727 (23/24 to 27/28)	**8,082**
3	CAZ004	Electric / Plug-in Hybrid Vehicles Running Costs (M2c)		**1,000**
4	CAZ005	University Station	Actual Profile	**3,400**
5	CAZ006	Camp Hill Line Rail Stations	Actual Profile	**5,218**
6	CAZ007	Cross-City Bus Scheme	Profile based on CAZ ability to contribute	**4,225**
7	CAZ008	Pinch Points City Council Match Funding from CAZ	CAZ Contribution of £1.500m	**1,500**
8	CAZ009	Clean Air City Fund (£20k per Ward)	No of Wards - 37 - £0.740m p.a.	**1,480**
9	CAZ010	Clean Air City Fund (£40k for 2 Member Wards)	No of Wards - 32 - £1.280m p.a.	**2,560**
10	CAZ011	Transport & Environment CAZ Programme	Actual Profile	**5,250**
11	CAZ012	Transformational Transport Plans upto 2050	CAZ Contribution of £0.500m	**500**
12	CAZ013	City Centre Traffic Cells implementation	Not Yet Profiled	**3,000**
13	CAZ014	Places for People Delivery (Kings Heath & Bournville)	Not Yet Profiled	**3,000**
14	CAZ015	Active Travel Fund Enhancement (Tranche 2) Schemes	Not Yet Profiled	**1,250**
15	CAZ016	Measures that support the Management of Travel Demand	Not Yet Profiled	**1,000**
16	CAZ017	Support the increased use of Active Modes of Travel & Public Transport	Not Yet Profiled	**3,000**
17	CAZ018	Council's Route to Zero Team - CAZ Funding Support	Not Yet Profiled	**2,000**
		Total of Non-CAZ Spending Proposals		**57,149**

Install Date	Ward	School	Part of the Safe School Streets programme
27/07/2023	Brandwood & Kings Heath	Allens Croft Primary	
27/07/2023	Heartlands	Alston Primary	Y
16/03/2023	Moseley	Anderton Park Primary	Y
04/01/2023	Nechells	Aston University Engineering Academy	
16/03/2022	Allens Cross	Bellfield J&I School	
05/01/2023	Sutton Trinity	Bishop vessey Grammar	
16/03/2022	Heartlands	Bordesley Green Primary School	
17/05/2023	Stockland Green	Brookvale Primary	Y
17/06/2022	Shard End	Brownmead Academy	Y
22/03/2023	Aston	Canterbury Cross Primary	
29/03/2023	Edgbaston	Chad Vale Primary	
20/10/2022	North Edgbaston	City Road Primary	
18/03/2022	Longbridge & West Heath	Cofton Primary School	Y
27/05/2022	Rubery & Rednal	Colmers Farm Primary	
21/10/2022	Brandwood & King's Heath	Colmore Junior and Infants	Y
25/03/2022	Yardley West & Stechford	Corpus Christi RC Primary	
31/03/2022	Stirchley	Cotteridge Primary School	
22/03/2022	Perry Common	Court Farm Primary	Y
10/06/2022	Aston	Deykin Avenue J&I School	
10/06/2022	Sheldon	Elms Farm school	
07/04/2022	Sparkhill	English Martyrs' Catholic Primary	
24/06/2022	Weoley Castle Selly Oak	Green Meadow Primary	
17/03/2022	Highters Heath	Grendon J&I School	
20/10/2022	Shard End	Guardian Angels Catholic Primary	
29/04/2022	Harborne	Harborne Primary School	
24/06/2022	Lozells	Heathfield Primary	
15/03/2022	Sutton Mere Green	Hill West Primary School	
15/11/2023	Sutton Reddicap	Hollyfield	
21/07/2022	Soho & Jewellery Quarter	Jewellery Quarter Academy	
07/04/2022	Bourville and Cotteridge	Kings Norton Boys	
16/06/2022	Kingstanding	Kings Rise Academy	
22/03/2022	Sparkbrook & Balsall Heath East	Ladypool Primary	
17/06/2022	Ladywood	Ladywood AQ Station	
10/2/2022?	Glebe Farm and Tile cross	Lea Forest Academy	
21/07/2022	Ward End	Leigh Primary Academy	
07/04/2022	Nechells	Manor Park Primary School	
03/01/2023	Aston	Mansfield Green	
31/03/2022	Sutton Walmley & Minworth	Minworth J&I	
04/01/2023	Nechells	Nechells Primary	
15/03/2022	Ladywood	Nelson Primary	Y
27/10/2022	Sutton Reddicap	New Hall Primary	Y
28/04/2022	Acocks Green	Ninestiles Academy	
24/03/2022	South Yardley	Oasis Hobmoor Academy	
10/06/2022	Oscott	Oscott Manor School	
31/03/2022	Billesley	Our lady Catholic Primary	
28/07/2023	Aston	Prince Albert Primary	
17/03/2022	Gravelly Hill	Queensbury School	
17/03/2022	Bournbrook & Selly Park	Raddlebarn Primary	
27/05/2022	Frankley Great Park	Reaside Academy	
24/06/2022	Hall Green North	Robinhood Academy	
15/03/2022	Handsworth	Rookery Primary School	
22/03/2023	Bartley Green	Shenley Academy	
24/03/2023	Small Heath	Somerville Primary	Y
17/05/2023	Hall Green North	St Ambrose Barlow Catholic Primary	
17/03/2022	Bordesley & Highgate	St Anne's Catholic Primary	
16/03/2022	Birchfield	St Clare's Catholic Primary	
28/03/2022	Erdington	St Edmund Campion	
11/08/2023	Moseley	St John & Monica Primary	
13/06/2022	Sutton Four Oaks	St Josephs Catholic Primary	
22/03/2022	Perry Barr	St Marks Catholic Primary	
16/03/2022	Alum Rock	St Saviours Primary	
07/04/2022	Bromford and Hodge Hill	Tile Cross Academy	
07/04/2022	Castle Vale	Topcliffe Pirmary	
22/03/2022	Sutton Vesey	Walmley Infants	
26/05/2022	Quinton	Woodhouse Primary Academy	
17/03/2022	Brandwood & Kings Heath	Woodthorpe J & I	Y
31/03/2022	Sutton Wylde Green	Wylde Green Primary	
25/03/2022	Bordesley Green	Wyndcliffe Primary	Y

Appendix 6: Brum Breathes Fund - approved applications (December 2023)

Ward	Number of Councillors	DISTRICT	Total Funding Available 2023-25	Amount Allocated
Stirchley	1	SOUTH	£ 40,000.00	£ 18,825.00
Sutton Reddicap	1	NORTH	£ 40,000.00	£ 16,091.00
Sutton Roughley	1	NORTH	£ 40,000.00	£ 35,265.76