

Title	Birmingham Clean Air Zone
Reference No	EQUA79
EA is in support of	New Service
Review Frequency	Six Months
Date of first review	07/01/2019
Directorate	Economy
Division	Transportation and Connectivity
Service Area	Infrastructure Projects
Responsible Officer(s)	<input type="checkbox"/> Nicholas Richards
Quality Control Officer(s)	<input type="checkbox"/> Janet L Hinks
Accountable Officer(s)	<input type="checkbox"/> Paul Simkins
Initial impact assessment	<p>The Ambient Air Quality and Cleaner Air for Europe Directive 2008 sets out emission limits for pollutants which all EU member states must comply with by 2020. The Environment Act 1995 and the Air Quality Standard Regulation 2010 draw down from the EU Directive and enforce compliance on Local UK Governments. In 2015 the Department for Environment, Food and Rural Affairs (DEFRA) updated air quality plans for the compliance with the EU Directives, these plans listed Birmingham City as one of five cities in the UK which require the implementation of a Clean Air Zone.</p> <p>The Joint Air Quality Unit (JAQU) has been set up by DEFRA and the Department for Transport (DfT) in order to aid in the delivery of these air quality plans; JAQU provide guidance and instruction for the implementation of air quality improvements.</p> <p>Birmingham City Council (BCC) has initiated the 'Brum Breathes' Programme with the aim of implementing a number of clean air initiatives, programmes and projects which will contribute towards improving air quality in the City Centre. The Brum Breathes Programme consists of five programmes, each made up of a number of projects and projects which will collectively improve air quality to a level which is acceptable to the EU Directive 2008. The five programmes which Brum Breathes constitutes are; Early Measures, Clean Air Zone, Air Quality Policy, Environment Delivering Infrastructure and Behavioural Change.</p> <p>This EA is focused on the Clean Air Zone Programme. In order to achieve compliance it is proposed to implement a CAZ D within Birmingham City Centre. This means that an area within the City Centre will be created where all commercial and domestic vehicles, other than motorbikes, which are not Euro 4 Petrol and Euro 6 Diesel compliant will be charged to enter the zone.</p> <p>Extensive air quality and traffic modelling has been undertaken to model various scenarios and the impact of the expected reduction in non-compliant cars. Whilst the CAZ D</p>

will significantly improve air quality, the modelling shows that compliance with the EU Directive will still not be achieved. As such, a number of Additional Measures have been selected to bring the City into compliance; creating the requirement for a "CAZ D+".

The Clean Air Zone (CAZ) will create an area within the City Centre, bounded by the Middle Ring Road (A4540), where control measures will be enforced to minimise air pollution and data collection technology will be installed which can be used to advise future measures. The programme consists of three initial projects, the impact of which will be enhanced by a series of additional measures. The initial projects are as follows; CAZ Signing Strategy, Automatic Number Plate Recognition (ANPR) cameras, IT and Accommodation. The additional measures which will also be implemented are; Charging Parking Zones, Low Emission Charging Points, and a Traffic Management Strategy Review.

The CAZ Signing Strategy project will implement a new signing network which will notify drivers on the approach to the City Centre that a Clean Air Zone is in operation, providing information of the charges which are being enforced.

'Countdown' signs will be installed along all approaches to the Middle Ring Road (A4540), providing drivers with an advance warning which is aligned to the decreasing distance. I.e. signs could be placed at the 3, 2 and 1 mile markers. As stated above, the new signing network will also include signs which inform drivers of how to check their vehicles compliance, the charges which must be paid for non-compliant vehicles and fines which will be enforced for those who fail to pay the charges. The implementation of this project will also involve the installation of any new infrastructure which is required and the provision of any required ground works.

The Automatic Number Plate Recognition (ANPR) project will complement the CAZ Signing Strategy project. The scope of work is to install a network of ANPR Cameras at the intersections where the approach roads meet the CAZ boundary, both on the incoming and outgoing roads. This camera network will provide the tool for enforcement of the CAZ, capturing images of the number plate of every vehicle which enters and leaves.

The 'back office' will be upgrade to enable appropriate software to check the number plates against a list of compliant vehicles and those which have paid the charge; identifying those vehicles which are not exempt and issuing the owner with a fine.

The successful implementation of the three projects briefly detailed above will result in a notable contribution towards improved air quality, the measures being implemented are expected to promote a significant behavioural shift, with many drivers opting for an alternative, more eco-friendly method of transport. It is anticipated that there will be wide ranging

health benefits for those working, living and visiting the city centre.

In addition to the Clean Air Zone to deliver compliance it is necessary to implement four additional measures which are;

Fleet upgrades – To provide a finance support package to Hackney Cab, LGV and private hire vehicle drivers to either retro-fit their vehicle to a compliant engine specification or to upgrade their vehicle to electric.

Parking – To remove all free parking from the city centre.

Network changes – To ban all but public transport to the Moor Street Queensway, Suffolk Street Queensway (northbound), southbound traffic from Paradise onto the A38 and Lister Street and Great Lister Street at the junction with Dartmouth Middleway.

Public transport – improvements to bus corridors.

The purpose of the Equality Analysis is to identify where or if the proposals affect the groups with protected characteristics positively or negatively and whether specific actions are required to address any adverse outcomes.

The consultation on the overall CAZ is ongoing and the results will be analysed to ensure that the consultation covers the relevant stakeholder especially those with protected characteristics. It will also be used to identify those areas where and what mitigation can be introduced and to whom.

Birmingham City Council has commissioned a distributional impact appraisal, together with a health impact assessment, to identify how the impacts of a proposed Clean Air Zone (CAZ) would be distributed across Birmingham's diverse population and business communities. These impacts would include positive health benefits as well as financial impacts.

Social and Equality Impacts

Income deprivation has been considered at lower super output level (LSOA)¹ relative to England and Wales, and relative to Birmingham. Compared to England and Wales as a whole, there are high levels of income deprivation within the CAZ and Birmingham in general. Owners of non-compliant vehicles resident within the CAZ and in close proximity to the CAZ (such as Nechells, Aston, Perry Barr, Tyburn, Soho and Sparkbrook) are potentially the worst affected financially by the proposed scheme, as due to their geographical location they would be least able to avoid entering and exiting the CAZ for everyday car journeys.

There is a higher rate of non-compliant cars associated with areas of income deprivation. It should also be noted that there is a relatively high proportion of households within the CAZ that have no access to a car. The adverse impacts therefore would be distributed among those households that are dependent on car use and which have non-compliant vehicles. It is notable that low income households across Birmingham are also among those who would benefit most from the effects of the CAZ in terms of reduced journey times and reduced petrol consumption due to reduced congestion around the city centre as well as from the health benefits of the proposed scheme.

Other social groups potentially adversely affected by the CAZ proposals would be those dependent on community transport and taxis, as without mitigation these forms of transport could be adversely affected to the extent that their availability decreases (see below). People vulnerable to these impacts would include the disabled, the elderly, women and children. It has therefore been recommended that these forms of transport are targeted for mitigation. There are some key community facilities within the CAZ whose users could be adversely affected by the combination of CAZ charges and parking charges. Examples would include staff and families of children in the Birmingham Children's Hospital, and congregants of those larger or more unique places of worship within the CAZ. These impacts could be mitigated through travel planning and ensuring convenient public transport is available at suitable times.

Business Impacts

The analysis has shown that some transport dependent businesses are more likely to have compliant fleets than others and so the impact of the CAZ would be distributed unequally across businesses. Taxi businesses would be faced with high upfront costs and few choices of response to the CAZ. Other types of business less able to afford the impacts of the CAZ appear to be private hire taxi companies, van companies with fleets that are owned by individuals rather than registered to the company, and SME HGV operators. A very high proportion of businesses within the CAZ are SMEs. Since all would be dependent on transport to some extent, any increase in costs from their suppliers as a result of entering the CAZ are likely to be passed on to these businesses, who in general would have less capacity to cope with increased costs than larger businesses.

Health Impacts

Health impacts would result from the reduction in air pollutants (particularly NO₂ and fine particles (PM₁₀ and PM_{2.5}) as well as behavioural changes from switching to active modes of transport (walking and cycling) and improved environmental conditions. Impacts on life expectancy from exposure to air pollutants, hospital admissions for respiratory and cardiovascular problems and productivity (labour, human capital and natural capital), have been quantified and monetised using JAQU's impact pathway approach. This has identified that in the first year of the CAZ there would be £3.2m (adjusted to 2020 values) in benefit from reduced health impacts from air pollution, and a further £56m (adjusted to 2020 values) in environmental benefits (from reduced impact of NO₂ on ecosystems, reduced impacts of PM₁₀ on building soiling and reduced impacts of ozone depleting substances on greenhouse gas related environmental effects). Analysis has shown that income deprived communities would proportionately receive higher health benefits than the population as a whole, meaning that the CAZ would help address a health inequality associated with the more deprived communities typically being exposed to more air pollution. Spatial analysis of where the main air quality changes would occur have shown that there would be a 26% improvement in NO₂ pollution concentrations around schools and nurseries which are currently within the areas at greater risk of illegal levels of air pollution.

One of the aims of the CAZ is to nudge behavioural change, so that people use more active modes of travel where they can. Although it is not possible to quantify the likely level of change of the CAZ, across a population the increase in physical activity could contribute to significant improvements in overall public health.

Mitigation

It is proposed to target mitigation at those groups least able to cope with the changes brought by the CAZ. This would include taxi drivers faced with high upfront costs and limited choices of compliant vehicles; community transport; income deprived residents who live or work in the CAZ, key workers who work in the CAZ; disabled people, and SMEs. The types

of mitigation under consideration include exemptions, discounts, sunset periods, financial incentives to support businesses and enhanced infrastructure to support the transition to compliant modes of transport. Mitigation options are being consulted on and tested to check that they do not undermine the objectives of the CAZ. They would be subject to the availability of funding. The final mitigation package will be set out in the full business case for the CAZ.

Protected characteristic: Age

Age details:

Wider Community

Children, young people and the elderly can be more vulnerable to air pollution, concerns over personal security and would be more sensitive to any changes in pedestrian access.

Children would be adversely affected by any reduction in the availability of community transport servicing schools and community centres within the CAZ. They would also be adversely affected by the increased cost of community transport if this prevented them accessing schools and community centres within the CAZ, or if it prevented families of patients at Birmingham Children's Hospital from visiting them during their stay.

A high proportion of elderly people have limited mobility and therefore would be adversely affected by implementation of the CAZ through the potential reduction in availability of community transport and taxis, and also the potential increase in cost of community transport and private vehicle travel.

A Defra commissioned study in 2006 showed that there is a tendency for higher relative mean annual concentrations of NO₂ and PM₁₀ in the most deprived areas of the country. In areas which exceed emissions standards, the correlation is stronger. The most vulnerable human receptors include young people and the elderly. A report published by the Royal College of Physicians finds that children living in high pollution areas are four times more likely to have reduced lung function when they become adults (Royal College of Physicians, 2016.).

The entire CAZ has a very low proportion of people over the age of 65 by LSOA relative to distribution across England and Wales and there is no variation in the proportion of

people over the age of 65 within the CAZ (Figure 4.6, Appendix B). The areas with greater proportions of elderly people are in the Sutton Coldfield area in the northern part of Birmingham and the Northfield/Selly Oak areas to the south. This suggests that the elderly population is unlikely to be disproportionately affected by changes incurred within the CAZ.

Where transport is not provided by the school or local authority, then there would be a differential adverse impact on children attending special educational needs schools if introduction of the CAZ discourages or prevents families from supporting their attendance at the school. There are also several community centres within the CAZ that have been identified as providing services used principally by children and which may require transport to and from the premises.

All facilities of importance within the air quality modelling area for the preferred CAZ option would experience a decrease in NO₂ concentrations to some degree. Figure 7.3 shows the degree of increase or decrease in NO₂ concentrations modelled following implementation of the preferred CAZ option relative to locations of facilities of importance to children as described above. As shown in the greatest decreases in average NO₂ concentrations are generally seen within the CAZ areas itself and surrounding major arterial roads as they extend out of the CAZ, which is also where average NO₂ concentrations are highest under the Do Minimum scenario.

The proposed package of mitigation measures is intended to reduce the impacts of the Clean Air Zone on these groups particularly in relation to those in low income families and with a reliance on community transport.

Protected characteristic: Disability

Disability details:

Wider Community

The presence of a higher disability ratio may indicate a higher proportion of people sensitive to air quality due to long term illnesses. The disabled are also more likely to have concerns over personal security, severance and be dependent on community or public transport.

The CAZ includes areas where there are a high proportion of disabled residents based on the comparative illness and disability ratio component of the Index of Multiple

Deprivation (Figure 4.7, Appendix B). The central north section as well as the southern west part of the CAZ includes the highest proportion of disabled residents in the CAZ. There is only a small section within the centre with a low proportion of disabled residents.

The 2011 Census reported that 9% of the population of Birmingham (98,181 people) reported a long term health problem or disability that was significantly limiting their day-to-day activities. A similar percentage of the population reported their day-to-day activities were slightly limited by a health problem or disability. The official labour market statistics state that the total number of people claiming disability living allowance in Birmingham is 43,920 (approximately 4% of the population).

Vehicles used by Blue Badge holders must meet the CAZ emission standards unless the vehicle is registered with the DVLA with a 'disabled' or 'disabled passenger vehicle' tax class. If your vehicle meets neither of these conditions and you want to use your vehicle within the CAZ you will need to pay the charge. Support will be offered to low income groups to help them to adapt to the CAZ.

Protected characteristic: Gender

Gender details:

Wider Community

There is a very low proportion of female residents throughout the majority of the CAZ. There is a higher proportion of female residents in a small section in the southern part of the CAZ (Digbeth area) and one area, north east of the centre which includes a high proportion of female residents. This is in the vicinity of the Birmingham Children's Hospital and the high proportion of female residents is assumed to be due to the presence of key worker accommodation on the hospital site. Much of the remaining CAZ area has a low proportion of female residents by LSOA relative to distribution across England and Wales.

There could be a disproportionate and differential impact on women, who as a group are more frequent users of taxis and have a more negative perception or experience of alternative modes of public transport and active travel modes (walking and cycling).

Mitigation measures being considered will benefit women who may be adversely affected by CAZ proposals e.g. low income and key workers.

Protected characteristics: Gender Reassignment	Not Applicable
Gender reassignment details:	It is not considered that the CAZ scheme is likely to disadvantage transgender people. Low income and key workers will be supported through the planned package of mitigations..
Protected characteristics: Marriage and Civil Partnership	Not Applicable
Marriage and civil partnership details:	It is not considered that the CAZ scheme is likely to disadvantage transgender people. Low income and key workers will be supported through the planned package of mitigations.
Protected characteristics: Pregnancy and Maternity	Wider Community
Pregnancy and maternity details:	<p>There are health inequalities associated with pregnancy and air quality. There is emerging evidence on the links between high levels of emissions and effects on the unborn child. Evidence shows that air pollution can affect the growth of the unborn baby and may be linked to premature birth or even still birth. It is estimated that traffic-related air pollution exposure (particularly exposure to PM) of pregnant women accounts for more than one-fifth of all cases of low birth weight at term. Low birth weight is associated with low lung function, COPD, cardiovascular disease and early death in adulthood. Air pollution can also harm placental development, which affects the development of the unborn child and has been associated with several chronic diseases, including heart disease, obesity and type 2 diabetes. Poor foetal growth is linked to abnormal development of the kidneys, and to hypertension and kidney disease in later life.</p> <p>The introduction of the Clean Air Zone will have positive outcomes for this group.</p>
Protected characteristics: Race	Wider Community
Race details:	<p>Compared to England and Wales, much of Birmingham has a high proportion of its population that identifies as Black, Asian and Minority Ethnic (BAME). There is a generally high concentration of Birmingham's BAME population to be within the central part of Birmingham, with the highest concentrations to the east (Hockley, Winson Green and Handsworth areas) and west of the CAZ (Sparkbrook, Small Heath and Bordesley Green areas). The areas with the lowest proportion of BAME population are the Sutton Coldfield area in the northern part of Birmingham and the Northfield/Selly Oak areas to the south, but these still comprise populations</p>

in the top 40% proportion of BAME population compared to England and Wales as a whole.

There are however high proportions of LSOAs within the CAZ with high levels of income deprivation and BAME communities. Key issues are therefore likely to relate to travel within the CAZ and the proportion of residents within the CAZ that have non-compliant vehicles who would not be able to avoid the zone.

The impact on the taxi trade could have consequential impacts for BAME and low income communities, since a very high proportion of taxi drivers are from communities with high proportion of non-white residents and income deprived residents. Since taxis in Birmingham are all wheelchair accessible, whereas currently none of the private hire taxis are, a reduction in this type of vehicle will have an adverse impact on disabled people who may depend on them for access. It is therefore recommended that taxis are targeted for mitigation due to the combination of direct and indirect impacts arising from the proposed CAZ.

Other measures to reduce the impact on low income residents and workers are proposed as part of the mitigations package.

There would be an overall beneficial health impact within the study area under the preferred CAZ option and all other options, however, the magnitude of benefit would be greatest under the preferred CAZ option. When income distribution is considered relative to England and Wales, residents of those LSOAs which fall within quintile one for income deprivation would experience a disproportionately greater amount of the benefits associated with reductions in atmospheric concentrations of all three pollutant types (NO₂, PM₁₀ and PM_{2.5}) than those within less deprived quintiles.

Protected characteristics: Religion or Beliefs

Religion or beliefs details:

Wider Community

According to the 2011 census, Christianity was the highest represented religion in Birmingham with 46% of residents saying they were Christian. Whilst 22% of the population was Muslim and 19% had no religious beliefs..

The majority of people classifying themselves in one of the White or Black ethnic groups said that they were Christian, whereas the Muslim community was predominantly made up from the Asian population. In general, the Muslim population are concentrated closer to the city centre area with the Christian group generally further out towards the council boundary.

Within the proposed CAZ area there are 30 registered places of worship, including Roman Catholic, Presbyterian, Church of England, Greek Orthodox Churches, Synagogues, Mosques and Sikh Temples. Most are of a size that suggests their catchment is highly localised. However, Birmingham Central Mosque is an exception with a capacity of 20,000 and regularly attracts more than 4,000 worshippers for Friday services, suggesting that it attracts a significant number of visits from outside the CAZ area on a regular basis. Other places of worship with a significantly larger than average capacity (greater than 500 spaces) within the CAZ area include the Anglican, Greek Orthodox and Catholic Cathedrals, Camp Hill Seventh Day Church, Ladywood Seventh Day Adventist Church and Birmingham City Church.

Measures to support people attending places of worship are being considered to reduce the impact on these groups.

Protected characteristics: Sexual Orientation

Not Applicable

Sexual orientation details:

It is not considered that the CAZ scheme is likely to disadvantage transgender people. Low income and key workers will be supported through the planned package of mitigations.

Consulted People or Groups

Consultation is currently underway with the wider stakeholder group. The outcome of this consultation will shape the final form of the scheme and any possible mitigation measures as well as the additional measures.

Informed People or Groups

Summary and evidence of findings from your EIA

The Public Sector Equality Duty drives the need for equality assessments (Initial and Full). An initial assessment has been prepared from the outset based upon available knowledge and information.

In producing this Equality Assessment due regard has been given to the 3 aims of the General Duty. The overall CAZ scheme impacts directly on any of the groups with protected characteristics who will need to enter the zone in that they may be required to pay if they have a non-compliant vehicle. In addition there may be additional disbenefits with the removal of the free city centre parking and additional

controlled parking zones. This will have a specific impact on those who have mobility issues.

However the introduction of the CAZ and the subsequent improvement to air quality will provide a betterment for the public good; including the groups with protected characteristics.

The implementation of elements of the scheme especially the additional measures will be subject to more detailed consultation as well as the statutory Traffic Regulation process. Once the detailed design stage has been completed a more informed EA will be completed for the individual schemes identifying where and what mitigation measures have been introduced.

Submit to the Quality Control Officer for reviewing?	No
Quality Control Officer comments	I have reviewed the assessment on 30 August 2018 and it can be sent for approval by the Accountable Officer
Decision by Quality Control Officer	Proceed for final approval
Submit draft to Accountable Officer?	Yes
Decision by Accountable Officer	Approve
Date approved / rejected by the Accountable Officer	31/08/2018
Reasons for approval or rejection	
Please print and save a PDF copy for your records	Yes

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