



Bristol Clean Air Plan Full Business Case

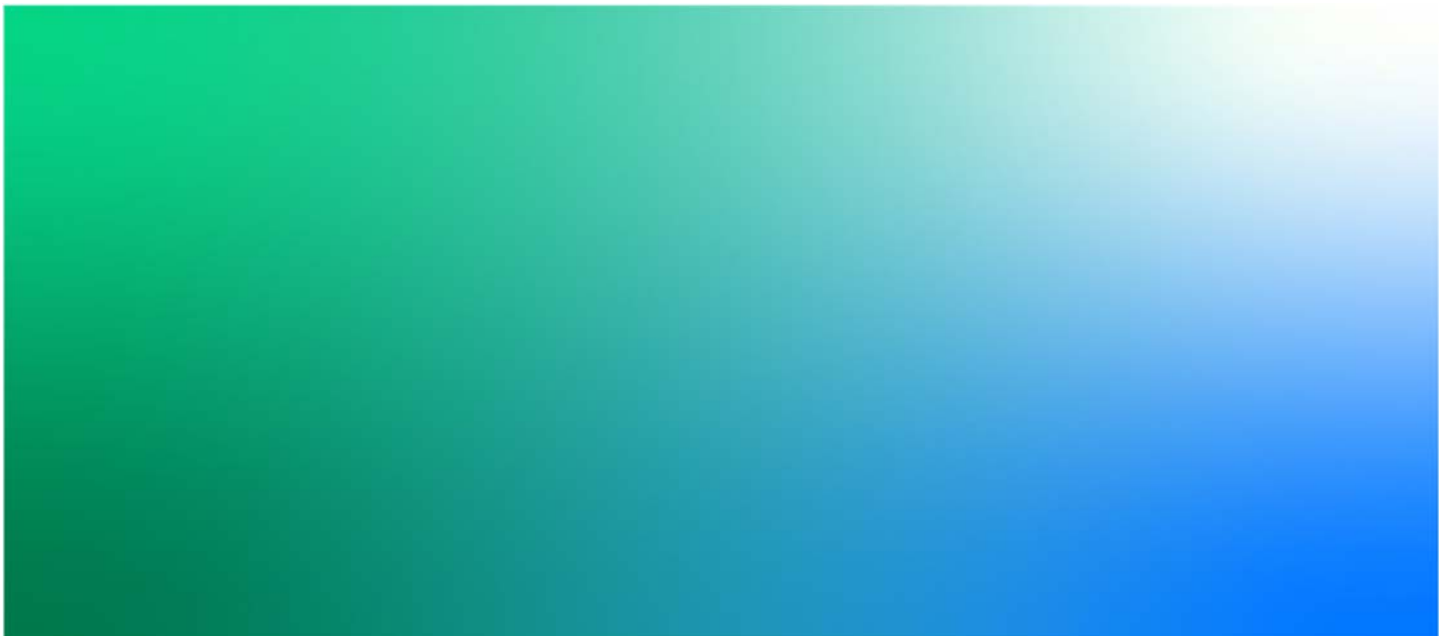
Executive Summary

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Bristol City Council

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Bristol Clean Air Plan Full Business Case

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Acronyms and Abbreviations

AQAL	Air quality assessment levels
AQMA	Air Quality Management Area
BCC	Bristol City Council
CAF	Clean Air Fund
CAP	Clean Air Plan
CAPEX	Capital expenditure
CAZ	Clean Air Zone
EU	European Union
FBC	Full Business Case
HGV	Heavy Goods Vehicle
JAQU	Joint Air Quality Unit
JTP	Joint Transport Plan
JTS	Joint Transport Strategy
LGV	Light Goods Vehicle
NO ₂	Nitrogen Dioxide
OBC	Outline Business Case
OPEX	Operational expenditure
PCN	Penalty Charge Notice
WECA	West of England Combined Authority

1. Background

Poor air quality is the largest known environmental risk to public health in the UK¹. Investing in cleaner air and doing more to tackle air pollution are priorities for the EU and UK governments, as well as for Bristol City Council (BCC). The Mayor of Bristol has often cited Bristol's 'moral and legal duty' to improve air quality in the city and the administration recognises that achieving improved air quality is not solely a transport issue. Notwithstanding the Council's work on a Clean Air Zone, efforts have been made to make citizens more aware of – and take personal responsibility for – various sources of air pollution, from traffic fumes to solid fuel burning. The Mayor has articulated a 'call to action' for local people, businesses and organisations to consider how small changes can make a significant difference in cutting toxic fumes across the city. BCC has monitored and endeavoured to address air quality in Bristol for decades and declared its first Air Quality Management Area in 2001. Despite this, Bristol has ongoing exceedances of the legal limits for Nitrogen Dioxide (NO₂) and these are predicted to continue until around 2027 without intervention.

The added context is that of the COVID-19 pandemic. Recent research suggests that poor air quality may be correlated with higher death / infection rates from COVID-19. This is further compounded by growing evidence that suggests that those from black, Asian and minority ethnic communities are more at risk of catching and dying from the virus and the fact that individuals from these communities are more likely to live in areas where air quality is poor. The challenge of maintaining public health and supporting economic recovery while also achieving legal air quality levels after lockdown restrictions are lifted will remain live and intersecting issues for the foreseeable future.

The UK Government continue to transpose European Union law into its Environment Bill², to ensure that certain standards of air quality continue to be met, by setting air quality assessment levels (AQALs) on the concentrations of specific air pollutants. It's very unlikely that these AQALs will differ to EU Limit Values prescribed by the European Union's Air Quality Directive and transcribed in the UK's Air Quality Standards Regulation 2010. Therefore, these Limit Values will remain in enforcement post-Brexit. In common with many EU member states, the EU Limit Value for annual mean nitrogen dioxide (NO₂) is breached in the UK and there are on-going breaches of the NO₂ limit value in Bristol. The UK government is taking steps to remedy this breach in as short a time as possible, with the aim of reducing the harmful impacts on public health. Within this objective, the Government has published a UK Air Quality Plan and a Clean Air Zone Framework, both originally published in 2017 (noting there have been subsequent revisions). The latter document provides the expected approach for local authorities when implementing and operating a Clean Air Zone (CAZ). The following business cases have been submitted to JAQU for the Clean Air Plan; Strategic Outline Case (April 2018), and an Outline Business Case (November 2019 and updated between April and June 2020).

¹ Public Health England (2014) Estimating local mortality burdens associated with particular air pollution.

<https://www.gov.uk/government/publications/estimating-local-mortality-burdens-associated-with-particulate-air-pollution>

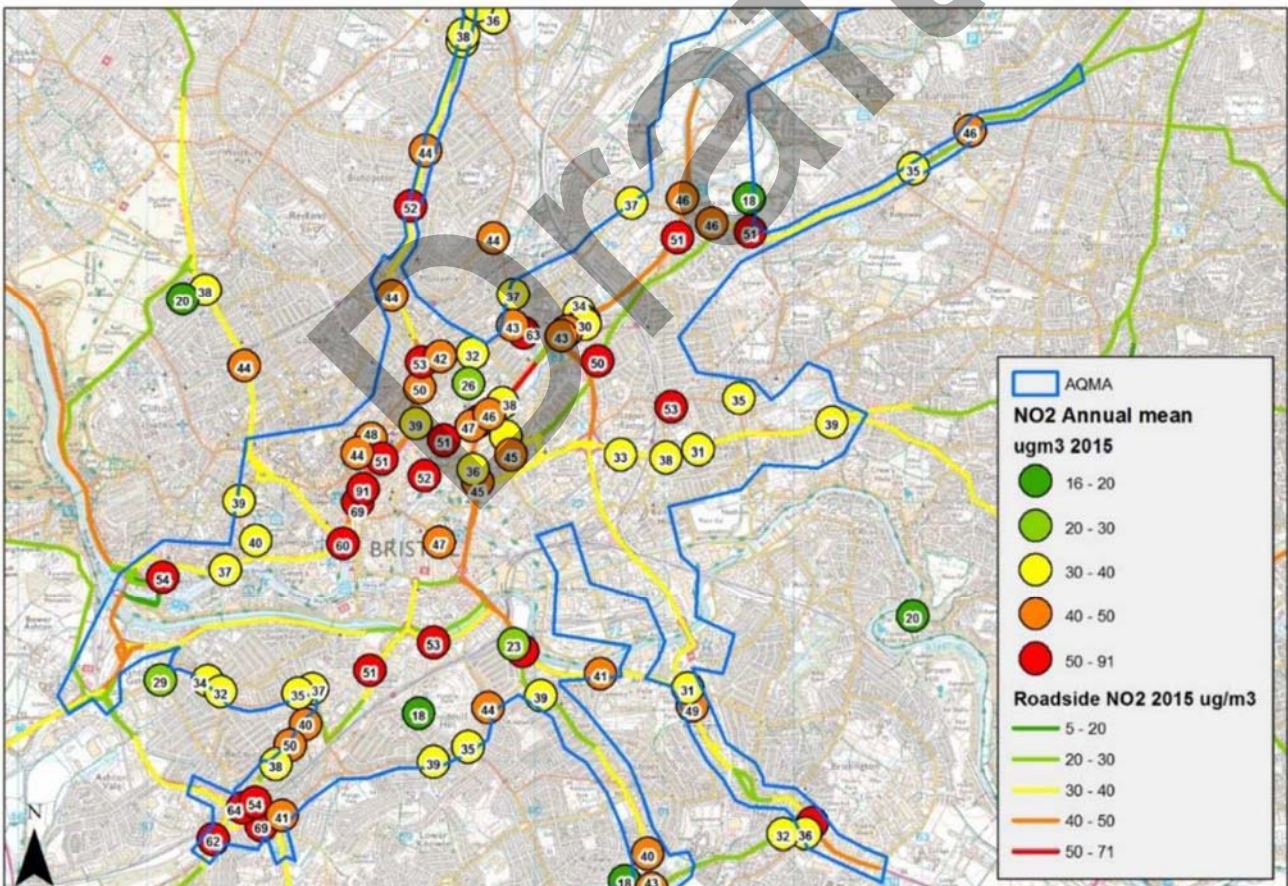
² Environment Bill 2019-21 <https://services.parliament.uk/bills/2019-21/environment.html>

2. Project Objective

The focus of the Clean Air Plan is on achieving air quality and public health improvements in compliance with the legal requirements set out above. It will prioritise the central area of Bristol which experiences the highest level of exceedances and has been the focus of a recognised Air Quality Management Area (AQMA) since 2001. Figure 2-1 shows the PCM modelled concentrations in Bristol (required to meet European regulations), and the local monitoring data recorded by BCC (required to meet UK Government regulations) as recorded in 2015.

The Clean Air Plan fits well with the objectives of existing policies in the region not least the Bristol Transport Strategy which includes outcomes aiming to minimise the impact of congestion and air quality within BCC. focuses on congestion and the council’s Climate Action Plan. Other policies either being drafted or underway include the Joint Local Transport Plan 4 and the Joint Transport Strategy (JTS), Joint Transport Plan (JTP) and the One City Climate Strategy. The measures proposed within the Clean Air Plan are complementary to existing policy objectives and to support wider transport initiatives. Bristol City Council is working closely with the West of England Combined Authority (WECA) to ensure that all emerging policy also reflects the magnitude of the air quality problem and the urgent need to address it.

Figure 2-1: Comparison of Existing Annual Nitrogen Dioxide Concentrations Measured at Monitoring Sites in Bristol and Estimated by the Pollution Climate Mapping (PCM) Model.



3. Full Business Case (FBC) Development

3.1 Five Cases

The (FBC) is structured around five cases in accordance with HM Treasury/JAQU guidance, namely:

- Strategic Case – sets out the case for change and the spending objectives of the Plan.
- Economic Case – assesses the preferred option that achieves compliance in the shortest possible time from a value for money perspective, as well as identifying distributional impacts of the preferred option.
- Commercial Case – establishes the preferred route to procurement, based on supplier capability and likely delivery solution.
- Financial Case - sets out the detailed costings for the Plan and available funding sources.
- Management Case – provides governance and management arrangements to deliver the preferred option.

There is a chapter for each case which are in turn supported by a comprehensive set of appendices that include drawings, technical notes, stakeholder and engagement plans, Clean Air Fund (CAF) proposals, modelling reports, finance reports and the procurement strategy.

3.2 Modelling Approach

Bristol's monitoring network is focused on NO₂, as the concentrations of this pollutant near busy roads exceed the health-based national Objectives and European Limit Values, though some data is also available about particulate matter.

The Bristol City Council and Defra monitoring network in 2019 consisted of:

- 7 real time NO₂ monitors which provide continuous live data which is uploaded automatically to a public website: <https://opendata.bristol.gov.uk/pages/air-quality-dashboard-new/air-quality-now#air-quality-now>;
- 4 real time particulate monitors (1 x PM2.5 and 3 x PM10); and
- 102 NO₂ diffusion tubes which provide a monthly and annual concentration for this pollutant.

3.3 Overview of Modelling Work

In 2013, BCC commissioned CH2M (now Jacobs) to update the existing GBATS model, primarily to assess the MetroWest scheme. The updated model is called the GBATS4 Metro Model (GBATS4M). The GBATS4M model consists of:

- A Highway Assignment Model representing vehicle-based movements across the Greater Bristol area for a 2013 autumn weekday morning peak hour (08:00-09:00), an average inter-peak hour (10:00-16:00) and an evening peak hour (17:00-18:00);
- A Public Transport (PT) Assignment Model representing bus- and rail-based movements across the same area and time periods; and
- A five-stage multi-modal incremental Variable Demand Model (VDM) that forecasts changes in trip frequency and choice of main mode, time period of travel, destination, and sub-mode choice, in response to changes in generalised costs across the 12-hour period (07:00-19:00).

The air quality model base year is 2015 since the 2017 data was not available at the time the model was developed, and in 2016 there was a significant amount of disruption from roadworks in the city (related to the Metrobus scheme) which prevented some monitoring data from being collected and altered the typical travel patterns across the city.

As the GBATS4M model has a base year of 2013, a 2015 traffic model has been developed to support this by interpolating from the 2013 and 2021 models. It was therefore pragmatic to undertake disaggregation of the traffic model by vehicle compliance / fuel type in the 2015 model rather than 2013. The validation of the 2015 fleet composition will be reported within the T4 Transport Modelling Forecast Report.

3.3.1 Consideration of recent traffic volume and air quality data

Bristol City Council have collated traffic and air quality data to consider the impact of the COVID-19 pandemic. Combining the evidence base available for both traffic volumes and air quality before, during and post lockdowns, the work concluded that the evidence shows a decline in traffic volumes and improvements to air quality during the first lockdown in particular. The second lockdown however, was less restrictive than the first and as such didn't lead to such a steep decline in traffic volumes. Following lockdown 2 and a subsequent transition between tiers 2 and 3, traffic numbers appeared to have returned to that of a similar pattern to pre-lockdown and a worsening of air quality in some parts of the city.

For comparative purposes, data from October 2019 and October 2020 was considered as October 2020 was the key period when traffic had most chance to return to normal levels; before the lockdown 2 and Christmas period changed things again. This showed that traffic in the critical locations during October 2020 was 82% of that same time the previous year.

Taking everything into consideration, it was concluded that with some areas of the city back to near normal traffic levels (although not all), that compliance will not be achieved at a small number of key sites by non-charging measures alone and therefore this means that annual compliance will not be met.

4. Option Assessment

4.1 Summary of option assessment work post-OBC

4.1.1 Updated Baseline Model

During the COVID-19 pandemic a number of Street Space Schemes have been implemented within Bristol in order to free up road space, which would normally be used by traffic and parking, for the use of public transport, cyclists and pedestrians. These schemes have significantly improved air quality in the centre of Bristol. It was hoped that these schemes alongside other measures would enable the council to meet its air quality aims without a charging zone. Due in part to the COVID-19 pandemic, it was not possible to demonstrate sufficient behavioural change on key corridors, such as Upper Maudlin St/Marlborough St to avoid having a charging zone. Further work was therefore carried out to assess what impact the street space schemes would have on the charging zone options and the baseline model was updated to include Street Space schemes.

4.1.2 Small CAZ D Option

Previous work as part of the OBC had selected the Medium CAZ C/Small CAZ D option as the preferred scheme option. However, modelling completed for the medium CAZ C/small CAZ D Option found that the majority of key air quality locations within Bristol are situated within the small CAZ D Zone. It was therefore proposed that, with the street space schemes in place, a small CAZ D Option could produce the same compliance year as a medium CAZ C/small CAZ D Option. This would avoid the wider economic impacts associated with a medium CAZ C Option, due to the dispersion of traffic more widely around the city. Therefore, following the submission of the OBC, modelling was carried out in order to assess the effectiveness of a small CAZ D Option, without the addition of a medium CAZ C Zone. Modelling was completed for the small CAZ D Zone and Fast Track Measures with the addition of Street Space Schemes.

The assessment work carried out found that the Small CAZ D option with Fast Track Measures is likely to achieve compliance by 2023, the same year as the Medium CAZ C/Small CAZ D. Therefore, the Small CAZ D Option was selected as the preferred option to be assessed within the FBC. The Small CAZ D option includes the following measures:

- Small Area Class D (charging non-compliant cars, buses, coaches, taxis, HGVs and LGVs);
- Fast Track Measures:
 - Closure of Cumberland Road inbound to general traffic; and
 - Holding back traffic to the city centre through the use of existing signals.

5. CAF Measures

To support the implementation of the CAZ, a series of additional measures are proposed to mitigate the impact of the CAZ on businesses, local residents and visitors. There will also be a number of sunset periods and exemptions considered and implemented; these will be further refined following stakeholder engagement between the OBC and FBC in accordance with the compliance objectives / legal direction.

The final list of measures taking into consideration the impact of the COVID-19 pandemic, new consultation data, business engagement feedback, previous evidence are as follows:

Financial Support:

- A loan / grant scheme to assist those earning low incomes / needing to travel into the zone to work, to replace or upgrade their vehicle
- Provision of grants for taxi, private hire and LGV drivers to upgrade and / or retrofit their vehicles
- A loan scheme to assist small local businesses to replace their vehicles
- Additional funding for supported bus services and coaches to retrofit vehicles and avoid CAZ charges

Infrastructure:

- Increase, improve and update Legible City Signage

Sustainable Travel Choices:

- Mobility credits and/or subsidised bus travel for certain demographic or income groups
- Targeted door knocking / roadshows in areas of deprivation
- Business support and engagement including personalised travel planning and building audits, targeted at small local businesses
- CAF scheme promotion; leaflets / publicity / events / website etc.

Freight:

- Micro-consolidation unit with cargo freight bikes and Only Mile Delivery centre

Potential Exemptions:

A list of proposed exemptions to the Small area CAZ D Option are listed within Table 5-1.

This is being submitted as a bid to Government alongside the FBC. Following submission of the FBC those measures supported by Government with funding agreed, and with any further additions / changes made as a result of project refinement as noted above, will be progressed.

Table 5-1: Exemptions offered as part of Small CAZ D Option

Measure	Description	Length
Historic vehicles	Full exemption as per the national CAZ framework – would need to register for an exemption	n/a
Disabled passenger vehicle tax classes 78 and 85	Full exemption as per the national AZ Framework – would need to register for an exemption	n/a
Diplomatic Vehicles, Military Vehicles	Full exemption as per the national CAZ Framework – would need to register for exemption	n/a
Specialist vehicles (e.g. cranes, agricultural vehicles and specific security vehicles)	Full exemption as per the national CAZ Framework – would need to register for exemption Security vehicles - that is a designated Cash-in-transit or bullion vehicles being used for the delivery and collection of cash and other valuables.	n/a
Recovery vehicles	Must be licensed as a recovery vehicle under paragraph 5 of Schedule 1 to the 1994 Act, this will all be fully confirmed and explained once the preferred option is approved by Government.	n/a
Showman's vehicles	Must be registered under the 1994 Act and is a "showman's vehicle" or "showman's goods vehicle" within the meaning of section 62 of the 1994 Act	n/a
Emergency service vehicles - Police, Fire, Ambulance services, NHS Patient Transport ambulances & Blood and Transplant vehicles	Full exemption as per the CAZ Framework – would need to register for exemption.	n/a
Motorcycles	Full exemption - "motorcycle means a motor bicycle or a motor tricycle but does not include an electrically propelled vehicle.	n/a
Support for residents living inside the zone	All residents living inside the CAZ area with a non-compliant vehicle will be offered a one- year exemption which they will need to register to receive. This will all be fully confirmed and explained once the preferred option is approved by Government. During this time financial support packages will be available and prioritised to those on low incomes and residents living inside the zone, subject to status and availability	1 year initially
Registered community transport vehicles with a S19 permit	Registered community transport Euro 4 and 5 diesel vehicles with a valid community transport permit i.e. operating under a Section 19 Permit, that are not otherwise exempt vehicles, will be exempt for at least the first year - to be reviewed. Once the vehicle is registered with the council, owners/drivers must register each day they travel into the zone for the charge to be waived. This will all be fully confirmed and explained once the preferred option is approved by Government.	1 year initially
Low income earners travelling into the zone or out of the zone for work purposes	It is proposed to set a threshold capped per individual income of less than £24k p/a gross and earning no more than £12.45 per hour	1 year initially

Measure	Description	Length
	<p>Individuals register one vehicle via MiPermit to go on the permitted vehicle list with evidence being required i.e. VC5, P60.</p> <p>This will all be fully confirmed and explained once the preferred option is approved by Government.</p> <p>Low income earners will also be prioritised for the financial support packages available subject to status and availability</p>	
Commercial vehicles with existing finance agreements exemption	<p>Companies based at an address within the Clean Air Zone and / or businesses keeping or storing vehicles overnight at an address within the Clean Air Zone.</p> <p>This will all be fully confirmed and explained once the preferred option is approved by Government.</p>	1 year initially
Visitors to specified hospitals	<p>Those attending hospital appointments longer term (more than 3 days a week) in non-compliant vehicles will be able register via MiPermit for a set period on a case by case basis.</p> <p>This will all be fully confirmed and explained once the preferred option is approved by Government.</p>	Support offered for 1 year initially
Support for Blue badge holders	<p>Blue Badge holders will need to register one vehicle on MiPermit to receive the year exemption after which time the impact on compliance will be reviewed.</p> <p>This will all be fully confirmed and explained once the preferred option is approved by Government.</p>	1 year initially
Home to School Transport buses / minibuses / coaches only	<p>Buses, minibuses and coaches only, carrying out only a home to school service (serving Bristol schools but may be registered elsewhere). BCC Passenger services to provide a list of vehicles to be added to a manually managed permitted vehicle list held by BCC.</p> <p>Taxi services will be able to access financial support packages subject to status and availability</p>	1 year initially
Support for people attending hospital appointments	<p>Patients attending hospital appointments at BRI. This includes:</p> <ul style="list-style-type: none"> • Bristol Royal Infirmary • Bristol Heart Institute • Bristol Royal Hospital for Children • Bristol Haematology and Oncology Centre • St Michael's Hospital • Bristol Dental Hospital • Bristol Eye Hospital <p>All patients with appointments are exempt.</p> <p>Proposed solution - Pod in Hospital reception area where patients are able to enter details to be added to the permitted vehicle list for the day, which would be a manually managed list held by BCC.</p> <p>This will all be fully confirmed and explained once the preferred option is approved by Government.</p>	1 year initially

6. Economic Assessment

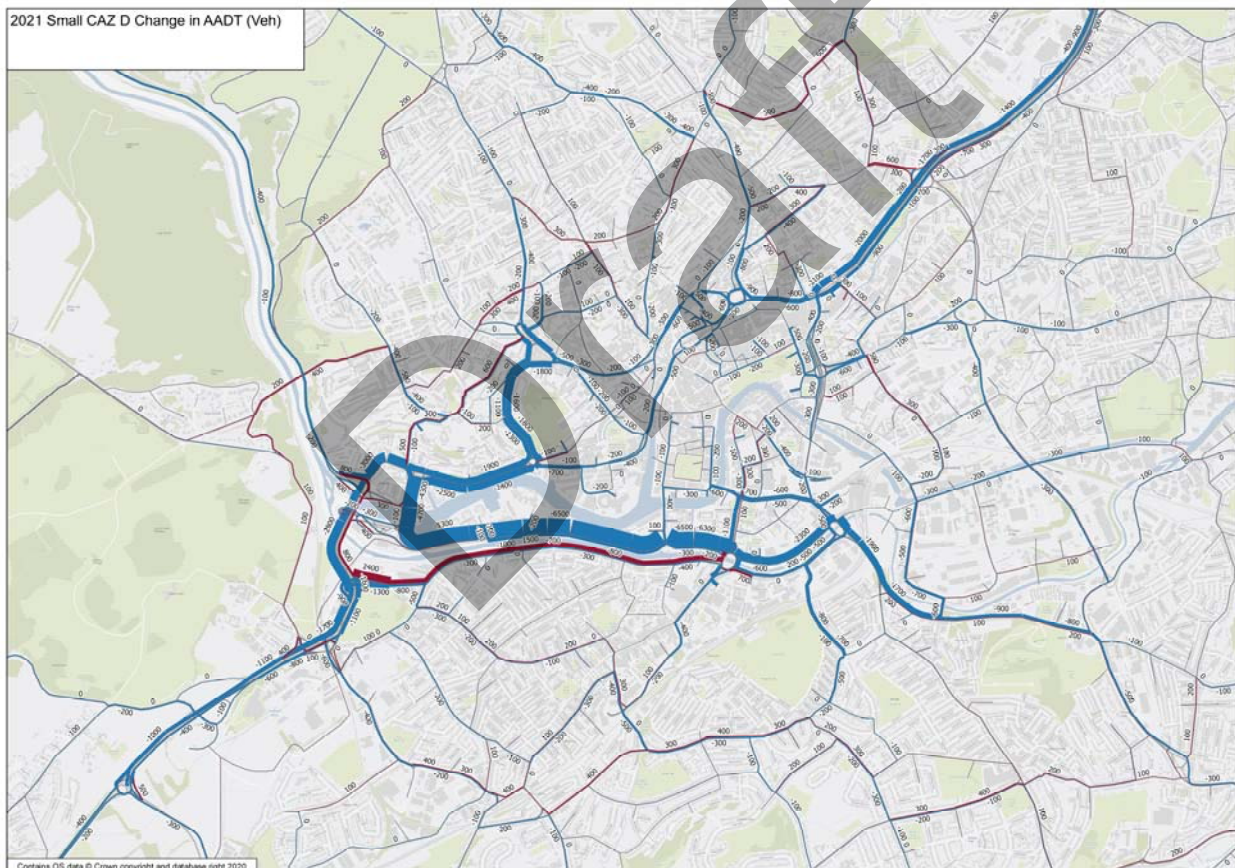
The Economic Case assesses the Small CAZ D option from a value for money perspective, as well as identifying distributional impacts of the preferred option. This work is informed by detailed transport and air quality modelling.

6.1 Small CAZ D Option

6.1.1 Transport Modelling

The transport modelling work was undertaken to assess the changes in traffic and inform the air quality modelling work. To show the impact of the Small CAZ D scheme on traffic flows around the Bristol area, a flow difference plot has been produced representing the AADT traffic flow change (veh) between the Small CAZ D option and Baseline. The change in AADT flows 2021 in Figure 6-1. In all difference plots, Blue represents a decrease in flows and Red represents an increase in flows.

Figure 6-1: 2021 Small CAZ D – Baseline (including Street Space Schemes): AADT (veh)



1 indicates that the Small CAZ D significantly reduces the traffic along Cumberland Road in 2021 compared to the Baseline due to the closure to inbound traffic along Cumberland Road. The introduction of a charge fee over the Small CAZ area reduces the amount of vehicle traffic accessing the City Centre, by approximately 2,000 vehicles per day, and through traffic using roads in the CAZ area.

However, this does result in some increases in traffic on roads mainly outside the CAZ boundary as non-compliant drivers attempt to avoid the charge by routing around the CAZ area. The scale of these potential impacts on other routes is considered to be modest, as almost all the changes on links showing increases can be considered as well within normal day-to-day variation in traffic volumes. A sample of the key roads with AADT increases outside the CAZ area are as follows:

- Clifton Suspension Bridge 4.5% AADT 2-way increase;
- St. Pauls Roads 5% AADT 2-way increase;
- Cotham Hill 2% AADT 2-way increase;
- Lower Ashley Road 2.5% AADT 2-way increase;
- Midland Road 5% AADT 2-way increase; and
- Bedminster Road 4% AADT 2-way increase.

Within the CAZ boundary, Coronation Road, 5% AADT 2-way increase in flows, due to the closure of Cumberland Road in the inbound direction.

The reduction in vehicles accessing the City Centre, due to the introduction of charge fee, would be approximately 1,500 vehicles per day, which is 500 fewer than in 2021. Furthermore, the slight increases in traffic on roads outside the CAZ boundary are lower by 2023 compared to 2021. All of this is because there are fewer non-compliant vehicles in the 2023 Baseline scenario compared to 2021. The scale of the impact from increases on some roads in 2023 is considered to be modest as almost all the changes on these links can be considered well within normal day-to-day variation in traffic volumes.

6.1.2 Air Quality Modelling

A detailed assessment of the impacts of the Small CAZ D scenario on air quality was undertaken for the FBC. The results indicate that the Small CAZ D would provide total compliance in 2023, compared to the reference case's natural compliance year of 2027.

The main focus areas preventing earlier compliance were Marlborough Street, Upper Maudlin Street and Baldwin Street. The Small Area CAZ D achieves compliance on Marlborough Street in 2023. Compliance on Upper Maudlin Street is estimated to be 2021. Street space schemes in place on Baldwin street alone achieve compliance at this location by 2021. Overall, this scenario achieves compliance by 2023 across the whole of BCC authority area.

Detailed information about the air quality changes associated with the scheme are shown in in Table 6-1.

Table 6-1: 2021, 2023 and 2031 Street Space Scheme Baseline and Small Area CAZ D (including Fast Track measures) modelled annual mean NO₂ results and compliance years at critical locations

	Rupert Street (nr Bridewell St)	Marlborough Street	Upper Maudlin Street	Park Row	Park Street	Queen's Road	College Green	Cheltenham Road	Newfoundland Way	Church Road	Baldwin Street
Receptor ID	15160	12649	12636	12014	6925	7098	11949	12708	13742	24587	11589
2021 Results (µg/m ³)											
Reference	51.4	57.7	48.3	44.7	37.8	34.7	40.7	41.4	49.9	43.5	26.5
Small Area CAZ D	43.1	42.8	37.4	35.3	29.3	28.5	32.8	38.9	39.8	41.6	24.5
Difference	-8.3	-14.9	-10.8	-9.4	-8.5	-6.1	-7.8	-2.5	-10.1	-1.9	-2.0
2023 Results (µg/m ³)											
Reference	46.0	49.4	42.1	38.9	32.4	30.1	35.2	37.0	43.9	37.9	23.7
Small Area CAZ D	39.8	40.3	34.6	32.7	26.5	25.8	29.7	35.5	36.3	36.5	22.2
Difference	-6.2	-9.1	-7.5	-6.1	-5.9	-4.3	-5.4	-1.6	-7.5	-1.4	-1.5
2031 Results (µg/m ³)											
Reference	33.3	33.3	28.2	26.3	22.9	21.5	24.2	26.8	29.4	25.2	18.8
Small Area CAZ D	32.9	35.3	28.1	26.6	22.1	21.4	23.9	27.3	29.0	25.6	18.8
Difference	-0.3	2.0	-0.1	0.3	-0.8	-0.1	-0.3	0.5	-0.4	0.4	-0.1
Compliance Year											
Reference	2026	2027	2024	2023	2021	2021	2022	2022	2025	2022	2021
Small Area CAZ D	2023	2023	2021	2021	2021	2021	2021	2021	2021	2022	2021
Difference	-3	-4	-3	-2	0	0	-1	-1	-4	0	0

6.1.3 Economic Impacts

By combining the economic impacts, the intervention option is forecast to generate an NPV of between -£118 million, as shown in Table 6-2. See the Economic Case (FBC-9) for more detail on these economic impacts.

Table 6-2: Economic impacts (2018 prices and values £)

Impact (£m, 2018 Prices and Values)	Small CAZ D
Present Value of Benefits	
Air Quality: Changes in NOx	2.85
Air Quality: Particulate Matter	0.77
Active Mode Appraisal Toolkit	1.27
Accident Analysis	6.57
GHGs	0.01
Journey Time/Vehicle Operating Costs	12.96
Present Value of Benefits (PVB)	£24.44
Present Value of Costs	
Consumer Welfare: Behavioural Response – Replace Vehicle	13.11
Consumer Welfare: Behavioural Response – Cancel Trip/Avoid Zone/Re-mode	43.23
Vehicle Scrappage	1.28
Transactions	0.07
Capital Expenditure: Set Up Costs	56.80
Operational Expenditure: Running Costs	28.12
Present Value of Costs (PVC)	£142.63
Net Present Value (NPV)	-£118.19

To provide scale context, these NPVs, have been compared to the forecast GVA in Bristol (forecast at £137 billion in present value terms [2018 prices and values] between 2021-30). Across the 10-year period assessed, the NPV of the intervention option represents -0.09% of present value GVA in Bristol over the same period.

7. Procurement

With a complex scheme of this nature, all procurement options must be considered for each of the deliverables within the project. There are four primary routes available to deliver the scheme:

- Leveraging relevant current BCC contracts;
- Through existing BCC frameworks;
- Through frameworks commissioned by other conveners such as Crown Commercial Services (CCS), the UK Government's professional procurement service for the public sector. We are also working with BaNES to share frameworks where possible; and
- Open tender through the Official Journal of the European Union (OJEU), or as otherwise instructed post Brexit.

These options were considered for each of the deliverables at the OBC stage and a preferred approach is identified as being through a government framework

It is recommended that the Clean Air Zone for Bristol is delivered, where appropriate, through existing contracts and frameworks established by BCC for most of the deliverables. This provides the following assurances to the project:

- To meet the tight timescales of the project, leveraging existing arrangements or frameworks will provide a compliant procurement process in the shortest timeframe;
- These contracts were competitively tendered and were awarded on MEAT (Most Economically Advantageous Tender) criteria ensuring both quality and value for money;
- By utilising current technology, existing operations can maintain business as usual and minimise disruption;
- Existing supplier relationships will allow for swift project on-boarding and encourage innovation; and
- Current technology deployed which is utilised to also support the CAZ will offer savings on licences

Although it is envisaged that BCC contractual arrangements will be able to fulfil the majority of the deliverables, it is acknowledged that some agreements were not optimal. When found to be the case and current arrangements are not wholly aligned with the CAZ requirements then BCC sought alternate supply routes. Where a BCC contract or framework was not deemed appropriate or for deliverables where no existing arrangements are in place, other public sector frameworks were investigated, for example CCS and ESPO. These arrangements provide the benefits of spend aggregation across the public sector, have been competed compliantly and have robust commercial terms. BCC intend to run mini-competitions to re-open competition between the pre-selected suppliers to ensure specification compliance, delivery targets and value for money.

8. Financial Summary

8.1 Costs

The Finance Case covers costs relating to both CAPEX costs (Capital expenditure) and OPEX costs (Operational expenditure).

A summary of the total capital costs incurred by the proposed scheme shows that total capital costs will be £44.3 million (2021 prices). As these capital works are forecast to take place in 2021, no inflation adjustments are considered necessary. Around 17% of CAPEX funding is requested from JAQU via the Implementation Fund with the residual funding requested from the Clean Air Fund.

CAPEX will be incurred by BCC across a range of activities including enforcements systems, highway works, non-charging measures for CAZ implementation, non-charging measures for Clean Air Fund, air quality monitoring installations and risk.

A Quantified Risk Assessment (QRA) risk has been calculated using @Risk software with risks established for the appropriate stage when it is relevant within the project. The QRA figure in line with WebTag guidance (P(80) is £2,801,000.00 during the project Bristol City Council Clean Air Plan: implementation stage). Full details of the QRA are provided in OBC-35 'Quantified Risk Assessment' in Appendix L of the FBC.

The central estimate for operational costs is between £7.7 million (shorter operational period) and £15.9 million (longer operational period) in 2021 prices. OPEX will be incurred by BCC across a range of activities, throughout the operation life of the CAZ, these include:

- Systems operations and maintenance
- Camera, communications, signage and buildings maintenance
- CAZ delivery and ongoing operational management
- Monitoring and evaluation
- Decommissioning
- PCN production
- CAZ publicity and advertising

The majority of these operational costs are accrued on either a fixed, annual basis for the lifecycle of the project or as one-off costs.

8.2 Funding applications

BCC is reliant on funding from the Implementation Fund, Clean Air Fund and anticipated revenue to deliver this Clean Air Plan. Funding requirements are described below:

- Implementation Fund – The funding grant requested from central government through the implementation fund is £8.4 million grant for capital expenditure. Further, BCC request £1.0 million in operational cost funding from the Implementation Fund to cover staff costs and publicity/advertising in advance of CAZ commencement (and therefore revenue generation). This funding requirement is consistent across both the shorter and longer operational period scenarios. In the absence of Implementation Fund support, BCC are unable to cover these costs in this pre-commencement period. That said, BCC recognise that in the event that the CAZ generates sufficient operational surplus in financial year 2021/22, there is scope to refund the requested Implementation Fund grant of £1.0 million to cover upfront pre-opening operational costs. This position will be determined through full reconciliation and audit at the end of the financial year.
- Clean Air Fund - The funding grant requested from central government through the Clean Air Fund is £35.9 million for capital expenditure.

- Revenue from CAZ charges – BCC will utilise anticipated revenue from the CAZ schemes to finance the ongoing operational cost of running the scheme.

8.3 Net operational position (before extended mitigations)

The current analysis indicates that in the 'core' scenario, cumulatively revenue generation is predicted to exceed operational costs, resulting in an estimated net operational surplus of between £17.5 million and £31.4 million across the appraisal period.

However, the scheme will generate a net operational deficit before October 2021 (as no revenue is forecast to materialise prior to CAZ commencement, but some staff costs and publicity/advertising costs are incurred). In the longer term operational period scenario, a deficit is also forecast in some of the later years of the appraisal period (as the number of non-compliant vehicles falls but scheme operations are maintained). The analysis demonstrates that the CAZ revenue is sufficient to cover operational costs of the scheme, as indicated in the table below. Hence, it is possible for BCC to safeguard revenue from early years of the scheme to offset any operational deficit in later years. However, BCC are requesting c. £1.0 million of upfront operational cost grant funding from JAQU's Implementation Fund to cover costs incurred in the period prior to CAZ commencement (and therefore revenue generation).

Table 8.1: Net Operating Position (£000s)

Variable	2021 Prices	Outturn Prices
Three Year Operation		
Operational Income	24,387	24,387
CAZ-Related OPEX	7,692	7,948
Net Operating Position (pre IF grant)	16,695	16,439
Implementation Fund Operational Grant Request	1,016	1,016
Net Operating Position (post IF grant)	17,712	17,455
Ten Year Operation		
Operational Income	47,665	47,665
CAZ-Related OPEX	15,862	17,316
Net Operating Position (pre IF grant)	31,802	30,349
Implementation Fund Operational Grant Request	1,016	1,016
Net Operating Position (post IF grant)	32,819	31,365

With revenue grant funding in place, the Operational Summary demonstrates that the Clean Air Plan is forecast to generate a significant positive cash flow over the appraisal period. Any cashflow surplus associated with the scheme will be ringfenced for the following purposes, in order of priority:

- Deficit coverage for ongoing and long-term operational expenditure, particularly in latter years of operation when the various schemes are anticipated to face an operational deficit, as well as decommissioning.
- Potential repayment of £1.0 million request from Implementation Fund to support operational costs incurred prior to October 2021 switch-on (subject to sufficient surplus and full reconciliation and audit).
- Creation of a reinvestment reserve to cover:
 - any underestimation of operational costs.
 - supplementary schemes to the CAF measures, as well providing an opportunity to further invest in engagement with businesses and local residents affected by the schemes. For example, this funding source would support or extend some of the following measures which may form part of the CAF bid:

- Additional financial support to businesses and residents to upgrade vehicles;
- Increase, Improve, update Legible City Signage on key radials and in city centre;
- Delivery of BCC's 'Liveable Neighbourhoods' aspirations (estimated cost range £45m to £283m);;
- An 'unintended consequences' fund for minor local implementations such as one-ways;
- Support for additional buses to the Bristol Royal Infirmary.

Within this context, the residual cash position for the CAP in Bristol is expected to be neutral throughout the appraisal period.

8.4 Summary of bids

In summary, the total request to central government for the delivery of the Clean Air Plan can be summarised as follows:

- £44.3 million in capital grant funding, of which:
 - £8.4 million from the Implementation Fund
 - £35.9 million from the Clean Air Fund
- £1.0 million in operational funding from the Implementation Fund

The Small CAZ D option can achieve a net operational surplus of between £17.5 million and £31.4 million across the appraisal period.. We have demonstrated above that that any surplus would be used to support further complementary air quality and transport projects in BCC.

Draft

9. Scheme management

The purpose of the management case is to ensure that appropriate governance arrangements are in place to successfully deliver the Bristol Clean Air Zone (CAZ), including the CAZ D (commercial and private non-compliant vehicle charging area), additional non-charging measures and wider programme of Clean Air Fund (CAF) measures. In line with JAQU Guidance, this Management case builds on both the Strategic Outline and Outline Business Cases by clearly identifying the optimal solution to the following issues:

- Project Governance structure during the design, implementation and operational phases of the project, including key management roles and responsibilities and the project organogram.
- Evaluation and monitoring processes and associated benefits realisation.
- The Change Control and Financial Management processes.
- Risk management and mitigation, including the setting of contingency elements of the budget.
- Clear and achievable project plan.
- Programme Management arrangements, including within the wider transport programme.
- Communications & Engagement arrangements.

9.1 Experience

Bristol City Council (BCC) has a proven track record of delivering major transport infrastructure projects and programmes of a similar nature and scale to the proposed Bristol CAZ. Moreover, the Transport Service includes an in-house project management team; the Transport Programme Team (TPT). This team grows and employs the learning from these projects and programmes to continually improve project and programme delivery. They are supported by the central BCC Portfolio Management Office (PMO) and are supporting CAZ in relation to this project. Examples of major infrastructure projects include Metrobus, Resident Parking Zones and the Showcase and Greater Bristol Bus Network (GBBN) infrastructure improvements. A summary of these projects follows, with key delivery and monitoring lessons that can be applied to support delivery of the Bristol CAZ highlighted.

The project will be managed under the general principles specified in the BCC programme manual for the delivery of transport capital projects, which are based on PRINCE2 / APM methodologies which are largely Agile focussed. The Transport Programme Team (TPT), in its capacity as the central project management resource for the Transport Service, will support the project. Due to the size, complexity, and public nature of this project, the governance structure has been tailored to the specific project environment. The project will be governed by the Bristol Clean Air Plan Programme Board. The Senior Responsible Owner (SRO) is Mike Jackson, Chief Executive. In addition, the Mayor's Office has a key role on the Project Board as a representative of the Executive.

9.2 Programme

There are several key stages that occur for any scheme or project– these include planning, design development, detailed design, mobilisation, construction, and project end. The planned programme for the Bristol CAP is laid out in a Gantt Chart in Appendix FBC 34, and lays out the anticipated timescales for each element of the project.

The implementation is at this point expected to commence once the FBC is approved and funding is awarded. It will conclude in October 2021, at which point the CAZ will be fully enforceable.

9.3 Communications and stakeholder engagement

Between 1 July and 12 August 2019, the council consulted on two options for a traffic Clean Air Zone which are designed to achieve compliance with legal NO₂ limits in the shortest possible time. The options were:

- Option 1: Clean Air Zone (private cars not charged)

- Option 2: Diesel car ban

The consultation asked respondents how concerned they are about the health impacts of poor air quality in Bristol and it sought feedback from citizens, businesses and other stakeholders on the two options. The findings of this consultation are summarised within the Consultation report associated with the OBC. A Stakeholder summit was run by BCC on Monday 18 November 2019.

A second consultation was held from the 8 Oct 2020 to 13 December 2020. Two further options were presented to the public, both designed to achieve compliance with legal NO₂ limits in the shortest possible time. The options were:

- Option 1: Clean Air Zone C (private cars not charged) with a smaller inner zone of a CAZ D (private cars charged)
- Option 2: Small area CAZ D

The consultation also asked respondents how concerned they are about the health impacts of poor air quality in Bristol and it sought feedback from citizens, businesses and other stakeholders on the two further options.

Due to the limitations caused by the COVID-19 Pandemic, drop-in sessions and face-to-face activities were much reduced. To boost response rates and to target low-responding parts of Bristol, 20,000 paper surveys were delivered direct to addresses in areas which have historically low response rates to consultations and high levels of deprivation.

The Traffic Clean Air Zones Consultation survey received 4,225 responses. A summary of responses from groups with protected characteristics and income deciles is contained within the report. More than half of respondents (54%; 2,250 respondents) agree or strongly agree that Option 1 is a good way to improve air quality (20% strongly agree and 34% agree). A higher proportion of respondents (60%; 2,466 respondents) agree or strongly agree that Option 2 is a good way to improve air quality (32% strongly agree and 28% agree).

Briefings were held with several groups including Business West (with 55 businesses joining), University Hospital Bristol NHS Trust, Southmead Hospital, University of Bristol, University of West of England, Bristol Workplace Travel Network, waste contractors, and neighbouring councils. 1,385 businesses were also contacted about the consultation.