

Bristol City Council Clean Air Plan Outline Business Case

Executive Summary

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Bristol City Council

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Executive Summary

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Acronyms and Abbreviations

AED	Approved Enforcement Device
ANPR	Automatic Number Plate Recognition
BCC	Bristol City Council
CAF	Clean Air Fund
CAP	Clean Air Plan
CAPEX	Capital expenditure
CAZ	Clean Air Zone
EU	European Union
HGV	Heavy Goods Vehicle
JAQU	Joint Air Quality Unit
LGV	Light Goods Vehicle
NO ₂	Nitrogen Dioxide
OBC	Outline Business Case
OPEX	Operational expenditure
PCN	Penalty Charge Notice

1. Background

The UK has in place legislation transposing requirements in European Union law, to ensure that specified standards of air quality are met, by setting Limit Values on the concentrations of specific air pollutants. In common with many EU member states, the EU limit value for annual mean nitrogen dioxide (NO₂) is breached in many parts of 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.

Due to the need to improve air quality in urban areas nationally, Her Majesty's Government in 2017 formally directed 24 local authorities, including Bristol City Council, to submit plans for how they will achieve compliance to the legal Nitrogen Dioxide (NO₂) limits and how they would implement these plans by March 2021. Local authorities are required to model various options for achieving clean air and to take forward the option that delivers compliance using the following three legal tests:

- 1) Achieves compliance with the legal NO₂ limits in the shortest period of time.
- 2) Reduces human exposure as quickly as possible.
- 3) Ensures that compliance is not just possible but likely.

In line with Government guidance, as part of the Plan, Bristol City Council has considered a range of options for the implementation of a Clean Air Zone (CAZ), including both charging and non-charging measures, as measures which may bring about compliance with the Limit Value for annual mean NO₂ in line with the legal tests. It has also considered a targeted ban on diesel vehicles in certain areas as a possible measure.

Air pollution is the biggest environmental threat to health in the UK, with between 28,000 and 36,000 deaths a year attributed to long-term exposure¹

Bristol City Council is very concerned about this public health issue and its 2019 Air Quality Annual Status Report states:

“Air pollution has negative impacts on the health of people in Bristol, especially vulnerable members of the population. Evidence suggests that it can cause permanent lung damage in babies and young children and exacerbates lung and heart disease in older people. A report into the health effects of air pollution in Bristol concluded that around 300 premature deaths each year in the City of Bristol can be attributed to exposure to NO₂ and fine particulate matter (PM2.5), with roughly an equal number attributable to both pollutants. This represents about 8.5% of deaths in the administrative area of Bristol being attributable to air pollution. This has an estimated cost to the NHS of £83m”.

Whilst the current Clean Air Zone proposals focus on achieving compliance with nitrogen dioxide limits, Bristol has not lost sight of the health improvements that can be achieved by reducing particulate pollution. In most cases, the measures to reduce nitrogen dioxide pollution should also reduce particulate pollution. Bristol is also considering as part of the wider Clean Air Plan, measures to reduce emissions from other sources other than transport i.e. wood burning stoves and the Bristol Port.

This Clean Air Plan sits alongside wider interventions that will contribute to improving air quality by reducing congestion through improving transport infrastructure. These are set out in The [Bristol Transport Strategy](https://www.bristol.gov.uk/policies-plans-strategies/bristol-transport-strategy) (<https://www.bristol.gov.uk/policies-plans-strategies/bristol-transport-strategy>) and the draft Joint Local Transport Plan and include: creating an inclusive mass transit system, enabling and promoting active transport modes, and working with local bus operators to agree a bus deal to increase the frequency and reliability of bus services. These schemes build on projects already underway or under development across the region to improve sustainable transport options and reduce congestion. This and the Clean Air strategy also sit alongside Bristol Climate Emergency Action Plan

¹ Public Health England (2019). Improving outdoor air quality and health: review of interventions - GOV.UK

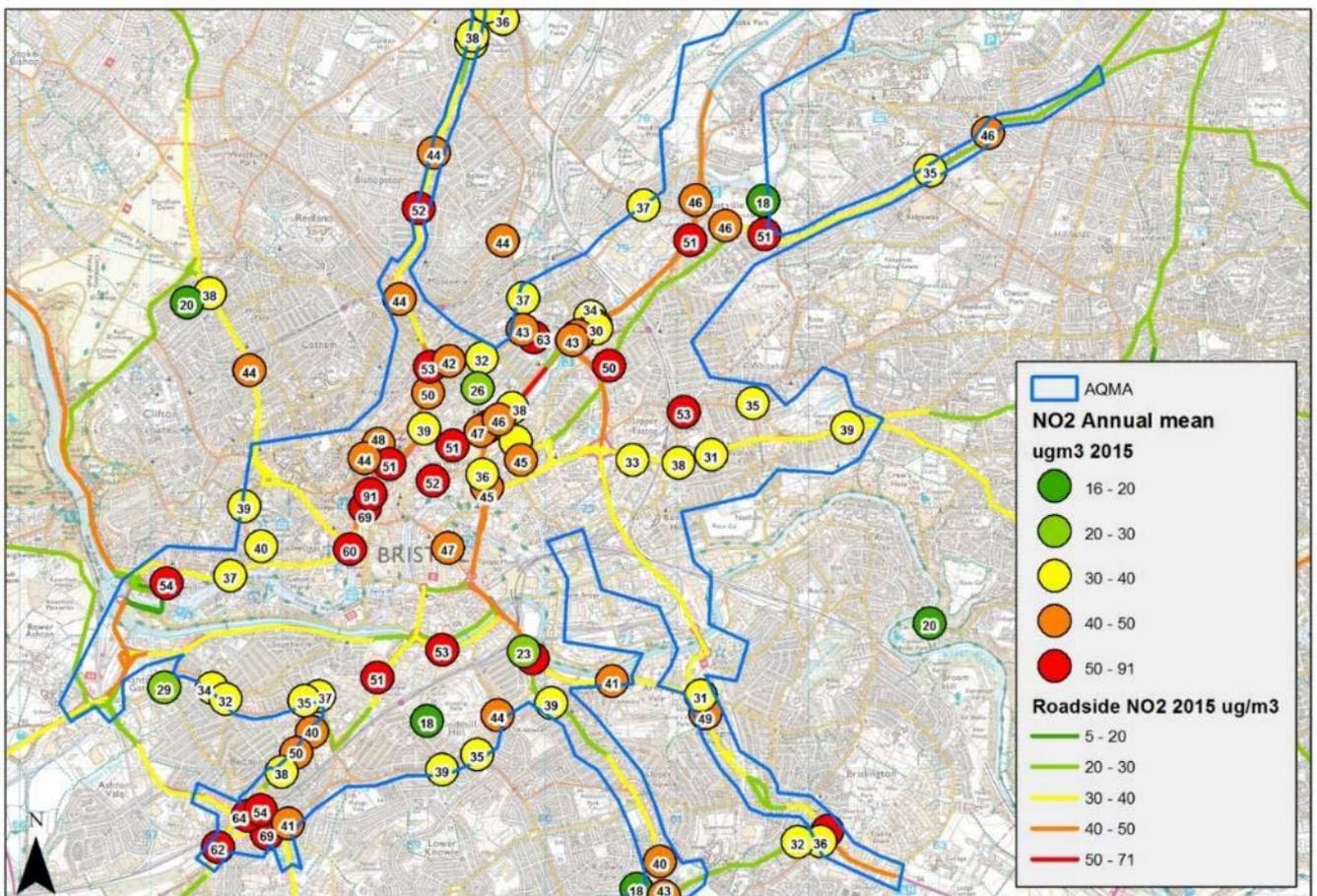
<https://www.bristol.gov.uk/documents/20182/33379/Mayor%27s+Climate+Emergency+Action+Plan+2019+FINAL.pdf/db6a1919-ad51-c50e-3ca2-3b4561195476>.

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.

The Clean Air Plan fits well with the objectives of existing policies in the region not least the Bristol Transport Strategy which focuses on congestion and the council's Climate Action Plan. Other policies either being drafted or underway include 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.

Fig 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. Outline Business Case (OBC) development

3.1 Five Cases

The (OBC) 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 shortlisted options that achieve compliance in the shortest possible time from a value for money perspective, as well as identifying distributional impacts of the shortlisted options.
- **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 2018 consisted of:

- 6 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>
- 3 real time particulate monitors (1 x PM_{2.5} and 2 x PM₁₀)
- 128 NO₂ diffusion tubes which provide a monthly and annual concentration for this pollutant.

3.3 Chosen model

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

The 2017 Automatic Number Plate Recognition (ANPR) surveys were undertaken in July, the analysis (including tabulated data) and use is discussed fully in the ANPR Data Analysis and Application technical note which is appended to the OBC. ANPR data has been used to determine the compliance splits of the current fleet when compared to the CAZ framework criteria relating to Euro Standards. The registration data from the ANPR surveys have been cross referenced with data purchased from Carweb to gain information on vehicle type, fuel type and Euro standard. The ANPR data has also been used to split the taxi fleet from the car matrices and the coaches from the HGV matrices, by applying global factors, by time period.

3.4 Base year

The project uses a baseline and benchmark option to test against. The baseline is a 'do nothing' scenario that includes all the project and so benefits, that would be achieved without this project being put in place. The

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benchmark is the CAZ option deemed by Government to be the most effective prior to modelling work that all subsequent modelling can be measured against.

The base year compliance splits by vehicle type (Car, Taxi, LGVs, Coaches and HGVs) have been determined from the 2017 ANPR data worked back to 2015 using the Emission Factor Toolkit national euro standard splits. The baseline has been adjusted to 2021 using the fleet projection tool within the Emission Factor Toolkit. The ANPR data collected has also been used to determine the HGV rigid/artic split by compliance and fuel type splits for cars and LGVs. This has been used to add more detail to the modelled outputs via post processing.

The model base year is 2015, with monitoring data for this year used to verify and adjust the modelled concentrations. Option 1, Option 2, Medium CAZ D + Option 1, and the hybrid of Option 1 and Option 2 have been modelled for the future years 2021 and 2031, together with the future baseline (without the aforementioned measures) for the same years. The options showed exceedances of the NO₂ limit in Bristol city centre in 2021 and no exceedances in 2031. So, in order to compare the two options in terms of reaching compliance in the shortest time possible and estimate in which year compliance would be reached, modelling results have been interpolated between 2021 and 2031.

4. Options assessment

4.1 Options from the Strategic Outline Case

Building on the findings of the Strategic Outline Case (SOC), approved by Government in March 2018, the purpose of the Strategic Case is to establish the reassessed case for change and preferred way forward by:

- Identifying BCC's statutory and regulatory air quality obligations;
- Presenting existing air quality conditions (including specific air quality problems arising from the aforementioned obligations, based on updated air quality and traffic modelling); and
- Outlining the desired goals of this intervention.

A key part of the Strategic Outline Case was the option assessment work. This involved developing a long list of schemes, and assessing them against evaluation criteria, which resulted in a short list of schemes for assessment in the OBC which are as follows:

- Option 1 – Benchmark option – medium area Class D charging zone. In line with JAQU's' Option Appraisal Guidance, the lowest class required to achieve compliance in the shortest possible timescales.
- Option 2 – Package of non-charging interventions. Having reviewed the effectiveness of the non-charging measures, the single most effective measure would be the prohibition of diesel cars from polluted parts of the city, which has been assumed to be the small zone.
- Option 3 – Medium area Class C charging option with complimentary non-charging interventions – Class C CAZ at Medium geography level with the addition of complimentary non-charging measures.
- Option 4 – Medium area Class D charging option with complementary non-charging interventions – Class D CAZ at Medium geography level.
- Option 5 – Small area Class C charging option with complementary non-charging interventions – Class C CAZ at Small geography level, with the addition of non-charging measures.
- Option 6 – Small area Class D charging option with complementary non-charging interventions – Class D CAZ at Small geography level, with the addition of the non-charging measures.

Non-charging measures could include:

- Introduction and enforcement of anti-idling zones for buses in the city centre
- Increased Euro Standard requirements for taxis and private hire vehicles in licensing agreements
- Restrictions on goods vehicles movements in the City Centre and / or AQMA during peak hours

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4.1.1 Option 2c Small Area Diesel Car Ban

Following initial analysis of the options above leading on towards the Outline Business Case and the identification of a preferred option (one that will achieve compliance with the legal air quality levels in line with the legal tests), a further option of diesel car exclusions over a small area with bus and taxi fleet improvement to Euro 6 or better (Option 2c) was developed to offer the best chance of reaching the compliance date. However issues were identified about the deliverability of a 24 hour ban, so this option was refined to an 8 hour ban for subsequent work.

4.1.2 Modelling results

The results of modelling the options in the SOC showed that Options 4 and 2c were the better performing options in terms of NO₂ compliance. Further economic assessments were undertaken for each of the two options. However, following consideration of these results, it was considered that the impact of the identified options on lower income households was such that there was a need to identify further options which would meet the air quality obligations of the Council but avoid or reduce these impacts. This saw the development of Variant 1.

4.1.3 Variant 1

The premise of Variant 1 was to develop an option that targeted reduction of NO₂ from taxis, HGVs, LGVs, Buses/Coaches since restrictions to these vehicle classes has less impact on lower income households than restrictions for cars, whilst delivering compliance in line with legal obligations.

Variant 1 included the following measures:

- Fleet improvements to all buses to Euro 6 (this will also be in the baseline which is also referred to as the reference case);
- All BCC taxis and private hire vehicles are upgraded to compliance (this will also be in the reference case);
- Increased use of Avonmouth freight consolidation site;
- Upgrade all BCC waste vehicles to Euro 6 or better – (it should be noted that this component was not modelled);
- Ban HGVs from NO₂ critical links;
- A car scrappage scheme;
- Bus and local traffic interventions in the most polluting areas; this includes a Park and Ride on the M32, an inbound bus lane on the M32 from Junction 2 to Cabot Circus car park, an inbound bus lane on Cumberland Road, and using existing traffic signals to control the amount of traffic entering congested areas with poor air quality.

Modelling indicated that the Variant 1 option would achieve a compliance date of 2030 and the compliance was driven by compliance at Marlborough Street (i.e. this would be the location that meets compliance last).

4.2 New Options

4.2.1 New Option 1

A further new option was developed to achieve compliance sooner than the Variant 1 whilst also reducing the impacts on vulnerable members of society and local businesses. New Option 1 consisted of all the measures in the Variant 1 with the addition of:

- CAZ C; charging non-compliant buses, taxis, HGVs and LGVs. This charge applies once a day regardless of how many times you go in or out of the medium zone:
 - Taxis, PHVs, LGVs £9.00;
 - HGVs, Buses and Coaches £100.00; and

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- A diesel car ban on Upper Maudlin Street and Park Row, running from St James Barton roundabout to Park Street – not including James Barton roundabout itself. This would run from 7am-3pm, 7 days a week (does not apply to taxis, private hire vehicles or emergency vehicles).

4.2.2 New Option 2

This option refines the 24 hour diesel car ban option modelled in Step 1 and 2 (Option 2c) with an 8 hour restriction. This was modelled because the previous diesel ban option had the shortest compliance date but could not be implemented under the terms of traffic legislation. This option comprises a diesel car ban over a specific small central area from 7am to 3pm, 7 days a week (does not apply to taxis, private hire vehicles or emergency vehicles). The scheme would be complemented by mitigation schemes. This was one of the options included in the public consultation which included a request for public feedback on a number of possible mitigation schemes including a scrappage scheme, improved cycle lanes, targeted exemptions etc.

4.2.3 New Benchmark Option

New Benchmark Option: Medium CAZ D with New Option 1 components (private cars charged).

This option represents the “benchmark” option (as set out above) and was updated to include diesel bans in certain parts of the city, bus, local traffic interventions in the most polluting areas and a local scrappage scheme.

4.3 Summary of options to be assessed in the OBC

As a result of the option assessment work, the following options were short listed for assessment in the OBC.

- - New Option 1 CAZ C Clean Air Zone (private cars not charged)
- - New Option 2 Diesel car ban over the small area
- - New Benchmark Option: Medium CAZ D with New Option 1 components (private cars charged)
- - Hybrid Option of New Option 1 and New Option 2

4.3.1 Consultation

Consultation was undertaken for New Options 1 and 2. The feedback included for an option to be developed containing both options combined. Following this, and considering all the other analysis and technical work carried out, the Hybrid Option was created and includes all those measures listed above.

4.3.2 Preferred option

The assessment work carried out showed that the Hybrid option is likely to reach compliance sooner (in 2025) than the New Benchmark Option. The Hybrid Option compliance date of 2025 is driven by exceedances at only one location – Marlborough Street whereas the New Benchmark Option compliance date is 2027 and compliance is driven by three locations.

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 current draft proposals are as follows:

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Grants:

- Provision of grants for taxi, private hire and LGV drivers to upgrade and/or retrofit their vehicles
- A loan scheme to assist businesses with replacing their vehicles
- A scrappage grant scheme for diesel for private car drivers

Infrastructure:

- Easton Way walking and cycle scheme, completion from Stapleton Rd Junction to J3, M32
- Old Market Connections completing 'Temple Way Slip' walking and cycling scheme
- Bedminster Bridges walking and cycle Improvements
- Other additional walking and cycling schemes, such as extended footways on Upper Maudlin Street; Hotwell Road; Midland Road; Newfoundland Road light segregation; Redcliffe Hill subways; Nelson Street; and/or Dovercourt Road/Concorde Way cycleway.
- Increase, Improve, update Legible City Signage
- Additional electric vehicle charging points
- Expansion of Portway P&R site (550 spaces with 350 additional to be unlocked)

Sustainable Travel Choices:

- Mobility credits and/or subsidised bus travel for certain demographic or income groups
- Targeted door knocking, targeted roadshows, business support including personalised travel planning, target main visitor destinations with travel plan support, CAF scheme promotion. Leaflets / publicity etc

Freight:

- Demonstration vehicles for small businesses
- Micro-consolidation with cargo freight bikes

Draft Potential Concessions/Exemptions:

- Blue badge holders located in the small area
- Low income households in the small area, with diesel cars as their sole vehicle
- Home to School Transport buses and coaches
- Emergency service vehicles
- NHS Patient Transport ambulances
- Community transport vehicles
- Disabled passenger vehicle tax class
- Specialist vehicles (e.g. cranes, agricultural vehicles)
- Historic Vehicles
- Security Services
- Diplomatic Vehicles, Military Vehicles

This is being submitted as a bid to Government alongside the OBC. Following submission of the OBC 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.

6. Project economics

The Economic Case assesses the shortlisted options that achieve compliance with legal requirements, as chosen above, from a value for money perspective, as well as identifying distributional impacts of the shortlisted options. This work is informed by detailed transport and air quality modelling.

6.1 Option 1

The Option 1 (Originally New Option 1) compliance year is anticipated to be 2029. It achieves compliance on Marlborough Street and Church Road (the two most significant locations in this assessment) by 2027, but is held back by non-compliance at 4 receptors on Park Street. All other locations are anticipated to be compliant prior to 2027. Plans to mitigate this through a diesel ban was shown by some technical modelling to cause a percentage of non-compliant vehicles to reroute onto Park Street increasing annual mean NO₂ concentrations at reportable receptors. This is one of the main reasons that Option 1 by itself was not taken forwards.

6.2 Option 2

Option 2 (originally Option 2c) comprises a small area diesel car ban within a specific boundary, this is a simpler but more restrictive option but is more effective at reducing NO₂ levels as it directly targets the highest polluting vehicles. Option 2 did not appear to have an immediate significant impact on compliance across the network when compared with Option 1. It reduced the number of non-compliance sites by 34 to a total of 104 in 2021, which is attributable to the fact that it covers a much smaller area than the measures in Option 1. However, Option 2 achieves a compliance year of 2028, which is one year earlier than Option 1. The additional number of non-compliance locations in the 2021 Option 2 scenario are outside of the diesel ban zone, with less significant exceedances of the EU Limit Value.

6.3 Medium CAZ D +

The purpose of the Medium CAZ D + was to act as a new benchmark case for future scenarios, and to compare previously assessed scenarios against. Whilst Options 1 & 2 were presented at public consultation, BCC also considered a benchmark CAZ D type scenario as a comparison, covering the same geographical extent as the proposed Option 1 (CAZ C+). The Medium CAZ D + scenario comprises the same measures as Option 1, but with the addition of a £9 charge for non-compliant cars that enter the area. The source apportionment results indicate that diesel cars are a significant contributor to poor air quality, often the most significant source.

Implementing a CAZ D instead of a CAZ C has additional benefits, as it also brings the compliance year forwards by 2 years (compared to Option 1), so that compliance is now achieved in 2027. In this case though, there are 12 receptors which prevent a compliance year of 2026. These are located on Park Street, Baldwin Street, Marlborough Street and Church Road. It was found that the Medium CAZ D+ leads to small improvements at three locations, which bring compliance forward by a year to 2027.

However, Baldwin Street is an example of a non-focused area (currently with no measures planned in that area), which still presents issues with NO₂ levels in this scenario. There are two receptors at this location which show in our modelling results to be non-compliant in 2026. The largest contributors to the high modelled annual mean NO₂ concentrations at this location are diesel cars, diesel LGVs and rigid HGVs.

6.4 Hybrid

The Hybrid option was initially assessed to have a compliance year of 2027, however further analysis of Church Road traffic flows showed that this option has a compliance year of 2025. It is the best scenario to take forward as it achieves compliance as quickly as possible and reduces human exposure the quickest. It may be possible to achieve total compliance of the EU Limit Value in 2024, especially if additional measures can be focused on Marlborough Street.

The hybrid scenario combines all the aspects of Option 1, with Option 2 (i.e. Option 1 with a small area diesel car ban). It is similar to the Medium CAZ C as it builds on previous solutions, but also introduces a diesel car

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ban rather than upgrading the CAZ C to CAZ D. The Hybrid achieves a compliance year of 2025, two years faster than the CAZ D+.

7. Procurement

The Commercial Case reviews options to procurement for each element of the project, including the CAF measures.

- 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; 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 work packages and a preferred approach identified for the OBC.

We are recommending that the Clean Air Zone for Bristol is delivered, through existing contracts and frameworks established by BCC for most of the work packages. 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.

It is envisaged that BCC contractual arrangements will be able to fulfil the majority of the work packages. If this is found not to be the case and current arrangements are not wholly aligned with the CAZ requirements then BCC will seek alternate supply routes but we believe this applies to a very small section of the CAP and this will not delay compliance.

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 total capital costs amount to £113,464,375.00. Of this sum, £69,074,375.00 is requested from JAQU via the Implementation Fund and £44,390,000.00 is requested from the Clean Air Fund.

CAPEX will be incurred by BCC across a range of activities including enforcements systems, control room facility, cameras and back office systems plus the non-charging elements of the CAZ which are largely the mitigation and exemptions.

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)

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is £6.5 million 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 OBC.

In addition, a 15% contingency has also been applied to the scheme costs (excluding staff costs) in recognition of novel nature of this project. A robust risk identification and quantification exercise has been undertaken to assess known risks, however as there is limited evidence about similar schemes, not all risk may have been captured and hence the need for this additional 15% contingency at this OBC stage. It is expected that costs will continue to be refined in liaison with JAQU as the project is developed to FBC submission.

The central estimate for operational costs (OPEX) is between £33.6.0 million and £38.0 million across the appraisal period (2019 prices). A detailed breakdown of OPEX costs is provided in BoQ format in 'Project Costs' in Appendix J of the OBC.

OPEX will be incurred by BCC across a range of activities, throughout the operation life of the CAZ, these include:

- Operations and enforcement of the CAZ;
- Maintenance of the CAZ and complementary infrastructure;
- Telecoms;
- Power;
- CAZ project delivery and ongoing operational management;
- Operational and maintenance costs of Clean Air Fund mitigation measures;
- Council Overheads on Staff Costs; and
- Other (including additional PCN administration processes, ongoing monitoring and evaluation, decommissioning etc).

The majority of these operational costs are accrued on a fixed, annual basis for the lifecycle of the project.

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. These are described below:

- Implementation Fund – The funding grant requested from central government through the implementation fund is £69,074,375.00 grant for capital expenditure.
- Clean Air Fund - The funding grant requested from central government through the Clean Air Fund is £44,390,000.00 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

Under the core scenario, the analysis indicates that cumulatively, revenue generation will exceed operational costs over the appraisal period, resulting in a net operational surplus of £67.955 million for the Hybrid option and £114.763 million for the benchmark option. However, the scheme will generate a net operational deficit in the pre-implementation phase (as no revenue is forecast to materialise prior to 2021, but some costs are incurred), and in the later years of the appraisal period (as the number of non-compliant vehicles falls but scheme operations are maintained).

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

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- Creation of a Sinking Fund to safeguard ongoing and long-term operational expenditure, particularly in years 2028-2030 when the scheme is anticipated to face an operational deficit, as well as decommissioning;
- Creation of a Clean Air Revenue Re-Investment Reserve, where any residual revenue surplus will be used by BCC to:
 - Support and extend the non-charging measures identified to supplement the Clean Air plan;
- Support programmes and policies in Bristol that are aligned with the aspirations of the Clean Air Plan (i.e. wider air quality and transport priorities);
- Mitigate any negative impacts on the Councils budget that arises from the implementation of the clean air zone.

Within this context, the residual cash position for the Clean Air Plan in Bristol is expected to be neutral throughout the appraisal period, the detail supporting this can be found in the Finance Case.

From an operational perspective, the financial analysis demonstrates that CAZ revenue is sufficient to cover operational costs for both Clean Air Plan options covered in the OBC. However, there will be operational deficit in the year immediately before implementation and in the latter stages of the appraisal period. Further, there is an outstanding risk that the CAZ income revenue stream identified in the operational analysis may not materialize. As a result, additional sensitivity testing is ongoing to understand the impact of variation in key assumptions on the operational position of the Clean Air Plan; this will take place post OBC submission. To mitigate the risk of the initial operational deficit, costs for the first year of operation are bid for as part of the Implementation bid.

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:

- £113,464,375.00 in capital grant funding, of which:
 - £69,074,375.00 from the Implementation Fund; and
 - £44,390,000.00 from the Clean Air Fund.

The options can achieve a net operational surplus of between c. £63.5 million and c. £121.1 million. We have demonstrated above that that any surplus would be used to support further complementary air quality and transport projects in BCC.

9. Scheme management

The management Case function is to ensure appropriate governance arrangements are in place to successfully deliver the programme. It also details the relevant approvals required to take the preferred option forward and considers how that would be managed within the council including:

- 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.

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9.1 Experience

BCC has a proven track record of delivering major transport infrastructure projects of a similar nature and scale to the proposed Bristol CAP. Moreover, the Transport Service employs an in-house project management team, the Transport Programme Team (TPT). This team grows and employs the learning from these projects to continually improve future delivery. They are supported by the central BCC Portfolio Management Office (PMO), which employs dedicated Project Assurance specialists. Examples of these major infrastructure projects include Metrobus, Resident Parking Zones and the Bus Lane Enforcement bus infrastructure improvements.

The project will be managed under the principles specified in the BCC programme manual for the delivery of transport capital projects, as maintained by the Transport Programme Team (TPT) in its capacity as the central project management resource for the Transport Service. Due to the size, complexity, and public nature of this project, the governance structure has been tailored to the specific project environment in order to ensure successful project delivery. The project will be governed by the Bristol Clean Air Plan Project Board in line with established project management principles. The Senior Responsible Owner (SRO) is Mike Jackson, Executive Director: Resources and Head of Paid Service.

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 OBC 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 March 2021, at which point the CAZ will be fully enforceable.

9.3 Communications and stakeholder engagement

A series of engagement activities took place in the lead up to the public consultation which began on the 1st July 2019 and finished on the 12th August 2019. During this time there were communications online, at face to face sessions over the city area, via meetings with key groups and through publicity.

A Communications Toolkit was also shared with more than 600 partner organisations, including primary and secondary schools, trade associations, GP practices and builders merchants.

For Option 1, more than two thirds of all respondents (69%; 3,414 respondents) agreed or strongly agreed that Option 1 is a good way to improve air quality (39% strongly agree and 32% agree). This was more than three times the 21% (1,018) of all respondents who disagree or strongly disagreed whilst 11% neither agreed nor disagreed. Bristol respondents also shared similar views to all respondents, with slightly higher proportions agreeing or strongly agreeing compared to all respondents. 71% of Bristol respondents agree or strongly agree, 19% disagree or strongly disagree and 10% neither agree nor disagree that Option 1 is a good way to improve air quality.

For Option 2 (diesel car ban), more than half of all respondents (55%; 2,717 respondents) agreed or strongly agreed that Option 2 was a good way to improve air quality (32% strongly agreed and 23% agreed). This was more than one and a half times the 34% (1,702) of all respondents who disagreed or strongly disagreed. 11% (534 respondents) neither agree nor disagree (the same proportion as for Option 1). Bristol respondents also viewed the Option 2 diesel car ban more favourably than all respondents - 59% of Bristol respondents agreed or strongly agreed, whilst 11% neither agree nor disagreed that Option 2 is a good way to improve air quality.

As the project progresses engagement focus will be on:

- Raising awareness of the chosen CAZ option
- Continuing to raise awareness of the need for action around air quality in Bristol

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- Aiding the general public to understand their role in tackling air pollution – advising them on how to reach compliance, change their travel habits etc.
- Supporting, preparing and advising people before implementation
- Ensuring rules and laws are adhered to;

An engagement plan will include:

- a) Clean Air Summit and engagement with city Transport Board, Economy Board, Environment Board.
- b) Necessary Statutory Consultation as regards highways measures.
- c) consultation in relation to the detail of the implementation of the preferred option

BCC will utilise messaging to raise awareness of implementation dates, circulate the available channels of support from Bristol City Council, and continue to focus on health messages. We will share these via our website and social media campaigns from the @BCC_Clean_Air account, as well as the general BCC social media accounts.

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