Bristol City Council Clean Air Plan

Full Business Case – Clean Air Fund Report

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Bristol City Council

Contents

1. Introduction

1.1 Context

Poor air quality is the largest known environmental risk to public health in the UK[1]. 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 (NO_2) 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 Bill[2], 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 (NO_2) 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).

1.2 Purpose of this Report

This report has been written to support the FBC, ready to be submitted to JAQU by BCC. It assesses a long list of potential options, provides reasoning, and details for the chosen mitigation measures and explains the amount of funding requested from the Clean Air Fund (CAF).

Section 2 describes the process to determine the mitigation measures and provides a summary of the social distribution impact assessment and the public consultation.

Section 3 sets out proposed exemptions.

[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

Section 4 describes and includes a long list of options considered for mitigating measures, comparing each to Critical Success Factors (CSFs) to determine the short list of measures which has been included in the CAF application. This section also sets out the proposed mitigation measures and an initial estimate of costs.

Section 5 sets out details of the consultation. This is based on the most recent consultation which ran from the 8th October through to the 13th December 2020. It includes feedback received which supports the need for the measures as included in this bid.

Section 6 provides a detailed section on each of the short-listed measures and an explanation for their costs. It also sets out how each measure fits with the CAF objectives.

2. Process of Designing Mitigation Measures

2.1 Overview

In order to design mitigation measures that are important to the successful implementation of the CAZ, the following process was followed:

1) Key conclusions were drawn from the OBC-31 'Distribution and Equalities Impact Analysis Report (DEIA)' Appendix H of the OBC, to identify the groups most negatively impacted by the CAZ and, therefore, most in need of support. The impact on those with protected characteristics, were also considered to ensure they were not disproportionately impacted. This was later used as a baseline for the FBC but was also updated to reflect changes in the scheme. This section of the report seeks to provide the background and stages involved in this process.

2) From the DEIA conclusions, a longlist of mitigation measures was created. A deliberately wide range of measures were considered which could mitigate the negative impacts identified in the DEIA so they could be investigated and analysed further.

3) The longlist measures were then assessed against the Critical Success Factors (CSF), as identified in the Strategic Outline Case (SOC). These are divided into:

- Primary CSF: Whether the measure delays reaching compliance in the shortest possible timeframe. This is a pass/ fail criterion as it is crucial to the overall project success, if this was not achieved the measure was rejected.
- Secondary CSFs: These are required to undertake a comparative assessment of the best options relative to the project objectives, they have been grouped using the five-case model approach set out in the DfT's guidance on 'Transport Business Cases' (2013) 3 as a framework:
    - Strategic
        - All trip purposes treated equitably
        - Compliance with Defra Draft CAZ framework, including minimum requirements
    - Economic
        - Mitigate financial impact on low income groups
        - Maximise health improvements of low-income groups
        - Net economic benefit
        - Improve general public health
    - Commercial
        - Is the market able to supply in the time available?
    - Financial
        - Likelihood of revenue equating to implementation/ operational costs 4
        - Upfront capital required for scheme
        - Risk of financial penalty to the Council(s)

- Management
  - Public acceptability
  - Local, regional, and national political acceptability

4) Upon comparison of the measures with the CSFs, a qualitative decision was made whether to progress themeasure to the short list. During this process the details of the measure were finalised.

5) The short list of measures was then analysed and quantified before a final decision was made on the items taken forward for the funding request to the CAF.

2.2 Distribution and Equalities Impact Analysis Report – summary

2.2.1 Impact Summary

Distributional impacts of air quality improvements are broadly even, though impacts for a few combinations of demographic groups are not evenly distributed. Accessibility impacts are likely to be mixed, and as such both trip matrices and journey time benefits have been interrogated to determine movements by non-compliant vehicles (and thus propensity to be impacted) and quantified proxy impacts respectively. Trip-making propensity impacts are evenly distributed in comparison with population distributions but are most heavily on the middle and lower quintiles of income deprived areas. Affordability impacts will be negative across the socio-economic and business groups that directly interact with the CAZ area where non-compliant vehicles are still used, though vehicle operating costs improve overall. Impacts are slightly disproportionately felt by the least income deprived communities.

Table 2-1 summarises the distributional impacts for each social/business group. Table 2-2 provides a brief qualitative summary of the distributional impacts of the CAP scheme. Table 2-3 indicates some of the potential mitigation target groups that could arise from the CAP scheme.

Table 2-1: Summary impact:

Social or Business Group	Air Quality		Accessibility		Affordability	
	Net +ve impact	Distribution	Net +ve impact	Distribution	Net +ve impact	Distribution
Deprivation / low income	✓	Slightly uneven	✓	Slightly uneven	×	Uneven
Children	✓	Reasonably even	✓	Slightly uneven		
Elderly people	✓	Slightly uneven	✓	Reasonably even		
Disabled people			✓	Slightly uneven		
Women			✓	Slightly uneven		
Ethnic minorities			✓	Reasonably even		
Businesses – SMEs					×	Reasonably even
Businesses – LGVs/HGVs					×	Uneven
Businesses – taxis					×	Reasonably even

Table 2-2: Summary distributional impacts

Impact group	CAP scheme
Air quality	Improvements across the city. Distribution of impacts is reasonably even across social groups, though slightly uneven compared to distributions of income deprivation and elderly residents.
Accessibility	Time benefit calculations are all positive, and the distributional impact is slightly reasonably for some groups but would not overall be considered problematic. Trip-making propensity by people with non-compliant cars related to the CAZ area is evenly distributed.

Impact group	CAP scheme
Affordability	Vehicle operating cost impacts are unevenly distributed, being disproportionately felt by the least income deprived communities, which see a slight net disbenefit in vehicle operating costs; others have net benefits.
Businesses	There are potential direct impacts on costs for LGV/HGV reliant businesses. Though trips by non-compliant LGV/HGV reliant businesses are reasonably spread around the city, those making trips related to the CAZ area will be affected; the CAZ area is reasonably small but covers most of the city centre.
Car owners	Impact on all non-compliant car owners. Distribution of non-compliant car ownerships is slightly skewed to lower income groups, but ability to react to charges more so (such as households with more than one vehicle).

Table 2-3: Summary distributional impacts – potential mitigation targets

Potential mitigation target group [a]	CAP scheme
Residents	
Residents of the CAZ area	✓
Specific trip needs	
Disabled people – blue badge	✓ [b]
Disabled people – with specialist vehicle adaptions	✓ [b]
Out-patient access to hospital	✓ [b]
Car owners	
Low income non-compliant car owners	✓
Low-income compliant car owners	✗
1-car households	✗
Businesses	
SMEs located in the CAZ area	✓
LGV/HGV-dependent businesses not specifically located in the CAZ area but that need to travel into it	✓
Taxi owners/drivers – BCC registered	✓
Taxi owners/drivers – other authority registration	✓

Note:

a) Groups that could be potential mitigation targets indicated with; '✓' are those where there is the potential for mitigation to be sought by or on behalf of the group, though not necessarily that it would be granted as part of implementing the CAP; '✗' indicates that it is less likely that any mitigation would applicable to this group/option. However, both are indicative, and neither a positive nor negative indication in this table is a definitive indicator of future proposals.

b) Could be linked with a destination specifically in the CAZ area and/or owning/using a non-compliant car

2.2.2 Concluding remarks

Air quality improves for most residents. Distributional impacts of air quality changes are also broadly even, though exceptions again exist, with impacts for some demographic groups not being evenly distributed.

Accessibility impacts are likely to be mixed. Trip-making propensity impacts are evenly distributed in comparison with population distributions but are most heavily on the middle and lower quintiles of income deprived areas, areas with the most children and those that have the lowest proportions of females. Impacts are disproportionately felt by the higher quintiles of the concentration of ethnic minorities, middle quintiles for disabled residents and more evenly for elderly residents. TUBA time benefits are also used as a proxy for accessibility; these are largely beneficial and the distributional impact broadly even.

Affordability impacts are likely to be negative across the socio-economic and business groups that directly interact with CAZ area, especially where there are charges for non-compliant cars or any restrictions on specific movements. Impacts are disproportionately felt by the second most and least income deprived communities. Impacts also fall on businesses operating non-compliant LGVs and HGVs who are either based in the CAZ area or

based elsewhere but operate within central Bristol and hence also interact with the CAZ area. Using TUBA vehicle operating cost benefits as a proxy for affordability indicates that the impacts are positive overall across the city as a whole, although impacts are slightly disproportionately felt by the least income deprived communities, which see a slight disbenefit in vehicle operating costs.

There will be direct impacts on the costs of operation for LGV/HGV reliant businesses, where their operations interact with the CAZ area. Trips by non-compliant LGV/ HGV reliant businesses are reasonably spread around the city.

The extent of impact on non-compliant car owners varies with the extent of users' trip-making requirements associated with the class 'D' charging measures in the CAZ area. Distribution of non-compliant car ownership is slightly skewed to lower income groups. However, the (in)ability of households to react to restrictions is unevenly felt by lower income groups (for instance, there are fewer multi-car households that could potentially using a compliant vehicle).

3. Exemptions

Table 3-1 sets out the planned exemptions to the Small CAZ D scheme.

Table 3-1: Exemptions offered

Measure	Description	Length
Historic vehicles	Full exemption as per the national CAZ framework – would need to register for an exemption. This applies to all vehicles with a tax class of which JAQU will check against the DVLA database. This applies to vehicles over 40 years old so new vehicles will be added each year	
Disabled passenger vehicle tax class 85	Full exemption as per the national CAZ Framework. This applies to all vehicles with a tax class of 85 which JAQU will check against the DVLA database. These vehicles are specially adapted for disabled passengers and difficult to modify. This only applies to vehicles adapted to accommodate disabled passengers and not individual blue badge holders (see separate blue badge holder exemption).	
Disabled Tax Class 78	This applies to all vehicles with a tax class of 78 which JAQU will check against the DVLA database. To qualify for this tax class requires an application to the DVLA with evidence issued by either the Department for Works and Pensions or the Service Personnel and Veterans Agency that the vehicle is used by, or for the purpose of a disabled person. This only applies to vehicles with this tax class and not individual blue badge holders (see separate blue badge holder exemption).	
Diplomatic Vehicles, Military Vehicles	Full exemption as per the national CAZ Framework. The MOD will provide a list of vehicles that are registered as diplomatic and military vehicles to JAQU	
Local Exemptions – The majority of local exemptions are initially being offered on a one-year temporary basis.		
Motorcycles	Full exemption - motorcycle means a motor bicycle or a motor tricycle but does not include an electrically propelled vehicle.	n/a
Specialist vehicles (e.g. cranes, agricultural vehicles and specific security vehicles)	It has been agreed with JAQU that specialist vehicles that would be expensive to replace and difficult/impossible to retrofit will be offered a one-year temporary exemption from paying CAZ charges. While this is a national exemption it is to be managed by local authorities, in this case Bristol City Council. Vehicles that meet BCC eligibility criteria will be offered a one-year temporary exemption. To provide guidelines on what should be classed as a specialist vehicle, BCC will be using the Special Vehicles (8), Special Concessionary (11) and Special Types (4) tax classes as outlined in DVLA document V355/1. Vehicles with these tax classes will be eligible for the exemption but the owner will still need to make an application and prove this. There may be other types of vehicles that do not have one of these tax classes but that qualify because they are designed for specific uses and therefore hard to upgrade or retrofit. If the vehicle owner can prove this, they will be granted the exemption, however it is the responsibility of the vehicle owner to make the case for their vehicle. The registered keeper of the vehicle will need to create an account with MiPermit and register for the exemption before planned travel. Decisions will be made on a case-by-case basis with approved vehicles being added to the local permitted vehicle list, held and manually managed by BCC. To apply for this exemption, the following evidence is required: • V5C for the vehicle • Proof of tax class of the vehicle	1 year initially

Measure	Description	Length
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.	1 year initially
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	1 year initially
Emergency service vehicles - Police, Fire, Ambulance services	Police, fire and rescue services or ambulance services entering the CAZ in the exercise of their duties will be given a one-year exemption. This includes: • Emergency police vehicles fitted with a blue warning beacon • Emergency fire vehicles fitted with a blue warning beacon • Emergency ambulances fitted with a blue warning beacon Local service providers/trusts will be asked to provide a list of vehicles and their registration numbers which will then be added to the manually manged permitted vehicle list held by BCC. Any unmarked police vehicles not included on this list due to security reasons that enter the CAZ will be able to appeal the charges. Local service providers/trust will also sign a Memorandum of Understanding with BCC guaranteeing that, where possible, they will prioritise using the compliant vehicles in their fleets inside the CAZ and try to move non-complaint vehicles to routes outside the CAZ.	1 year initially
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. Residents will need to create an account with MiPermit. MiPermit will validate their account against council tax records supplied by BCC to check they are a resident within the CAZ. Once the resident has created an account and had it verified, they will be able to apply for exemptions for each of their non-compliant vehicles, providing their V5C as evidence. These vehicles will then be added to the local permitted vehicles list. 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	Registered community transport Euro 4 and 5 diesel vehicles with a valid Section 19 or Section 22 Permit, that are not otherwise exempt vehicles, will be exempt for at least the first year - to be reviewed. The registered keeper of the vehicle will need to create an account with MiPermit and then apply for an exemption for the individual vehicles. To apply for this exemption, the following evidence is required: • Evidence of Section 19 or 22 permit • V5C Vehicles that operate a community transport style function without a Section 19 or Section 22 Permit will have access to financial support packages subject to status and availability. 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	People entering the CAZ to work will be offered a one-year temporary exemption, provided they meet the following criteria: • Annual income less than £26K (gross) • An hourly rate no higher than £13.51 • Work at least 18 hours a week at business premises located inside the CAZ	1 year initially

Measure	Description	Length
	A second round of funding will be held from early 2022 for those earning up to £27k to avoid those in need of support marginally missing out. This threshold is based on individual salary/income and not household income. The exemption would only be available for one non-compliant vehicle per individual. People who are either employed or self-employed and work from premises based inside the CAZ and meet the above financial criteria will need to create an account on MiPermit and then register for the exemption. To apply for this exemption, the following evidence is required: • V5C showing they are the registered keeper of the vehicle • A letter from employer/s on headed paper to confirm business address and hours worked • P60 (or payslip/s if not been there a year)/self-assessment tax return Once an individual has been granted this exemption, their vehicle will be exempt from CAZ charges for all journeys into the CAZ, whether for work purposes or not. Low income earners will also be prioritised for the financial support packages available subject to status and availability.	
Commercial vehicles with existing finance agreements exemption	This one-year temporary exemption will be available to companies based at an address within the Clean Air Zone and businesses keeping or storing vehicles overnight at an address within the Clean Air Zone. It applies to vehicles leased/purchased prior to 25th February 2021. The registered keeper of the vehicle would need to create an account with MiPermit and register for the exemption. To apply for this exemption, the following evidence is required: • Evidence the business is registered within the zone • V5C for the vehicle • Evidence of the existing finance agreement on the vehicle	1 year initially
Visitors to the BRI complex	An exemption will be offered to visitors to the BRI hospital complex to waive any CAZ charges they incur, particularly those attending on a daily basis over a prolonged period of time. Because of the delicate nature of this exemption we will be deferring to hospital staff to decide who can apply for this exemption using the same criteria they use for issuing parking permits to visitors. Specified hospitals are: • 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 • Central Health Clinic This exemption will tie in with an existing permit system operated by hospital staff. Exemptions will be issued for a 7-day period and can be renewed if the patient is still in the hospital after the initial 7 days. There is no limit to how many times this can be renewed, as long as the patient is still an inpatient at the hospital. There are also other exemptions that apply to hospital appointments and emergency attendance at A&E – see below.	1 year initially

Measure	Description	Length
Support for Blue Badge holders	Blue Badge holders will need to create an account with MiPermit and provide a photo of their blue badge as evidence. Once the account is verified the blue badge holder will be able to: a) register their main vehicle on MiPermit to be exempted for the full 12 months and added to the local permitted vehicle list b) apply for an allocation of 50 daily exemption permits to be used as required – best option if travelling in different vehicles c) do a combination of the two Permits for travelling in other vehicles will work in a similar way to RPS visitor permits bought by residents with parking permits, although there would be no charge for the blue badge exemption permits. The Blue Badge holder would have to use one of their allocated permits if travelling in a different vehicle to their main registered vehicle, or if they do not have a registered main vehicle. To use the permit, the Blue Badge holder would have to activate it on MiPermit and provide the vehicle registration number of the vehicle they are to travel in along with the date of travel. This vehicle will then be added to the local permitted vehicles list for that day of travel only. Blue Badge holders will be able to apply for more exemption permits as needed if they use up their initial allowance.	1 year initially
Home to School Transport buses / minibuses / coaches only	Buses, minibuses and coaches only carrying out only a home to school service (serving Bristol schools but may be registered elsewhere). Passenger Services team will provide a list of vehicles providing the service to be added to a manually managed local permitted vehicle list held by BCC. If there are last minute changes (for example due to a vehicle breaking down) Passenger Services will have to contact the CAZ team to have any replacement vehicles added to the permitted vehicles list for that day. We were awarded £2.1m for bus retrofit support as part of the Clean Air Fund bid submitted alongside the Full Business Case. It is our intention to award funding before the CAZ scheme is implemented. Taxi services don't qualify for this exemption but will be able to access financial support packages subject to status and availability.	1 year initially
Families with Personal Travel Budgets (PTBs) Who Travel Through the CAZ	As well as running the Home to School service, Passenger Services also provide some low-income families with personal travel budgets (PTBs) to help cover the costs of transporting their child(ren) to their allocated school. Passenger Services have identified a small number of families whose route to school would take them through the CAZ. These families will be offered a one-year temporary exemption. Passenger Services will contact them directly and collect their vehicle registration number(s) and add them to a manually managed local permitted vehicle list held by BCC. In the case that one of these families moves or their child(ren) move schools they will be required to let Passenger Services know so they can assess whether their route still crosses the CAZ. If it does not the exemption will be revoked.	1 year initially
Patients attending appointments at the BRI Hospital complex	A one-year temporary exemption will be offered for patients attending appointments at the BRI hospital complex to waive any CAZ charges they incur attending their appointment. The BRI hospital complex includes: • Bristol Royal Infirmary	1 year initially

Measure	Description	Length
	• Bristol Heart Institute • Bristol Royal Hospital for Children • Bristol Haematology and Oncology Centre • St Michael's Hospital • Bristol Dental Hospital • Bristol Eye Hospital • Central Health Clinic The exemption will be outlined in appointment letters sent out from the hospital along with information for patients about how to apply if their vehicle is non-compliant. There will also be signage in the hospitals with information for patients about the CAZ and the exemption, including BCC contact details. The patient does not have to be the driver of the vehicle and can register more than one vehicle if they are dropped off/picked up by different vehicles. Patients will need to register for a separate exemption per charging day (12am-12pm) they travel. Patients will be able to visit MiPermit online and enter their registration number and journey details as well as a unique appointment number, which will be included in the letter inviting them to their appointment. Their vehicle will then be added to the list of locally permitted vehicles for that day. Patients can register online anytime within the payment window (6 days before, the day of travel and 6 days after) and do not need to create a MiPermit account. For those attending the hospital without appointments (e.g. visiting A&E), codes will be displayed in relevant reception areas for the patients to enter online within the payment window. These will be changed periodically by BCC staff to limit abuse. BCC will also be placing 2 pods at all main reception areas in the hospital complex and in the emergency department of the BRI, a total of 18 devices across 9 locations. Patients will be able to enter their vehicle registration number at these pods to register for the exemption on the day. The CSC will be available to help guide people through the online process or to talk them through using the pods. They will also be available to register exemptions for those struggling through a MiPermit browser page, provided patients contact them within the payment window.	

Note - The above exemptions are a revision of the previous exemptions which were considered further following the OBC submission and in light of the potential impact on citizens as a result of Covid-19. JAQU have sought consistency of exemptions for CAZ schemes. There were further changes to exemptions made in the updated CAZ Guidance Pack released in December 2020. There have also been revisions in light of the as yet still unknown impact of the Pandemic.

BCC considers these exemptions as important measures to give specific vehicles and users, along with businesses unable to access financial support, an extended time frame to adapt to the CAZ. BCC will also keep the exemptions under review to ensure they are not impacting or hindering the delivering of compliance.

Further work was undertaken after the OBC to engage with the groups directly affected and refine the exemptions to best minimise negative impacts of the scheme, whilst maintaining the planned compliance date. Following this, legal advice was sought on the completion in the Charging Order.

However, BCC also recognise that the exemptions have restricted applicability, and do not help the majority of affected groups other than in some cases providing a longer period to adjust. In some cases, affected groups could be faced with the same issues following the exemption period as they would have done without a concession. To assist those groups affected by the scheme, BCC has devised a list of mitigation measures to be implemented alongside the exemptions. These are outlined in the next section.

These exemptions are subject to change following feedback provided by JAQU.

4. Mitigation Measures

4.1 Long list of mitigating measures

After the target groups were identified through the DEIA, a long list of measures was created. Shown below in Table 4-1 are the measures designed to aid the disadvantaged user groups in adapting to the scheme. Marking against the Primary and Secondary CSFs is rated Good, OK or Poor fit. It should be noted that whilst a mitigating measure may be rated as a 'poor fit', it is likely to be because it is already being run by the council or others so wouldn't offer best value as part of the CAP, and not that the measure itself is of poor value to Bristol.

Table 4-1: Longlist of Mitigation Measures

Mitigation Measure	Primary CSF	Secondary CSF	Bring to Shortlist?
Financial Support:			
Provision of grants for taxi, private hire and LGV drivers to upgrade and / or retrofit their vehicles	**N/A** – Private hires can benefit from scrappage scheme. LGV vehicles can benefit from the interest free loans described below.	**N/A** – *see comments to the left.*	**No**
An interest-free loan scheme to assist businesses replace their vehicles	**Good** – Can be implemented in the short term and should provide air quality improvements.	**Good** – High capital cost, but will aid impacted groups, provide economic, health and air quality benefits and be acceptable locally.	**Yes**
A grant (non-repayable) scheme for diesel car drivers	**Good** – Can be implemented in the short term and should provide air quality improvements.	**Good** – High capital cost, but will aid impacted groups, provide economic, health and air quality benefits and be acceptable locally.	**Yes**
Business Rate Relief for SMEs	**OK** – Does not to target air quality improvements.	**Poor Fit** – Not compliant with CAZ framework, will not provide direct air quality improvements and will not impact affected groups or economic benefits.	**No**
Additional funding for supported bus services to use Euro VI vehicles and avoid CAZ charges	**OK** – Can be implemented in the short term and should provide some air quality improvements.	**Good** – High public and politically acceptability. BCC shown to be leading the way in CAZ compliance, rather than paying the charge for non-compliance.	**Yes**
Infrastructure:			
Optimisation of traffic signal timings across the city	**OK** – this could see air quality improvements, though likely to be long term as a very large number of traffic signals across the city to optimise.	**Poor Fit** – concern over availability of enough specialist technical resource requirement (in-house, external, on-site technicians) could delay implementation timescale.	**No**
Review and reconfigure pedestrian crossing phase configurations	**OK** – unlikely to be very noticeable by pedestrians to effect major modal change	**Poor Fit -** concern over availability of specialist technical resource requirement (in-house, external, on-site technicians) could delay implementation timescale.	**No**
Introduction of further Bus Priority Schemes	**OK** – this could see air quality improvements and encourage modal shift to the bus.	**Poor Fit** – funding is currently available in other schemes for a number of bus priority schemes, separate to the CAZ.	**No**
Easton Way, completion from Stapleton Rd Junction to J3, M32	**Good** – will help encourage walking and cycling from an area on the CAZ boundary	**Good** – this will help mitigate the impact on low income groups, improve health and increase safety.	**Yes**

Mitigation Measure	Primary CSF	Secondary CSF	Bring to Shortlist?
Old Market Connections completing 'Temple Way Slip'	**Good** – will help encourage walking and cycling in a 'missing link' in the CAZ.	**Good** – this will help mitigate the impact on low income groups from the east of the city and improve health and increase safety.	**Yes**
Bedminster Bridges walking / cycling improvements	**Good** – will help encourage walking and cycling on the southern boundary of the CAZ.	**Good** – this will help mitigate the impact on low income groups from the south of the city and improve health and increase safety.	**Yes**
Extend footways on Upper Maudlin Street by BRI	**Good** – will help encourage walking and cycling on the very busy Upper Maudlin Street for the BRI	**Good** – this will help mitigate the impact users of the BRI, improve health and increase safety.	**Yes**
Hotwell Road shared cycleway and path	**Good** – will help encourage walking and cycling on the western boundary of the CAZ.	**Good** – this will help mitigate the impact on low income groups from the west of the city and improve health and increase safety.	**Yes**
Midland Road (bottom of Bristol to Bath Cycle Path)	**Good** – will help encourage walking and cycling in a 'missing link' in the CAZ.	**Good** – this will help mitigate the impact on low income groups from the east of the city and improve health and increase safety.	**Yes**
Newfoundland Road light segregation	**Good** – will help encourage walking and cycling on the north-eastern boundary of the CAZ.	**Good** – this will help mitigate the impact on low income groups from the north-east of the city and improve health and increase safety.	**Yes**
Redcliffe Hill filling in subway and walking and cycle improvements	**Good** – will help encourage walking and cycling on the southern boundary of the CAZ.	**Good** – this will help mitigate the impact on low income groups from the south of the city and improve health and increase safety.	**Yes**
Nelson Street segregated contraflow	**Good** – will help encourage walking and cycling in the city centre, in the centre of the CAZ.	**Good** – this will help achieve modal shift to sustainable modes, improve health and increase safety.	**Yes**
Dovercourt Road cycleway	**Good** – will help encourage walking and cycling from the north-east of the CAZ including a very low-income areas (Lockleaze)	**Good** – this will help achieve modal shift to sustainable modes, improve health and increase safety.	**Yes**
Additional Bristol to Bath cycleway improvements	**OK** – may help encourage walking and cycling from the east of the city but may be too far out to have major benefits for the CAZ	**Poor Fit** – relationship to the CAZ will be less clear to users than other walking and cycling improvements	**No**
More cycle stands / cycle hangers / cycle hubs / cobble treatment	**OK** – may help encourage cycling but other funding sources should be available.	**Poor Fit** – relationship to the CAZ will be less clear to users than other walking and cycling improvements	**No**
Increase, Improve, update Legible City Signage on key radials and in city centre	**Good** – will help encourage walking and cycling along some key radial routes and within the CAZ boundary	**Good** – this will help achieve modal shift to sustainable modes, improve health and increase safety.	**Yes**
Remove on-street clutter, e.g. North Street	**OK** – unlikely to be very noticeable by pedestrians and cyclists to effect major modal change	**Poor Fit** – relationship to the CAZ will be less clear to users than other walking and cycling improvements	**No**

Mitigation Measure	Primary CSF	Secondary CSF	Bring to Shortlist?
Side Road priority / improve crossings	**Poor Fit** – unlikely to be very noticeable by pedestrians and cyclists to effect major modal change and could increase congestion / delays / reduce air quality	**Poor Fit** – in relation to the CAZ. Likely to difficult to deliver on large scale in the timescale required.	**No**
Additional electric vehicle charging points	**Good** – needed to support the encouragement of the uptake in electric vehicles.	**OK** – some already planned. More may favour more advantaged communities but would also help businesses and taxi / private hires	**Yes**
Work with new build developments to put in EV charging points	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Already being led by a team in the council.	**No**
Expansion of Portway P&R site (550 spaces with 350 additional to be unlocked)	**Good** – needed to offer motorists from west/north-west of the city with an alternative to access the city centre.	**Good** – existing site, currently the smallest and large potential to increase use.	**Yes**
Promoting Sustainable Travel Choices:			
Mobility Credits and/or introduction of subsidised or free bus travel for certain demographic or income groups	**Good** - this will help compliance to happen more quickly	**Good** – will help mitigate the effects for low income groups and other demographics.	**Yes**
Loan bikes	**OK** – this could help reach compliance, but likely to have a limited overall effect	**OK** – could help improve overall public health, but a scheme is already in operation by the council and others that could be used.	**No**
Electric bike hire scheme	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Recent local experience shows a lack of interest from the market and no clear user demand	**No**
Car clubs / electric vehicle car clubs	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Experience has shown that this would be expensive to set up and would need to be commercial going forward.	**No**
Car club and charging points for Hartcliffe	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Whilst this would target an area of low income, the need for this to be focused on Hartcliffe is not clear, would be expensive to set up and would need to be commercial going forward.	**No**
Targeted door knocking to explain about the CAZ and offer alternative travel solutions	**Good** - this has been demonstrated to be very effective and will help compliance to happen more quickly	**Good** – based on previous experience, this is good value for money and can have positive effects on the harder-to-reach parts of the community.	**Yes**
Targeted roadshows to explain about the CAZ and offer alternative travel solutions	**Good** - this has been demonstrated to be very effective and will help compliance to happen more quickly	**Good** – based on previous experience, this is good value for money and can have positive effects on the harder-to-reach parts of the community.	**Yes**
Clean Air Zone helpline	**N/A** – some form of helpline will be needed, but this should be funded as part of the overall marketing and communications package.	**N/A** – *see comments to the left.*	**No**

Mitigation Measure	Primary CSF	Secondary CSF	Bring to Shortlist?
Business support including personalised travel planning	**Good** – this will help compliance to happen more quickly.	**Good** – this will help the acceptability of the CAZ to businesses	**Yes**
Target main visitor destinations	**Good** – this will help compliance to happen more quickly.	**Good** – this will help the acceptability of the CAZ to main visitor attractions	**Yes**
TravelWest Challenges such as using apps to record miles travelled sustainably	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Other measures are likely to have a greater effect and be more related to the CAZ. Also, currently in place with others in the council.	**No**
CAZ / CAF scheme promotion. Leaflets / publicity etc	**Good** – this will be needed to promote the understanding and benefits of the CAZ, and of the complimentary measures.	**Good** – schemes and complimentary measures will have less benefit if they are not promoted to potential users.	**Yes**
Driver training for delivery fleets on green driving techniques	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Other measures are likely to have a greater effect and be more related to the CAZ. Also, currently in place with others in the council.	**No**
School engagement	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. other measures are likely to have a greater effect and be more related to the CAZ. Engagement with children on wider environmental / travel issues happens already. Also, currently in place with others in the council	**No**
Green fleet events	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Other measures are likely to have a greater effect such as the interest free loans and demonstration vehicles for small businesses. But be open to events promoted by the private sector if the opportunity arises.	**No**
Introduce variable parking tariffs in council owned car parks to discourage polluting / incentivise electric vehicles	**OK** – this could help reach compliance, but likely to have a limited overall effect	**OK** – it would show BCC's support for more environmentally friendly vehicles but at the same time as CAZ charges and diesel car ban could be seen as too much of a 'stick'.	**No**
Freight:			
EV Centre of Excellence (Demonstration vehicles for small businesses)	**Good** – this will help compliance to happen more quickly.	**Good** – this will help support businesses affected by the CAZ	**Yes**
Micro-consolidation with cargo freight bikes	**Good** – this will help reduce the number of commercial / delivery vehicles and build on the success of the existing Bristol Freight Consolidation Centre	**Good** – this will help support businesses affected by the CAZ and makes a positive statement about supporting businesses and reducing the effects of delivery vehicles.	**Yes**
Freight Lockers	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Not proven to have any significant effect and other measures are likely to have a greater effect and be more related to the CAZ.	**No**

Mitigation Measure	Primary CSF	Secondary CSF	Bring to Shortlist?
Waste Consolidation	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. Not proven to have any significant effect and may have significant organisational and commercial barriers.	**No**
Others:			
Introduction and enforcement of anti-idling zones for buses in the city centre	**OK** – this could help reach compliance, but likely to have a limited overall effect	**Poor Fit** – in relation to the CAZ. newer buses will be a lot more environmentally friendly than the old buses, and many have stop-start technology fitted as standard. May be hard to enforce	**No**
Increased Euro Standard requirements for taxis and private hire vehicles in licensing agreements	**N/A -** Already happening due to recent changes in licensing arrangements	**N/A** – *see comments to the left.*	**No**
Enforcement of mandatory compliance for buses, taxis, and private hire vehicles to access bus lanes and / or franchise routes	**OK** –Buses, taxis and private hires will be subject to other measures to ensure compliance.	**Poor Fit** – in relation to the CAZ. this would be difficult to set and enforce.	**No**
Retrofitting of Council and privately-owned waste vehicles	**OK** – Waste vehicles will be subject to other measures to ensure compliance.	**Poor Fit** – in relation to the CAZ. Council waste fleet is currently being upgraded under a separate initiative.	**No**
Restrictions on goods vehicles movements in the CAZ during peak hours	**OK** – Goods vehicles will be subject to other measures to ensure compliance.	**OK** – Key roads are already planned to have HGV bans	**No**
Funding to improve council fleets	**OK** – this could help reach compliance, but likely to have a limited overall effect	**OK** – Many parts of the council fleet are currently being upgraded under separate initiatives, but additional funding would be welcomed.	**No**

4.2 Shortlist of Mitigation Measures

As a result of the assessment, the following mitigation measures were shortlisted for inclusion in the CAF bid at OBC stage. The shortlisted items were:

Financial Support:

- Provision of grants for taxi, private hire and LGV drivers to upgrade and / or retrofit their vehicles
- A loan scheme to assist businesses replace their vehicles
- A scrappage grant scheme for diesel car drivers (due to the Hybrid scheme including a small area diesel car ban at the time the OBC was put together)
- Additional funding for supported bus services to use Euro VI vehicles and avoid CAZ charges

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:

- EV Centre of Excellence
- Micro-consolidation with cargo freight bikes
- The cost of measures originally proposed to support the Bristol Clean Air Zone Hybrid option was £38.6 million. This cost was included the cost estimate presented in the financial case and the economic assessment presented in the economic case for the OBC.

4.3 Revised Shortlisted Mitigation Measures

Following the OBC submission, work was carried out to consider whether a Medium CAZ C with a Small CAZ D may reach compliance in the same year as the Hybrid option. This work concluded, as directed, with the submission of modelling data between March and June 2020. JAQU agreed that the submitted data was adequate to demonstrate that the CAZ C/ D combination would be the preferred option. This was followed up with a further legal direction in August 2020. However, once the global pandemic hit it required a further review of all the mitigation measures and the entire scheme proposals. The baseline was revised to capture the changes on street, as a result of the measures implemented to improve / enable social distancing. This showed that there was potentially no longer a need for the CAZ C/ D combination and that a Small CAZ D with additional measures may be enough to reach compliance, however this was far from certain. It was decided that another public consultation would be needed given all the changes in the project. This put forward two options; the CAZ C/ D combination and the Small CAZ D with additional measures, should a charging CAZ be required to reach compliance in the shortest possible time. Further evidence submitted to JAQU between September and December showed that in all likelihood a CAZ would still be required to reach compliance, but that a Small CAZ D with additional measures would achieve the required outcome.

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 as part of the retrofitting of their vehicles to avoid CAZ charges (funding for bus retrofitting was awarded to BCC in May 2021 following an initial FBC submission. The remaining bid is to cover engine refurbishment costs).

Infrastructure:

- Increase, Improve and update Legible City Signage
- Old Market Gap Cycle Scheme

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; publicity / events / website etc.

Freight:

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

4.4 Summary of Revised Shortlisted Measures

Table 4-2: Summary of Revised shortlisted Mitigation measures

Measure	Group Impacted	Geographic Scope	Summary of Measure	DEIA	Costs
Financial support					
A loan / grant scheme to assist businesses to upgrade or replace their vehicles	SME businesses, self - employed, HGV / LGV fleets, non -schedules bus and coach services, Hackney Carriages, PHVs	City-wide, prioritisation given to SMEs and those located directly in affected areas	Interest-free loan and grant scheme to assistwith upgrading of vehicle(s) or replacing vehicles. This will provide financial support for businesses already hugely affected by the pandemic, otherwise unable to afford the cost of moving to a compliant vehicle. This will result in a rise in compliant vehiclesentering the zone and so improving air quality	SMEs; defined by the Gov.UK definition of SMEs. Self-employed; defined by the Gov.UK definition of self-employed and in this instance relates only to self-employed people with a premises based within the zone Businesses operating in the zone that rely on road transport to operate will be disproportionately affected. Higher costs would then likely be passed down to the customer, potentially affecting trade.For taxis, this could lead to fare rises which in turn could lead to an increase in car use.	£32,457,616
A loan / grant scheme to assist those earning low incomes / needing to travel into the zone towork, to replace or upgrade their vehicle	Commuters and residents earning low incomes	City wide	Interest-free loan and grant scheme to assist with upgrading of vehicle(s) or replacing vehicles. Prioritisation given to those on low incomes and needing to travel in non-compliant vehicles to work / study in the zone.	Low income car owners who need to travel into the zone / use their car for work. Without this support they will be disproportionately affected which may affect their ability to work, potentially raising unemployment. Providing this support avoids this. According to the DEIA '*Affordability impacts will be negative across the socio-economic and business groups that directly interact with the CAZ area where non-compliant vehicles are still used, though vehicle operating costs improve overall. Impacts are slightly disproportionately felt by the least income deprived communities'.*	£1,851,953

Measure	Group Impacted	Geographic Scope	Summary of Measure	DEIA	Costs
Bus retro-fit / support for the purchase of new vehicles	Local bus companies – schedules services only	City wide	A grant to retrofit or purchase new buses for use locally to undertake scheduled services only. This is aimed at mitigating the impact on air quality caused by continued use of non-compliant vehicles in the central area	Local bus operators offering scheduled services within the CAZ zone could be disproportionately impacted. This could result in higher fares for customers who may be on low incomes. Supporting them to become compliant would avoid fare rises and potential move to the car as a cheaper alternative which would also impact compliance.	£2,075,388
Bus (engine) refurbishment	Local bus companies – schedules services only	City wide	A grant to be utilised by local buses used to undertake scheduled services only. This is aimed at mitigating the impact on air quality caused by supporting the retrofitting grant, already awarded, to enable older vehicles to last for longer once retrofitted. This will further ensure continued use of non- compliant vehicles in the central area for longer	Local bus operators offering scheduled services within the CAZ zone could be disproportionately impacted. This could result in higher fares for customers who may be on low incomes. Supporting them to become compliant would avoid fare rises and potential move to the car as a cheaper alternative which would also impact compliance.	£1,170,000
Infrastructure					
Increase, Improve, update LegibleCity Signage	All people moving around the city, especially those on foot and by cycle.	Various routes to the centre of Bristol linking in key areas such as Temple Meads with the shopping district and leisure facilities	Building on the success of the existing Bristol Legible City signage project, this would see new and updated signage and mapping making it easier for people to navigate around the city without relying on cars	Residents, visitors, businesses. Asking people to change their mode of transport requires alternative modes to be made accessible and attractive plus easy to use. This support will make walking and cycling routes clearer and more accessible, thus enabling and encouraging a modal shift to more sustainable modes of transport. This will benefit visitors who may arrive in the city unaware of how accessible the facilities are by foot or bike. But it also benefits those residents who may be unable to afford to use buses, taxis or to maintain the upkeep of a vehicle. Making routes and timings clearer can make walking a very accessible option.	£500,000

Measure	Group Impacted	Geographic Scope	Summary of Measure	DEIA	Costs
Old Market Gap cycle scheme	Cyclists, people earning low incomes but needing to travel into the city, residents	This scheme will complete the only unimproved section of East - West city centre cycle route, which provides a link to the Bristol to Bath Railway Path which is a key commuting corridor for cyclists.	Cycles currently mixing with high volume of vehicle traffic at junction, or conflicting with pedestrians on busy shared use footway. Existing footway width inadequate and not designed for high levels of cycle or pedestrian flows. Conflict level is high, and comfort levels poor. Requires segregation between pedestrians and cycles to restore comfort, remove conflict, and provide good alternative to cycling on carriageway	This scheme offers not only an opportunity to complete a vital cross city link, but it aims to further increase cycling levels resulting in a modal shift away from reliance upon the private car. This all supports our aim of improving air quality in the central area. To encourage people from their cars we need to provide viable alternatives. The CAZ will have an impact on the citizens of Bristol, this will be a positive way to help mitigate that impact whilst at the same time reducing air pollution. Cycling may become the only viable option for some. According to the DEIA: *'Vehicle operating cost impacts are unevenly distributed, being disproportionately felt by the least income deprived communities, which see a slight net disbenefit in vehicle operating costs; others have net benefits'* *And;* *'The (in)ability of households to react to restrictions is unevenly felt by lower income groups (for instance, there are fewer multi-car households that could potentially using a compliant vehicle)'.* Making the case for a complete cross city cycling route.	£720,726

Measure	Group Impacted	Geographic Scope	Summary of Measure	DEIA	Costs
Sustainable Travel Team					
Mobility credits and / or subsidised bus travel for certain demographic or income groups	People earning low incomes, residents and operating small businesses within the CAZ	CAZ boundary	Mobility credits in the form of a grant to support subsidised bus travel for certain groups, low income earners, residents, and small business owners. The grants will also be offered to upgrade office facilities with showers, lockers, and cycle parking. It will also be used to encourage a modal shift away from the private car to further improve air quality alongside other CAF measures.	Residents, low income families and owners of small businesses. There is a great network of cycle and walking routes around the central area, utilising infrastructure such as the legible signage noted above, means using these routes becomes more accessible. Not everyone can afford a bike or a bus ticket. If people are keen to change from using an old non-compliant vehicle then we need to support them to make this change. Owning an older vehicle can be expensive so this support helps them make the transition whilst also improving air quality	
Business support including personalised travel planning	Businesses within the CAZ	CAZ boundary	Support for businesses, both large and small, in terms of visits, roadshows for staffand visitors, customised travel information and personalised travel planning	SMEs will be more affected by the CAZ being introduced but larger businesses will also need to manage the impact of the CAZ in terms of informing staff, supply chain, customers etc. They may have work forces who are trying to change their mode of travel but are unaware of the route from home to work and then may be unable to lock their bike up at work for example. This will be support aimed at all businesses to make those transitions. Small businesses will be less able to make changes such as installing cycle parking so they would be more in need of financial support whereas larger companies will likely need more travel planning support.	

Measure	Group Impacted	Geographic Scope	Summary of Measure	DEIA	Costs
CAF scheme promotion. Leaflets / publicity, language translations, alternative formats etc.	All	Bristol City Council area	Targeted promotion specifically covering all the measures as part of the CAF to ensure people most in need of support know about them and they are used effectively	Support and messaging to target areas of deprivation. Residents in these areas may not have considered changing their mode before due to the financial implications i.e. getting to work. As with the Mobility Credits support, this is aimed at helping people most in need of support aware that it's there. We will work with local groups to ensure we fully understand language and cultural barriers to ensure areas of deprivation are fully engaged with the CAZ.	£5,853,496.00 (covering all three offers)
Freight					
Micro-consolidation with cargo freight bikes and Only Mile Delivery Centre.	Small businesses within the CAZ / those earning lower incomes.	CAZ / city centre area	Set up a micro-consolidation facility in or near the city centre for small deliveries, including 'last mile' delivery by electric carts and/ or cargo cycles. This will build upon the success of the existing Bristol Freight Consolidation scheme, based at Avonmouth but serving the city centre and targeted at SMEs. Work with Bath and North East Somerset (B&NES) to extend the Only Mile Delivery centre scheme being proposed. This focusses on business to business deliveries within the zone, seeking to replace those journeys by non- compliant vehicles with compliant delivery vehicles, subsidised so that this only costs the same as standard postage. This will include further add- on products, such as a shopping concierge service.	Small businesses will be hardest hit by the introduction of a charging zone. As detailed in the DEIA: 'There are potential direct impacts on costs for LGV/ HGV reliant businesses. Though trips by non-compliant LGV/ HGV reliant businesses are reasonably spread around the city, those making trips related to the CAZ area will be affected; the CAZ area is reasonably small but covers most of the city centre'. This measure will mitigate the impact by enabling quicker deliveries at no additional cost to the business and reducing the need to travel through the zone so saving CAZ charges whilst also improving air quality. The biggest benefit is in improved air quality as freight journeys through the zone are reduced and better managed. Cleaner air provides benefits to all; residents, visitors, those with health conditions etc.	£2,000,000
TOTAL					**£46,629,169**

5. Clean Air Zone Consultation

The feedback detailed in this Section is intended to give an ***overview*** of the range of comments received in relation to possible mitigating measures and exemptions. It does not detail every comment but lists the key themes arising from the consultation.

Table 5-1: Comments on possible mitigations and exemptions

Theme	Comment
Loans	Owners of private cars (21%) and LGVs (13%) are the most likely to take a loan. The proportion of respondents who would take a loan for other vehicle types is: • Private hire vehicles: 8% (all at the maximum 8%) • Hackney carriages (taxis): 7% • HGVs: 11% • Buses: 8% • Coaches: 7% **Private cars:** Of the 3,089 respondents who selected one of the options for a private car, 29 (1%) said they would take a £1,000 loan, 76 (2%) a £2,000 loan, and 538 (17%) a £3,000 loan. 2,446 (79%) respondents said they would not take a loan. **LGVs**: of 270 respondents who selected one of the options for LGVs, none said that they would take a £1,000 or a £2,000 loan, 35 (13%) said they would take a £3,000 loan, and 235 (87%) said they would not take a loan. **Private hire vehicles:** Of 185 respondents who selected an option for private hire vehicles, none said they would take a £1,000 or £2,000 loan, 14 (8%) said they would take a £3,000 loan and 171 (92%) said they would not take a loan. **Hackney carriage (taxi):** of 176 respondents who selected an option for hackney carriages, 1 (1%) said they would take a £4,000 loan, 1 (1%) said they would take a £5,000 loan ,10 (6%) said they would take a £6,000 loan, and 164 (93%) said they would not take a loan. **Heavy Goods Vehicles (HGVs):** of 191 respondents who selected an option for HGVs, 2 (1%) said they would take a £10,000 loan, 1 (1%) said they would take a £13,000 loan, and 18 (9%) said they would take a £16,000 loan. 170 (89%) said they would not take a loan. **Buses:** of 189 respondents who selected an option for buses, 5 (3%) said they would take a £20,000 loan, 1 (1%) said they would take a £25,000 loan, and 10 (5%) said they would take a £30,000 loan. 173 (92%) said they would not take a loan. **Coaches:** of the 170 respondents who selected an option for coaches, 1 (1%) said they would take a £20,000 loan, 1 (1%) a £25,000 loan, and 10 (6%) a £30,000 loan. 158 (93%) said they would not take a loan.
Grants / Mobility Credit	Respondents were much more likely to use a grant than a mobility credit for all four vehicle types. More than half of people who stated their intentions would use a grant to replace a petrol car (52%) or diesel car (57%). Fewer respondents would use a grant to replace an LGV (35%) or taxi (22%). This level of uptake for grants is much higher than for loans for all four vehicle types. **Petrol cars:** 1,967 respondents stated their intentions for petrol cars (Figure 38), of whom: • 1,015 (52%) said they would replace their vehicle using a £2,000 grant • 271 (14%) said they would replace it using a £2,000 mobility credit • 865 (44%) said they would not replace their vehicle. **Diesel cars:** 1,345 respondents stated their intentions for diesel cars (Figure 39), of whom: • 760 (57%) said they would replace their vehicle using a £2,000 grant • 159 (12%) said they would replace it using a £2,000 mobility credit • 544 (40%) said they would not replace their vehicle. **LGVs:** 176 respondents stated their intentions for LGVs (Figure 40), of whom: • 61 (35%) said they would replace their vehicle using a £2,000 grant • 13 (7%) said they would replace it using a £2,000 mobility credit • 111 (63%) said they would not replace their vehicle.

Theme	Comment
	Taxis: 85 respondents stated their intentions for taxis (Figure 41), of whom: • 19 (22%) said they would replace their vehicle using a £2,000 grant • 7 (8%) said they would replace it using a £2,000 mobility credit • 61 (72%) said they would not replace their vehicle
Exemptions - Respondents were asked to give their views on four groups: bus operators, coach operators, people living in the CAZ D area using private cars, and 'other' specified by the respondent	Over three quarters of respondents thought the people living in the CAZ D area using private cars should be eligible for exemptions (40%) or concessions (37%). 4,053 (96%) respondents provided views on exemptions and concessions. **Bus operators:** Of 3,783 respondents who gave a view on concessions and exemptions for bus operators: • 1,260 (33%) said they should receive an exemption • 1,014 (27%) supported a concession • 1,509 (40%) said they should pay the full charge to drive a non-compliant vehicle in the proposed charging zones. **Coach operators:** Of the 3,686 respondents who gave a view on coach operators: • 631 (17%) said they should receive an exemption (approximately half the proportion for bus operators) • 1,033 (28%) respondents said coach operators should receive a concession (similar to the proportion for bus operators) • 2,022 (55%) respondents said coach operators they should pay full charge. **People living in CAZ D area using private cars:** 3,864 respondents gave a view on people living in the CAZ D area using private cars. Over three quarters of the respondents thought this group should receive either an exemption or concession: • 1,545 (40%) said CAZ D area residents using private cars should receive an exemption • 1,423 (37%) said they should receive a concession • 896 (23%) said they should pay a full charge. **Other groups suggested by respondents:** 1,472 respondents provided free text answers for the 'other' category. Of these, the most frequently suggested were disabled people, people who need to drive for work, people on low incomes, people living in CAZ areas, hospital users and taxis. This aligns with several of the concessions and exemptions being considered following the 2019 consultation. The breakdown of 'other' groups that respondents said should receive exemptions and concessions is provided below: • 367 (25%) said disabled people should receive exemptions/concessions • 346 (24%) said workers should be eligible, including emergency service workers, delivery drivers, hospital workers and frontline workers • 121 (8%) said that people on low incomes should be eligible • 86 (6%) said that taxis should be exempt or receive concessions • 71 (5%) said that people who live in the CAZ should be eligible • 67 (5%) said that patients and visitors to hospitals should be eligible • 67 (5%) said that businesses should be exempt or receive concessions • 63 (4%) said that bus operators should be exempt or receive concessions • 49 (3%) said that private vehicles should be exempt or receive concessions, including classic cars, camper vans, and hybrid/electric vehicles • 41 (3%) said that Bristol residents should be exempt or receive concessions • 18 (1%) said that older people should be exempt or receive concessions. Other groups specified include parents, out-of-town drivers, community transport, hire cars, religious groups, and volunteers.
General comments	Of the 2,034 (48%) respondents who provided further comments on the proposals: 876 (43%) made suggestions for additional measures to improve air quality. The main comments included requests for more public transport improvements (434 respondents, 21%), more improvements to facilitate cycling and walking (215 responses, 11%), encouraging the use of electric vehicles (136 responses, 7%), and improving the traffic and road layout (88 responses, 4%)

Theme	Comment
	590 (29%) provided comments detailing general support or lack of support for the proposals and/or air quality improvements. Most of these comments stated respondents' concerns that the proposals are not ambitious enough and changes need to be made immediately, but generally support the need to improve air quality in Bristol 365 (18%) proposed changes to the proposals, specifically inclusion of exemptions and concessions, targeting of specific vehicles, and changes to the scheme boundaries 275 (14%) expressed concern about impacts of a CAZ on specific groups, journeys, and places 105 (5%) commented on loans, grants, and other financial incentives 65 (3%) outlined alternative scheme suggestions to a CAZ, such as pedestrianising the city centre, implementing more road closures, or bringing in a congestion charge
Businesses	19 letters and emails were received, providing responses to the consultation. Of these: • 18 were from businesses and organisations (see Table 3 for details); and • One was from a member of the public. Comments are categorised into the following five main themes : • 16 respondents (84%) suggested alterations to the proposals • 11 respondents (58%) expressed support for the proposals • 11 respondents (58%) commented on their reservations about the proposals • 5 respondents (26%) said that further information was required to determine the most effective way to reduce air pollution. • 5 respondents (26%) said that further information was required to determine the most effective way to reduce air pollution, including: o Identifying the root cause of air pollution in the impacted areas o Information about the air quality and traffic modelling o How businesses would be affected by the proposals.

A summary of the level of support for different themes of improvements/incentives are set out below:

Options 1 & 2: Summary of additional improvements and incentives:

- Owners of private cars (21%) and LGVs (13%) are the most likely to take a loan
- Respondents were much more likely to use a grant than a mobility credit for all four vehicle types
- Over three quarters of respondents thought the people living in the CAZ D area using private cars should be eligible for exemptions (40%) or concessions (37%)
- 896 (23%) said residents should pay a full charge
- 367 (25%) said disabled people should receive exemptions/concessions
- 121 (8%) said that people on low incomes should be eligible
- 1,260 (33%) said bus operators should receive an exemption
- 631 (17%) said coach operators should receive an exemption (approximately half the proportion for bus operators)

6. Details of measures

6.1 Financial support package

This section presents an evidence base to estimate the upgrade cost of the different vehicle types eligible for the grant and interest-free finance scheme. The financial package being sought will enable BCC to offer grant and interest-free finance values that will cover a fair amount of the cost of upgrading to a compliant vehicle, while also being able to offer assistance to as many businesses and low income households as possible. BCC is requesting the funds to cover the interest, administration, and default costs from JAQU as part of the package of non-charging measures.

6.1.1 Delivery plan

As soon as the FBC is submitted and funding levels are known, Bristol will issue a pre-application form for businesses to register their interest in applying for financial support, with support from a telemarketing team. This will be used to ensure the funding levels are adequate and will be the beginning of the application process. The aim is to make the support available as soon as possible to allow time to retrofit, upgrade or exchange vehicles and consider a change of mode i.e. buying a bike, considering walking routes etc.

The scheme will be overseen by the Engagement Team who will also be able to signpost applicants to other sources of support available for businesses such as Mobility Credits, Roadshows etc. The telemarketing team will also signpost businesses to the other support available with a database being created to capture this type of interest / enquiry.

Bristol will be signing a Participation Agreement with B&NES, to draw down support from their Financial Assistance Framework. This will mean Bristol can liaise with finance companies on the framework and agree a Bristol Financial Assistance Scheme. This will all be possible once the FBC is approved. Once BCC are able to utilise the framework, applicants will be notified by the telemarketing / engagement teams and will be invited to apply. The first stage of the process is to have a criteria check. This involves having a telematics unit fitted to their vehicle for a set period of time, providing evidence that support is required. If applicants meet the criteria, then they will be put in touch with the finance company to apply directly for their support. The Engagement Team will liaise with the telemarketing team and loan company throughout to ensure signposting is taking place and to monitor uptake and budgets.

Experience from B&NES, who have the first live Clean Air Zone, has shown that demand has been high for loans and grants combined and that their upper level of uptake was met. We want to ensure that as many people, businesses, taxi drivers and bus companies are supported as possible. We are therefore basing our assumptions on the higher uptake level for loans and grants.

As noted above, the application process will be the same as it is for the Bath CAZ, applicants will need to have a telematics unit installed to provide evidence of the need to travel regularly into the zone to justify the request for financial assistance. This will be the same process for loans and grants with evidence from B&NES showing that people are applying for both at the same time to cover different elements of the transition to a compliant vehicle. The costs of the telematics units are built into the telemarketing cost estimates, approximately 500 units will be purchased at a maximum cost of £30k. The units can be re-used after each use.

6.1.2 Vehicle Upgrade Costs

The values presented within this section of the report reflect BCC's current understanding of vehicle upgrade costs and will be discussed further with JAQU. The financial support package uses figures provided by JAQU.

Evidence about the research into vehicle upgrade costs is set out in Appendix A.

Following initial discussions with JAQU, the assumptions of the maximum loan/ grant values for each type of vehicle are shown in Table 6-1 below.

Table 6-1: Maximum grant and loan value available for each vehicle type (Source: FBC-26 'Primary Behavioural Response Calculation Methodology')

Vehicle type	Maximum Grant Available	Maximum Loan Value
LGV	£4,500	£16,000
HGV	£16,000	£26,000
Coach	£16,000	£35,000
Taxi (PHV)	£1,500	£9,000
Taxi (Hackney)	£4,000	£9,000
Cars	£2,000	£5,000

6.1.3 Frequency Analysis

In order to quantify the number of vehicles that may be eligible for the grant and loan scheme a calculation was undertaken using the most relevant available data, the process of which is described below.

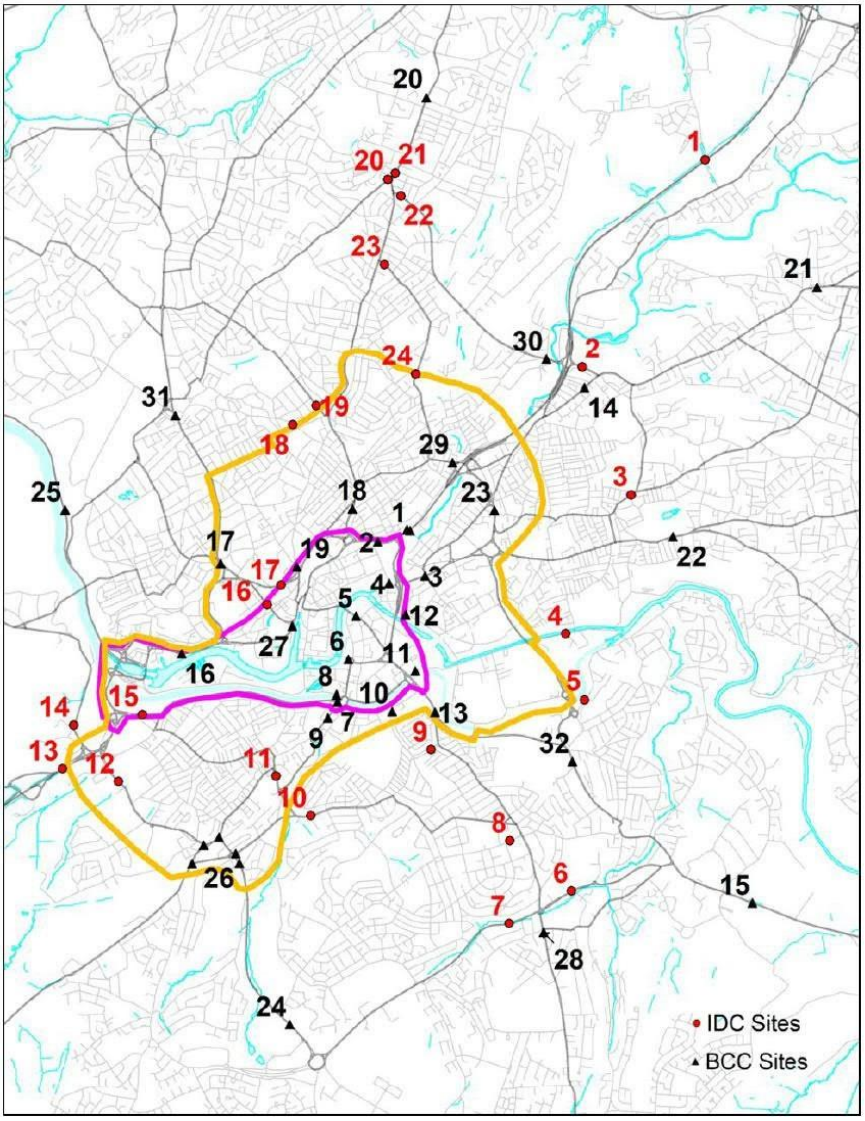
This vehicle data was then used to provide a best estimate of the cost of the schemes overall, and therefore, the funds requested from the CAF.

ANPR data was obtained for cameras within the zone, from records for June and July 2017 (61 days). The data was processed to extract distinct combinations of vehicle registration marks (VRM) and dates. A count was then performed on the number of records for each VRM providing the number of days out of the 61 that each VRM had been seen. This data was then summarised by vehicle class, fuel type and euro classification to produce frequency splits.

The ANPR data indicates a very high number of vehicles are seen on only a few days a month. It was considered that the proportions produced from the whole 2 months were likely unrealistic for commuting, particularly as the ANPR data does not differentiate by purpose. To account for this, Cars seen 7 days or fewer of the 61 were removed from consideration producing the proportions. Further an allowance of two weeks' holiday is made in the subsequent calculation given the 2-month time period during the early part of the summer.

Figure 6-1 shows the location of both the permanent and commissioned ANPR sites.

Figure 6-1: ANPR Survey Locations



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 information on the vehicle specifications was obtained for June and July in 2017 to compare the July data with equivalent data from June, a neutral month.

Table 6-2 presents trip frequency analysis (factored to 2021 based on the projected change in Euro class composition)./

Table 6-2: Predicted composition of the non-compliant BCC fleet in 2021

Vehicle type	Number of days travelling in the CAZ in 7 days						
	1 or more	2 or more	3 or more	4 or more	5 or more	6 or more	7 or more
LGV	6732	3315	1750	903	285	52	6
HGV	669	328	174	96	27	9	1
Coach	81	44	25	13	5	1	0
Taxi (PHV)	-	-	-	-	-	-	588
Taxi (Hackney)	-	-	-	-	-	-	330
Car	3917	2009	1230	833	488	241	106

Note: this table presents the number of individual vehicles that are sighted 1,2,3…etc days and aggregates directly to determine the numbers of vehicles that enter the CAZ on 1,2,3… days per week. Average daily figures for vehicle-trips into the CAZ area derived from the ANPR data are quoted elsewhere in the report.

Through number plate matching across the 7-day period, frequency analysis was undertaken to identify the number of days each pre-Euro 6 diesel and pre-Euro 4 petrol vehicle was recorded in the ANPR data for Small CAZ zone. Note that the total numbers of non-compliant PHV (588) and Hackney cabs (330) were sourced from data provided by BCC. No frequency adjustment is applied to taxis as it is assumed that those registered in Bristol are likely to all be operating in any zone on a regular basis.

ANPR analysis over 7 days adjusted to 2021 levels indicate a total of 12,316 non-compliant vehicles entering the CAZ, and therefore potentially eligible for these schemes; this figure consists of 6732 LGVs, 669 HGVs, 81 coaches, 918 taxis (PHV and Hackney) and 3917 cars. Note though that this is not a direct estimate of the relevant number of commercial vehicles that would be eligible for the scheme; there could be other vehicles that are otherwise regulars in central Bristol but did not travel on days covered by ANPR data, and conversely the ANPR data will have included other vehicles that drive into central Bristol less frequently.

This data can be used to calculate an approximation of the number of vehicles that may be eligible to apply for the grant and interest-free finance scheme. The duty cycle of the vehicles, especially the frequency of entry, is expected to be an important marking criterion in the application for the schemes, as this directly relates to the financial impacts of the CAZ on the company. For these reasons it is initially assumed that only vehicles entering the CAZ at least twice a week will apply, due to the relative lower expense of paying the charge. Whilst this may not make pure economic sense, the value of a newer vehicle would present other benefits in terms of reduced operational maintenance costs and fuel efficiency.

Using this assumption, in Table 6-3 figures entitled '2 or more' (days a vehicle was recorded in the CAZ) show the predicted number of non-compliant vehicles, split by vehicle type, that will drive into the CAZ at least twice a week, and therefore likely to result in an application for finance or a grant from a business or private vehicle owner. Note that coach figures were further assessed, because comparatively few enter the CAZ on a weekly basis, but far more do on a monthly basis, reflecting regular day-tourism business that is important to many local operators. As such, the criteria for coaches to be included was based on regular monthly trips to the CAZ area[3].

The LGV and HGV figures below relate to the 2 day a week totals from ANPR surveys of non-compliant vehicles as follows:

- The 3315 eligible LGVs represent 22.3% of total non-compliant LGVs recorded once per month in the ANPR survey (14868), and 9.3% of all non-compliant LGVs recorded in the ANPR survey (35567)
- The 328 eligible HGVs represent 18.9% of total non-compliant HGVs recorded once per month in the ANPR survey (1738), and 7.0% of all non-compliant HGVs recorded in the ANPR survey (4605)

[3] Coaches (per month) are observed in the ANPR data as follows: 166 (once), 113 (twice), 92 (three times), 81 (4/ month or 1/ week)

6.1.4 Overall Cost of Scheme

Using a combination of the data presented in Sections 6.1.2 and 6.1.3 above, a calculation can be made to estimate the total cost of the scheme and the funding requested from the Government required to implement it. To calculate the overall value of the financial support scheme, a series of estimates have been prepared. These are based on the number vehicles observed at different frequencies of accessing the CAZ area, taking the key assumption that vehicles entering the CAZ twice a week are likely to be considered the minimum eligibility requirement:

- Lower uptake – assumes only vehicles which enter the CAZ area on 5 or more days per week would be eligible for the scheme (6 day per month for coaches);
- Middle uptake – assumes only vehicles which enter the CAZ area on 3.5 or more days per week would be eligible for the scheme (4.5 days per month for HGVs and 4 days per month for coaches); and
- Upper uptake – this assumes that only vehicles which enter the CAZ area on 2 or more days per week would be eligible for the scheme (4 days per month for HGVs and 2 days per month for coaches).

The consultation work indicated that there would be a greater interest in grants, than loans for car upgrades than was previously assumed, so the assessment has been revised to reflect this. The uptake levels have been informed by the loan and grant applications being made to B&NES and the consultation feedback.

The number of vehicles for these uptake assumptions can be seen in Table 6-3 and in Appendix B. Note that an individual income cap of £27,000 has been applied to car loan and grant schemes, therefore only individuals with a non-compliant vehicle and individual income of less than £27,000 would be eligible for funding.

The 'upper uptake' figures have been taken forward in the totals requested in this CAF bid; £34,309,559 in total (including contingency).

Table 6-3: Lower, medium and upper uptake assumption values of total scheme cost

	Vehicle type	Grant amount per vehicle	Finance amount per vehicle	Number expected to upgrade	Number of grant applicants	Total value of grant	Number of finance applicants	Total value of finance (to the project, excluding contingency)
Lower uptake	LGV	£4,500	£16,000	271	285	£1,339,754	257	£820,956
	HGV	£16,000	£26,000	26	21	£336,000	5	£27,619
	Coach	£16,000	£35,000	61	49	£784,000	12	£84,779
	Taxi (PHV)	£1,500	£9,000	588	523	£902,580	65	£116,424
	Taxi (Hackney)	£4,000	£9,000	330	240	£1,188,000	90	£162,000
	Car	£2,000	£5,000	216	173	£380,296	43	£43,215
	Total	**-**	**-**	**1,492**	**1,291**	**£4,930,630**	**472**	**£1,254,994**
Middle uptake	LGV	£4,500	£16,000	1210	1274	£5,988,017	1147	£3,669,253
	HGV	£16,000	£26,000	54	43	£688,000	11	£55,772
	Coach	£16,000	£35,000	81	65	£1,040,000	16	£113,092
	Taxi (PHV)	£1,500	£9,000	588	523	£902,580	65	£116,424
	Taxi (Hackney)	£4,000	£9,000	330	240	£1,188,000	90	£162,000
	Car	£2,000	£5,000	449	359	£789,476	90	£89,713

	Vehicle type	Grant amount per vehicle	Finance amount per vehicle	Number expected to upgrade	Number of grant applicants	Total value of grant	Number of finance applicants	Total value of finance (to the project, excluding contingency)
	Total	**-**	**-**	**2,712**	**2,504**	**£10,596,072**	**1,419**	**£4,206,254**
Upper uptake	LGV	£4,500	£16,000	3149	3315	£15,578,994	2983	£9,546,277
	HGV	£16,000	£26,000	96	77	£1,232,000	19	£99,840
	Coach	£16,000	£35,000	114	91	£1,456,000	23	£158,828
	Taxi (PHV)	£1,500	£9,000	588	523	£902,580	65	£116,424
	Taxi (Hackney)	£4,000	£9,000	330	240	£1,188,000	90	£162,000
	Car	£2,000	£5,000	891	784	£1,723,732	107	£106,843
	Total	**-**	**-**	**5,168**	**5,030**	**£22,081,306**	**3,287**	**£10,190,212**

Table 6-3 also shows the average interest-free finance and grant amount calculated for each vehicle type. The values provided for the grant scheme include the value of the grant in addition to the overhead costs, whereas the figures provided for the finance scheme include only overhead costs. Overhead costs include interest, administration fee and default costs. BCC is requesting the funds to cover the interest, administration, and default costs from JAQU as part of the package of non-charging measures. In relation to this, the following assumptions have been made:

- The overhead costs (administration, interest and default costs) for all vehicles have assumed to be approximately 20% of the total cost of the finance provided to the individual or business;
- A 20% contingency has been applied to the loan financial estimate in the overall financial model, as this has not been agreed with the finance supplier (the contingency is shown in the ; and
- The administration fee for the grant scheme is estimated to be £200 per grant.

Also, in addition to the costs in the table, the costs of marketing and collecting telematics data will be included in the implementation fund proposal.

6.1.5 Prioritisation Criteria

SMEs

In terms of loan and grant funding, SMEs will be prioritized in an initial round of funding. Following the first round, and depending on funding levels remaining, the support will be opened up to all businesses based in Bristol not having already applied.

SMEs are defined according to the Companies Act 2016 (see www.gov.uk/government/publications/life-of-a-company-annual-requirements/ life-of-a-company-part-1-accounts). Non-compliant vehicles that are to be upgraded will need to be registered to an SME with premises located within the Bristol CAZ area.

In support of this measure, a telemarketing team will be employed to work alongside the Engagement Team to ensure all businesses are made aware of the CAZ, the support available and to create a record of all business contacts and the likely impact of CAZ on businesses across the city. This will be carried out well in advance of the go live date to ensure there is adequate time for businesses to assess and apply for the funding they need.

Support will be prioritized for SMEs and self- employed businesses based in Bristol. Applications will be assessed based on the criteria as noted in the exemptions table and with self- assessment tax forms for self- employed. This

will relate to the business premises only; taxis will not therefore count as a business in this context as there is a separate funding allocation for taxis.

The telemarketing company will contact all businesses in the zone area and surrounding area on the outside of the boundary. They will compile a complete contact list and call, email and write to all businesses explaining about the CAZ, what's involved and what support is available. They will work with businesses to gauge the likely impact of the CAZ and signpost them to the support available. There will also be a pre-registration process for the financial support available, with additional funding being sought should current forecasts prove to be insufficient.

Those earning low incomes

Priority will be given to those earning low incomes and needing to travel into the zone for work purposes, the threshold for 'low income' is £26k. This is calculated based on the median annual wage for residents of Bristol. When discussing the threshold, the ONS calculation of defining those on low income being 60% of the median annual wage was deemed too low, especially given the economic uncertainties at the moment. We therefore have a Bristol specific threshold which is 80% of the median annual income per individual in Bristol, which will be capped at £26k for the initial round of funding. A second round of funding will be available for those earning up to £27k, this avoids anyone in need of support just missing out making the scheme fairer.

When applying for financial assistance those people needing to travel into the zone for work purposes and earning what we define as a low income will be prioritized for funding. Evidence of meeting this criteria will need to be provided in the form of a V5C showing they are the registered keeper of the vehicle, a letter from employer on headed paper to confirm business address and hours worked and a P60 (or a pay slip if not been there a year) /self-assessment tax return. The loans and grants will be managed by a finance company appointed through the framework BaNES have established. They will administer the financial support following the criteria we agree with them as part of a signed agreement.

6.1.6 Value for Money Assessment

6.1.6.1 Quantifiable Impacts

The grant component of the financial support mitigation measure will provide funding towards the replacement of 5,168 non-compliant vehicles owned by businesses or private individuals. Section 5.3.3 demonstrates that the aggregate cost of providing grant funding towards the replacement of 5,168 non-compliant vehicles is £34.3 million (including administration fee for each grant). Recipients of this grant funding avoid upgrade costs amounting to £34.3 million. This avoided cost represents an economic benefit to upgraders. Hence, the grant funding therefore directly offsets expenditure by businesses and individuals at a 1:1 ratio.

The interest-free finance component of the financial support mitigation measure is to be provided to 2,018 qualifying non-compliant vehicles. The finance structure means that whilst recipients do not avoid the upgrade cost attributable to businesses/ individuals, they can save on interest costs (plus default costs and administration fees) associated with purchase of compliant vehicles via a commercial finance arrangement. The finance therefore directly offsets expenditure by businesses and individuals at a 1:1 ratio.

6.1.6.2 Additional Non-Quantifiable Impacts

In addition to the quantified and monetised benefits described above, the mitigation measure is expected to have the following wider, non-quantifiable benefits:

- Prevent job losses amongst trades people in Bristol, as the availability of financial support allows vehicular upgrade.
- Maintains Bristol as a location that is attractive to local trades people, ensuring that consumers continue to have choice.
- Supports dependent businesses such as retail. The mitigation measure safeguards the delivery of stock on a reliable basis. This will help prevent job losses and help maintain the vitality and viability of Bristol City Centre.

- Supports the leisure and tourism industry in the city by providing opportunities for eligible coach companies to access financial support.
- Most businesses across all sectors are reliant to some extent on freight or delivery services. If non-compliant vehicles continued to enter the CAZ, any associated charge would likely be passed on to end consumers. Provision of financial support for eligible freight vehicles reduces the amount of non-compliant freight vehicles entering the CAZ zone and therefore helps to minimise pass-through of CAZ costs.
- Protects local freight businesses and traders by reducing the capital cost burden of upgrading to compliant vehicles. This is particularly important for SMEs and sole traders, who may be more vulnerable to a significant financial shock such as upgrading to a compliant vehicle.
- Provides a monetary stimulus for the local economy as new vehicles may be purchased from local dealerships.
- Prevents negative publicity. In the event that SMEs or trades people went out of business as a consequence of the CAZ, both BCC and central government may be perceived to lack support for vulnerable business groups.

Through its support and prioritisation of financial support for applications to upgrade to electric vehicles, the measure also has the potential to support the emerging electric vehicle industry. Further, by encouraging the use of electric vehicles, the mitigation measure will increase awareness within the nascent market. Electric vehicles will also contribute to lower operating costs and noise pollution.

6.2 Bus Retrofit

6.2.1 Overview

An Expression of Interest (EOI) for the Clean Air Zone retrofit funding ran from 20/11/20 to 11/12/20. The EOI was sent to approx. 130 email addresses at 75 bus and coach companies (stakeholder list complied using contacts from BCC & WECA). In total responses were received from 16 companies with estimates being received from 10 of the 16 companies.

During the EOI period, queries were received from First Bus about refurbishment funding which would take place alongside the retrofit, this was estimated as being £390,000 for their fleet, at a cost of £10k per vehicle. We would like to roll this out to all operators who completed the EOI (total of 117 vehicles), as a way of mitigating some of the difficulties with retrofitting these larger vehicles, capped at £400k per operator. We therefore propose funding of £1,170,000.00 to cover this, which is deemed to be the most cost effective and reliable way of undertaking the retrofitting within the given timescale before going live. First Bus have provided some valuable insights into retrofitting as the primary bus provider in the city with considerable experience of retrofitting buses. Other operators may not be aware of the additional work and costs involved in retrofitting their vehicles, this budget is to mitigate the risk of any delays to retrofitting. First Bus are fully versed in what is required and from their lessons learnt, refurbishment costs are a vital part of the process of retrofitting buses.

The refurbishment process involves installing retrofit kit + efans on vehicles such as Euro III, Volvo B7TL Double Deckers. The aim being to ensure these older vehicles would be good for another 5-7 years' service, which in addition requires an engine refurbishment at the same time as the retrofit.

The amount of funding being requested is based on the feedback provided in the EOI relating to the fleet numbers each operator provided. The total number of vehicles that would be refurbished alongside retrofitting to ensure the vehicles last longer is 117.

Following engagement with bus operators and JAQU following an initial submission of the FBC, it has been agreed that bus operators would be able to utilise the retrofitting budget allocation on retrofitting their existing fleet or they could put it towards the purchase of a new vehicle.

6.2.2 CAF Objectives

This resource meets the objectives of the CAF by offering "community-wide measures such as road layout changes, changes to cycling or walking infrastructure, improved public transport, park and ride schemes, promoting car clubs, vehicle retrofit; or better travel planning services".

Furthermore, these measures will reduce transport costs for people fitting in with the CAF Guidance as being; "measures aimed directly at supporting individuals or businesses such as local travel discounts (which could be linked to smart ticketing), cycle to work schemes, local scrappage schemes or support for upgrading to a new vehicle (including ultra- low emission vehicles).

6.2.3 Delivery Plan

BCC already has experience of administering grants to retrofit buses and sustainable transport grants. This experience and existing staff / team resource will be utilised to work alongside the Engagement Team administering the grants, providing guidance and expertise. The team are already mobilised, with current funding ending in the spring, to easily be able to pick up this work once funding is awarded. The team are already carrying out exploratory work and planning how this could all be managed. With the EOI already having taken place, we have contacts ready to go. The team would create a bespoke document to capture the operator details, number of vehicles, amount of the grant awarded and whether they are retrofitting or purchasing new vehicles. They will then carry out monitoring and follow up activities to provide updates on the compliance levels of each operator.

High level indicative draft programme –

Application period – 6 weeks
Evaluation of applicants – 2 weeks
Funding start date – 8 weeks from application period beginning

Grant agreement signed – 2 weeks

Once the funding is awarded, in under 3 months operators could be in a position to begin booking in retrofits or ordering new vehicles. As the go live date has now moved to summer 2022, this provides as long a lead in time as possible to ensure the majority of the fleet are retrofitted ahead of go live or at least within the first year of CAZ operation.

Refurbishment total estimate £1,170,000.00

Retrofit total estimate £2,075,388

Total retrofitting cost estimate £3,245,388.00

Below is a summary of the content of the EOI email that was sent out

Vehicle type - Euro Category Euro standard

Bus M3 (GVW over 5000 kg and more than eight seats in addition to the driver) Euro VI

Coach M2 (GVW not exceeding 5000 kg, ref mass exceeding 2610 kg and more than eight seats in addition to the driver) Euro VI

Charges would apply to diesel vehicles which are Euro 5 or older and petrol vehicles which are Euro 3 or older – known as 'non-compliant vehicles'. Charges would NOT apply to Euro 6 diesel vehicles and Euro 4, 5 and 6 petrol vehicles.

Bristol have a Legal Direction to implement a scheme which results in meeting the legal air quality limits in the shortest possible time, and its recognised that this could impact on businesses such as Bus Operators. In response to this JAQU has set aside Clean Air Funding (CAF) to mitigate against and attempt to minimise impact of a

charging CAZ, should the evidence show that is required to reach compliance. JAQU has recently suggested that Bristol City Council should consider allocating part of Bristol's CAF to retrofit buses following a very successful example of Leeds City Council.

To demonstrate interest in retrofitting non-compliant vehicle funding, and to provide an idea of the total amount of funding that would be required, we are now contacting all bus operators in the sub-region for expressions of interest.

Funding information guidance

At this stage we are inviting expressions of interest before applying for the funding from JAQU and a scheme is fully developed. However, for guidance, the following should be considered as a basis for decision making.

- Funding is for buses and coaches only (as defined in the table above)
- The funding will be applied for as a grant.
- Applications will be scored and grants awarded based on a prioritisation matrix.
- Monitoring and proof of eligible spend will be part of the terms and conditions of any grant agreement.
- There will likely be minimum and maximum levels of funding to apply for per vehicle. The average cost for retrofitting a bus is £17,000, the initial proposed minimum and maximum value range is between £13,000 and £20,000. Its acknowledged there may be some costlier retrofits for hard to replace/specialist models, and applications outside this range could be considered on a case by case basis.
- Eligible vehicles will need to demonstrate that they are operated within the CAZ D area:

CAZ D draft boundary plan https:// bristol.citizenspace.com/growth-regeneration/ caz2020/user_uploads/ bd13351-caz-inner-zone-map-cd--with-insets-1-v2.pdf

- Any awarded funding must be spent/ fully committed before the date specified once the funding is agreed.
- The grant value is to be determined but could be up to 100% of the non-compliant vehicles retrofit equipment costs (on-going costs following the retrofit will not be eligible).
- Retrofits must be carried out by an accredited Clean Vehicle Retrofit Accreditation Scheme supplier. A list of accredited suppliers company details can be found here https:// energysavingtrust.org.uk/ wp- content/ uploads/ 2020/10/ CVRAS-Approved-Devices-Open-List-Version-26-11.09.2020.pdf
- Retrofitting methods and suppliers
- Buses: Retrofit solutions for buses are well-established. Exhaust after-treatment systems combining Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR) technology are the most widely applied. Other technologies include re-powering, where the old engine is replaced with a new engine with lower emissions, such as replacing diesel engine with an electric or hybrid drivetrain.
- Coaches: Similar to buses, there is diesel particulate filter (DPF) and selective catalytic reduction (SCR) technology applicable to coach retrofit applications. These systems are tested on specific coach test cycle protocol.

The £17k fee for retrofitting buses was as a result of the market research carried out. Suppliers were contacted for an estimate of min and max costs. We also researched various other funding initiatives and academic papers. The conclusions of this work were that averages for busses was £15,958.33 and coaches was £18,250.00 with a meanvalue being calculated.

Please note, the £17k figure did not include the extra funding that First Bus are seeking for engine refurbishment as part of the retrofit process which is now included in the funding request.

6.2.4 CAF Objectives

This resource meets the objectives of the CAF by offering "community-wide measures such as road layout changes, changes to cycling or walking infrastructure, improved public transport, park and ride schemes, promoting car clubs, vehicle retrofit; or better travel planning services".

Furthermore, these measures will reduce transport costs for people fitting in with the CAF Guidance as being; "measures aimed directly at supporting individuals or businesses such as local travel discounts (which could be linked to smart ticketing), cycle to work schemes, local scrappage schemes or support for upgrading to a new vehicle (including ultra- low emission vehicles).

6.2.5 Value for Money Assessment

6.2.5.1 Quantifiable Impacts

By making non-compliant vehicles compliant, the refurbishment alongside retrofitting measure allows bus companies to avoid upgrading their fleet or cancelling services, which may occur in the absence of the measure. This additional process will ensure vehicles last longer, this is a business benefit and mitigates the impact of the CAZ, particularly for smaller operators. However, as with the bus retrofitting mitigation measure, this was incorporated into the core economic model, but these economic costs are avoided within the model.

As such, it is possible to derive a proxy for the economic benefit of the measure by adjusting key inputs to the core model, to mimic a scenario where bus retrofitting does not take place and bus companies are forced to either upgrade or change their travel behaviours. Within this context, the negative economic impact of cancelling the bus retrofitting measure can be retrospectively added to the model, to understand the avoided cost of bus companies upgrading their fleet in response to the CAZ.

An additional impact could be that bus companies may cancel journeys or avoid the zone as a result of the CAZ charge, which in turn reflects a disbenefit to bus companies. However, it is not possible to calculate the welfare loss associated with avoiding cancelled bus services for the Bristol CAZ area because appropriate data is not available from traffic models. As such, this is not included in the quantified impact. It is worth noting though that other studies have estimated that up to 5% of (initially) non-compliant bus journeys could be cancelled relative to a baseline in the absence of upgrades or retrofitting, though the number of cancelled journeys relative to the baseline will fall over time, thus also reducing the avoided welfare benefit loss.

In order to model the scenario of avoided costs for bus companies, the core economic model was adjusted to include assumptions around the scale and timing of bus upgrading and cancelled/ foregone bus journeys in the absence of the bus retrofitting measure. The retrofit and repower measure will support some 158 non-compliant buses. In the absence of the retrofitting measure, these non-compliant buses will be expected to upgrade (at the expense of bus companies) or have their journeys cancelled. Based on the behavioural responses adopted in the model, some 95% of non-compliant bus trips (representing 75% of all bus vehicles) will be upgraded to compliant vehicles.

With respect to the 158 non-compliant buses expected to benefit from retrofitting, these behavioural responses translate to some 119 vehicles incurring upgrade costs to bus companies in the absence of retrofitting (i.e. 75% of all non-compliant buses proposed for retrofitting). These behavioural responses will result in economic costs to the bus companies, as the cost of upgrading and cost of cancelling journeys increases. In terms of upgrading in the absence of bus retrofitting, the economic cost to bus companies can be summarised as follows:

- Vehicle age estimates were combined with the estimated vehicle values by age (based on depreciation rates) to estimate the residual value of vehicles by Euro Standard (a proxy for age), across vehicle types and across years

- The cost differential between upgrading in 2021 and all other years in the appraisal period was calculated based on residual value of vehicles in each year

- The differential proportion of vehicles upgrading in each year by baseline/ intervention scenario was applied to the cost differential for upgrading in each year, to arrive at a weighted cost differential

- The weighted cost differentials for upgrading was summed across all years to arrive at an aggregate cost differential

- The proportion of vehicles upgrading (split by age, as indicated by Euro Standard) was applied to the aggregate cost differential for upgrading, to arrive at a blended average upgrade cost differential between the baseline and intervention.

Following this approach, a cost to upgrade was estimated at £43,500 per vehicle for switching to new vehicles. The equivalent upgrade cost for switching to second-hand vehicles was estimated at £9,400 per vehicle. As a result, the cost of upgrading will vary depending on any assumption regarding a switch to new or used buses. Adopting an assumption that all upgrading buses switch to a new vehicle, the economic cost of upgrading 119 non-compliant buses in the absence of the retrofitting measure is £5.3m (2019 prices). Assuming that all upgrading buses switch to a second-hand compliant vehicle, the economic cost of upgrading reduces to £1.1 million. However, given that the market for second-hand compliant bus vehicles is understood to be relatively small, it is likely that the choice to upgrade would require a switch to a new vehicle.

The assumption that 119 non-compliant vehicles will need to be upgraded to new vehicles in the absence of the retrofitting measure results in potential for additional economic costs to bus companies relating to vehicle scrappage. Vehicle scrappage occurs because the overall fleet size is assumed to stay the same. Hence, an influx of new vehicles to the bus fleet will result in the scrappage of older non-compliant vehicles. Vehicle scrappage costs arise because the intervention case is assumed to bring forward the upgrading (and therefore scrappage) of vehicles. This means vehicles are scrapped earlier and with higher residual values than they would have been under the baseline scenario. As a result, the intervention case leads to a greater loss of residual asset value.

The differential in residual asset value between the baseline and intervention options can be summarised as follows:

- Established the asset value of vehicles to be scrapped based on age and depreciation rates

- Subtracted the asset value of vehicles to be scrapped in each year of the appraisal period from the 2021 value to establish an asset value differential per vehicle scrapped earlier than intended, across all years

- Used the interpolation rates to determine the proportion of vehicles scrapped each year in the intervention case, and applied the proportion to the asset value differential per vehicle identified above

- Summed the asset value differential across all years and Euro Standards to arrive at a weighted average asset value differential to act as a proxy for scrappage cost change between the baseline and intervention cases.

Adopting this approach, the residual value of scrapped vehicles was around £6,000 per unit for buses. Multiplying this value by the 119 buses that would be scrapped to cater for replacement new buses, the aggregate economic cost of vehicle scrappage is estimated at £724,000 (2018 prices).

Table 6-4 demonstrates that combined, the economic cost of upgrading or cancelling bus journeys and scrapping vehicles earlier than would otherwise occur in the absence of the Bristol Clean Air Plan amounts to almost £6.0 million. This economic cost would be incurred in the absence of the bus retrofitting measure. The proposed retrofitting measure allows these costs to be avoided. As a result, the avoided cost of £6.0 million can be considered an economic benefit of the proposed retrofitting measure.

Table 6-4: Aggregate Value for Money Assessment

Economic Impact Category	Value (2018 Prices, Undiscounted)
Avoided Upgrade Cost Associated with Replacing Vehicle	5,265,873
Avoided Welfare Loss from Cancelled Bus Services	n/a
Avoided Residual Value Loss for Scrapped Vehicles	724,359
Total Benefits	5,990,232
Total Costs	3,245,388
Benefit Cost Ratio	1.85

Set against a total bus refurbishment and retrofitting cost of £3.25 million, the economic benefits identified above could generate an indicative BCR of 1.85 in response to implementing the retrofitting measure.

Note that the resolution of the economic model does not allow bespoke calculation of a range of potential economic impacts without the provision of more detailed air quality and traffic modelling inputs. As no additional air quality or traffic modelling was undertaken for this exercise, impacts relating to air quality, traffic flows, accidents and greenhouse gas emissions were not estimated for introducing this measure. That said, it should be noted that the impact of not implementing the retrofitting mitigation measure is expected to be negligible across these economic drivers. Further, active mode analysis was not undertaken as the proposed retrofitting measure is not expected to significantly change the number of people choosing to walk or cycle. Transaction cost impacts were not estimated because no transaction cost was identified for purchasing replacement bus vehicles; hence no avoided cost would be achieved by implementing the retrofitting measure.

6.2.5.2 Additional Non-Quantifiable Impacts

In addition to the quantified and monetised benefits described above, the mitigation measure is expected to have the following wider, non-quantifiable benefits:

- Reduced severance for some communities that may lose access to Bristol City Centre. As bus companies are expected to cancel some services in response to the CAZ (in the absence of bus retrofitting), the mitigation measure will ensure that services are retained.
- Although outside the city centre, in surrounding areas, particularly outer suburban areas, the bus network that feeds into the city is characterised by multiple operators including a number of small, locally focussed operators.
- The mitigation measure will ensure that the cost of upgrading to compliant vehicles does not fall on small operators, thus challenging their long-term viability.
- By ensuring bus services are retained, the mitigation measure will avoid any negative publicity associated with reducing key public services.
- By ensuring bus services are retained, the mitigation measure will support wider efforts to achieve mode shift from private car use to public transport. Attempts to promote use of public transport could appear illogical if the bus network contracted in response to the CAZ.
- Retention of bus services will support the ongoing vitality and viability of Bristol city centre, by ensuring that consumers can continue to access the central area and maintain current levels of retail expenditure. Should bus services be cancelled, expenditure in the city centre could fall as consumers that rely on bus services to access the centre are forced to use alternative retail areas or modes.

- Similarly, retention of bus services will also ensure that residents that rely on bus travel can continue to access civic functions and social activities located in Bristol city centre. This will safeguard social inclusion and cohesion.

Updates:

Following initial submission of the FBC CAF Bid in February 2021, £2.1m was awarded to retrofit buses. This will now be rolled out with only the refurbishment costs remaining to bid for which totals £1.17m. The whole amount has been included in this bid to reflect the whole budget as it remains part of the CAF funding package. During the FBC revisions process, a proposal was put forward by one operator wishing to put the retrofitting budget towards the purchase of new vehicles, which is deemed by some to be more cost effective. The data is still being considered for this, which could equate to 14% of the current bid for retrofitting. All existing retrofitting expressions of interest will be progressed whilst agreement on the purchase of new vehicles is being considered.

6.3 Infrastructure; Legible signage

The CAZ project will work with Bristol Legible City (BLC) Team to create direction signs, on street information panels and city / area maps and visitor information all relating to the CAZ; raising awareness whilst also promoting existing resources such as cycling and walking routes.

This provision will be crucial in supporting visitors and residents to make the change to more sustainable modes of movement.

Established in 1996 Bristol Legible City is a unique concept to improve people's understanding and experience of the city through the implementation of identity, information, and transportation projects. Bristol Legible City projects include direction signs, on-street information panels with city and area maps, printed walking maps, visitor information, identity, and arts projects.

https://www.bristollegiblecity.info/

BLC is widely recognised as an innovative project and has since been replicated in cities and towns across the UK and internationally.

6.3.1 Delivery Plan

BCC has experience of managing legible signage and are seeking funding for additional team support to manage this measure. The new member of the team will work alongside staff who have a wealth of experience, contacts and established methods that offer best practice. This will nicely align with other planned legibility work for the city in the coming few years. This could be put into practice as soon as funding is awarded.

6.3.2 Supporting the CAZ

Building on Bristol's reputation as a walkable city and encouraging more residents and visitors to choose to walk in the central area will be a key contributor to the city meeting its clean air goals. To enable this change will require investment in assets and resources to help people find their way about the city in a way that is comfortable, intuitive and that reveals Bristol's unique offer. Fortunately, the city has a history on investing in helping people find their way about on foot through its investment in the BLC project. It is proposed that CAZ investment should build on this excellent legacy.

To support Bristol in reducing car use and becoming a more walkable city BLC will further extend and develop two projects designed to help residents and visitors make better informed choices in making their way around the city. These two projects are:

- Smart monoliths (Figure 6-2 and street furniture
- PopMap: User-defined digital mapping platform

Smart monoliths

Figure 6-2: A BLC Monolith at Bristol Temple Meads)

BLC provides on-street map monoliths throughout Bristol's central area. These units are designed to provide intuitive and user-friendly mapping information for users to orientate themselves and plan their onward journey. The units are located prominently in public spaces and at key decision points.

The BLC team have been working with Toshiba's Bristol Research and Innovation Laboratory and The University of the West of England's Computer Science Research Centre to develop a project to upgrade these monoliths to be able to sense environmental conditions and to be able to communicate with users in making decisions on which route to take.

The upgraded units will contain a suite of low energy / passive environmental sensors that will be collect data on conditions including noise, air quality, temperature, and vibration. This information will be communicated back to the council and displayed to users via a digital mapping app allowing visitors and residents to make decisions about routing, Figure 6-3.

Figure 6-3: Early design testing work on sensor array

In addition to this, research had recently been undertaken to confirm user needs and to identify and gaps in the current system. This work demonstrated that the on-street provision is still used and trusted by visitors and

residents and that there is a desire from local businesses to expand the system to support visitors in getting Bristol's major destinations and smaller independent businesses. The gap analysis identified 38 new sites for on-street provision.

The monoliths are designed to a very high spec and have lasted for two decades in the urban environment. They are adaptable, updatable, reconfigurable and of a very high design standard in terms of their physical design, information design, and cartography. They feature as points in a connected and integrated walking system for the city – a system and approach that started in Bristol and has since been replicated across the world by the way; London and New York are two good examples.

At present there are no cycling specific monoliths in place. However, the legible city monoliths include cycling information and are used by cyclists. There has also been work undertaken to develop a model for cycling drawing on similar work in London (Olympics) and New York.

The proposal is to install new monoliths at 20 key sites within the central area to support the CAZ.

PopMap

During lockdown and subsequent Covid-19 related restrictions in 2020 work on BLC was shifted to the development of the project's digital mapping resources. This work included the production of a royalty-free, GIS enabled digital map of the city that can be used to display useful data such as venue information, public space access, and walking and cycling access, an extract can be seen in Figure 6-4.

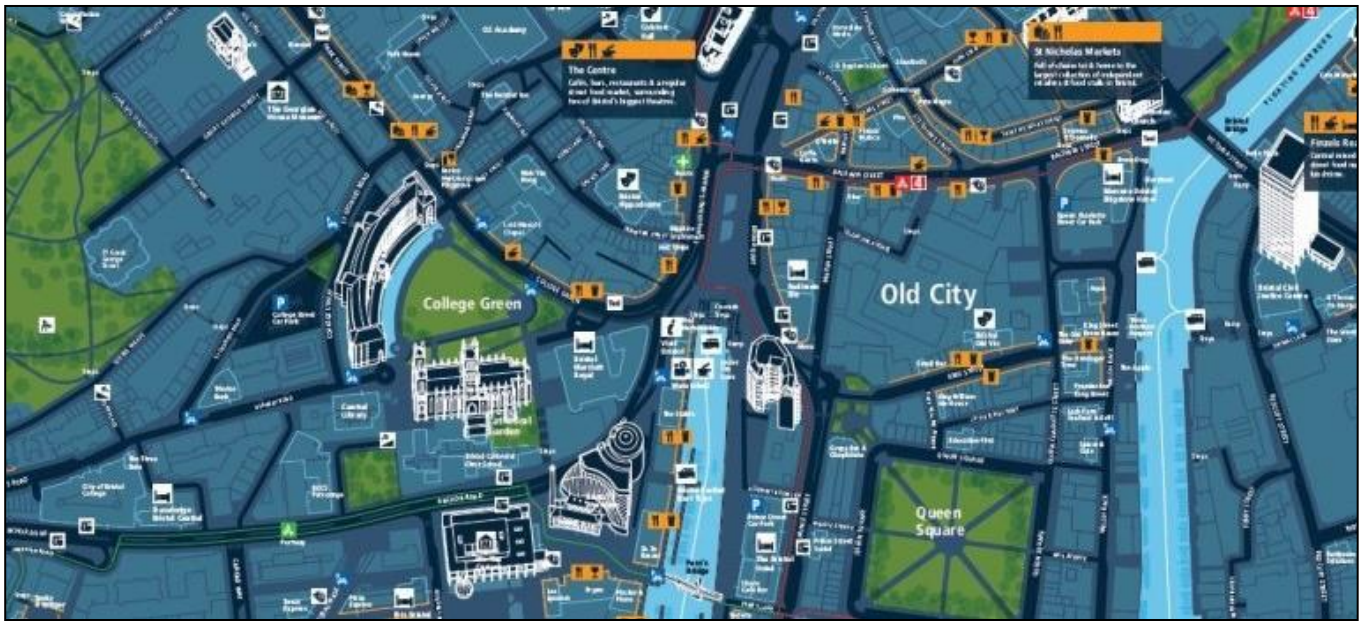


Figure 6-4: BLC Mapping

BLC, working in partnership with City ID and Calvium on a Bristol & Bath Creative R&D Pathfinder – details here – has seen the implementation of the project's digital mapping in the production of the PopMap project. PopMap is a novel user-centred mapping app that allows the resident or visitor to access a real time view of the city based on their preferences and location, see screenshots in Figure 6-5. The app works as a geo-located, hyper-local search tool. Providing information on what is happening where and when and relative to the user. The app is supported with an accessible Content Management System (CMS) that allows real-time updates to the mapping by partners i.e. local businesses and other stakeholders. The app provides the potential to display data based on a wide range of specific user preferences based on preferred activities or user-needs e.g. accessing museums/galleries via flat, cobble-free routes.

A standout feature of the app unlike other digital routing apps which are based on car-based routing, PopMap has been built up using the public realm as the ground to its routing. This fundamentally changes the focus from driving to walking and re-centres the city's public realm as a place for active travel.

Figure 6-5: Sample screen grabs from PopMap prototype

Furthermore, the BLC team are particularly interested in how PopMap can be put into use as a critical tool in Covid-19 recovery, signposting people to local businesses and providing live information on any restrictions.

At present the PopMap app is a working prototype. The proposal is to further develop and extend the app to fully support walking and cycling in the city. There are many other apps available. None of which do what PopMap does to the same level of local detail and, importantly, most are designed for car-based journeys, unlike PopMap which is built from public realm and walking data providing a completely different view of the city.

6.3.3 Supporting case

Recent research undertaken by Mace & Menter has demonstrated the value of the BLC project in supporting visitors and residents in making their way around Bristol. The surveys undertaken in support of this research show that the majority of visitors to Bristol prefer to explore the city on foot when they arrive. There is recognition that this "walking economy" is a significant contributor to local economic and cultural activity and local business support the extension and development of the city's pedestrian wayfinding system to build on this.

In further extending the BLC on-street provision and deploying and extending coverage of the PopMap app the following benefits will be realised:

- Filling the gaps in the pedestrian wayfinding system and improving user-confidence in finding their way about Bristol on foot or bike.
- Revealing Bristol's full "walking economy" offer thereby encouraging residents and visitors to spend more time exploring and enjoying the city's public spaces, venues, and neighbourhoods.
- Providing an access for all information system for the city allowing users with mobility or sensory impairments a means to plan their journey confidently.
- Incentivising users to get out of their cars and make full use of all that Bristol has to offer.

Recent research commissioned by BLC shows that visitors come to Bristol with the intention of exploring on foot and are attracted here by the city's independent businesses and creative reputation. BLC proposes to use the opportunity offered by the introduction of a clean air zone, to build on this existing situation and investment by further supporting visitors and residents to explore the city on foot and by bike by providing excellent, up to date and locally relevant navigation assets.

The project has a growing body of recent survey and research against which enhancements and expansion can be measured to provide evidence of impact.

6.3.4 Outline of proposed investment

Measures included in the bid:

- Extension of project to fill gaps and extend coverage – particularly around major transport locations and new development areas including Temple Meads Masterplan Area. 20 new smart monolith units providing mapping and sensing and connected to the city's BNET cable network.

  20 x £15k = £300k

- Further development and extension of the PopMap application to aid walking and cycling and support Covid-19 recovery. Development with PopMap project partners including City ID, Calvium and the Bristol & Bath Design R&D Partnership.
- Engagement, testing and deployment.

  £100k

- Project Management support to enable smooth roll-out of project and delivery of procurement framework.

  £50k

- Promotion and research.

  £50k

  Total bid: £0.5m

In summary £300k is for hardware and £200k is for the informational products - £200k is an outline figure for all of the work that is not the physical fabrication and installation of the monoliths i.e. digital products, map orientation and production. Each time a new monolith is produced we need to produce the artwork that will displayed on that unit. This work includes updating the mapping, preparing map cuts that fit the location as well as artwork for the header panels. The app is work in progress so this will need investment to ensure that it meets that it fully supports behaviour change from private vehicle to foot and bike. This means undertaking some development and testing, making sure the digital mapping coverage is sufficient and up to date.

6.3.5 CAF Objectives:

This resource meets the objectives of the CAF by offering "*community-wide measures such as road layout changes, changes to cycling or walking infrastructure, improved public transport, park and ride schemes, promoting car clubs, vehicle retrofit; or better travel planning services".*

Furthermore, the objectives state that *"measures aimed directly at supporting individuals or businesses such as local travel discounts (which could be linked to smart ticketing), cycle to work schemes, local scrappage schemes or support for upgrading to a new vehicle (including ultra- low emission vehicles).* This proposal will support other schemes by making it easier to travel using alternative modes.

As part of the CAZ scheme we are encouraging the upgrade of existing vehicles and a move towards there being more complaint vehicles on the road network. However, the CAZ is equally about promoting and encouraging the use of alternative modes as well cycling, walking, e-scooters etc. We plan to utilise the resources of the Sustainable Travel Team as noted below to achieve this. To support this, there needs to be a comprehensive system in place to best support the navigation around the city, be that by bike or on foot or using another mode. This element of

the bid provides confidence that when we encourage the use of alternative modes, there is a network available to facilitate that modal shift.

6.3.6 Value for Money Assessment

The mitigation measure does not generate any direct, monetisable benefits. However, through its ability to unlock the following wider, non-quantifiable benefits, the mitigation measure is considered critical to unlocking and maximising the full potential of the other mitigation measures proposed as part of this CAF bid:

- It will maintain Bristol as a location that is attractive to local businesses, ensuring that consumers continue to have choice, and help maintain the vitality and viability of Bristol City Centre.
- Could lead to the promotion of more active and healthier lifestyles through support for active mode alternatives including walking and cycling.
- Will assist the leisure and tourism industry in promoting the City Centre of Bristol as a destination that is attractive to visit and easy to navigate to attractions without recourse to a car.

6.4 Old Market Gap Cycle Scheme

We were advised some time ago to remove the cycling schemes, of which there were 3, from our original CAF bid. We were advised that they were measures not previously funded through CAF. Some of the reasoning behind this was the feeling that obtaining evidence required, as stated in the CAZ Framework, would be difficult and therefore hard to be justified as mitigation measures. Given the strong cycling focus in Bristol, based on a longstanding history of delivering cycle schemes leading to behaviour change, it was felt that cycling needed to play a part in the scheme.

The schemes were reviewed again following the change of zones to a small CAZ D. It was decided that one scheme in the zone could be included as part of implementation. The Old Market Gap was chosen as being the best fit with the CAZ. With previous successes in achieving behaviour change through cycling-based projects, it was felt that this would be strong enough to aid reaching compliance in the shortest possible time.

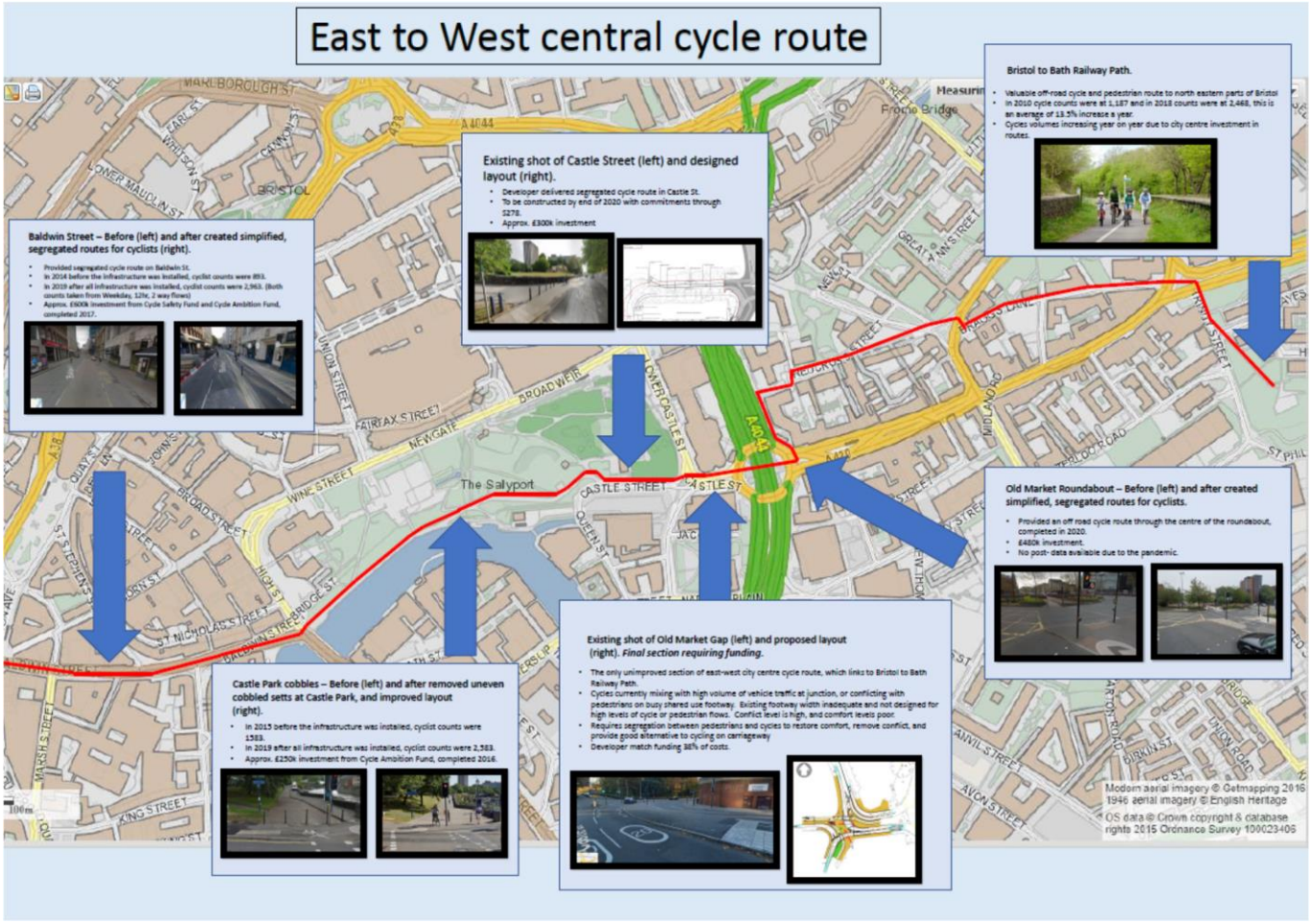
However, following the FBC submission and comments received it became clear that we could not justify the cycle scheme, through the use of modelling, as being vital to reach compliance in the timescales we had. We therefore removed it from Implementation and put it back in the CAF Bid.

6.4.1 Outline of proposed investment

The scheme we are proposing to fund through the CAF bid would complete the only unimproved section of East - West city centre cycle route, which provides a link to the Bristol to Bath Railway Path which is a key commuting corridor for cyclists.

Below is plan of the East – West cycle route and other cycling based projects which indicates that we have had a very healthy level of cycle volume increase every time we've invested in the infrastructure required.

Figure 6-6: East to West Central Cycle Route



We are not in a position to have everything tendered in time for the FBC submission, this is explained further in the Commercial Case. The current programme shows that we have made great progress with design work to date. We are confident we can deliver this scheme in full by the end of the 2023/ 2024 financial year at the very latest and potentially sooner if we can get the funding approved as soon as possible. This timescale is for the entire project to be completed including surrounding greening of the area, the cycle scheme itself is aimed to be completed and able to be used in the 2022/2023 financial year.

The West of England Local Cycling and Walking Infrastructure Plan 2020- 2036 shows that the proposed scheme is in accordance with policy to achieve modal shift. The project will complete the final gap in the city centre East-West cycle route, enabling cycles to easily access the traffic-free Bristol to Bath Railway path. The project would remove a significant conflict point between pedestrians, cycles and traffic in the city, which lies right on the CAZ boundary. Street greening and an extension to the bus lane is also incorporated in the designs.

Following discussions with the developer, we have confirmation that they will contribute £447,701 towards the cost of the project which equates to 38% of the total scheme. The legal agreement of this contribution is being drafted by both parties now and is due to be sealed shortly. BCC is therefore seeking £720,726 from the CAF bid to complete this vital central link.

The project has passed through Stage Two of Bristol City Council's Quality Assurance Process, which means that the preliminary design is agreed by all internal stakeholders across the Council, and has permission to proceed to stage Three (attached are both the signed off Quality Assurance 2 form and drawing).

While we cannot tender the works yet, we have high confidence in the level of funding we are proposing to include in the CAF bid. Every 4 years BCC conducts a procurement exercise to procure a list of contractors to deliver Highways and Associated Works under £150,000, and the calculated costs for this scheme are derived from the schedule of rates, which has already been tendered for. Whilst the civils cost for this project will be greater than £150,000, it does provide a market tested indication for the potential tender costs received once put out to tender.

This scheme offers not only an opportunity to complete a vital cross city link, but it aims to further increase cycling levels resulting in a modal shift away from reliance upon the private car. This all supports our aim of improving air quality in the central area. In order to encourage people from their cars we need to provide viable alternatives. The CAZ will have an impact on the citizens of Bristol, this will be a positive way to help mitigate that impact whilst at the same time reducing air pollution.

CAF Objectives

This measure meets the objectives of the CAF by offering " community-wide measures such as road layout changes, changes to cycling or walking infrastructure, improved public transport, park and ride schemes, promoting car clubs, vehicle retrofit; or better travel planning services".

Furthermore, the objectives state that "measures aimed directly at supporting individuals or businesses such as local travel discounts (which could be linked to smart ticketing), cycle to work schemes, local scrappage schemes or support for upgrading to a new vehicle (including ultra- low emission vehicles). This proposal will support other schemes by making it easier to travel using alternative modes.

The CAZ is heavily focused on promoting and encouraging the use of alternative modes as well cycling, walking, e-scooters etc. This measure will complete a much needed gap and mean that people commuting into the central area, who may have non-compliant vehicles and be unable to afford the charges or don't qualify for financial support, can consider commuting by bike instead. We are offering support in terms of trying / buying a new bike, having cycling lessons etc. so this completes that package. This route is one of the main commuting corridors and it's vital we secure this funding now to complete it, avoiding any further delays caused by the need to carry on bidding elsewhere.

Value for money assessment

This mitigation measure also does not generate any direct, monetisable benefits. However, through its ability to unlock the following wider, non-quantifiable benefits, the mitigation measure is considered critical to unlocking and maximising the full potential of the other mitigation measures proposed as part of this CAF bid:

- It will maintain Bristol as a location that is attractive to cycle to work in, encouraging more commuting by bike
- Could lead to the promotion of more active and healthier lifestyles through support for active mode alternatives including walking and cycling
- Will assist the leisure and tourism industry in promoting the City Centre of Bristol as a destination that is attractive to visit and easy to navigate to attractions without recourse to a car

6.5 Sustainable Travel Team

The Sustainable Travel Team was established in 2009 as part of the Cycling City Project. The team was originally set up to engage with businesses and schools, raising awareness of the support available to review their cycling facilities. This was all with a view to encouraging cycling to work as a viable transport mode. It stretched to schools and the community too, encouraging the use of cycle buddy schemes and the provision of cycle training.

Over the years the team have been continually supported by various grant funded pots including the Access Fund more recently. The team have evolved and now have a wealth of experience and success behind them, leading the way with best practice which is now being rolled out in other authorities. The team is made up of transport engagement officers, roadshow, and Active Travel officers.

For 2021/22 DfT have allocated the Capability Fund. This is the post Access fund that has been allocated to the West of England Combined Authority for distribution to BCC and the other two local authorities. It has been designed to support behaviour change activities within each local authority and to develop local cycling and walking infrastructure plans (LCWIP).

This is a one-year funding allocation and although the overall funding pot has increased country wide, some local authorities have been given a significantly reduced allocation received in previous years under the Access fund. BCC has seen a 60-70% reduction in funding and the focus for the funding is very specific in that all the activities must support local capital infrastructure plans developed under the LCWIP. However, this funding will complement the offer outlined below for the CAZ implementation as it focuses on behaviour change work to encourage people across the whole city to walk and cycle more. It will also focus on certain locations where capital infrastructure projects are being implemented to help with scheme design through engagement and the co-design process.

The work outlined within the CAF bid under the Sustainable Travel Team will therefore target businesses within the CAZ zone and individuals travelling into and out of the zone. This work has been split into four workstreams:

- Financial package support (signposting and checking eligibility)
- Awareness raising / Mobility credits (grants, walking and cycling offers etc.)
- Travel planning (both for businesses and individuals including workplace audits)
- CAF scheme promotion (Bus retrofit, legible city and micro-consolidation for freight)

Financial package support

The team will raise awareness of the financial package support available across the affected businesses and communities. The telemarketing team working with businesses within the zone will send through referrals and the roadshow officers will check eligibility criteria and if applicable will organise the telematics and refer to the finance and loan companies. The roadshow officers will also work within communities to ensure residents in the zone and those on low incomes travelling into and out of the zone are signposted to the support. They will check their eligibility via telematics and will refer those applicable to the loans and grants.

Awareness raising / Mobility Credits

The team will raise awareness of the CAZ using business roadshows targeting SMEs and those businesses within the zone. These will be the priority and support will expand to include businesses that will be entering and leaving the zone for business purposes. Community roadshows will be used to target the residents within the CAZ area and travelling into and out of the zone. These will be used to get people to check they are compliant and to educate people on the 'why' and what they can do to help improve air quality and to encourage behaviour change.

The mobility credits as detailed in the table below will be used to encourage behaviour change in travel patterns and will be administer and coordinated by the team. The officers have a wealth of experience delivering these types of mobility credits which have proven essential to encourage modal shift for both business and leisure trips. These will be split into three areas focusing on businesses, wheels to work (those on low incomes of benefits seeking work, skills, training etc.) and communities. There is also information on the marketing and communications support in the table that shows how the information will be disseminated online and includes campaigns that can help engage people to reduce air pollution e.g. No Idling campaign, Clean Air Challenge etc.

Travel Planning

The team will provide travel planning support to businesses and residents. Businesses will benefit from workplace travel audits, postcode plotting, travel champions helping to provide equipment and peer support to staff wishing to change travel mode and the creation of travel plans. The mobility credits will link in this work to help businesses achieve their travel plan targets and provide facilities to enable employees to travel more sustainably.

Individual travel planning will be offered via roadshows and through door knocking in targeted areas designed to encourage the uptake of mobility credits and the use of journey planning tools. These can include the Go Jauntly app concentrating on walking routes, BetterbyBike focusing on cycling and the Travelwest journey planner which specialises on public transport.

CAF scheme promotion

The team will use the roadshows, targeted door knocking and engagement materials to promote the CAF schemes. For example, the team will administer the bus retrofit grants to the companies who have already expressed an interest in the support. The team will work with colleagues leading on the roll out of legible city signage which will complement the journey planning tools and signpost businesses via the travel planning and mobility credit work to the micro-consolidation for freight.

The offer for the CAZ is for the roadshow officers to raise awareness of the offers and support available across the affected businesses and communities. Whilst the Transport Engagement officers liaise with the telemarketing team and coordinate / administer the mobility credits such as mobility grants, business travel audits for SMEs, walking and cycling offers, Electric vehicle offers etc.

The CAZ support will work alongside the Capability fund which has recently replaced the Access Fund and which Bristol have submitted a bid for funding from. The idea is that we will be doing all of this work independently of each other as they have different audiences. Capability Fund targets general behaviour change and LCWIP projects audiences whereas CAZ targets low income individuals, CAZ residents, businesses particularly SMEs and the self-employed etc. and those on the boundary of the CAZ area. There are however potentially cost saving efficiencies between the two work programmes for year 1, for example where we are doing a behaviour change campaign which will benefit both audiences such as Love to Ride this can be paid from both pots. If we get Capability funding which may cover years 2 and 3 of the CAZ funding, then we could do the same and reduce the overall costs, but this is not known at the time of this bid.

6.5.1 Delivery Plan

The team are established, mobilised and ready to begin this work once funding is awarded. They will utilise existing contacts, experience, and knowhow to plan this work, begin EOIs and working alongside the comms team to get more information about the offers of support available out to those most in need.

Below, in Table 6-5, is a summary of the mobility credits that are included as part of the behaviour change work that the team offer including the 'how' the team will raise awareness and deliver the offers through both the business and community workstreams over a 3 year period (not an exhaustive list):

Table 6-5: Summary of behaviour change work

Business workstream	Mode	Details / targets over 3 years	Justification / case studies	Delivery / Channels
Roadshow and Events at businesses (both virtual and face to face) These are often accompanied by Dr Bike providing bike maintenance for new cyclists and existing riders.	All modes	Deliver 150 targeted business engagement events for employers across the region to raise awareness of the CAZ and educate them on how they might be affected and what options are available to them. This will include conversations about exemptions, loans, grants, and the mobility credits. The mitigation offers and signing people up to them are for example, getting businesses to implement showers and changing facilities through a	We delivered 150 travel roadshow events for employers from 2017 to 2020 for general transport behaviour change. This will help employees change travel mode and help employers provide the correct environment to break down barriers. The 'hook' for this workstream is the introduction of CAZ and the need to raise awareness, getting people engaged and thinking about what changes they need to make.	Use existing resources and promote via websites, social media and all tranches and partnerships Audience – all businesses with a focus on SMEs, business parks, organisations with large fleets and businesses in the CAZ zone Focus is specifically on the businesses who are likely to be directly affected by CAZ introduction following on

Business workstream	Mode	Details / targets over 3 years	Justification / case studies	Delivery / Channels
		business grant, uptake of e bikes or e cargo bikes for fleet journeys, PTP for employees and get them to transfer to wfh or cycling to work.		from the consultation engagement networks.
Business Engagement The roadshow / events described above are the 'how' we get the message out. The business engagement at these events and through the network meetings are about signing employees up to the key offers/ mobility credits. The Transport Engagement officers lead on network meetings and deliver the key offers to the business representatives.	All modes	Provide walking and cycling information and support to 5000 employees Provide a travel support service (i.e. loan bike, cycle training referral, personalised travel planning, Dr Bike session, lunchtime walks, walking maps/ app, electric bikes, scooter hire, e-cargo bikes, car sharing & car club memberships) to 1000 employees Targeting sustainable travel behaviour change over >50% for those who receive a support service through the business engagement work.	Between 2017 and 2020, provided staff with information, incentives, and support to encourage sustainable commuting habits. Across the 17-20 programme our Roadshow team provided cycling and walking information to over 9000 employees and provided travel support service to over 1500 employees. The team set up and manage a network of businesses (sole traders to larger employers) providing a range of physical support and networking opportunities for sustainable travel. The forums include the Bristol Workplace Travel network, Temple Quarter Travel Forum, Hengrove Travel Forum and partner with two additional area forums – SeverNet and North Bristol Suscom. These offer more than 200 big, medium, and small businesses across the city the opportunity to share best practice and link in with mobility credits to increase sustainable travel of staff and visitors to their site. Membership includes some of the top employers e.g. both universities, hospital trusts, HMRC, DAC Beachcroft, BIDs etc.	Use existing resources and promote via websites, social media and all tranches and partnerships Audience – all businesses with a focus on SMEs, business parks, organisations with large fleets and businesses in the CAZ zone
Match funded Grants The grants are available for initiatives that improve sustainable travel provision in businesses. This includes the implementation of physical measures, promotional events or any other measure that will encourage mode change amongst staff.	All modes	Deliver 50 match-funded business grants over the course of the project through a competitive application process. Providing access to new or improved facilities to over 50,000 staff Grants can be used for improving sustainable travel modes such as providing new or improved cycle parking or storage facilities, parking management facilities, signage of cycling routes, provision of pool bikes, improvement of pedestrian access to and within the site, provision of car sharing	Between 2017 and 2020, delivered over 80 grants and received a match of over £300k and benefitted over 50,000 staff. The grant scheme offers small and large grants to help boost sustainable travel. A BID group ran a cycle breakfast to encourage people to cycle to work. They also purchased Sheffield stands and drying room lockers. Larger grants focus on bigger employers such as where the University of Bristol converted 15 parking spaces and two motorbikes spaces in the lower ground car park into 321 secure covered cycle	Use existing resources and promote via websites, social media and all tranches and partnerships Audience – all businesses with a focus on SMEs, business parks, organisations with large fleets and businesses in the CAZ zone Audience

Business workstream	Mode	Details / targets over 3 years	Justification / case studies	Delivery / Channels
		bays in staff car parks, electric vehicle charge points, promotion of car sharing and events to promote walking and cycling.	spaces which is used by the 5000 staff and 20,000 students attending the site. The team have also helped Good Sixty who is a food and veg business delivery their produce using 2 e cargo bikes. The bikes replaced a van and do around 32 deliveries a day to customers.	
Active Travel Champions These are people based within organisations whose purpose is to get more people walking or cycling to work through peer lead support.	All Modes	Grow membership of Active Travel Champions by 100 across the city. Research has shown that 'nudge support' from peers has more influence over our own behaviour than messages about the environment, economy, and social responsibility. Champions are provided with support and toolkits to help them persuade colleagues including Emergency Cycle Repair Kits. Champions can share knowledge of key offers, organise roadshows, bicycle maintenance, Dr Bike sessions, promote travel challenges and annual survey, arrange loan of an electric pool bike or EV vehicle for business travel, improve business facilities, set up walking groups and lead walks etc.	In 20/21 the team have increased the champion network which in turn has encouraged nearly 400 people to take up active travel modes. A good example of this is at DAC Beachcroft where the champion ran their own workplace challenge to encourage active travel like walk to work challenge. They even had an inter site challenge which covered sites all over the UK.	Use existing resources and promote via websites, social media and all tranches and partnerships Audience – all businesses with a focus on SMEs, business parks, organisations with large fleets and businesses in the CAZ zone Audience
Annual Travel Challenge The challenge is a way to encourage travel behaviour change by providing an element of competition and to incentivise and drive behaviour change through rewards and prizes.	All modes	1500 participants per year. Replace 10,000 car trips over the 3 challenges. 10,000 trips to be replaced by walking, running, scooting and cycling to work or working from home. To develop a habit takes between 4 and 6 weeks which is why the challenge runs for this period. The challenge records the amount of car journeys that are replaced by sustainable modes of travel. The businesses who win prizes for the most active participants are followed up to ensure that employees have enough support to continue with these behaviour changes.	Between 2017 and 2020, nearly 2000 people participated in Bristol per year and nearly 10,000 car trips were replaced by sustainable modes to work. In 2020 during the October challenge over 13,654 journeys were logged and over 60,000 miles were travelled with estimated CO2 saved of 3368kg. 39% of participants switched from single occupancy vehicles and 2413 journeys were logged that replaced the car.	Use existing resources and promote via websites, social media and all tranches and partnerships Audience – all businesses with a focus on SMEs, business parks, organisations with large fleets and businesses in the CAZ zone Audience

Business workstream	Mode	Details / targets over 3 years	Justification / case studies	Delivery / Channels
Annual Travel to Work Survey The team offers support for businesses that are looking to better understand their workforce's travel behaviour and implement improvements. A healthier and active workforce leads to increase performance and productivity and reduce costs on physical measures such as parking.	All modes	Average 5,000 participants in our travel to work survey per year The survey provides a consistent source of data which can track travel behaviour. However, the team use it as travel planning tool and another way to engage businesses.	In 2020 we had over 10,000 participants within the region with half of these from Bristol. In the survey employees are asked about their businesses and what improvements they would like to see to help them make a change in travel mode. The team provide reports to each business that has taken part with a review of the feedback left by employees. The business is offered a free workplace travel audit as a follow up to help implement the improvements required.	Use existing resources and promote via websites, social media and all tranches and partnerships Audience – all businesses with a focus on SMEs, business parks, organisations with large fleets and businesses in the CAZ zone Audience
Wheels to work				
Discounted bus tickets	Bus	5,000 people seeking access to work, skills, training, apprenticeships, or education to benefit through one of the schemes resources These on lower incomes may be adversely affected by the introduction of CAZ as they are more likely to have older cars that may not be compliant. This group are not going to be able to upgrade to compliant vehicles and this support will help them find alternatives to travelling to work and to education.	Between 2017 and 2020, over 5000 people have benefitted from one of the schemes. The teamwork with around 50 partner organisations such as the job centres, housing associations, youth service, salvation army etc to encourage their clients to travel sustainable when seeking employment and educational opportunities. The team currently have 3 key partners who offer the bike offer and work with all bus operators in the area. The mobility credits include free taster bus tickets, discounted bikes, free loan bikes, free bicycle maintenance workshops, adult cycle training and accompanied rides, journey and route planning and bike servicing.	Use existing resources and promote via websites, social media and all tranches and partnerships Audience – low income employment, unemployed, students.
Discounted bike loans/ sales This is for people on low incomes or seeking work and skills across the city to ensure they are supported and encourage to travel sustainably.	Cycling			
Travel planning (Business and Community Workstreams)				
Travel planning for businesses and residents Creation and development of travel plans aimed at managing the transport needs of a site whether this is a business development or residential site.	All modes	Provide travel planning support to 100 businesses and 5000 residents. The team offer support to businesses that are looking to establish a travel plan that is aimed at managing the transport needs of the organisation. The team also work with residents living and working with	Minimise the impact of new developments on the highway network by developing, implementing, and auditing the travel plans. Moving home is a transition point where behaviour change can be achieved particularly with regards travel habits. The Malago housing development is a good case study of where the team have begun the	Use existing resources and promote through the DM Team, developers, and consultants. Audience – new and existing residents, new and existing employees located in the city affected by the CAZ.

Business workstream	Mode	Details / targets over 3 years	Justification / case studies	Delivery / Channels
		the city to encourage behaviour change. This can include new and existing developments.	rollout of the travel plan which includes measures such as free mobility credits for residents. The team have also worked with relocation of businesses. When HMRC relocated to centre of Bristol the team developed a travel plan for them and provided support for their welsh employees of which some were relocating from Cardiff and required travel planning assistance.	
Marcomms				
CAZ webpage	All modes	Ensure information on loans, grants and mobility credits including pre eligibility information is up to date	Referrals from tele marketing team and sign posting from Travelwest and BBB websites	Use existing websites, social media channels and all tranches Audience – everyone who could be affected by the implementation of CAZ. Specific focus on businesses and deprived communities Overall estimate for marcomms is £130k p.a. which includes citywide campaigns on comms and development of websites and apps that help plan journeys.
Supporting campaigns	All modes	Launch campaigns for offers and support	Ensure wide reach of audiences to assistance available	
Travelwest	All modes	Improve the TravelWest website to support customisable route planning tool and travel disruption alerts bespoke to employers and individuals Businesses could use their postcode plotting that the team will have completed for them from the workplace travel audit and employees could work out how best they can get to work. Does anyone live nearby and travel at the same time to share journeys? Are they able to combine train and scooter journeys? Get alerts if buses are late and need to find a different way home etc.	Travelwest is the no.1 portal for travel information in the West of England	
Travelwest Journey Planner	All modes			
Personalised travel tools	All modes			
Better By Bike (BBB)	Cycling	Improve our better by bike website to support customisable cycle trip planning tool This would combine all types of cycle routes eg segregated, on road etc. If the customer was as an inexperienced cyclist, they may choose to cycle on a quiet route and not along a main road so when planning the journey, they may want to know what is involved.	BBB receives over 10,000 hits per month	
BBB journey planner	Cycling			

Business workstream	Mode	Details / targets over 3 years	Justification / case studies	Delivery / Channels
Communities Workstream				
Roadshow, Door knocking and events within the community (both virtual and face to face) These are often accompanied by Dr Bike providing bike maintenance for new cyclists and existing riders.	All modes	Deliver 150 community events and roadshows for individuals and community groups across the city. Door knocking on 10,000 HHs within targeted deprived wards affected by CAZ. The aim is to raise awareness of the CAZ and to educated them on how they might be affected and what options are available to them. How else can they travel into city for social events, schools, seeing people etc. all about linked trips. This will include conversations about exemptions, loans, grants and the mobility credits.	In 17/20 we delivered just over 200 roadshows and events for residents and community groups. The 'hook' for this workstream is the introduction of CAZ and the need to raise awareness, getting people engaged and thinking about what changes they need to make. Door knocking was carried out for the Filwood Green cycle path to promote the new facility and encourage behaviour change. The door knocking was combined with community events in key community locations.	Use existing roadshow officers and promote through Travelwest, BBB and all other tranches Audience – low income residents, deprived wards, people with disabilities, young and old people, new residents, visitors and community groups
Community Engagement The roadshow / door knocking and events described above are the 'how' we get the message out. The community engagement at these events and through the door knocking are about signing people up to the key offers/ mobility credits. The Transport Engagement officers lead on community meetings with key champions and influencers to deliver the key offers.	All modes	Provide walking and cycling information to 5000 residents Provide travel support to 1000 residents and target behaviour change to 50% or more of all those who received support. For targeted residents the team will provide free support to get people travelling more sustainably. The offers include personal travel planning, borrow a bicycle for tree and try cycling before you buy includes electric bikes, free cycle training, free basic bicycle maintenance, accompanied cycle ride, free taster bus tickets, walking maps and walking groups, car club membership discounts, car sharing app information, electric vehicles advice etc.	Between 2017 and 2020, the officers provided residents with information, incentives and support to encourage sustainable commuting habits. Over 4000 residents received information about walking and cycling and just over 1000 were provided with travel support. The team already work with community stakeholders including faith groups, walking groups, cycling groups, educational facilities etc to encourage sustainable travel. Through voluntary and community sector networks the team can offer community travel grants to residents and groups to set up sustainable travel initiatives such as the Cycling Sister project in Easton aimed at Muslim women to build confidence in cycling.	Use existing roadshow officers and promote through Travelwest, BBB and all other tranches Audience – low income residents, deprived wards, people with disabilities, young and old people, new residents, visitors, and community groups
Loan Bike (including electric)	Cycling	Deliver 800 2-4-week bike loans This is where the team loan a bike to an individual to encourage them to take up cycling. The clients are fitted to the bikes and shown how to operate them particularly important with e bikes. Storage and security are included in the tutorial. Lights are also provided.	Between 2017 and 2020, we have administered nearly 700 loan bikes to encourage new and returning cyclists As part of the evaluation process clients are asked to fill in a follow up survey 6 to 12 weeks after the intervention and over 50% who responded are cycling more than before the loan of a bike.	Use existing assets and promote through multiple channels such as BetterByBike, Travelwest, Bristol Cycle Centre, Roadshow officers, Businesses and Schools

Business workstream	Mode	Details / targets over 3 years	Justification / case studies	Delivery / Channels
Dr Bikes/ Bike maintenance sessions	Cycling	Deliver 300 Dr Bike / Bike Maintenance sessions By developing these new skills at maintenance sessions people can keep their bikes in working order.	Average of nearly 300 completed in previous years This not only encourages new cyclists, but it also maintains the level of cycling to ensure people don't stop if their bike get a puncture and they revert back to the car.	Use existing contracts and resource and promote through Travelwest, BBB and all other tranches
Cycle Training	Cycling	Provide 2000 people with cycle training sessions One to one cycle training on or off road where the instructor will come to your house or place of work and will provide advice and support on where and how to cycle safely. This can be provided in a traffic free environment at the Bristol Cycle Centre or on road. The cycle trainer will help with manoeuvres on the road, balance and co-ordination required for riding a bike. The trainer will also ask about your experience to ensure the session is adapted to the client.	In 17/18 provided nearly 1500 cycle training sessions As part of the evaluation process clients are asked about their cycling habits before the session and after. In 2017 those who responded to survey noted that 43% were cycling between 30min to 1 hour 30 mins per week after the sessions compared with 14% before.	Use existing staff and partners to provide this offer at Bristol Cycle Centre and on street.
Accompanied / group rides	Cycling	Deliver 225 accompanied / group rides These rides will be focusing on helping individuals build confidence when learning to ride around the city particularly for work journeys.	Average nearly 50 over in a year The clients are asked about their cycling habits after the session and we now have links with cycling clubs where some people have wanted to progress onto cycling as a sport.	Use existing partners to provide this offer and promote through Roadshow team, Travelwest and BBB and all other tranches

The level of staff to deliver the above following the end of the Access Funding will be:

- Senior CAZ officer – I FTE staff focused on coordination of all the CAZ engagement work
- Communities – 3 FTE staff focussed on support for people earning lower incomes, residents, disabled people, elderly residents, young people, and new residential developments etc.
- Businesses – 4 FTE staff focussed on support for SMEs, all businesses, buses, taxis, commuters into the zone and out of the zone for work or education purposes, coaches etc.
- Travel Planning – 1 FTE staff focussed on new residents, new businesses, new other developments etc.
- Marcomms – 0.5 FTE staff focussed on the website, journey planner, PTP tools, Better By Bike etc.
- Roadshow officers – 0.5 FTE co-ordinator, 0.8 FTE senior officer, 1 FTE officer and 14 Travel Advisors

Total staff resource required – 15 staff and 14 TAs costing £826,357.00 for year one

6.5.2 Outline of proposed investment:

Operational budgets of approximately £1m required per year to deliver the programme above made up of and staff budget of approximately £826k for year one then falling to £636k for year 2 and £644k for year 3, as shown in Table 6-6.

Table 6-6: Operational and staff costs over a 3-year period

	Operational costs			Staff costs		
Workstream	**Year 1**	**Year 2**	**Year 3**	**Year 1**	**Year 2**	**Year 3**
Business budget	£375k	£375k	£375k	£222k	£222k	£222k
Wheels to work budget	£140k	£150k	£150k	£47.8k	£59k	£59k
Communities budget	£230k	£230k	£230k	£212k	£125k	£125k
Roadshow budget	£125k	£155k	£155k	£282k	£221k	£223k
Marketing budget	£90k	£90k	£90k	£28.6k	£28.6k	£28.6k
Total	**£1,077m**	**£1,120m**	**£1,120m**	**£796k**	**£636k**	**£644k**

Total bid of £1.90m for year 1, £1.96m for year 2 and £1.96m for year 3 = approximately £5.8m.

6.5.3 CAF Objectives:

- This resource meets the objectives of the CAF by offering "community-wide measures such as road layout changes, changes to cycling or walking infrastructure, improved public transport, park and ride schemes, promoting car clubs, vehicle retrofit; or better travel planning services".
- Furthermore, these measures will reduce transport costs for people fitting in with the CAF Guidance as being; "measures aimed directly at supporting individuals or businesses such as local travel discounts (which could be linked to smart ticketing), cycle to work schemes, local scrappage schemes or support for upgrading to a new vehicle (including ultra- low emission vehicles)".
- The Access Fund support will run out once the CAZ goes live; this resource is urgently required in advance of that so that we do not experience a gap in service which could result in the loss of staff to other jobs and a loss of momentum. Initially the resource will overlap with the existing services with the CAZ added on, ultimately the team will be just focussing on addressing the impacts of the CAZ and the need to encourage and promote opportunities for individuals to use other modes.

6.5.4 Value for Money Assessment

The mitigation measure does not generate any direct, monetisable benefits. However, through its ability to unlock the following wider, non-quantifiable benefits, the mitigation measure is considered critical to unlocking and maximising the full potential of the other mitigation measures proposed as part of this CAF bid:

- As a result, could prevent job losses amongst people in Bristol and its neighbouring authorities, by for example ensuring awareness of the availability of financial support for vehicles to be upgraded. It will also maintain Bristol as a location that is attractive to local businesses, ensuring that consumers continue to have choice.
- Could lead to the promotion of more active and healthier lifestyles through support for active mode alternatives including walking and cycling.

- Allows independent businesses (e.g. retail) to be more proactive in their response to the Clean Air Plan. This could help safeguard the delivery of stock on a reliable basis. This will help prevent job losses and help maintain the vitality and viability of Bristol City Centre.
- Most businesses across all sectors are reliant to some extent on freight or delivery services or trades people. Any CAZ charge would likely be passed on to end consumers. By raising awareness and encouraging travel planning, the amount of non-compliant vehicles entering the CAZ zone could be reduced, thereby minimising pass-through of CAZ costs to end consumers.
- Will ensure the leisure and tourism industry is aware of opportunities to access support in dealing with the transition to the Clean Air Plan.

6.6 Freight Consolidation

6.6.1 Previous projects – DHL

There is not actually an existing Bristol freight consolidation scheme at Avonmouth. DHL had in the past received funding to set up a large-scale freight consolidation centre that utilised an existing out of town storage facility based at Avonmouth Docks. The pilot was deemed a success as there was a 78% reduction in journey movements for those businesses participating in the scheme. However, the high level of overheads resulted in high service charges which proved to be a barrier to participation, which affected the numbers applying and led to the conclusions that the model was not sustainable. Anecdotally though, DHL continue to operate a reduced scale freight consolidation scheme at Avonmouth, but not using electric vehicles. They did not engage in the GULW grant opportunity covered below.

6.6.2 Delivery Plan

BCC has a wealth of experience working on freight consolidation and are already discussing options to work alongside f given their inclusion of freight measures in their CAZ plans. Having recently awarded the GULW grant, there is recent experience of tendering for this type of project as well as expertise within existing teams to be able to take on this additional work once funding is awarded.

We have considered some possible locations, a very rough mock up attached (Gmaps link), for Urban and Micro centres (rail added as well, there has been discussions with rail logistics suppliers). The market will dictate location and they have the logistics experience, this can be agreed once funding is approved and tender exercises can be carried out. At present, this work is only required as part of the CAZ and is dependent on funding being approved. For this bid, costs from the recent tender exercise have been included to provide robust cost estimates and a realistic scope.

A draft programme has been drawn up, based on recent tender exercise for this type of scheme. This shows that the tender could be awarded relatively quickly and awarded prior to the go live date for the CAZ, ensuring that benefits are being realised alongside the other mitigation measures at the point of the charges being introduced.

Once funding is awarded, the EOI will take place and discussions will take place with Zedify to get their most recent data and lessons learnt. Liaison with B&NES has been ongoing but with their data as well, we can work together to finalise scope and consider other options for example alternatives such as funding a consortium of small businesses as detailed below in the funding scope.

6.6.3 Existing projects – Go Ultra Low West (GULW)

Overview

The GULW £100k grant awarded to Bristol in late 2020 is due to begin in January 2021 and run for 12 months. Initial results are very encouraging for a new company which began with one member of staff in difficult year and supports the small grants to small businesses model.

Bristol defines freight consolidation as being: 'where many suppliers have goods delivered to a consolidation centre or equivalent where they are stored, and then when needed are combined into a single load for the onward journey to the delivery point. One supplier consolidating deliveries, would not count towards this definition of freight consolidation'.

This also applies in reverse, to collections back into the hub, reverse logistics. Examples include collecting batteries or other recycling that gets consolidated at a depot for collection by a larger vehicle. Also, collection of first mile items for on forwarding by a 3PL such as DHL etc.

Freight consolidation improves air quality by reducing petrol and diesel vehicle trips. There is also more potential for the last part of the journey to be completed by a low or no emission vehicle such as an electric van or a cargo bike.

In terms of benefits, this type of measure is aimed at mitigating the impacts of the scheme. For businesses, according to the DEIA, the impact is likely to be felt most strongly by LGV / HGV reliant businesses: 'There are potential direct impacts on costs for LGV/ HGV reliant businesses. Though trips by non-compliant LGV/ HGV reliant businesses are reasonably spread around the city, those making trips related to the CAZ area will be affected; the CAZ area is reasonably small but covers most of the city centre'. This measure will support the businesses by reducing costs associated with deliveries and moving stock etc. and also reduces the need for LGV / HGV trips in and around the zone benefiting not only the business in not having to pay the charges but also helping to improve air quality.

Other benefits for Bristol in general include:

- Fewer freight vehicles moving through the city leading to improved air quality and less congestion
- Reduced noise pollution
- Less wear and tear on road surfaces
- Improved safety for pedestrians and cyclists

Expressions of interest in applying for the GULW grant were received from 9 companies; this is very encouraging and reflects the recent focus on improving the environmental impact of business deliveries. Zedifiy have been awarded the GULW grant and will be setting up a brand-new centre - not add to existing facility.

The grant is capital only – this was highlighted as a barrier to applicants. It was requested future funding also included a revenue allowance. Companies who are not in or near Bristol, early stage start-ups or pre-revenue were at a disadvantage.

Transport will be zero tailpipe emissions so will include EVs as well as cargo freight bikes. Starting fleet includes 3 x Iceni trikes, 2 x Urban Arrows and 1 x Nissan ENV200 (total budget around £50k)

It is unlikely we can partner CAF funding with GULW. There are potential financial implications with that option and it is extremely likely to be challenged by unsuccessful GULW applicants. However, we want to build on the project and align with B&NESs scheme to build on and enhance the work that Zedifiy begin over the next year.

Zedifiy proposed services are as follows:

- Last mile

Businesses drop off their deliveries at their depot where they are consolidated and transferred to vehicles optimised for the urban environment. In Bristol they will use their existing partnerships to bring volume deliveries from major overnight carriers to backstop the operation and provide a robust framework on which to build. They will also target small businesses such as veg box schemes situated out of the city, but with a requirement to deliver within Bristol's Air Quality Management Area (AQMA) and so potential Clean Air Zone (CAZ).

- Only mile

For businesses located within the city we offer same day dedicated collection and delivery rounds consolidated at their depot. They've partnered with Click It Local (https:// www.clickitlocal.co.uk/) to offer consolidated deliveries from high street shops.

- First mile

Zedify offer businesses within urban areas the opportunity to send national and international parcels with a choice of national carriers. Collecting goods from businesses by bike and consolidating them at our depot on the edge of the city for onward distribution dramatically reduces the number of vans in Bristol's AQMA and potential CAZ. They will also provide a consolidation point for reverse logistics needs.

6.6.4 Outline of proposed investment:

It is estimated that an initial financial input of £250-300k is required to set up a centre, as is detailed in Table 6-7. (Source: Zedifiy, the successful GULW applicant, this would be a small centre initially).

Table 6-7: Summary of operational and capital costs (year 1)

Operational Costs Year 1	
Marketing/ Sale	£3,900
Personnel	£65,269
Premises	£34,920
Insurance	£2,488
Tech fees	£16,696
Accounting & professional	£400
Fleet servicing & costs	£1,300
General expenses	£1,800
Total	**£126,773**

Capital Costs Year 1	
Iceni trikes	£70,000
Urban Arrow XL	£14,000
Nissan ENV200	£20,000
Desktop computer	£800
Mobile phones for riders	£960
Office furniture	£500
Other set up costs	£1,000
Total	**£107,260**
Total	**£234,033**

CAF Funding Scope - £2m bid

- Follow the GULW example and award as grants via a competitive bidding process
- EOI could be pursued once the FBC is approved and funding is certain. This project is only being planned as part of the CAZ mitigation and would not otherwise be taking place, therefore without CAF funding it will not be progressed unless other funding sources can be sought in future.
- £2m would ideally be split into a number of smaller grants to enable multiple companies to start up, enter the Bristol market, or add to existing centres. However, we are open to considering alternative options such as funding a consortium of small businesses which would provide benefits including shared resources, consolidating deliveries and furthermore supports a group most affected by the introduction of a charging CAZ, SMEs. There are also other opportunities to be explored. This will be best managed by taking into account the learning from existing services and releasing an EOI to inform the tender process once we have funding awarded. We can't undertake any more detailed work until funding is more certain.
- Expand freight definition to include waste consolidation. There are successful case study examples of waste consolidation. This would increase the potential bidding take up

- Definition of freight consolidation will be re-examined with the Policy Team to increase take up. For example, one supplier consolidating deliveries would not count towards the BCC definition of freight consolidation. By reviewing this, we could again open- up applications to a much broader range of businesses

- Collaboration with BaNES

- Grant application will be led by the Access Engagement team who are very experienced in engaging, marketing, and processing grants

- Further support only mile delivery by complimenting the scheme with a rebate or voucher scheme to bring costs in line with postage costs (in line with BaNES paper)

- Add on a concierge service for shoppers to Bristol City Centre

Following the tender put out as part of GULW, we are confident that we have a number of businesses who would likely apply - as demonstrated by GULW applications received. Having the ability for multiple companies to receive funding will increase the outputs and the move to zero emission will be quicker and more widespread in the AQMA. It will kick- start a culture of zero emission delivery in the centre as companies start to compete with each other using zero emission as a selling feature. Customers will request, and be sold on, zero emission delivery as an easy win to hit their own strategic sustainability goals. It also spreads the risk across suppliers.

6.6.5 CAF Objectives:

This bid meets the objectives of the Clean Air Fund as a way of mitigating the impact of a CAZ being implemented, as covered in the extracts from the CAF Guidance document below:

> *"B) By enabling the local authority to implement local plans that collectively impact on fewer people. For example if a local authority identified the following two approaches that achieve compliance equally as quickly: a) implementing a class C1 charging Clean Air Zone; or b) implementing a class B2 charging Clean Air Zone3 and additional measures (for instance a freight consolidation centre). Option b) would impact less people as vans would no longer be in scope for charging but has an additional cost to fund the additional measures - the Clean Air Fund could potentially support these additional measures.*

HGVs/Freight drivers and companies

15. Potential air quality measures such as charging zones or access restrictions could also impact the freight and heavy-duty sector. Potential measures to support freight operators to upgrade their vehicle or change their current patterns could include: freight consolidation centres; improving freight deliveries e.g. by changing mode, time of delivery or route; investing in alternative fuel refuelling; or HGV retrofit.

Case Study: West of England Partnership – freight consolidation

The Department of Transport's Local Sustainable Travel Fund enabled the expansion of a pre-existing freight consolidation centre for Bristol and Bath, operated by DHL. During 2014/15, the freight consolidation scheme served 133 retailers in Bristol and Bath, preventing over 2,074 delivery trips to the two city centres, and saving carbon dioxide emissions estimated at over 23,000 tonnes. In 2016, the annual NOx emission reductions in Bristol was 358.62kg. Electric vehicles have been used until recently, but these vehicles are no longer in operation. They will be replaced by new electric vehicles. The Clean Air Fund could support measures such as a freight consolidation centre where a local authority's plan impacts on the freight sector. Support could result in fewer vehicles having to enter a Clean Air Zone where a charge may apply".

6.6.6 Value for Money Assessment

6.6.6.1 Quantifiable Impacts

The freight and waste consolidation proposals will remove non-compliant freight traffic associated with businesses in Bristol City Centre from the highway network, including both LGV and HGV freight traffic that currently service these businesses on a daily basis. Last mile delivery elements will allow businesses to deliver or collect goods from storage depots, alleviating the need for non-compliant freight vehicles to enter the CAZ and risk passing any CAZ charge incurred onto the businesses they are servicing.

Whilst the air quality and transport benefits of removing non-compliant LGVs and HGVs from the network are likely to be positive, they cannot be assessed in the absence of formal modelling. It is possible to monetise the impact of removing non-compliant freight traffic on business operational costs, if it is assumed that non-compliant freight traffic will pass on the cost of entering the CAZ to the businesses they are delivering to. Hence, it is possible to estimate the reduction in costs incurred by those businesses who may avoid the pass-through cost of entering the CAZ for non- compliant freight traffic. However, given the competitive basis of funding awards proposed, it is not possible to accurately estimate the numbers of vehicles removed, as the scale of the eventual operations will depend on individual proposals and take-up. To illustrate the potential benefits, the principal of the assessment is to calculate the impact of CAZ charges that would otherwise be passed onto individual businesses.

For instance, interrogation of ANPR data relating to frequency of journeys into the CAZ area indicates that almost 8,000 LGVs enter the area every day, of which over 3,300 are non-compliant. Many make regular journeys, with almost half doing so 2 or more days per week, and around 6% do so on 5 or more days (these proportions are similar for compliant and non-compliant LGVs). Fewer HGVs enter the area, at around 1,500 per day, of which around 350 are non-compliant (again, similar proportions are observed making the journey regularly, on 2 or 5 or more days per week, and likewise comparing compliant and non-compliant vehicle movements). Hence, if it assumed that broadly 20% of the more regular non-compliant vehicles could be removed, this would imply around 100 LGVs and 20 HGVs per day would be a realistic target. Removal of these non-compliant trips within the CAZ area could result in avoided costs of £2,900 per day for local businesses (based on the £9 LGV CAZ charge and £100 HGV CAZ charge per day). Assuming that these movements would otherwise occur six days a week, the daily figure can be annualised to £904,800 of avoided costs for local businesses.

Set against a scheme cost of £2 million, these economic benefits could generate an indicative BCR of over 1.0 within its second year of operation. If impacts are extrapolated across the ten-year appraisal period, the scale of benefits is likely to increase. Also note that it has not been possible to estimate the additional economic benefits that might arise due to reduced traffic and improved air quality as a result of fewer non-compliant freight trips.

6.6.6.2 Additional Non-Quantifiable Impacts

Through its ability to unlock the following wider, non-quantifiable benefits, the mitigation measure is considered critical to unlocking and maximising the full potential of the other mitigation measures proposed as part of this CAF bid. The measure will also support the following wider impacts:

- Promotes more active and healthier lifestyles through support for active mode alternatives via the electric delivery bike infrastructure.
- Supports dependent businesses such as retail. The mitigation measure safeguards the delivery of stock on a reliable basis. This will help prevent job losses and help maintain the vitality and viability of Bristol City Centre.
- Most businesses across all sectors are reliant to some extent on freight or delivery services. If non-compliant vehicles continued to enter the CAZ, any associated charge would likely be passed on to end consumers. Provision of delivery and servicing plans as well as alternatives to LGV access to the city centre could reduce the amount of non-compliant freight vehicles entering the CAZ zone and therefore helps to minimise pass-through of CAZ costs to end consumers.
- Protects local freight businesses and traders by providing support for alternatives to non-compliant LGV use. This is particularly important for SMEs and sole traders, who may struggle to identify these opportunities alone.

Appendix A. Research into vehicle valuation

This appendix presents the research into vehicle valuation, this informed discussion with JAQU on this matter, and has now been superseded by the values presented in Section 6.

LGVs

The cost of a new LGV was calculated from the Publication by Road Haulage Association on the LGV and HGV operating costs, 2018, linked below:

http:// www.transportengineer.org.uk/article-images/166209/ Out_of_our_hands.pdf . See Table A.1.

Table A.1: LGV and HGV 2018 New Vehicle Costs

Detailed vehicle type	2018 Cost
Car derivative vans – diesel	£14,244
Vans of 3.5 tonnes gvw – diesel	£26,186
Average	£20,215

Upgrade costs for each vehicle type and Euro Standard were calculated using the depreciated vehicle values, comparing the resale cost of a non-compliant vehicle and the cost of purchasing a compliant vehicle (see FBC-26 'Primary Behavioural Response Calculation Methodology').

Table A.2 then goes on to calculate the average upgrade cost for LGVs.

It was necessary to also account for 'secondary' behavioural responses within these calculations, to estimate the proportion of vehicles replaced by new or used vehicles, and the switch between diesel and petrol cars. In the absence of more accurate/ local information, JAQU's assumptions from paragraph 3.3 of the Evidence Package, were used, and are as follows:

- 25% of those with a non-compliant vehicle who upgrade will buy a brand-new vehicle of the same fuel type.
- The other 75% will replace their vehicle with a second-hand complaint vehicle. Of these, 75% of diesels owners will switch to petrol with the remainder keeping the same fuel type.

The cost of resale was based on the lowest value of that vehicle type and euro standard. The cost of a compliant vehicle was calculated using on the secondary behavioural responses outlined above, and also based on an assumption that the lowest cost second-hand compliant vehicle will be purchased.

Table A.2: Upgrade Costs (Source: FBC-26 'Primary Behavioural Response Calculation Methodology')

Vehicle type	Euro Class	Resale cost	Cost of compliant vehicle	Cost to upgrade per vehicle
LGV	Euro 0	£0	£8,772	£8,772
	Euro 1	£159	£8,772	£8,613
	Euro 2	£380	£8,772	£8,392
	Euro 3	£642	£8,772	£8,131
	Euro 4	£1,534	£8,772	£7,238
	Euro 5	£4,367	£8,772	£4,405
			Weighted Average	**£5,864.65**

HGVs

The cost of a new rigid HGV and artic HGV was calculated from the Publication by Road Haulage Association on the LGV and HGV operating costs, 2018, linked below:

http:// www.transportengineer.org.uk/article-images/166209/ Out_of_our_hands.pdf

Upgrade costs for each vehicle type and Euro Standard were calculated using the depreciated vehicle values, comparing the resale cost of a non-compliant vehicle and the cost of purchasing a compliant vehicle (see FBC-26 'Primary Behavioural Response Calculation Methodology').

Table A.3 then goes on to calculate the average upgrade cost for LGVs.

It was necessary to also account for 'secondary' behavioural responses within these calculations, to estimate the proportion of vehicles replaced by new or used vehicles, and the switch between diesel and petrol cars. In the absence of more accurate/ local information, JAQU's assumptions from paragraph 3.3 of the Evidence Package, have been used, and are as follows:

- 25% of those with a non-compliant vehicle who upgrade will buy a brand-new vehicle of the same fuel type.
- The other 75% will replace their vehicle with a second-hand complaint vehicle. Of these, 75% of diesels owners will switch to petrol with the remainder keeping the same fuel type.

The cost of resale is based on the lowest value of that vehicle type and euro standard. The cost of a compliant vehicle was calculated using on the secondary behavioural responses outlined above, and also based on an assumption that the lowest cost second-hand compliant vehicle will be purchased.

Table A.3: Upgraded Costs (Source: FBC-26 'Primary Behavioural Response Calculation Methodology')

Vehicletype	Euro Class	Resale cost	Cost of compliant vehicle	Cost to upgrade per vehicle
HGV Rigid	Euro 0	£0	£29,621	£29,621
	Euro 1	£309	£29,621	£29,313
	Euro 2	£832	£29,621	£28,789
	Euro 3	£1,509	£29,621	£28,112
	Euro 4	£4,071	£29,621	£25,550
	Euro 5	£13,392	£29,621	£16,229
Weighted average				**£20,528**
HGV Artic	Euro 0	£0	£35,618	£35,618
	Euro 1	£371	£35,618	£35,247
	Euro 2	£1,001	£35,618	£34,617
	Euro 3	£1,815	£35,618	£33,803
	Euro 4	£4,896	£35,618	£30,722
	Euro 5	£16,104	£35,618	£19,514
Weighted average				**£22,496**

Coaches

Data on Coach upgrade costs and methodology has been used from the Bath Clean Air Plan: Clean Air Fund Report, as outlined below. Please also see the Retrofitting section below for additional data.

Using the data obtained from the ANPR survey within Bath and Carweb, it was possible to identify the most common coach makes and models within Bath. These were identified as the Mercedes Tourismo, Volvo B Series, Irizar I Series and Scania K Series. It should be noted these makes and models are fairly broad to capture as many coaches in the estimate as possible to improve its accuracy.

To calculate the average cost of upgrading from a non-compliant to a compliant second-hand coach of these makes and models, research was undertaken into the cost of coaches of different Euro Classes. To obtain the data a combination of the following sites was used: Plaxton Coach Sales, Odyssey Coach Sales and John Hill Coach Sales. It should be noted that used vehicle sales sites have been used to calculate the cost as it prices an upgrade to a compliant 2nd hand vehicle, the minimum that is required, maximising the number of vehicles that can be supported.

Table A.4 below, shows the average cost of used coaches, of each of the makes and models listed above of each of the Euro-classes 3, 4, 5 and 6. Table A.5 then calculates the average cost of upgrading each coach make and model or each non-compliant Euro-class, to a compliant coach of the same make and model. As shown, this leaves and average upgrade cost of £70,341.

Table A.4: Average cost of used coach models

Euro-Class		Coach Model			
		Mercedes Tourismo	Volvo B Series	Irizar I Series	Scania K Series
Non-Compliant	Euro 3 Diesel	N/A	£33,088	N/A	£37,678
	Euro 4 Diesel	N/A	£80,244	N/A	£57,171
	Euro 5 Diesel	£90,088	£131,696	£126,116	£95,145
Compliant	Euro 6 Diesel	£153,461	£176,680	£162,960	£149,475

Table A.5: Average cost of upgrading to a compliant used coach of the same make and model

Euro-Class	Coach Model				Upgrade Cost
	Mercedes Tourismo	Volvo B Series	Irizar I Series	Scania K Series	Average
Euro 3 Diesel	N/A	£143,593	N/A	£111,797	**£127,695**
Euro 4 Diesel	N/A	£96,436	N/A	£92,304	**£94,370**
Euro 5 Diesel	£63,374	£44,984	£36,844	£54,330	**£49,883**
Average	**£63,374**	**£95,004**	**£36,844**	**£86,144**	**£70,341**

Taxis/PHVs

Data on Taxi and PHV upgrade costs and methodology wasn used from the Bath Clean Air Plan: Clean Air Fund Report, as outlined below.

Using the data obtained from the ANPR survey within Bath and Carweb, it was possible to identify the most common vehicle types registered as Taxis that travelled into Bath City Centre. These were identified as the Seat Toledo, Skoda Octavia, Mercedes E-Class and Ford Galaxy and show a good overview of the types of Taxi found in B&NES.

Parkers.co.uk was then used to look up the average prices of both compliant and non-compliant models of the vehicle. This data was then in turn used to calculate an average upgrade cost as well as an overall average for Taxis of £9,000, as shown in Table A.6 It should be noted that Parkers.co.uk is used to calculate the cost to upgrade to a compliant second-hand vehicle, the least that is required, maximising the number of vehicles that could be supported through this scheme.

Table A.6: Average upgrade costs for taxis

Vehicle	Average Cost of Non-Compliant Vehicle	Average Cost of CompliantVehicle	Upgrade Cost
Seat Toledo	£7,500	£13,000	**£5,500**
Skoda Octavia	£9,750	£17,250	**£7,500**
Mercedes E-Class	£12,750	£26,000	**£13,250**
Ford Galaxy	£11,750	£21,500	**£9,750**
		Average	**£9,000**

Cars

The cost of a new car was calculated by determining the most popular car models in the local area. A national list was obtained from the www.smmt.co.uk website, which is comparable with the most popular car models identified from the Bristol Automatic Number Plate Registration (ANPR) data. Prices for Petrol and Diesel models of the list of popular cars were extracted from the Parkers database for new car prices. Table A.7 shows the new car prices for the most popular cars.

Table A.7: New Car Prices based on most Popular Cars (Source: FBC-26 'Primary Behavioural Response Calculation Methodology')

Model	New					
	Petrol			Diesel		
	High	Low	Ave	High	Low	Ave
Ford Fiesta	£20,000	£13,200	**£16,600**	£19,000	£14,200	**£16,600**
Ford Focus	£22,400	£17,600	**£20,000**	£22,500	£19,100	**£20,800**
Vauxhall Corsa	£19,300	£11,800	**£15,550**	£17,500	£13,500	**£15,500**
Vauxhall Astra	£23,400	£14,500	**£18,950**	£21,900	£16,100	**£19,000**
Volkswagen Golf	£25,000	£18,500	**£21,750**	£24,500	£19,100	**£21,800**
BMW 3 Series	£29,000	£22,900	**£25,950**	£32,500	£24,500	**£28,500**
MINI	£15,905	£20,635	**£18,270**	£ -	£ -	**£ -**
Volkswagen Polo	£17,500	£15,500	**£16,500**	£17,400	£15,800	**£16,600**
Renault Clio	£15,000	£11,000	**£13,000**	£15,500	£12,500	**£14,000**
Audi A3	£33,500	£20,500	**£27,000**	£31,000	£20,500	**£25,750**
Toyota Yaris	£14,500	£12,500	**£13,500**	£ -	£ -	**£ -**
Mercedes C Class	£35,500	£26,000	**£30,750**	£38,000	£27,000	**£32,500**
Average	**£22,584**	**£17,053**	**£19,818**	**£23,980**	**£18,230**	**£17,588**

Note: Values based on Clean Air Fund Report (Bath & North East Somerset Council) issued January 2020

It was necessary to also account for 'secondary' behavioural responses within these calculations, to estimate the proportion of vehicles replaced by new or used vehicles, and the switch between diesel and petrol cars. In the

absence of more accurate/ local information, JAQU's assumptions from paragraph 3.3 of the Evidence Package, have been used, and are as follows:

- 25% of those with a non-compliant vehicle who upgrade will buy a brand-new vehicle of the same fuel type.
- The other 75% will replace their vehicle with a second-hand complaint vehicle. Of these, 75% of diesels owners will switch to petrol with the remainder keeping the same fuel type.

Table A.8 shows the weighted upgrade cost calculations for Cars (Petrol and Diesel), LGV and HGVs (Rigid and Artic). The cost of resale is based on the lowest value of that vehicle type and euro standard. The cost of a compliant vehicle was calculated using on the secondary behavioural responses outlined above, and also based on an assumption that the lowest cost second-hand compliant vehicle will be purchased.

Table A.8: Weighted upgrade costs (Source: FBC-26 'Primary Behavioural Response Calculation Methodology')

Vehicle type	Euro Class	Resale cost	Cost of compliant vehicle	Cost to upgradeper vehicle
Car (Petrol)	Euro 0	£0	£6297	£6298
	Euro 1	£156	£6297	£6142
	Euro 2	£373	£6297	£5925
	Euro 3	£629	£6297	£5669
			Weighted average	**£5732**
Car (Diesel)	Euro 0	£0	£6835	£6835
	Euro 1	£138	£6835	£6697
	Euro 2	£331	£6835	£6504
	Euro 3	£558	£6835	£6277
	Euro 4	£1335	£6835	£5500
	Euro 5	£3800	£6835	£3035
			Weighted average	**£4431**
			Weighted average car	**£4884**

Appendix B. Loan/Grant Package Assumptions

B.1 Upper Upgrade Estimate

Funding Required	Grants Number	Grants Funding	Finance Number	Finance Funding	tot.veh
Cars	784	£ 1,723,732	107	£ 106,843	891
PHV	523	£ 902,580	65	£ 116,424	588
Hackney	240	£ 1,188,000	90	£ 162,000	330
LGVs	3315	£ 15,578,994	2983	£ 9,546,277	3149
HGVs	77	£ 1,232,000	19	£ 99,840	96
Coaches	91	£ 1,456,000	23	£ 158,828	114
Sub Totals	**5030**	**£ 22,081,306**	**3287**	**£ 10,190,212**	5168
Grand Total	**8317**	**£ 32,271,517**			
		£ 34,309,559	<<< including 20% contingency on Finance		

Summary totals	
Excluding cars	£ 30,440,942
Cars	£ 1,830,575
	£ 32,271,517
20% Finance contingency	

Scheme Variables

CAZ Scheme: Small CAZ D — Income Model: Individual

Private Car — Total Uptake 100%

Requirements:			Grants: Replacement	Grants: Mobility Credits	Finance: Loan
Days/Week in CAZ	2	890			
Individual Income	£27,000	44.3%			
Incentive			£ 2,000		£ 5,000
Uptake			88%		12%

Taxis

			PHV: Petrol	PHV: Hybrid	PHV: EV/Long Range	Hackney: LPG	Hackney: EV	Hackney: E6d
Non Compliant PHV		588						
Non Compliant Hackney		330						
	PHV	Hackney						
Total Uptake	100%	100%						
Grant			£ 1,500	£ 1,500	£ 1,500	£ 4,000	£ 4,000	£ 4,000
Uptake			19%	35%	35%	18%	9%	45%
Finance			£ 9,000	£ 9,000	£ 9,000	£ 9,000	£ 9,000	£ 9,000
Uptake			1%	5%	5%	9%	9%	9%

LGVs — Total Uptake 190%

Requirements:			Free charge	BEV	E6	E6d+
Days/Week in CAZ	2	3315				
Grant			£ 4,500	£ 4,500	£ 4,500	£ 4,500
Uptake			20%	40%	0%	40%
Finance			£ 16,000	£ 16,000	£ 16,000	£ 16,000
Uptake			18%	36%	0%	36%

HGVs — Total Uptake 100%

Requirements:			Grant	Finance
Days/Week in CAZ	4	96		
Incentive			£ 16,000	£ 26,000
Uptake			80%	20%

Coaches — Total Uptake 100%

Requirements:			Grant	Finance
Days/Month in CAZ	2	113		
Incentive			£ 16,000	£ 35,000
Uptake			80%	20%

Coaches — Total Uptake 100%

Requirements:			Grant	Finance
Days/Week in CAZ	2	44		
Incentive			£ 16,000	£ 35,000
Uptake			80%	20%

B.2 Middle Upgrade Estimate

Funding Required	Grants Number	Grants Funding	Finance Number	Finance Funding	tot.veh	*Summary totals*	
Cars	359	£ 789,476	90	£ 89,713	449	Excluding cars	£ 13,923,137
PHV	523	£ 902,580	65	£ 116,424	588	Cars	£ 879,189
Hackney	240	£ 1,188,000	90	£ 162,000	330		£ 14,802,326
LGVs	1274	£ 5,988,017	1147	£ 3,669,253	1210		
HGVs	43	£ 688,000	11	£ 55,772	54	20% Finance contingency	
Coaches	65	£ 1,040,000	16	£ 113,092	81		
Sub Totals	**2504**	**£ 10,596,072**	**1419**	**£ 4,206,254**	2712		
Grand Total	**3923**	**£ 14,802,326**					
		£ 15,643,577	<<< including 20% contingency on Finance				

Scheme Variables

CAZ Scheme: Small CAZ D — Income Model: Individual

Private Car — Total Uptake 100%

Requirements:			Grants: Replacement	Grants: Mobility Credits	Finance: Loan
Days/Week in CAZ	3.5	449	Incentive	£ 2,000	£ 5,000
Individual Income	£27,000	44.3%	Uptake	80%	20%

Taxis

			PHV: Petrol	PHV: Hybrid	PHV: EV/Long Range	Hackney: LPG	Hackney: EV	Hackney: E6d
Non Compliant PHV		588	Grant	£ 1,500	£ 1,500	£ 1,500	£ 4,000	£ 4,000	£ 4,000
Non Compliant Hackney		330	Uptake	19%	35%	35%	18%	9%	45%
	PHV	Hackney	Finance	£ 9,000	£ 9,000	£ 9,000	£ 9,000	£ 9,000	£ 9,000
Total Uptake	100%	100%	Uptake	1%	5%	5%	9%	9%	9%

LGVs — Total Uptake 190%

Requirements:			Free charge	BEV	E6	E6d+
Days/Week in CAZ	3.5	1274	Grant	£ 4,500	£ 4,500	£ 4,500	£ 4,500
			Uptake	20%	40%	0%	40%
			Finance	£ 16,000	£ 16,000	£ 16,000	£ 16,000
			Uptake	18%	36%	0%	36%

HGVs — Total Uptake 100%

Requirements:			Grant	Finance
Days/Week in CAZ	4.5	54	Incentive	£ 16,000	£ 26,000
			Uptake	80%	20%

Coaches — Total Uptake 100%

Requirements:			Grant	Finance
Days/Month in CAZ	4	81	Incentive	£ 16,000	£ 35,000
			Uptake	80%	20%

Coaches — Total Uptake 100%

Requirements:			Grant	Finance
Days/Week in CAZ	3.5	17	Incentive	£ 16,000	£ 35,000
			Uptake	80%	20%

B.3 Lower Upgrade Estimate

Funding Required	Grants Number	Grants Funding	Finance Number	Finance Funding	tot.veh	*Summary totals*	
Cars	173	£ 380,296	43	£ 43,215	216	Excluding cars	£ 5,762,113
PHV	523	£ 902,580	65	£ 116,424	588	Cars	£ 423,511
Hackney	240	£ 1,188,000	90	£ 162,000	330		£ 6,185,624
LGVs	285	£ 1,339,754	257	£ 820,956	271		
HGVs	21	£ 336,000	5	£ 27,619	26	20% Finance contingency	
Coaches	49	£ 784,000	12	£ 84,779	61		
Sub Totals	**1291**	**£ 4,930,630**	**472**	**£ 1,254,994**	1492		
Grand Total	**1763**	**£ 6,185,624**					
		£ 6,436,622	<<< including 20% contingency on Finance				

Scheme Variables

CAZ Scheme: Small CAZ D — Income Model: Individual

Private Car — Total Uptake 100%

Requirements:			Grants		Finance
			Replacement	Mobility Credits	Loan
Days/Week in CAZ	5	216	Incentive	£ 2,000	£ 5,000
Individual Income	£27,000	44.3%	Uptake	80%	20%

Taxis

			PHV			Hackney		
			Petrol	Hybrid	EV/Long Range	LPG	EV	E6d
Non Compliant PHV		588	Grant	£ 1,500	£ 1,500	£ 1,500	£ 4,000	£ 4,000	£ 4,000
Non Compliant Hackney		330	Uptake	19%	35%	35%	18%	9%	45%
	PHV	Hackney	Finance	£ 9,000	£ 9,000	£ 9,000	£ 9,000	£ 9,000	£ 9,000
Total Uptake	100%	100%	Uptake	1%	5%	5%	9%	9%	9%

LGVs — Total Uptake 190%

Requirements:			Free charge	BEV	E6	E6d+
Days/Week in CAZ	5	285	Grant	£ 4,500	£ 4,500	£ 4,500	£ 4,500
			Uptake	20%	40%	0%	40%
			Finance	£ 16,000	£ 16,000	£ 16,000	£ 16,000
			Uptake	18%	36%	0%	36%

HGVs — Total Uptake 100%

Requirements:			Grant	Finance
Days/Week in CAZ	5	27	Incentive	£ 16,000	£ 26,000
			Uptake	80%	20%

Coaches — Total Uptake 100%

Requirements:			Grant	Finance
Days/Month in CAZ	6	61	Incentive	£ 16,000	£ 35,000
			Uptake	80%	20%

Coaches — Total Uptake 100%

Requirements:			Grant	Finance
Days/Week in CAZ	5	5	Incentive	£ 16,000	£ 35,000
			Uptake	80%	20%