Bristol City Council Clean Air Plan

Outline Business Case

Finance Report

OBC-41

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Bristol City Council

Bristol Clean Air Plan

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1. Introduction

1.1 Disclaimer

The financial case sets out the anticipated costs of the scheme based on the current scheme design (including both charging and non-charging measures). It will set out the current understanding of the financial situation and outline the resources available for the project including all available funding sources (the primary sources of funding considered in the financial model are the Clean Air Fund, Implementation Fund etc.).

A financial model was prepared to profile the scheme costs (capital and operational) against the funding sources and revenue from the CAZ. This model provides an approximation of the level of revenue that could be accumulated from the CAZ. The financial model is based on the traffic and air quality modelling outputs, and so the accuracy will be no greater than the accuracy of the transport and air quality models, which contain a number of limitations. Further, the financial model is predicated on key operational assumptions provided by BCC based on their experience of administering similar projects (in particular, bus lane enforcement). The financial model is suitable to indicate whether the revenue from the CAZ is likely to be sufficient to cover the operating costs based on these key assumptions, but it does not give an accurate forecast of the revenue from the scheme. Jacobs does not therefore take responsibility for the accuracy of this financial model.

1.2 Background and 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). BCC has monitored and endeavoured to address air quality in Bristol. Despite this, Bristol has ongoing exceedances of the legal limits for Nitrogen Dioxide (NO_2) and these are predicted to continue until around 2029 without intervention.

In 2017 the government published a UK Air Quality Plan for Nitrogen Dioxide[2] setting out how compliance with the EU Limit Value for annual mean NO_2 will be reached across the UK in the shortest possible time. Due to forecast air quality exceedances, BCC, along with 27 other Local Authorities, was directed by Minister Therese Coffey (Defra) and Minister Jesse Norman (DfT) in 2017 to produce a Clean Air Plan (CAP). The Plan must set out how BCC will achieve sufficient air quality improvements in the shortest possible time. In line with Government guidance, BCC is considering the implementation of a Clean Air Zone (CAZ), including both charging and non-charging measures, in order to achieve sufficient improvement in air quality and public health.

Jacobs has been commissioned by BCC to produce an Outline Business Case (OBC) for the delivery of the CAP; a package of measures which will bring about compliance with the Limit Value for annual mean NO_2 in the shortest time possible in Bristol. The OBC assesses the shortlist of options set out in the Strategic Outline Case, and proposes a preferred option including details of delivery. The OBC forms a bid to central government for funding to implement the CAP.

This document is written to support the OBC and acts as a detailed appendix to the financial case in the OBC. It outlines the funding and expenditure requirements for the CAP, as well as outlining wider financial impacts and consequences of the proposed arrangement for BCC and Government. It is underpinned by a financial model (appended to this report), which profiles the scale and sources of proposed funding alongside the timing of expenditure. Explicitly, it details the revenue and capital needs (and associated profile) to deliver the project, within the context of the BCC's wider financial situation.

[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] https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017

2. General Structure and Assumptions

2.1 Model Structure

In line with the Defra/DfT Joint Air Quality Unit (JAQU) Guidance[3], the financial model comprises the following elements:

- Funding Profile – outlining the profile for capital and revenue funding requirements, split by funding source (including Implementation Fund, Clean Air Fund, BCC and other funding opportunities).
- Capital Expenditure Summary – providing detail on the cost and spending profile for capital assets delivered as part of Clean Air Plan implementation, split by funding source (as above).
- Operational Summary – providing detail on the cost and spending profile for ongoing operation of the Clean Air Plan, set against any revenues generated by the scheme elements to arrive at a net cash flow position.
- Impact on BCC Accounts – assessing the impact of the Clean Air Plan on BCC' income and expenditure account and balance sheet.

In addition to these standard financial model components, the model also contains a detailed Bill of Quantities (BoQ), which drives the cost estimates for CAPEX and OPEX. The BoQ is replicated from OBC33 'Project Costs' in Appendix J of the OBC. Further, the model provides detailed analysis around the costs associated with enforcing CAZ regulations and dealing with any contraventions, based on BCC advice and experience on similar projects (e.g. car parking/bus lane enforcement). Detailed consideration of these issues is required due to the convoluted and potentially costly nature of enforcement, particularly related to the Penalty Charge Notice (PCN) process for individuals in contravention of the Clean Air Plan's proposed regulations. More detail on this analysis is provided below.

2.2 Approach to Analysis

A financial model was developed for two options considered at OBC stage:

- The preferred scheme – i.e. hybrid option. This option charges a range of non-compliant vehicles (buses, coaches, taxis, private hire vehicles, HGVs and LGVs) but does not affect cars. It also applies a small area diesel car ban;
- The benchmark scheme – i.e. Medium CAZ D + Option 1. this option charges all non-compliant vehicles, including cars.

The modelling work used in the analysis showed compliance for both options would be achieved by 2027. Since this work, further modelling has indicated compliance of the Hybrid option could be achieved by 2025. The financial modelling presented below assumes that the CAZ schemes are in operation until 2030. If the schemes were only operational to 2025, the scale of revenues and costs would both be diminished. Specifically, the scale of revenues could be c. 80% of the values referenced in Section 4.2.8 and the scale of costs could be c. 60% of the values referenced in Section 4.3.3. The scale of revenues diminishes less than costs because most revenues accrue in the opening years of the CAZ operation, when a higher number of vehicles are non-compliant. In comparison, most costs are fixed across the appraisal period, irrespective of number of non-compliant vehicles. As a result, should the CAZ scheme's operation be curtailed to 2025, it is still expected to return a significant operational surplus.

[3] Outline Business Case Workshop, May 2018

3. Capital Expenditure Summary

A central estimate for scheme implementation costs ranges between £108.4 million to £113.5 million (2019 prices). This range estimate increases to between £111.9 million and £117.2 million with inflation (assumed at 3.5% per annum in line with BCIS current tender price forecast). The high end of this range is related to the hybrid option, due to the increased number of ANPR cameras and signage required to impose a small area diesel ban in addition to a CAZ under this option.

Tables 3.1 and 3.2 presents a summary of how these CAPEX estimate is built up, split by broad theme and funding source. A more detailed breakdown of CAPEX costs is provided in BoQ format in OBC33: Project Costs, which forms Appendix J of the OBC. Note that the BoQ includes a 15% contingency applied to all cost items, which is reflected in the values in Tables 3.1 and 3.2. This contingency is retained alongside the quantified risk estimate to cover unspecified risks and unforeseen outcomes.

Note that around 60% of the funding request be targeted towards the Implementation Fund under both options. The remainder will be targeted towards the Clean Air Fund.

Table 3-1: CAPEX by broad theme and funding source (£2019 prices)

CAPEX Item	Hybrid Option			Medium CAZ D + Option 1		
	Implementation Fund	Clean Air Fund	Total	Implementation Fund	Clean Air Fund	Total
Enforcement System	10,527,100	0	10,527,100	8,225,950	0	8,225,950
Street Works	8,232,275	0	8,232,275	5,425,125	0	5,425,125
Non-Charging Measures - Implementation Fund	43,815,000	0	43,815,000	43,815,000	0	43,815,000
Non-Charging Measures – Clean Air Fund	0	44,390,000	44,390,000	0	44,390,000	44,390,000
Risk	6,500,000		6,500,000	6,500,000		6,500,000
Total	**69,074,375**	**44,390,000**	**113,464,375**	**63,966,075**	**44,390,000**	**108,356,075**

Table 3-2: CAPEX by broad theme and funding source (£outturn prices)

CAPEX Item	Hybrid Option			Medium CAZ D + Option 1		
	Implementation Fund	Clean Air Fund	Total	Implementation Fund	Clean Air Fund	Total
Enforcement System	10,895,549		10,895,549	8,513,858		8,513,858
Street Works	8,520,405		8,520,405	5,615,004		5,615,004
Non-Charging Measures - Implementation Fund	45,348,525		45,348,525	45,348,525		45,348,525
Non-Charging Measures – Clean Air Fund		45,943,650	45,943,650		45,943,650	45,943,650
Risk	6,500,000		6,500,000	6,500,000		6,500,000
Total	**71,264,478**	**45,943,650**	**117,208,128**	**65,977,388**	**45,943,650**	**111,921,038**

The scale and profile of expenditure is outlined in Table 3-2, which provides a more comprehensive Capital Expenditure Summary for the project. Further detail on cost estimation is provided in OBC33: which forms Appendix J of the OBC.

4. Operational Summary

The operational summary reconciles the revenue generating potential of the project with the cost of ongoing operation and enforcement of the CAZ and maintenance of capital assets.

4.1 Strategic Assumptions

The operational model is underpinned by key assumptions, as listed below:

- For the hybrid option, non-compliant buses, coaches, taxis, private hire vehicles, HGVs and LGVs are charged. Cars are not charged. All diesel cars are assumed to adhere to the small area diesel ban, meaning no additional fines are levied and no additional revenue is raised via this mechanism.
- For the Medium CAZ D + Option 1 option, non-compliant buses, coaches, taxis, private hire vehicles, HGVs, LGVs and cars are all charged.
- Operational phase begins in 2021, commencing until the primary objectives of the Clean Air Plan are achieved (i.e. compliance with the air quality limit values and objectives). The model assumes that the Clean Air Plan remains in operation until 2030 to ensure steady-state rather than temporary compliance. As noted in Section 2.2, the key conclusions of the financial analysis are not materially impacted by any reduction in operational period to an interim point, for example, if compliance may be achieved earlier (e.g. 2025). This is because revenue generation is skewed towards the earlier part of the appraisal period when more non-compliant vehicles exist. In comparison, costs are more equally distributed across the full period 2021-2030.
- The forecast number of non-compliant vehicles in 2021 is adopted from transport modelling outputs, with non-compliant vehicles forecasts for subsequent years based on interpolation also undertaken as part of transport modelling.
- Administration costs associated with reviewing and processing foreign vehicles are included within the model. However, any revenue generation is excluded on the basis that it is difficult to charge, fine and/or pursue payment for foreign vehicles. It is assumed that all operational activities associated with foreign vehicle enforcement would be outsourced to third parties, who typically operate on a 'no-win no-fee' basis. Based on ANPR data, 1.55% of all vehicles in the CAZ area are foreign vehicles; any revenue relating to these vehicles is ignored within the model, even though processing charges are captured.

4.2 Revenue Generation

4.2.1 Overview

The Clean Air Zone Framework states that local authorities should not set the level of charge as a revenue raising measure. The Transport Act 2000 requires any excess revenue that may arise from charges above the costs of operation to be re-invested to facilitate the achievement of local transport policies. These should aim to improve air quality and support the delivery of the ambitions of the zone. The revenue re-investment reserve described below provides a mechanism for utilising any excess revenue generated within these parameters.

In this context the project is expected to lead to some revenue generation in the early years as a result of the CAZ-related charges levied on non-compliant vehicles. Revenue generation is a function of two interconnected components:

- The number of non-compliant vehicles entering the CAZ and paying the respective charge based on vehicle type.
- The number of non-compliant vehicles entering the CAZ, not paying the respective charge based on vehicle type and instead facing a fine via the Penalty Charge Notice (PCN) process.

The overarching framework for revenue generation as a result of CAZ is outlined in Figure 4-1. The various revenue generating streams emanating from the starting position of the number of non-compliant vehicles are discussed within this chapter, including an explanation of key assumptions in this calculation.

An initial estimate is made here based on reasonable estimates of key assumptions, established through benchmarking against other similar schemes (bus lane enforcement, Dart Crossing, early evidence from the London Ultra Low Emission Vehicle [ULEV] Zone experience). However, it should be noted that there is a considerable level of uncertainty in these assumptions since a CAZ scheme that involves charging non-compliant vehicles has not yet been implemented within the UK. Hence, a number of sensitivity scenarios are in development which will consider variations in key assumptions. These sensitivity tests will need to be considered in detail to understand the range of potential range of revenue generation.

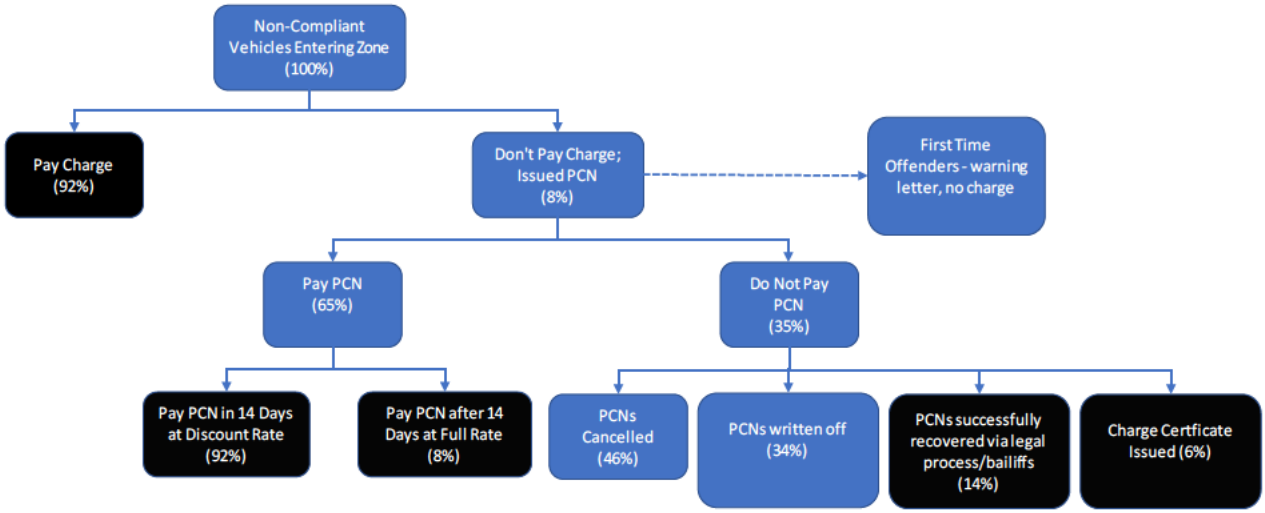

Figure 4-1: CAZ Revenue Generation Framework

4.2.2 Non-Compliant Vehicles Entering the Zone

The profile of non-compliant vehicles entering the CAZ zone is outlined in Table 4.2, based on outputs from traffic modelling. These figures account for all anticipated behavioural responses to the proposed scheme, including altering route to avoid the zone, cancelling a trip entirely, and switching the mode of transport used for the journey. The analysis demonstrates that the volume of non-compliant traffic falls quickly from project implementation in 2021.

Whilst the traffic and air quality modelling indicate that compliance with air quality is achieved in 2028, Table 4-2 demonstrates that a significant number of non-compliant trips persist throughout the appraisal period. In order to ensure long-term compliance and prevent the return of non-compliant vehicles, the financial model assumes that the scheme is in operation for the full ten-year appraisal period. This also provides transport operators with a stable environment in which to make investment decisions. The traffic data in Table 4-2 and subsequent revenue and cost estimation reflects this assumption.

Table 4-2: Non-Compliant Vehicles Subject to CAZ Charge

	Number of Non-Compliant Vehicles Entering the CAZ Cordon											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Cars/Taxis	0	0	0	0	0	0	0	0	0	0	0	0
Average LGV	681,433	618,266	555,098	446,330	349,272	239,460	156,406	85,765	42,186	15,546	3,189,762	318,976
Buses	28,106	25,442	22,778	18,208	14,143	9,580	6,159	3,298	1,563	538	129,815	12,982
HGV rigid	123,573	111,605	99,637	79,179	61,038	40,837	25,824	13,493	6,139	1,957	563,282	56,328
Total	833,112	755,313	677,514	543,717	424,454	289,877	188,389	102,556	49,887	18,041	3,882,860	388,286
Medium CAZ D + Option 1												
Cars/Taxis	781,949	708,436	634,923	508,630	396,159	269,541	174,300	94,343	23,404	8,040	3,599,724	359,972
Average LGV	705,560	639,967	574,373	461,481	360,784	246,970	160,985	87,999	43,082	15,743	3,296,943	329,694
Buses	31,494	28,494	25,493	20,350	15,778	10,656	6,824	3,632	1,705	577	145,002	14,500
HGV rigid	132,071	119,184	106,297	84,295	64,808	43,168	27,138	14,045	6,296	1,947	599,249	59,925
Total	1,651,074	1,496,080	1,341,086	1,074,755	837,530	570,336	369,246	200,019	74,486	26,306	7,640,918	764,092

Note that the number of non-compliant vehicles entering the CAZ under Medium CAZ D + Option 1 is higher. This is due to the charging of non-compliant cars under this option. Also note that behavioural responses demonstrate that no taxis will pay the charge; all are assumed to replace their vehicles to compliant vehicles. Hence there are no cars/taxis entering the CAZ cordon under the hybrid option, which affects taxis but not cars.

4.2.3 CAZ Charge

The drivers of the non-compliant vehicles presented in Table 4-2 are, until the CAZ is removed, liable to pay a variable charge depending on type of vehicle. The charging schedule for the scheme is outlined in Table 4-3. It is set at the minimum level that is expected to induce changes in travel behaviour (i.e. a shift away from use of non-compliant vehicles) to the extent that concentrations of NO_2 comply with the air quality Objectives and Limit Values as quickly as possible.

Table 4-3: Charging Schedule

Vehicle Type	Charge
Cars/Taxi	£9.00
LGVs	£9.00
Buses/Coaches	£100.00
HGVs	£100.00

4.2.4 CAZ Charge Payment

Case study evidence of road-charging operations and enforcement reveals that not all individuals pay the required charge and are therefore in contravention of the scheme. As there is no direct precedent for the CAZ in the UK, it is not possible to estimate the contravention rates from an existing CAZ scheme. In the absence of a direct comparison, BCC is of the view that the contravention rates reported at the Dartford Crossing represent the most appropriate benchmark to apply in the BCC CAZ context. The Dartford Crossing reported contravention rates of around 6% in 2014 when the payment process changed from toll booth operation to

automated/offline payments[4]. The contravention rate reduced marginally to 5% through to 2017, suggesting a stable and constant contravention rate.

It is considered likely that the contravention rate for a CAZ in BCC will be higher than the Dartford Crossing contravention rate. The reasoning for this deviation from the Dartford Crossing experience is that the CAZ is an entirely new scheme in BCC, whereas the data for Dartford Crossing reflects an update to an existing scheme only. Further, the criteria for compliance at the Dartford Crossing is simple, i.e. all vehicles are charged. For a CAZ, the criteria for compliance is more complex (relating to vehicle emission standards), meaning there is greater scope for contravention where individuals don't realise their vehicle was non-compliant. In light of these considerations and experience of adopted contravention rates in other proposed locations, the financial analysis assumes that 8% would be a suitable steady state contravention rate for a CAZ scheme in BCC. This assumption is consistent with recently published evidence from London's ULEV Zone, which demonstrated a contravention rate of 9%.

Based on the contravention rate assumptions discussed above, the tables below outline the number of vehicles anticipated to pay the appropriate CAZ charge (Table 4-4) and the resulting number of vehicles in contravention of the CAZ regulations and issued with a PCN (Table 4-5).

Note that the number of vehicles contravening the CAZ regulations and issued with a PCN in Table 4-5 also reflects the proposed BCC policy to waive any fine associated with an issued PCN for first time contravention offences. Instead, first time offenders will be issued with a warning letter only. Hence the 8% non-payment rate in Table 4-5 is inclusive of first time offenders, but the actual numbers reported below this line are net of first time offenders.

Table 4-4: Number of Vehicles Paying the CAZ Charge

	Number of Vehicles Paying the CAZ Charge											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Payment Rate	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%		
Cars/Taxis	0	0	0	0	0	0	0	0	0	0	0	0
LGVs	626,919	568,805	510,690	410,623	321,330	220,303	143,893	78,904	38,811	14,302	2,934,581	293,458
Buses/Coaches	25,857	23,407	20,956	16,752	13,012	8,814	5,666	3,034	1,438	495	119,430	11,943
HGVs	113,687	102,677	91,666	72,844	56,155	37,570	23,758	12,413	5,648	1,801	518,220	51,822
Total	766,463	694,888	623,313	500,219	390,497	266,687	173,318	94,352	45,896	16,598	3,572,231	357,223
Medium CAZ D + Option 1												
Payment Rate	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%		
Cars/Taxis	719,393	651,761	584,129	467,939	364,467	247,978	160,356	86,795	21,532	7,397	3,311,746	331,175
LGVs	649,115	588,769	528,423	424,562	331,921	227,213	148,106	80,959	39,635	14,483	3,033,188	303,319
Buses/Coaches	28,975	26,214	23,454	18,722	14,516	9,803	6,278	3,341	1,568	530	133,402	13,340
HGVs	121,506	109,649	97,793	77,551	59,623	39,715	24,967	12,922	5,792	1,791	551,309	55,131
Total	1,518,988	1,376,394	1,233,799	988,775	770,527	524,709	339,706	184,017	68,528	24,201	7,029,645	702,964

[4] DART Charge Data Table (2018), DfT, https://www.gov.uk/government/publications/dart-charge-data-table

Table 4-5: Number of Vehicles in Contravention of CAZ Regulations and Issued with PCN

	Number of Vehicles Contravening the CAZ Charge and Issued with PCN											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Non-Payment Rate	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%		
Cars/Taxis	0	0	0	0	0	0	0	0	0	0	0	0
LGVs	32,733	29,699	26,665	21,440	16,778	11,503	7,513	4,120	2,026	747	153,223	15,322
Buses/Coaches	1,799	1,628	1,458	1,165	905	613	394	211	100	34	8,308	831
HGVs	5,291	4,778	4,266	3,390	2,613	1,748	1,106	578	263	84	24,117	2,412
Total	39,823	36,105	32,388	25,995	20,296	13,864	9,013	4,909	2,389	865	185,648	18,565
Medium CAZ D + Option 1												
Non-Payment Rate	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%		
Cars/Taxis	59,691	54,079	48,468	38,827	30,241	20,576	13,305	7,202	1,787	614	274,789	27,479
LGVs	33,892	30,741	27,590	22,168	17,331	11,863	7,733	4,227	2,069	756	158,371	15,837
Buses/Coaches	2,016	1,824	1,632	1,302	1,010	682	437	232	109	37	9,280	928
HGVs	5,655	5,103	4,551	3,609	2,775	1,848	1,162	601	270	83	25,657	2,566
Total	101,253	91,747	82,241	65,906	51,356	34,969	22,637	12,263	4,235	1,490	468,097	46,810

4.2.5 CAZ Charge Income

Combining the CAZ charges in Table 4-3 with the number of vehicles paying the CAZ charge in Table 4-4 demonstrates that the CAZ charge could generate a stream of revenue over the appraisal period that declines to around £0.4 million in 2030 (Table 4-6).

Note that this estimate is net of a small proportion of non-compliant vehicles that will be non-UK registered (1.55%) and that is assumed to not generate any revenue.

Table 4-6: Direct CAZ Income – From CAZ Charge Payments (£'000s)

	CAZ Charge Income											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Cars/Taxis	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
LGVs	£5,555	£5,040	£4,525	£3,638	£2,847	£1,952	£1,275	£699	£344	£127	£26,002	£2,600
Buses/ Coaches	£2,546	£2,304	£2,063	£1,649	£1,281	£868	£558	£299	£142	£49	£11,758	£1,176
HGVs	£11,192	£10,109	£9,025	£7,172	£5,528	£3,699	£2,339	£1,222	£556	£177	£51,019	£5,102
Total	£19,293	£17,453	£15,613	£12,459	£9,657	£6,518	£4,172	£2,220	£1,041	£353	£88,778	£8,878
Medium CAZ D + Option 1												
Cars/Taxis	£6,374	£5,775	£5,176	£4,146	£3,229	£2,197	£1,421	£769	£191	£66	£29,344	£2,934
LGVs	£5,751	£5,217	£4,682	£3,762	£2,941	£2,013	£1,312	£717	£351	£128	£26,876	£2,688

	CAZ Charge Income											
Vehicle Type	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total	Annual Average
Buses/ Coaches	£2,853	£2,581	£2,309	£1,843	£1,429	£965	£618	£329	£154	£52	£13,133	£1,313
HGVs	£11,962	£10,795	£9,628	£7,635	£5,870	£3,910	£2,458	£1,272	£570	£176	£54,276	£5,428
Total	£26,940	£24,367	£21,795	£17,386	£13,469	£9,086	£5,809	£3,088	£1,267	£422	£123,629	£12,363

4.2.6 CAZ Charge Contravention – PCN Process

Those vehicles that contravene the CAZ payment process will be issued with a PCN that levies a fine in line with the charging order. In line with The Road User Charging Schemes (Penalty Charges, Adjudication and Enforcement) (England) Regulations 2013, the charging order will specify a fine of £120 per vehicle (reduced to £60 if paid within fourteen days), plus the initial CAZ charge. In theory, all vehicles in contravention of the CAZ payment process will be subject to the PCN fine. However, BCC experience of the PCN process for other fining mechanisms (in particular bus lane enforcement) reveals that the PCN payment rate is around 65%. Adopting this benchmark, the number of vehicles expected to pay the PCN is outlined in Table 4-7.

Table 4-7: Number of Vehicles Paying the PCN

	Number of Vehicles Paying the PCN											
Vehicle Type	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total	Annual Average
Hybrid Option												
Cars/Taxis	0	0	0	0	0	0	0	0	0	0	0	0
LGVs	21,277	19,304	17,332	13,936	10,905	7,477	4,883	2,678	1,317	485	99,595	9,959
Buses/ Coaches	1,169	1,058	948	757	588	399	256	137	65	22	5,400	540
HGVs	3,439	3,106	2,773	2,204	1,699	1,136	719	376	171	54	15,676	1,568
Total	25,885	23,469	21,052	16,897	13,192	9,012	5,858	3,191	1,553	562	120,671	12,067
Medium CAZ D + Option 1												
Cars/Taxis	38,799	35,152	31,504	25,237	19,657	13,374	8,648	4,681	1,161	399	178,613	17,861
LGVs	22,030	19,982	17,934	14,409	11,265	7,711	5,026	2,748	1,345	492	102,941	10,294
Buses/ Coaches	1,310	1,185	1,061	847	656	443	284	151	71	24	6,032	603
HGVs	3,676	3,317	2,958	2,346	1,804	1,201	755	391	175	54	16,677	1,668
Total	65,815	59,636	53,456	42,839	33,382	22,730	14,714	7,971	2,753	969	304,263	30,426

Of the 65% of vehicles that pay the PCN, BCC experience also suggests that 92% pay at the reduced payment rate (i.e. within fourteen days, £60 plus initial CAZ charge). The residual 8% of payments are at the full payment rate (i.e. after the fourteen-day window, £120 plus the initial CAZ charge). The number of vehicles paying at the reduced and full PCN payment rate are outlined in Table 4-8 and

Table 4-9 respectively.

Table 4-8: Number of Vehicles Paying the Reduced PCN Fine

	Number of Vehicles Paying the Reduced PCN Fine											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Cars/Taxis	0	0	0	0	0	0	0	0	0	0	0	0
LGVs	19,640	17,819	15,999	12,864	10,067	6,902	4,508	2,472	1,216	448	91,934	9,193
Buses/ Coaches	1,079	977	875	699	543	368	236	127	60	21	4,985	498
HGVs	3,174	2,867	2,560	2,034	1,568	1,049	663	347	158	50	14,470	1,447
Total	23,894	21,663	19,433	15,597	12,178	8,319	5,408	2,945	1,434	519	111,389	11,139
Option 1 with Medium CAZ D												
Cars/Taxis	35,815	32,448	29,081	23,296	18,145	12,345	7,983	4,321	1,072	368	164,873	16,487
LGVs	20,335	18,445	16,554	13,301	10,398	7,118	4,640	2,536	1,242	454	95,023	9,502
Buses/ Coaches	1,209	1,094	979	781	606	409	262	139	65	22	5,568	557
HGVs	3,393	3,062	2,731	2,165	1,665	1,109	697	361	162	50	15,394	1,539
Total	60,752	55,048	49,344	39,544	30,814	20,982	13,582	7,358	2,541	894	280,858	28,086

Table 4-9: Number of Vehicles Paying the Full PCN Fine

	Number of Vehicles Paying the Full PCN Fine											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Cars/Taxis	0	0	0	0	0	0	0	0	0	0	0	0
LGVs	1,637	1,485	1,333	1,072	839	575	376	206	101	37	7,661	766
Buses/ Coaches	90	81	73	58	45	31	20	11	5	2	415	42
HGVs	265	239	213	170	131	87	55	29	13	4	1,206	121
Total	1,991	1,805	1,619	1,300	1,015	693	451	245	119	43	9,282	928
Medium CAZ D + Option 1												
Cars/Taxis	2,985	2,704	2,423	1,941	1,512	1,029	665	360	89	31	13,739	1,374
LGVs	1,695	1,537	1,380	1,108	867	593	387	211	103	38	7,919	792
Buses/ Coaches	101	91	82	65	50	34	22	12	5	2	464	46
HGVs	283	255	228	180	139	92	58	30	13	4	1,283	128
Total	5,063	4,587	4,112	3,295	2,568	1,748	1,132	613	212	75	23,405	2,340

As only 65% of people receiving a PCN are expected to pay the fine levied against them, the residual 35% of PCN recipients make representations against the PCN and have it cancelled, written off or are referred to the Traffic Penalty Tribunal (TPT) System. BCC experience suggests that:

- 46% of all non-paid PCNs are cancelled after a successful representation which results in no revenue generation for BCC.
- 34% of all non-paid PCNs are not recovered and are written off instead, which results in no revenue generation for BCC
- 14% of all non-paid PCNs are recovered via the TPT process or other legal action (e.g. bailiffs).
- 6% of all non-paid PCNs are followed by a charge certificate, which adds 50% to the fine levied.

Within this context, Table 4-10 presents the number of non-paid PCNs expected to be cancelled or written off and Table 4-11 outlines the number of non-paid PCNs successfully recovered via the TPT, other legal processes or through issuance of a charge certificate.

Table 4-10: Number of Non-Paid PCNs Cancelled or Written Off

	Number of Non-Paid PCNs Cancelled or Written Off											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Cars/Taxis	0	0	0	0	0	0	0	0	0	0	0	0
LGVs	9,165	8,316	7,466	6,003	4,698	3,221	2,104	1,154	567	209	42,902	4,290
Buses/ Coaches	504	456	408	326	253	172	110	59	28	10	2,326	233
HGVs	1,481	1,338	1,194	949	732	490	310	162	74	23	6,753	675
Total	11,150	10,110	9,069	7,279	5,683	3,882	2,524	1,374	669	242	51,981	5,198
Medium CAZ D + Option 1												
Cars/Taxis	16,713	15,142	13,571	10,872	8,468	5,761	3,726	2,016	500	172	76,941	7,694
LGVs	9,490	8,608	7,725	6,207	4,853	3,322	2,165	1,184	579	212	44,344	4,434
Buses/ Coaches	564	511	457	365	283	191	122	65	31	10	2,598	260
HGVs	1,583	1,429	1,274	1,011	777	518	325	168	75	23	7,184	718
Total	28,351	25,689	23,027	18,454	14,380	9,791	6,338	3,434	1,186	417	131,067	13,107

Table 4-11: Number of Non-Paid PCNs Ordered to Pay Full Fine Through TPT, other legal processes or Charge Certificate

	Number of PCNs Successfully Pursued											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Cars/Taxis	0	0	0	0	0	0	0	0	0	0	0	0
LGVs	2,291	2,079	1,867	1,501	1,174	805	526	288	142	52	10,726	1,073
Buses/ Coaches	126	114	102	82	63	43	28	15	7	2	582	58
HGVs	370	334	299	237	183	122	77	40	18	6	1,688	169

	Number of PCNs Successfully Pursued											
Vehicle Type	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total	Annual Average
Total	2,788	2,527	2,267	1,820	1,421	970	631	344	167	61	12,995	1,300
Medium CAZ D + Option 1												
Cars/Taxis	4,178	3,786	3,393	2,718	2,117	1,440	931	504	125	43	19,235	1,924
LGVs	2,372	2,152	1,931	1,552	1,213	830	541	296	145	53	11,086	1,109
Buses/ Coaches	141	128	114	91	71	48	31	16	8	3	650	65
HGVs	396	357	319	253	194	129	81	42	19	6	1,796	180
Total	7,088	6,422	5,757	4,613	3,595	2,448	1,585	858	296	104	32,767	3,277

4.2.7 CAZ Contravention Income

Combining the number of reduced fine PCN payments (Table 4-8), the number of full fine PCN payments (

Table 4-9 and Table 4-11 [including the 50% premium fine on Charge Certificates where appropriate]) and the associated fine levels (£60 plus initial CAZ charge for reduced fines and £120 plus initial charge for full fines), it is possible to estimate indirect CAZ income related to PCN payments. Note that this estimate is net of a small proportion of non-compliant vehicles that will be non-UK registered (1.55%) and that is assumed to not generate any revenue.

Table 4-12 demonstrates that the PCN process could generate a stream of revenue over the appraisal period that declines to between £57,000 and £93,000 in 2030.

Note that this estimate is net of a small proportion of non-compliant vehicles that will be non-UK registered (1.55%) and that is assumed to not generate any revenue.

Table 4-12: Indirect CAZ Income – From PCN Fine Payments (£'000s)

	PCN Fine Income (£'000s)											
Vehicle Type	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total	Annual Average
Hybrid Option												
Cars/Taxis	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
LGVs	£1,872	£1,698	£1,532	£1,231	£964	£661	£432	£237	£116	£43	£8,785	£878
Buses/ Coaches	£219	£198	£178	£142	£111	£75	£48	£26	£12	£4	£1,013	£101
HGVs	£644	£581	£521	£414	£319	£214	£135	£71	£32	£10	£2,941	£294
Total	£2,734	£2,478	£2,231	£1,788	£1,393	£949	£615	£333	£161	£57	£12,738	£1,274
Medium CAZ D + Option 1												
Cars/Taxis	£3,413	£3,092	£2,784	£2,230	£1,737	£1,182	£764	£414	£103	£35	£15,754	£1,575
LGVs	£1,938	£1,758	£1,585	£1,273	£995	£681	£444	£243	£119	£43	£9,080	£908
Buses/ Coaches	£245	£222	£199	£159	£123	£83	£53	£28	£13	£5	£1,132	£113

HGVs	£688	£621	£556	£441	£339	£226	£142	£73	£33	£10	£3,128	£313
Total	£6,284	£5,693	£5,124	£4,103	£3,195	£2,172	£1,404	£758	£268	£93	£29,094	£2,909

4.2.8 CAZ Revenue Generation

Combining the direct CAZ income (Table 4-6) with the indirect CAZ income (Note that this estimate is net of a small proportion of non-compliant vehicles that will be non-UK registered (1.55%) and that is assumed to not generate any revenue.

Table 4-12), the CAZ could gross (i.e. before costs are deducted) between £21.9 million and £32.8 million in Year 1, declining to between £0.4 million and £3.9 million in 2030, as set out in Table 4-13.

Table 4-13: Total CAZ Income

	PCN Fine Income (£'000s)											
Vehicle Type	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**	**Annual Average**
Hybrid Option												
Cars/Taxis	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
LGVs	£7,426	£6,738	£6,057	£4,870	£3,811	£2,613	£1,707	£936	£460	£170	£34,787	£3,479
Buses/ Coaches	£2,765	£2,503	£2,241	£1,792	£1,392	£943	£606	£325	£154	£53	£12,771	£1,277
HGVs	£11,836	£10,690	£9,545	£7,585	£5,848	£3,912	£2,474	£1,293	£588	£188	£53,959	£5,396
Total	£22,027	£19,931	£17,843	£14,247	£11,050	£7,468	£4,786	£2,553	£1,202	£410	£101,517	£10,152
Medium CAZ D + Option 1												
Cars/Taxis	£9,787	£8,867	£7,960	£6,376	£4,966	£3,379	£2,185	£1,183	£293	£101	£45,098	£4,510
LGVs	£7,689	£6,975	£6,267	£5,035	£3,936	£2,695	£1,756	£960	£470	£172	£35,955	£3,596
Buses/ Coaches	£3,098	£2,803	£2,508	£2,002	£1,552	£1,048	£671	£357	£168	£57	£14,265	£1,426
HGVs	£12,650	£11,416	£10,183	£8,076	£6,209	£4,136	£2,600	£1,346	£603	£187	£57,405	£5,740
Total	£33,225	£30,060	£26,918	£21,489	£16,664	£11,258	£7,213	£3,846	£1,534	£516	£152,723	£15,272

It should be noted that the revenue generation predicted in Table 14 is reliant on a number of key assumptions which are not certain. BCC have made reasonable attempts to estimate these assumptions based on similar schemes delivered in the UK or experience of enforcement within the authority, but since a CAZ of this type has not yet been implemented, the available evidence is limited and hence the forecasts are uncertain. As noted above, a range of detailed sensitivity tests are being undertaken to understand the impact of amending key assumptions on the forecast revenue generation and will be presented when available.

4.3 Operational Costs

4.3.1 Overview

Operational costs will be incurred by BCC across a range of activities:

- Operations and enforcement of the CAZ
- Maintenance of the CAZ and complementary infrastructure
- Telecommunicatons

- Power
- CAZ Project Delivery and Ongoing Operational Management
- Monitoring and Evaluation
- Other (including additional PCN administration processes, decommissioning etc)

The majority of these operational costs are accrued on either a fixed, annual basis for the lifecycle of the project or as one-off costs. However, cost items relating to PCN/TPT activities and general operations and enforcement are contingent on variations in vehicle non-compliance and contravention as outlined in the section above and are therefore worthy of more detailed discussion.

4.3.2 PCN Administration Costs

The non-compliance and contravention rate estimates presented above demonstrate that large volumes of vehicles could enter the CAZ and avoid paying the relevant charge in a single year. This volume of contraventions would require a significant administrative effort to process and enforce the charging order. For example, every PCN generated by vehicles in contravention of the charging order generates workload in terms of civil enforcement, reviewing ANPR footage, preparing and distributing correspondence.

In terms of PCN preparation, the CAZ-related PCN process could necessitate significant recruitment of administrative staff, potentially on short-term and temporary contracts to reflect the sharp decline in contravention rates (Table 4-4). Based on BCC existing PCN processes (for issuing parking and bus lane enforcement fines), the following staffing requirements would be generated by the large PCN process:

- 1 civil enforcement officer (CEO) per 30,000 PCNs (staff costs: £26,700 p.a.)
- 1 appeals officer per 10,000 PCNs (staff costs: £26,700 p.a.)

Applying these benchmarks to the forecast number of PCN's required as a result of the project will indicate the number of full-time equivalent administrative roles that would need to be filled across the CAZ operation period. The bulk of these roles would be obsolete over time as vehicular compliance improves, hence the focus on short-term and temporary contracts.

Further, supervisory staff would also need to be recruited to oversee the PCN process. Based on current BCC supervisory ratios:

- 1 civil enforcement supervisor per 2 CEOs (staff costs: £35,820 p.a.)
- 1 senior appeals officer per 4 appeals officers (staff costs: 31,700 p.a.)

Further, a permanent TPT senior officer (staff costs: £35,820 p.a.) would be required across the operation of the CAZ. Applying BCC average staff costs for these roles (including salary and direct overheads), the council could incur additional wage costs of between £2.7 million and £4.0 million over the lifetime of the project.

Administration costs will also arise from BCC obligation to make a financial contribution to the TPT process, stationery and supplies (processing) and PCN postage (distribution) of each PCN. BCC advise that benchmark costs for these activities (based on car parking and bus lane enforcement experience) are:

- PCN Generation - £0.30 per PCN towards the ongoing existence of this independent panel
- Stationery and Supplies - £1.43 per PCN for printing and processing
- PCN postage - £0.70 per PCN for distribution

Adopting these benchmarks, the number of PCNs issued would lead to additional costs of between £0.8 million and £1.5 million over the period (Table 4-14).

Table 4-14: Additional Costs Arising from PCN Process (£'000s)

	Administration Costs Arising from PCN Process (£'000s)											
Type of Additional Cost	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total	Annual Average
Hybrid Option												
PCN Generation	£20	£18	£16	£13	£10	£7	£5	£2	£1	£0	£93	£9
Stationery and supplies	£95	£86	£78	£62	£49	£33	£22	£12	£6	£2	£444	£44
PCN postage	£47	£42	£38	£30	£24	£16	£11	£6	£3	£1	£217	£22
Total	£162	£147	£132	£106	£83	£56	£37	£20	£10	£4	£755	£75
Medium CAZ D + Option 1												
PCN Generation	£40	£36	£32	£26	£20	£14	£9	£5	£2	£1	£183	£18
Stationery and supplies	£189	£171	£153	£123	£96	£65	£42	£23	£9	£3	£874	£87
PCN postage	£92	£84	£75	£60	£47	£32	£21	£11	£4	£1	£428	£43
Total	£321	£291	£261	£209	£163	£111	£72	£39	£14	£5	£1,485	£149

4.3.3 Summary

Inclusive of the variable staffing and PCN process costs outlined above, the core estimate for the scheme's operational costs including all cost items is between £33.6 million and £38.0 million across the appraisal period (2019 prices). This estimate increases to between £38.4 million and £42.4 million taking into account inflation (labour costs inflated at 3% per annum based on Office for Budget Responsibility's (OBR) wage forecasts and other operating costs inflated at 2.9% in line with OBR's retail price index growth forecast). Table 4-15 presents a summary of how this OPEX estimate is built up, split by broad theme.

A more detailed breakdown of OPEX costs is provided in BoQ format in Appendix J. As per the CAPEX outlined in Table 3-1 and Table 3-2, note that the BoQ includes a 15% contingency applied to all cost items, which is reflected in the values in Table 4-15.

Table 4-15: OPEX by broad theme and funding source (£)

OPEX Item	Hybrid Option		Medium CAZ D + Option 1	
	2019 Prices (£)	Outturn Costs (£)	2019 Prices (£)	Outturn Costs (£)
Operations	17,613,467	19,064,596	24,060,452	25,688,789
Maintenance	5,829,350	7,043,412	3,877,800	4,685,419
Communications	909,765	1,099,239	709,895	857,743
Power (on street)	495,639	598,864	370,910	448,158
CAZ Project Delivery & Ongoing Operational Management Team	2,976,000	3,540,348	2,976,000	3,540,348
Monitoring and Evaluation	1,401,928	1,642,567	1,401,928	1,642,567

OPEX Item	Hybrid Option		Medium CAZ D + Option 1	
	2019 Prices (£)	Outturn Costs (£)	2019 Prices (£)	Outturn Costs (£)
Other	4,335,585	5,428,745	4,562,787	5,541,707
Total	**33,561,733**	**38,417,772**	**37,959,771**	**42,404,730**

The timing of expenditure is outlined in Table 4-16, which provides a more comprehensive Operational Expenditure Summary for the project.

4.4 Net Operational Position

In line with JAQU guidance, the intention – as far as it is possible – is to cover all other operating costs (i.e. those related to running and administering the CAZ itself) through revenue generated by the scheme.

Based on the scale and timing of revenue generation and operational costs reported in Note that this estimate is net of a small proportion of non-compliant vehicles that will be non-UK registered (1.55%) and that is assumed to not generate any revenue.

Table 4-12 and Table 4-16 respectively, Table 4-17 outlines the net operational cashflow associated with the Clean Air Plan, under the central scenario. The analysis indicates that cumulatively, revenue generation will exceed operational costs, resulting in a net operational surplus (before extended mitigations) of between £68.0 million and £114.8 million across the appraisal period.

However, the scheme will generate a net operational deficit in the pre-implementation phase (as no revenue is forecast to materialise prior to 2021, but some costs are incurred[5]), and in the later years of the appraisal period (as the number of non-compliant vehicles falls but scheme operations are maintained).

Table 4-17: Net Cash Flow Position: Core Scenario (2019 Prices)

	Net Cash Flow Position (£'000s)												
Operational Item	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Hybrid Option													
Operational Income	0	0	22,027	19,931	17,843	14,247	11,050	7,468	4,786	2,553	1,202	410	101,517
CAZ-Related OPEX	0	308	4,859	4,591	4,064	3,648	3,202	2,760	2,442	2,173	1,853	3,663	33,562
Net Operating Position	0	-308	17,169	15,340	13,779	10,599	7,848	4,708	2,344	380	-651	-3,253	67,955
Medium CAZ D + Option 1													
Operational Income	0	0	33,225	30,060	26,918	21,489	16,664	11,258	7,213	3,846	1,534	516	152,723
CAZ-Related OPEX	0	308	6,273	5,734	5,147	4,464	3,802	3,086	2,524	2,123	1,664	2,834	37,960
Net Operating Position	0	-308	26,952	24,327	21,772	17,025	12,862	8,172	4,688	1,723	-130	-2,319	114,763

The net operational position (before extended mitigations) in Table 4-17 represents the current best estimate for operational revenues and costs. However, acknowledging that Clean Air Plans are a nascent concept and that there is no precedent or direct benchmark for the timing and scale of revenues in particular, a significant degree of uncertainty can be attached to the above analysis. Within this context,

[5] Operational expenditure is forecast in 2020 to cover monitoring and evaluation baseline, publicity and advertising and set-up of the health and wellbeing study.

extensive sensitivity testing is being undertaken to better understand the potential range of net operating positions for the project, based on variance in key assumptions. The findings of this sensitivity analysis will be shared as soon as available.

Notwithstanding this uncertainty, the central analysis demonstrates that the CAZ revenue is sufficient to cover operational costs of the scheme under both options. In fact, the proposed Clean Air Plan is forecast to generate a significant positive cash flow over the appraisal period. Note that the values in Tables 4.17 do not include inflation. Allowing for operational cost inflation in line with the retail price index (2.9% per annum) for non-staff costs and income inflation (3.0% per annum) for staff costs, the net operational position remains in surplus, albeit diminished for both options:

- Hybrid Option: Reduction in net operational surplus from £68.0 million to £63.1 million;
- Medium CAZ D + Option 1: Reduction in net operational surplus from £114.8 million to £110.3 million

Any cashflow surplus associated with the scheme will be ringfenced for the following purposes, in order of priority:

- Deficit coverage ongoing and long-term operational expenditure, particularly in years 2020 and 2028-2030 when the scheme is anticipated to face an operational deficit, as well as decommissioning.
- Creation of a sinking fund to cover any underestimation of operational costs. This sinking fund is currently set at £18 million under the preferred (hybrid) option.
- Schemes are being developed to supplement the CAF measures, as well providing an opportunity to further invest in engagement with businesses and local residents affected by the CAZ and diesel ban, showing BCC's commitment to re-invest any revenue. For example, this funding source would support the following measures for which we are bidding to the CAF further:
  - An interest-free loan scheme to assist businesses to replace their vehicles
  - A scrappage grant (nonrepayable) scheme for diesel car drivers
  - Increase, Improve, update Legible City Signage on key radials and in city centre
  - An 'unintended consequences' fund for minor local implementations such as one-ways.

Within this context, the residual cash position for the CAP in Bristol is expected to be neutral throughout the appraisal period, as demonstrated in Tables Table 4-18 and

	Net Cash Flow Position (£'000s)											
Operational Item	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Hybrid Option												
Net Cashflow	-308	17,169	15,340	13,779	10,599	7,848	4,708	2,344	380	-651	-3,253	67,955
Deficit Coverage	-308	4,212	0	0	0	0	0	0	0	-651	-3,253	0
Contribution to Sinking Fund to Cover Underestimation of Costs	0	12,957	4,998	0	0	0	0	0	0	0	0	17,955
Reinvestment Reserve (residual monies)	0	0	10,341	13,779	10,599	7,848	4,708	2,344	380	0	0	50,000
Residual Cash Position	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table 4-19

below.

Table 4-18: Residual Cash Flow Position – Hybrid Option (£'000s)

	Net Cash Flow Position (£'000s)											
Operational Item	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Hybrid Option												
Net Cashflow	-308	17,169	15,340	13,779	10,599	7,848	4,708	2,344	380	-651	-3,253	67,955
Deficit Coverage	-308	4,212	0	0	0	0	0	0	0	-651	-3,253	0
Contribution to Sinking Fund to Cover Underestimation of Costs	0	12,957	4,998	0	0	0	0	0	0	0	0	17,955
Reinvestment Reserve (residual monies)	0	0	10,341	13,779	10,599	7,848	4,708	2,344	380	0	0	50,000
Residual Cash Position	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table 4-19: Residual Cash Flow Position – Medium CAZ D + Option 1 (£'000s)

	Net Cash Flow Position (£'000s)											
Operational Item	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Hybrid Option												
Net Cashflow	-308	26,952	24,327	21,772	17,025	12,862	8,172	4,688	1,723	-130	-2,319	114,763
Deficit Coverage	-308	2,757	0	0	0	0	0	0	0	-130	-2,319	0
Contribution to Sinking Fund to Cover Underestimation of Costs	0	24,195	24,327	16,242	0	0	0	0	0	0	0	64,763
Reinvestment Reserve (residual monies)	0	0	0	5,530	17,025	12,862	8,172	4,688	1,723	0	0	50,000
Residual Cash Position	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

4.5 Sensitivity Testing

The key assumption around the operational position of the project relates to the number of non-compliant vehicles travelling within the CAZ and therefore required to pay the CAZ charge. As such, sensitivity tests have been undertaken to understand the impact of reducing the number of non-compliant vehicles in the CAZ area. The table below demonstrates that even if 50% of the core forecast of non-compliant vehicles travel in the CAZ area, the operational position for the scheme will continue to be generate a significant surplus.

Note that additional sensitivity testing to test other revenue and cost assumptions is currently being undertaken and will be shared separately.

Table 5.5: Sensitivity Test – Variation in Quantum of Non-Compliant Vehicles (£'000s)

	Net Cash Flow Position (£'000s)											
Operational Item	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Hybrid Option												
100%	-308	17,169	15,340	13,779	10,599	7,848	4,708	2,344	380	-651	-3,253	67,955
80%	-308	13,330	11,902	10,624	8,117	5,932	3,403	1,491	-75	-865	-3,326	50,226
70%	-308	11,393	10,125	9,092	6,847	4,947	2,738	1,064	-303	-972	-3,362	41,261
60%	-308	9,488	8,407	7,501	5,631	3,962	2,072	665	-530	-1,079	-3,399	32,409
50%	-308	7,524	6,630	5,964	4,361	3,004	1,406	238	-757	-1,186	-3,435	23,439

5. Financial Statements

The budget, funding and cashflow statements for the central scenario of the preferred (hybrid) option are outlined in Tables 5.1 to 5,3. The key findings of the financial statements are:

- The budget statement demonstrates that the aggregate net operating income is in surplus across the appraisal period, leading to the development of an £68.0 million revenue reinvestment reserve.
- The funding statement demonstrates that the implementation and operation of the preferred option will require more than £113.5 million in external capital funding. The Implementation Fund (£69.1 million) and Clean Air Fund (£42.1 million) are the proposed central government funding streams.
- The cashflow statement demonstrates that the net cashflow is positive at an aggregate level over the appraisal period

Table 5-1: Budget Statement

Cash Flow	Budget Statement (£'000s)												
Operational Item	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Operating Income													
Operating Revenue	0	0	22,027	19,931	17,843	14,247	11,050	7,468	4,786	2,553	1,202	410	101,517
Operating Expenses													
Operating Costs	0	308	4,859	4,591	4,064	3,648	3,202	2,760	2,442	2,173	1,853	1,767	31,666
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	1,896	1,896
Total	0	308	4,859	4,591	4,064	3,648	3,202	2,760	2,442	2,173	1,853	3,663	33,562
Net Operating Income	**0**	**-308**	**17,169**	**15,340**	**13,779**	**10,599**	**7,848**	**4,708**	**2,344**	**380**	**-651**	**-3,253**	**67,955**
Use of Net Income													
Sinking Fund	0	-308	4,212	0	0	0	0	0	0	0	-651	-3,253	0
Reinvestment Reserve	0	0	12,957	15,340	13,779	10,599	7,848	4,708	2,344	380	0	0	67,955
Residual Cash Position	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table 5-2: Funding Statement

Cash Flow	Funding Statement (£'000s)												
Operational Item	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Total**
Implementation Fund													
Capital	138	68,936	0	0	0	0	0	0	0	0	0	0	69,074
Revenue	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	138	68,936	0	0	0	0	0	0	0	0	0	0	69,074
Clean Air Fund													

Capital	0	44,390	0	0	0	0	0	0	0	0	0	0	44,390
Revenue	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	44,390	0	0	0	0	0	0	0	0	0	0	44,390
Total													
Capital	138	113,326	0	0	0	0	0	0	0	0	0	0	113,464
Revenue	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	138	113,326	0	0	0	0	0	0	0	0	0	0	113,464

Table 5-3: Cashflow Statement

Cash Flow	Cashflow Statement (£'000s)												
Operational Item	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Capital Grant from IF/CAF	138	113,326	0	0	0	0	0	0	0	0	0	0	113,464
Operating Revenue	0	0	22,027	19,931	17,843	14,247	11,050	7,468	4,786	2,553	1,202	410	101,517
Revenue Grant from IF/CAF	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital Costs	138	113,326	0	0	0	0	0	0	0	0	0	0	113,464
Operating Costs	0	308	4,859	4,591	4,064	3,648	3,202	2,760	2,442	2,173	1,853	1,767	31,666
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	1,896	1,896
Net Cashflow	0	-308	17,169	15,340	13,779	10,599	7,848	4,708	2,344	380	-651	-3,253	67,955

6. Summary and Conclusions

The financial analysis of the hybrid and benchmark Clean Air Plan options, demonstrates that the capital cost of implementation will amount to between £108.4 million and £113.5 million. BCC is requesting around 60% of this funding from the Implementation Fund to support capital expenditure. BCC is also requesting the residual funding from the Clean Air Fund to support capital expenditure on mitigation measures.

From an operational perspective, the financial analysis demonstrates that CAZ revenue is sufficient to cover operational costs for both Clean Air Plan option. However, there will be operational deficit in the year immediately before implementation and in the latter stages of the appraisal period. Further, there is outstanding risk that the CAZ income revenue stream identified in the operational analysis may not materialize. As a result, whilst limited sensitivity testing is presented below, additional testing is ongoing to understand the impact of variation in key assumptions on the operational position of the Clean Air Plan.

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

- Hybrid Option: £113.5 million in capital grant funding, of which:
  - £69.1 million from the Implementation Fund;
  - £44.4 million from the Clean Air Fund.
- Medium CAZ D + Option 1: £108.4 million in capital grant funding, of which:
  - £64.0 million from the Implementation Fund;
  - £44.4 million from the Clean Air Fund.

The options can achieve a net operational surplus of between c. £68.0 million and c. £108.4 million. It is intended that any surplus can be used to:

- cover any initial or final operational deficits;
- cover underestimation of operational costs; and,
- support complementary air quality and transport projects in BCC, particularly in relation to expansion of CAF mitigation measures.