

# Title Page and Introduction

This sheet provides a first introduction to the workbook

Check-box	Last User	Date	Status	User Comments
OK	DB	15/04/20		



## Security classification

FOR CIRCULATION TO Newcastle-under-Lyme Borough Council, Stoke on Trent City Council, Staffordshire County Council AND JAQU ONLY - NOT FOR GENERAL CIRCULATION. CLIENT CONFIDENTIAL

## What is this workbook?

Economic assessment model - North Staffordshire Local Air Quality Plan

## What are these data for?

Undertaking cost-benefit analysis of potential options to improve air quality in North Staffordshire

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## Check of Checks

The Map sheet contains the results of each sheet's autocheck - the overall result is presented below:

Overall model check of checks: #NAME?

## Version Control

Version	Date	User	Description of changes made	Primary Met. Notes
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## Governance

Details for latest Model Version	Value
Model Author/Owner	James Sykes
QA Reviewer	David Birchby
Date of last model review	07/05/2020
Senior Responsible Officer (SRO)	Guy Hitchcock
Project Manager (PM)	Mark Attree
Project Reference	ED12487
Client organisation	Newcastle-under-Lyme Borough Council, Stoke on Trent City Council, Staffordshire County Council
Client individual(s) (if appropriate)	
Ricardo QA requirement	N/A
Ricardo QA score	N/A

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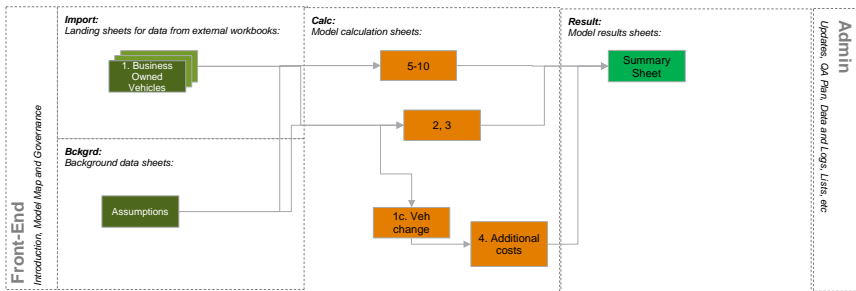
# Map: Navigation around the model and Key

This sheet provides a workbook map, sheet list and colour key

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OK	DB	15/04/20		

## 1. Model map

The following schematic diagram shows how data flows through the model



## 2. Table of sheets

This table lists all the sheets in the workbook and re-presents key information recorded in the top rows

Section	Link	Sheet Name	Explanation
Front-end	<a href="#">Goto</a>	Title	This sheet provides a first introduction to the workbook
	<a href="#">Goto</a>	Map	This sheet provides a workbook map, sheet list and colour key
The Model Itself	<a href="#">Goto</a>	DataLoc	This sheet logs the data and assumptions that underpin the workbook
	<a href="#">Goto</a>	Assumptions	Contains general assumptions and data inputs which define calculations in the model; also c
	<a href="#">Goto</a>	1. Vehicle Ownership	[NOT USED] Data input from DfT on vehicle ownership
	<a href="#">Goto</a>	2. Fuel consumption	[NOT USED] Data input from Webtag on vehicle fuel consumption
	<a href="#">Goto</a>	3. Fuel prices	Fuel costs imported from BEIS guidance
	<a href="#">Goto</a>	4. Carbon Price	Carbon prices imported from BEIS guidance
	<a href="#">Goto</a>	5. GDP Deflators	Import of GDP deflators from HMT
	<a href="#">Goto</a>	6. Damage costs	Damage costs imported from JAQU guidance
	<a href="#">Goto</a>	7. GHG emission factors	GHG emission factors imported from BEIS guidance
	<a href="#">Goto</a>	8. AQ outputs	Outputs of air quality emissions modelling undertaken by Ricardo
	<a href="#">Goto</a>	9. Travel time	[NOT USED]
	<a href="#">Goto</a>	10a. ANPR data	Input of ANPR data with fleet euro split and uplift factors
	<a href="#">Goto</a>	10b. Licence data	Import of bus and taxi licence data
	<a href="#">Goto</a>	10c. 2020 fleet split	Import of fleet euro split in 2020 from Ricardo AQ Model
	<a href="#">Goto</a>	10d. Baseline vehicle fleet	Selection of data source for fleet baseline, and application of uplift factors
Calculation tabs	<a href="#">Goto</a>	11. Time values	[NOT USED]
	<a href="#">Goto</a>	12. Opex Fuel	Import, sorting and extrapolation of vehicle opex, fuel consumption and CO2 emissions
	<a href="#">Goto</a>	13. Replacement costs	Import, sorting and depreciation of vehicle capex
	<a href="#">Goto</a>	14. Trip data	[NOT USED]
	<a href="#">Goto</a>	15. Impl. costs	Import of implementation costs provided by SWECO
	<a href="#">Goto</a>	1. Veh change	Depicts changes in fleet (vehicles removed and added), over appraisal period
	<a href="#">Goto</a>	2. Vehicle values	Draws together upgrade costs and upgrade assumptions for different fates
	<a href="#">Goto</a>	3a. Upgrade costs ORR B	Calculates upgrade costs for ORR B options
	<a href="#">Goto</a>	3b. Upgrade costs ORR1 B	Calculates upgrade costs for reduced boundary B
	<a href="#">Goto</a>	3c. Upgrade costs ORR1 D	Calculates upgrade costs for reduced boundary D
	<a href="#">Goto</a>	3d. Upgrade costs results	Draws data from supporting cost calculation tabs and compares CAZ to baseline
	<a href="#">Goto</a>	4. Additional costs	Calculates savings/increases in opex, fuel consumption and CO2 associated with options
	<a href="#">Goto</a>	5. AQ impacts	Monetises changes in AQ emissions
	<a href="#">Goto</a>	6. Implementation	Calculates total implementation costs over appraisal period
	<a href="#">Goto</a>	7. Congest Trav time	Monetises changes in travel time (only used in sensitivity analysis)
<a href="#">Goto</a>	9. welfare loss	Calculates total welfare costs associated with alternative behavioural assumptions	
Results	<a href="#">Goto</a>	Summary sheet	Aggregates individual PV impacts into NPV summary

CheckOfChecks\_n OK

## 3. Colour key for model cells and text

The model uses the following colour-coding conventions to denote different sheet and cell functionalities.

Style	Abbrev	Cell	Title/Tab	Description
Column1			Data input	Cells where raw data imported to workbook
Column1			Calculation	Cells where calculations undertaken
Column1			Results	Cells where results are calculated / presented

## Data and Assumptions Import Log

This sheet logs the data and assumptions that underpin the workbook

Check-box	Last User	Date	Status	User Comments
OK	DB	16/04/20		

### 1. Overview

### 2. Data Log: Primary data sources for this workbook

Data Source Path	Filename	Version	Range Na Date	Nature Data Name	Brief Description of its Use	Public use	Dependent	Rating Security/K	Quality	Impact	Risk	Comments	Transformation Check Initials	Date	Comments	Result
https://www.hmt.gov.uk	Green Book			Discount Rate	Used to discount all impacts	y		Green	Green	amber	amber		DB	16-Nov	OK	
https://www.hmt.gov.uk	GDP indicators			Price Index	Used to inflate/deflate prices to common price base	y		Green	Green	amber	amber		DB	16-Nov	OK	
N/A	N Staff Transport Model			Vehicle fleet composition	Used to define vehicle euro split in 2022	n		Green	red	red	red		DB	16-Nov	OK	
N/A	Ricardo AQ modelling			Annual emissions of NOx and other pollutants (baseline and scenarios)	Used to represent CAZ impacts on emissions	n		Green	red	red	red		DB	16-Nov	OK	
N/A	N Staff Transport Model			Fleet projection (vans/vehicles)	Used to split fleet vehicle baseline to 2022	n		Green	amber	amber	amber		DB	16-Nov	OK	
N/A	ANPR data (N Staff); taxi licence data (N Staff); bus operator data (N Staff)			Number of vehicles entering the target area	Used to depict baseline fleet	n		Red	red	red	red	No perfect source	DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance			Damage Costs (air quality and GHGs)	Used to monetise air quality emissions changes	n		Green	red	red	red		DB	16-Nov	OK	
	Ricardo study for TIL (2014): 'Environmental Support to the Development of a London Low Emission Vehicle Roadmap' (unpublished)			Average value of new vehicle by type	Used to calculate upgrade costs of vehicles	n		Green	red	red	red		DB	16-Nov	OK	
	Cost for hybrid vehicles taken from Ricardo Energy & Environment (forthcoming): 'Car Choice Model (CCM) summary report' (unpublished)			Vehicle depreciation	Used to calculate upgrade costs of vehicles	n		Green	amber	amber	amber		DB	16-Nov	OK	
	Ricardo study for TIL (2014): 'Environmental Support to the Development of a London Low Emission Vehicle Roadmap' (unpublished)			Fuel consumption per vehicle	Used to calculate fuel cost savings associated with vehicle upgrades	n		Green	red	red	red		DB	16-Nov	OK	
	Cost for hybrid vehicles taken from Ricardo Energy & Environment (forthcoming): 'Car Choice Model (CCM) summary report' (unpublished)			Fuel costs	Used to calculate fuel cost savings associated with vehicle upgrades	n		Green	red	red	red		DB	16-Nov	OK	
	N Staff transport model and JAGU Options Appraisal Guidance (unpublished)			Behavioural response proportions	Used to calculate number of non-compliant vehicles adopting different behavioural responses to CAZ	n		Amber	red	red	red		DB	16-Nov	OK	
	Delta Air Quality plan - scenario concentration results (unpublished)			Impact extrapolation factor	Used to extrapolate impacts over appraisal period	y		Green	red	red	red		DB	16-Nov	OK	
	Ricardo study for TIL (2014): 'Environmental Support to the Development of a London Low Emission Vehicle Roadmap' (unpublished)			Average vkm per vehicle	Used to calculate fuel saving, open and CO2 impacts of upgraded vehicles; also used an hour to illustrative AQ emission impacts of PM and taxis	n		Green	red	red	red		DB	16-Nov	OK	
	BEIS Supplementary Green Book Guidance (unpublished)			CO2 emission factors	Used to calculate GHG emission impacts of upgrades	y		Green	amber	amber	amber		DB	16-Nov	OK	
	BEIS Supplementary Green Book Guidance (unpublished)			Conversion Factors	Used to convert fuel impacts between units	y		Green	red	red	red		DB	16-Nov	OK	
	Ricardo study for TIL (2014): 'Environmental Support to the Development of a London Low Emission Vehicle Roadmap' (unpublished)			Operative cost	Used to calculate operative cost impacts	n		Green	red	red	red		DB	16-Nov	OK	
	JAGU Options Appraisal Guidance			CAZ charge	Used to calculate charge revenue	n		Green	Green	Green	Green		DB	16-Nov	OK	
	Implementation Costs provided by SWECO			Implementation costs	Used to calculate implementation costs	n		Green	red	red	red		DB	16-Nov	OK	

### 3. Assumptions Log: List of assumptions for this workbook

Data Source (where relevant)	Path	Filename	Version	Range Na Date	Nature Assumption Name	Brief Description of its Use	Public use	Dependent	Rating Security/K	Quality	Impact	Risk	Comments	Transformation Check Initials	Date	Comments	Result
N/A	JAGU Options Appraisal Guidance				Discount Year	2019 - used to discount all monetary impacts			Green	Green	Green	Green		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Price Year	2018 - common price base for all monetary impacts			Green	Green	Green	Green		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Appraisal Period	10 years (2020 to 2031) - over which all impacts are assessed			Green	Green	Green	Green		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Discount Rate	3.5% - used to discount all monetary impacts			Green	Green	Green	Green		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Upgrade to new	8 upgrade responses is triggered when 25% of those upgrading will purchase a new vehicle and 75% will replace their non-compliant vehicle with a second-hand compliant vehicle			Amber	red	red	red		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Fuel switch	Used in assessment of upgrade costs Of those replacing their vehicle with a second-hand compliant variant, 25% will purchase the cheapest compliant vehicle of the same fuel type, while 75% will purchase the cheapest compliant vehicle (for example, in a charging clean air zone diesel will switch to petrol). For every vehicle purchased new, due to an upgrade response, another vehicle will be scrapped.			Amber	red	red	red		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Scrapage/Fleet size	Used in assessment of upgrade costs			Amber	red	red	red		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Average drive spent in the target area	Median drive spent in the target area better represents the average driver than the mean (not directly applied in economic mo)			Green	Green	Green	Green		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Trips proportional to response	Those vehicles making the most trips into the zone are the most likely to upgrade.			Green	Green	Green	Green		DB	16-Nov	OK	
N/A	Expert judgement				Optimism bias assumptions	Applied in sensitivity tests			Green	Green	Green	Green		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance / Expert judgement				Vehicle Types	As defined by JAGU - but the model combines HGVs (rigid and articulate) and Coaches (coach, minibus) and buses (single)			Green	Green	Green	Green		DB	16-Nov	OK	
N/A	Expert judgement / LCC sense check				ANPR assumptions	Conversions to inflate ANPR data from weekly to annual vehicle numbers and inflation factor to reflect the lack of complete ANPR coverage based on expert judgement			Amber	red	red	red		DB	16-Nov	OK	
N/A	N Staff transport model				Growth in overall vehicle fleet	Used to derive fleet baseline How much will the vehicle fleet grow between 2019 (ANPR year) and 2022			Green	amber	amber	amber		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance / LCC transport model				Change in fleet composition project	How will the fleet composition change between now and 2020. Private hire vehicles are assumed to have the same fleet composition and cars. Taxi fleet composition projection is based on JAGU assumptions			Green	red	red	red		DB	16-Nov	OK	
N/A	Expert judgement				Ownership profile	Private hire vehicles are assumed to have the same fleet composition and cars. Taxi fleet composition projection is based on JAGU assumptions A four-year ownership profile is assumed for vehicle users. i.e. on average vehicle users own vehicles for 4 years, before replacing them. In 2020 vehicles that are sold are expected to be halfway through this profile (2 years remaining).			Amber	red	red	red		DB	16-Nov	OK	
N/A	Expert judgement				Euro standard age	Used in assessment of upgrade costs Vehicles of different Euro standards are assumed to be the youngest possible age for that standard in 2020.			Green	amber	amber	amber		DB	16-Nov	OK	
N/A	Expert judgement				Remaining life of vehicle	Used in assessment of upgrade costs While the age of the vehicle is greater than the life of vehicle, 2 more years is assumed.			Green	amber	amber	amber		DB	16-Nov	OK	
N/A	Expert judgement				Price reduction in resale	It is assumed that with a number of CAZ operating across the UK, there will be an effect on the resale value of non-compliant vehicles. This is assumed to be 10%. Used in assessment of upgrade costs			Amber	Amber	Amber	Amber		DB	16-Nov	OK	
N/A	Expert judgement				Resale of used, non-compliant vehicles	Different resale profile for different Euro standards - different proportions of vehicles are either scrapped or resold depending on vehicle age. Older vehicles are more likely to be scrapped, newer vehicles likely to be resold.			Amber	red	red	red		DB	16-Nov	OK	
N/A	Expert judgement				Scrapage of non-compliant vehicles	Used in assessment of upgrade costs Older vehicles are likely to be scrapped first			Green	red	red	red		DB	16-Nov	OK	
N/A	JAGU Options Appraisal Guidance				Consumer Preference	Impact of welfare loss associated with an avoided, cancelled or mode-shifted trip can be valued as half of the CAZ charge. Used to calculate welfare loss			Amber	red	red	red		DB	16-Nov	OK	

### 4. DECC guidance on Data and Assumptions Log ratings

Assumptions

1. General Assumptions

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenue	100	105	110	115	120	125	130	135	140	145	150
Expenses	80	85	90	95	100	105	110	115	120	125	130
Profit	20	20	20	20	20	20	20	20	20	20	20

2. Transport Assumptions

Category	Value
Transportation	10
Logistics	5
Warehousing	3
Inventory	2
Other	1

3. Detailed Response

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

4. Cost Assumptions

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

5. Sensitivity analysis selection

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

6. Revenue Assumptions

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

7. Expenses Assumptions

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

8. Profit Assumptions

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

9. Detailed response: Input

Item	Q1	Q2	Q3	Q4	Annual
Revenue	25	26	27	28	106
Expenses	20	21	22	23	86
Profit	5	5	5	5	20

DataSet 03: Fuel Prices

Check-box	Last User	Date
<input checked="" type="checkbox"/>	GW	15/04/20

Sheet explanation

Inherits fuel cost values from BEIS guidance  
Used to value changes in fuel consumption associated with unroaded vehicles

1a. Price Year

Price year of data 2018

1b. Retail fuel prices

Data input

Year	Table 13 - Road Fuel LRICs (real 2018 p/litre)					
	Low		Central		High	
	Petrol	DERV	Petrol	DERV	Petrol	DERV
2010	45.4	47.0	45.4	47.0	45.4	47.0
2011	56.3	60.7	56.3	60.7	56.3	60.7
2012	57.5	62.8	57.5	62.8	57.5	62.8
2013	55.4	60.4	55.4	60.4	55.4	60.4
2014	48.5	53.1	48.5	53.1	48.5	53.1
2015	33.9	36.6	33.9	36.6	33.9	36.6
2016	31.3	31.7	31.3	31.7	31.3	31.7
2017	38.0	39.5	38.0	39.5	38.0	39.5
2018	40.8	44.3	42.7	46.4	46.0	50.2
2019	30.9	32.9	41.2	44.7	51.0	55.9
2020	31.0	33.0	41.1	44.5	51.1	56.1
2021	31.1	33.1	41.0	44.5	51.8	56.9
2022	31.2	33.2	41.4	45.0	52.1	57.3
2023	31.6	33.7	41.9	45.5	53.6	58.8
2024	32.1	34.2	42.3	46.0	54.9	60.3
2025	32.5	34.8	42.8	46.5	55.7	61.3
2026	33.0	35.3	43.7	47.5	57.0	62.9
2027	33.4	35.8	44.1	48.1	57.9	63.9
2028	33.9	36.3	44.6	48.6	59.3	65.4
2029	34.3	36.8	45.4	49.6	60.1	66.5
2030	34.8	37.3	45.9	50.1	61.5	68.0
2031	34.8	37.3	45.9	50.1	61.5	68.0
2032	34.8	37.3	45.9	50.1	61.5	68.0
2033	34.8	37.3	45.9	50.1	61.5	68.0
2034	34.8	37.3	45.9	50.1	61.5	68.0
2035	34.8	37.3	45.9	50.1	61.5	68.0
2036	34.8	37.3	45.9	50.1	61.5	68.0
2037	34.8	37.3	45.9	50.1	61.5	68.0
2038	34.8	37.3	45.9	50.1	61.5	68.0
2039	34.8	37.3	45.9	50.1	61.5	68.0
2040	34.8	37.3	45.9	50.1	61.5	68.0
2041	34.8	37.3	45.9	50.1	61.5	68.0
2042	34.8	37.3	45.9	50.1	61.5	68.0
2043	34.8	37.3	45.9	50.1	61.5	68.0
2044	34.8	37.3	45.9	50.1	61.5	68.0
2045	34.8	37.3	45.9	50.1	61.5	68.0
2046	34.8	37.3	45.9	50.1	61.5	68.0
2047	34.8	37.3	45.9	50.1	61.5	68.0
2048	34.8	37.3	45.9	50.1	61.5	68.0
2049	34.8	37.3	45.9	50.1	61.5	68.0
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2066	34.8	37.3	45.9	50.1	61.5	68.0
2067	34.8	37.3	45.9	50.1	61.5	68.0
2068	34.8	37.3	45.9	50.1	61.5	68.0
2069	34.8	37.3	45.9	50.1	61.5	68.0
2070	34.8	37.3	45.9	50.1	61.5	68.0
2071	34.8	37.3	45.9	50.1	61.5	68.0
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2074	34.8	37.3	45.9	50.1	61.5	68.0
2075	34.8	37.3	45.9	50.1	61.5	68.0
2076	34.8	37.3	45.9	50.1	61.5	68.0
2077	34.8	37.3	45.9	50.1	61.5	68.0
2078	34.8	37.3	45.9	50.1	61.5	68.0
2079	34.8	37.3	45.9	50.1	61.5	68.0
2080	34.8	37.3	45.9	50.1	61.5	68.0
2081	34.8	37.3	45.9	50.1	61.5	68.0
2082	34.8	37.3	45.9	50.1	61.5	68.0
2083	34.8	37.3	45.9	50.1	61.5	68.0
2084	34.8	37.3	45.9	50.1	61.5	68.0
2085	34.8	37.3	45.9	50.1	61.5	68.0
2086	34.8	37.3	45.9	50.1	61.5	68.0
2087	34.8	37.3	45.9	50.1	61.5	68.0
2088	34.8	37.3	45.9	50.1	61.5	68.0
2089	34.8	37.3	45.9	50.1	61.5	68.0
2090	34.8	37.3	45.9	50.1	61.5	68.0
2091	34.8	37.3	45.9	50.1	61.5	68.0
2092	34.8	37.3	45.9	50.1	61.5	68.0
2093	34.8	37.3	45.9	50.1	61.5	68.0
2094	34.8	37.3	45.9	50.1	61.5	68.0
2095	34.8	37.3	45.9	50.1	61.5	68.0
2096	34.8	37.3	45.9	50.1	61.5	68.0
2097	34.8	37.3	45.9	50.1	61.5	68.0
2098	34.8	37.3	45.9	50.1	61.5	68.0
2099	34.8	37.3	45.9	50.1	61.5	68.0
2100	34.8	37.3	45.9	50.1	61.5	68.0

Data input

Year	Table 9 - Electricity LRIC (real 2018 p/kWh)					
	Low		Central		High	
	Domestic/Commercial/Industrial	Domestic/Commercial/Industrial	Domestic/Commercial/Industrial	Domestic/Commercial/Industrial	Domestic/Commercial/Industrial	Domestic/Commercial/Industrial
2010	7.5	8.9	7.5	8.9	7.5	8.9
2011	8.0	5.9	5.7	8.0	5.9	5.7
2012	7.7	6.3	6.1	7.7	6.3	6.1
2013	8.5	7.0	6.8	8.5	7.0	6.8
2014	6.7	5.9	5.7	6.7	5.9	5.7
2015	7.0	5.4	5.2	7.0	5.4	5.2
2016	7.4	5.7	5.3	7.3	5.6	5.2
2017	9.0	7.3	6.8	9.0	7.3	6.8
2018	9.8	8.3	7.7	9.9	8.4	7.8
2019	9.4	8.0	7.3	10.4	9.0	8.3
2020	9.5	8.1	7.3	10.4	9.0	8.2
2021	9.6	8.2	7.3	10.6	9.2	8.4
2022	9.5	8.1	7.2	10.7	9.3	8.4
2023	9.7	8.3	7.3	10.8	9.4	8.4
2024	9.7	8.3	7.4	10.9	9.5	8.6
2025	9.9	8.5	7.5	11.2	9.8	8.8
2026	10.2	8.8	7.6	11.4	10.0	8.9
2027	10.0	8.5	7.4	11.1	9.8	8.7
2028	9.9	8.4	7.3	10.8	9.4	8.4
2029	10.0	8.4	7.3	10.8	9.4	8.3
2030	9.8	8.3	7.1	10.7	9.3	8.3
2031	9.8	8.3	7.1	10.7	9.3	8.3
2032	9.8	8.3	7.1	10.7	9.3	8.3
2033	9.8	8.3	7.1	10.7	9.3	8.3
2034	9.8	8.3	7.1	10.7	9.3	8.3
2035	9.8	8.3	7.1	10.7	9.3	8.3
2036	9.8	8.3	7.1	10.7	9.3	8.3
2037	9.8	8.3	7.1	10.7	9.3	8.3
2038	9.8	8.3	7.1	10.7	9.3	8.3
2039	9.8	8.3	7.1	10.7	9.3	8.3
2040	9.8	8.3	7.1	10.7	9.3	8.3
2041	9.8	8.3	7.1	10.7	9.3	8.3
2042	9.8	8.3	7.1	10.7	9.3	8.3
2043	9.8	8.3	7.1	10.7	9.3	8.3
2044	9.8	8.3	7.1	10.7	9.3	8.3
2045	9.8	8.3	7.1	10.7	9.3	8.3
2046	9.8	8.3	7.1	10.7	9.3	8.3
2047	9.8	8.3	7.1	10.7	9.3	8.3
2048	9.8	8.3	7.1	10.7	9.3	8.3
2049	9.8	8.3	7.1	10.7	9.3	8.3
2050	9.8	8.3	7.1	10.7	9.3	8.3
2051	9.8	8.3	7.1	10.7	9.3	8.3
2052	9.8	8.3	7.1	10.7	9.3	8.3
2053	9.8	8.3	7.1	10.7	9.3	8.3
2054	9.8	8.3	7.1	10.7	9.3	8.3
2055	9.8	8.3	7.1	10.7	9.3	8.3
2056	9.8	8.3	7.1	10.7	9.3	8.3
2057	9.8	8.3	7.1	10.7	9.3	8.3
2058	9.8	8.3	7.1	10.7	9.3	8.3
2059	9.8	8.3	7.1	10.7	9.3	8.3
2060	9.8	8.3	7.1	10.7	9.3	8.3
2061	9.8	8.3	7.1	10.7	9.3	8.3
2062	9.8	8.3	7.1	10.7	9.3	8.3
2063	9.8	8.3	7.1	10.7	9.3	8.3
2064	9.8	8.3	7.1	10.7	9.3	8.3
2065	9.8	8.3	7.1	10.7	9.3	8.3
2066	9.8	8.3	7.1	10.7	9.3	8.3
2067	9.8	8.3	7.1	10.7	9.3	8.3
2068	9.8	8.3	7.1	10.7	9.3	8.3
2069	9.8	8.3	7.1	10.7	9.3	8.3
2070	9.8	8.3	7.1	10.7	9.3	8.3
2071	9.8	8.3	7.1	10.7	9.3	8.3
2072	9.8	8.3	7.1	10.7	9.3	8.3
2073	9.8	8.3	7.1	10.7	9.3	8.3
2074	9.8	8.3	7.1	10.7	9.3	8.3
2075	9.8	8.3	7.1	10.7	9.3	8.3
2076	9.8	8.3	7.1	10.7	9.3	8.3
2077	9.8	8.3	7.1	10.7	9.3	8.3
2078	9.8	8.3	7.1	10.7	9.3	8.3
2079	9.8	8.3	7.1	10.7	9.3	8.3
2080	9.8	8.3	7.1	10.7	9.3	8.3
2081	9.8	8.3	7.1	10.7	9.3	8.3
2082	9.8	8.3	7.1	10.7	9.3	8.3
2083	9.8	8.3	7.1	10.7	9.3	8.3
2084	9.8	8.3	7.1	10.7	9.3	8.3
2085	9.8	8.3	7.1	10.7	9.3	8.3
2086	9.8	8.3	7.1	10.7	9.3	8.3
2087	9.8	8.3	7.1	10.7	9.3	8.3
2088	9.8	8.3	7.1	10.7	9.3	8.3
2089	9.8	8.3	7.1	10.7	9.3	8.3
2090	9.8	8.3	7.1	10.7	9.3	8.3
2091	9.8	8.3	7.1	10.7	9.3	8.3
2092	9.8	8.3	7.1	10.7	9.3	8.3
2093	9.8	8.3	7.1	10.7	9.3	8.3
2094	9.8	8.3	7.1			

# DataSet 04: Carbon Prices

Check-box	st	U:	Date	Status	User	Comments
<input checked="" type="checkbox"/>	OK	GW	15/04/20			

## Sheet explanation

Imports carbon prices from BEIS guidance  
Used to value changes in GHG emissions associated with upgraded vehicles

### 1. Carbon prices and sensitivities 2010-2100 for appraisal, 2

	Imported data			2018 prices			Conversion to 2018 prices	
	Lower	Central	Upper	Lower	Central	Upper	T	NT
2010	14	14	14	30	60	90	14.5873	62.12420506
2011	13	13	13	30	61	91	13.1413	63.05606814
2012	7	7	7	31	61	92	6.83645	64.00190916
2013	4	4	4	31	62	94	4.25743	64.9619378
2014	5	5	5	32	63	95	5.30091	65.93636866
2015	6	6	6	32	64	96	6.123	66.92541237
2016	5	5	5	33	65	98	4.70738	67.92929355
2017	5	5	5	33	66	99	5.39721	68.94823296
2018	2	13	26	34	67	101	13.2759	69.98245645
2019	0	13	26	34	68	102	13.6871	71.0321933
2020	0	14	28	35	69	104	14.4077	72.0976762
2021	4	21	37	35	70	106	21.3763	73.28930413
2022	8	27	46	36	72	107	28.349	74.50093207
2023	12	34	56	36	73	109	35.3196	75.70256001
2024	16	41	65	37	74	111	42.2902	76.90418794
2025	20	47	74	38	75	113	49.2608	78.10581588
2026	24	54	84	38	76	114	56.2315	79.30744382
2027	28	61	93	39	77	116	63.2021	80.50907175
2028	32	67	103	39	79	118	70.1727	81.71069969
2029	36	74	112	40	80	120	77.1433	82.91232763
2030	40	81	121	40	81	121	84.114	84.11395556
2031	44	88	132	44	88	132	91.9245	91.92453715
2032	48	96	144	48	96	144	99.7351	99.73511874
2033	52	103	155	52	103	155	107.546	107.5457003
2034	55	111	166	55	111	166	115.356	115.3562819
2035	59	118	178	59	118	178	123.167	123.1668635
2036	63	126	189	63	126	189	130.977	130.9774451
2037	67	133	200	67	133	200	138.788	138.7880267
2038	70	141	211	70	141	211	146.599	146.5986083
2039	74	148	223	74	148	223	154.409	154.4091899
2040	78	156	234	78	156	234	162.22	162.2197714
2041	82	163	245	82	163	245	170.03	170.030353
2042	85	171	256	85	171	256	177.841	177.8409346
2043	89	178	268	89	178	268	185.652	185.6515162
2044	93	186	279	93	186	279	193.462	193.4620978
2045	97	193	290	97	193	290	201.273	201.2726794
2046	100	201	301	100	201	301	209.083	209.083261
2047	104	208	313	104	208	313	216.894	216.8938426
2048	108	216	324	108	216	324	224.704	224.7044241
2049	112	223	335	112	223	335	232.515	232.5150057
2050	115	231	346	115	231	346	240.326	240.3255873
2051	118	239	360	118	239	360	248.824	248.8244567
2052	121	247	373	121	247	373	257.058	257.0577408
2053	124	255	386	124	255	386	265.331	265.3310756
2054	126	263	400	126	263	400	273.607	273.6072997
2055	129	271	413	129	271	413	281.62	281.6197182
2056	131	278	426	131	278	426	289.68	289.679685
2057	133	286	439	133	286	439	297.446	297.4462692
2058	135	293	451	135	293	451	305.028	305.0281374
2059	137	300	464	137	300	464	312.483	312.4827837
2060	138	307	476	138	307	476	319.75	319.7498838
2061	139	313	486	139	313	486	325.518	325.5178877
2062	140	318	497	140	318	497	331.251	331.2509598
2063	141	323	506	141	323	506	336.403	336.4032606
2064	141	328	515	141	328	515	341.279	341.2792062
2065	141	332	523	141	332	523	345.568	345.5676064
2066	141	336	531	141	336	531	349.797	349.7969448
2067	141	340	538	141	340	538	353.328	353.3280494
2068	140	343	545	140	343	545	356.557	356.5571885
2069	140	345	551	140	345	551	359.296	359.2962431
2070	139	348	556	139	348	556	361.659	361.6585417
2071	138	350	561	138	350	561	364.005	364.0049699
2072	137	352	566	137	352	566	365.95	365.9496536
2073	136	353	570	136	353	570	367.601	367.6010819
2074	135	354	574	135	354	574	368.591	368.5912416
2075	133	355	577	133	355	577	369.631	369.6310445
2076	131	355	579	131	355	579	369.72	369.7199724
2077	130	355	581	130	355	581	369.853	369.8529671
2078	128	355	582	128	355	582	369.392	369.3923345
2079	126	354	583	126	354	583	368.71	368.7103932
2080	124	353	582	124	353	582	367.363	367.36282
2081	122	353	584	122	353	584	367.177	367.1769542
2082	120	352	584	120	352	584	366.346	366.3461166
2083	118	351	584	118	351	584	365.237	365.2369569
2084	115	350	584	115	350	584	363.897	363.8965493
2085	113	349	584	113	349	584	362.717	362.7174308
2086	111	347	582	111	347	582	360.834	360.8336277
2087	109	345	581	109	345	581	358.664	358.6639125
2088	106	343	579	106	343	579	356.438	356.4376723
2089	104	340	576	104	340	576	353.872	353.8720234
2090	101	338	574	101	338	574	351.282	351.2818568
2091	99	335	572	99	335	572	349.093	349.0929466
2092	97	333	570	97	333	570	346.844	346.8441011
2093	94	331	567	94	331	567	344.033	344.033143
2094	92	328	564	92	328	564	341.154	341.1536848
2095	89	325	561	89	325	561	338.154	338.1541933
2096	87	322	557	87	322	557	335.076	335.0758689
2097	85	319	554	85	319	554	332.128	332.1275325
2098	82	316	549	82	316	549	328.645	328.6452914
2099	80	313	546	80	313	546	325.489	325.4894786
2100	77	309	541	77	309	541	322.003	322.0033783

## Source

BEIS supplementary Green Book Guidance  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/602657/5\\_Data\\_tables\\_1-19\\_supporting\\_the\\_toolkit\\_and\\_the\\_guidance\\_2016.xlsx](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/602657/5_Data_tables_1-19_supporting_the_toolkit_and_the_guidance_2016.xlsx)  
 Tables 3: Carbon Prices and sensitivities

## DataSet 05: GDP Deflators

Check-box	Last User	Date	Status	User Comments
OK	GW	15/04/20		

### Sheet explanation

Import of HMT GDP Deflators  
Used to inflate / deflate costs to same price base

### 1. GDP DEFLATORS AT MARKET PRICES, AND MONEY GDP

Financial year				Calendar year				
Financial year	GDP deflator at market prices 2016-17 = 100 per cent change on previous year	Money GDP <sup>(3), (4)</sup>		Calendar year	GDP deflator at market prices 2016 = 100 per cent change on previous year	Money GDP <sup>(3)</sup>		
		Cash £ million Non-Seasonally Adjusted	Cash £ million Seasonally Adjusted			Cash £ million Non-Seasonally Adjusted		
2000-01	69.900	1.95	1,107,924	1,104,616	2000	70.030	1.86	1,095,651
2001-02	70.772	1.25	1,147,395	1,151,712	2001	70.727	1.00	1,139,479
2002-03	72.415	2.32	1,211,222	1,206,957	2002	72.219	2.11	1,190,601
2003-04	73.871	2.01	1,272,293	1,273,436	2003	73.848	2.26	1,257,474
2004-05	75.962	2.83	1,336,299	1,335,027	2004	75.732	2.55	1,320,128
2005-06	77.813	2.44	1,420,214	1,420,135	2005	77.627	2.50	1,396,274
2006-07	80.023	2.84	1,493,214	1,492,031	2006	79.781	2.77	1,474,923
2007-08	82.151	2.66	1,569,164	1,571,317	2007	81.840	2.58	1,549,821
2008-09	84.248	2.55	1,573,876	1,573,372	2008	84.211	2.90	1,589,931
2009-10	85.637	1.65	1,557,283	1,557,542	2009	85.592	1.64	1,547,563
2010-11	87.103	1.71	1,622,044	1,621,521	2010	86.903	1.53	1,601,927
2011-12	88.433	1.53	1,668,699	1,666,988	2011	88.677	2.04	1,659,784
2012-13	90.254	2.06	1,725,624	1,728,156	2012	90.147	1.66	1,712,321
2013-14	91.996	1.93	1,806,329	1,803,916	2013	91.855	1.89	1,782,109
2014-15	93.280	1.40	1,871,789	1,875,048	2014	93.535	1.83	1,861,964
2015-16	94.084	0.86	1,934,600	1,934,489	2015	94.079	0.58	1,916,896
2016-17	96.311	2.37	2,019,484	2,019,115	2016	96.090	2.14	1,995,479
2017-18 <sup>(1), (2)</sup>	97.975	1.73	2,085,654	2,086,798	2017 <sup>(1), (2)</sup>	97.909	1.89	2,071,667
2018-19 <sup>(1), (2)</sup>	100.000	2.07	2,167,078	2,163,287	2018 <sup>(1), (2)</sup>	100.000	2.14	2,144,304
2019-20 <sup>(1), (2)</sup>	-	2.00	2,199,839	2,199,987	2019 <sup>(1), (2)</sup>	-	1.98	2,182,436
2020-21 <sup>(1), (2)</sup>	-	1.84	2,274,802	2,274,314	2020 <sup>(1), (2)</sup>	-	1.84	2,254,754
2021-22 <sup>(1), (2)</sup>	-	1.94	2,355,228	2,355,501	2021 <sup>(1), (2)</sup>	-	1.92	2,334,801
2022-2023	-	1.95	2,439,946	2,439,921	2022	-	1.95	2,418,509

2014 to 2018	2015 to 2018	2017 to 2018
1		
1.005814	2015 1	2015 1
1.027313	2016 1.021375	2016 1.021361
1.046756	2017 <sup>(1), (2)</sup> 1.040705	2017 <sup>(1), (2)</sup> 1
1.069115	2018 <sup>(1), (2)</sup> 1.062935	2018 <sup>(1), (2)</sup> 1.021361
1.08403	1.08403	
1.103978	1.103978	
1.131755	1.125214	

#### Source

<https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-december-2019-quarterly-national-accounts>  
Last updated Jan 2020

## DataSet 06: Damage costs

Check-box	Last User	Date	Status	User Comments
<input checked="" type="checkbox"/>	GW	15/04/20		

### Sheet explanation

Import of damage costs for air pollutants from JAQU guidance  
 Damage costs for both Nox and PM are converted to price year 2018 using 5. GDP deflators and have a 2% annual uplift applied as in JAQU guidance. Functionality is also built in for discounting at this stage (N15)  
 Damage costs then used to monetise changes in AQ emissions  
 Used in sheets 5. AQ Impacts

#### 1a. Nox damage costs

	Lower	1388
	Central	16010
£/tonne	Upper	61834

	Inner London	Central London	Outer London	Inner conurbation	Urban big	Urban large	Urban Medium	Transport average
2017 (prices)					£16,010			
Sensitivity								
2018 prices								
2018 price with uplift from 2015					£16,352			

Discount  Note: Discounting not applied at this stage

Annual Uplift	1.02														
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	£16,352	£16,679.03	£17,013	£17,353	£17,699.91	£18,054	£18,414.99	£18,783	£19,159	£19,542	£19,933	£20,332	£20,738	£21,153	£21,576

#### 1a. PM damage costs

	Lower	£ 63,815.00
	Central	305377
£/tonne	Upper	£940,942.00

	Inner London	Central London	Outer London	Inner conurbation	Urban big	Urban large	Urban Medium	Transport average
2017 (prices)					£305,377			
Sensitivity								
2018 prices								
2018 price with uplift from 2015					£311,900			

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	£311,900	£318,138.08	£324,501	£330,991	£337,610.68	£344,363	£351,250.15	£358,275	£365,441	£372,749	£380,204	£387,809	£395,565	£403,476	£411,546

### Source

Source: JAQU - National data inputs for Local Economic Models  
 2015 prices





## DataSet 08: Air Quality Outputs

### Sheet explanation

Import of AQ modelling results from Ricardo modelling

Used to calculate emissions impact of scenarios for valuation

Used in sheets 5. AQ Impacts

### 1. Baseline AQ emissions

Units: Tonnes/year all vehicles

Baseline	
Pollutant	2022
1,629,200	Nox 1,629.20
	PM 285.3
	Ricardo Stoke Model

### 2. Scenario AQ emissions

Units: Tonnes/year all vehicles

PREFERRED OPTION (Option 4+)	
Normal Boundary	
Pollutant	2022
1,616,100	Nox 1,616.10
	PM 284.6

CAZ D	
Pollutant	2022
1,528,200	Nox 1,528.20
	PM 278.90

CAZ D 0%	
Pollutant	2022
1,582,600	Nox 1,582.60
	PM 279.00

Check-box	Last User	Date
<input checked="" type="checkbox"/>	DB	15/04/20

Status	User Comments
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**DataSet 10a: ANPR data**

**Sheet explanation**

Head of ANPR data from 2016  
 Columns are original ANPR data and we have split assumptions from transport model and split factors to 10 ANPR data / split to 2022  
 Fields into sheet 10a, which depicts fleet baseline for assessment

Check box	Last User	Date	Status	User Comments
<input checked="" type="checkbox"/>	JS	15/04/20		

2016 Euro standard of vehicles are not available currently

**1a. 2019 ANPR Count by Euro-Standard**

Vehicle	Fuel	Power P. Euro	Count	Weight Count
Cnr	PETROL	PETROL	1	2.84
Cnr	PETROL	PETROL	1	1.77
Cnr	PETROL	PETROL	2	1.76
Cnr	PETROL	PETROL	3	130.374
Cnr	PETROL	PETROL	4	249.182
Cnr	PETROL	PETROL	5	368.426
Cnr	PETROL	PETROL	6	348.426
Cnr	DIESEL	DIESEL	1	981
Cnr	DIESEL	DIESEL	2	1.021
Cnr	DIESEL	DIESEL	3	64.846
Cnr	DIESEL	DIESEL	4	239.155
Cnr	DIESEL	DIESEL	5	327.126
Cnr	DIESEL	DIESEL	6	327.126
Cnr	ELECTRICITY	ELECTRICITY	6	2.540
Cnr	GAS	PETROL	3	4
Cnr	PETROL/GAS	PETROL	0	6
Cnr	PETROL/GAS	PETROL	2	12
Cnr	PETROL/GAS	PETROL	3	146
Cnr	PETROL/GAS	PETROL	4	2
Cnr	GAS BI-FUEL	ELECTRICITY	2	65
Cnr	GAS BI-FUEL	ELECTRICITY	3	71
Cnr	GAS BI-FUEL	ELECTRICITY	4	265
Cnr	GAS BI-FUEL	ELECTRICITY	5	207
Cnr	HYBRID ELECTRIC	ELECTRICITY	3	71
Cnr	HYBRID ELECTRIC	ELECTRICITY	4	1.546
Cnr	HYBRID ELECTRIC	ELECTRICITY	5	13.248
Cnr	GAS/GAS	DIESEL	6	30.180
Cnr	ELECTRIC DIESEL	ELECTRICITY	5	56
Cnr	ELECTRIC DIESEL	ELECTRICITY	6	652
Cnr	NEW FUEL TECHNOLOGY	ELECTRICITY	4	2
HOV	PETROL	PETROL	4	6
HOV	PETROL	PETROL	5	2
HOV	PETROL	PETROL	6	4
HOV	DIESEL	DIESEL	1	49
HOV	DIESEL	DIESEL	2	207
HOV	DIESEL	DIESEL	3	207
HOV	DIESEL	DIESEL	4	2074
HOV	DIESEL	DIESEL	5	2074
HOV	DIESEL	DIESEL	6	2074
HOV	ELECTRICITY	ELECTRICITY	0	11
HOV	GAS	PETROL	6	159
HOV	PETROL/GAS	PETROL	2	24
HOV	PETROL	PETROL	1	33
HOV	PETROL	PETROL	2	4
HOV	PETROL	PETROL	3	45
HOV	PETROL	PETROL	4	251
HOV	PETROL	PETROL	5	181
HOV	PETROL	PETROL	6	245
HOV	DIESEL	DIESEL	1	614
HOV	DIESEL	DIESEL	2	614
HOV	DIESEL	DIESEL	3	1020
HOV	DIESEL	DIESEL	4	1020
HOV	DIESEL	DIESEL	5	1020
HOV	DIESEL	DIESEL	6	1020
HOV	ELECTRICITY	ELECTRICITY	0	12
HOV	GAS	PETROL	3	4
HOV	PETROL/GAS	PETROL	0	2
HOV	PETROL/GAS	PETROL	1	2
HOV	PETROL/GAS	PETROL	2	2
HOV	GAS BI-FUEL	ELECTRICITY	4	49
HOV	HYBRID ELECTRIC	ELECTRICITY	4	12
HOV	NEW FUEL TECHNOLOGY	ELECTRICITY	3	4
HOV	NEW FUEL TECHNOLOGY	ELECTRICITY	4	11

**1b. 2019 ANPR - reformatted**

ANPR data reformatted for calculations, and PC and electric reformatted

Vehicle	Fuel	Power P. Euro	Year	2019 Count (Weight)	Comments/assumed	Condition
Cnr	Petrol	Petrol	1	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	1	1	0	4 - Non-Compliant
Cnr	Petrol	Petrol	2	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	2	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	3	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	3	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	4	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	4	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	5	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	5	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	6	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	6	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	7	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	7	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	8	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	8	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	9	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	9	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	10	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	10	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	11	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	11	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	12	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	12	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	13	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	13	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	14	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	14	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	15	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	15	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	16	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	16	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	17	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	17	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	18	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	18	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	19	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	19	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	20	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	20	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	21	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	21	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	22	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	22	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	23	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	23	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	24	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	24	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	25	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	25	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	26	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	26	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	27	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	27	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	28	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	28	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	29	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	29	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	30	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	30	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	31	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	31	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	32	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	32	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	33	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	33	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	34	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	34	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	35	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	35	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	36	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	36	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	37	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	37	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	38	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	38	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	39	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	39	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	40	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	40	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	41	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	41	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	42	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	42	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	43	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	43	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	44	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	44	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	45	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	45	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	46	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	46	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	47	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	47	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	48	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	48	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	49	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	49	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	50	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	50	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	51	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	51	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	52	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	52	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	53	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	53	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	54	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	54	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	55	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	55	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	56	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	56	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	57	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	57	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	58	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	58	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	59	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	59	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	60	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	60	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	61	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	61	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	62	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	62	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	63	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	63	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	64	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	64	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	65	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	65	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	66	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	66	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	67	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	67	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	68	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	68	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	69	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	69	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	70	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	70	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	71	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	71	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	72	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	72	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	73	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	73	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	74	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	74	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	75	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	75	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	76	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	76	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	77	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	77	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	78	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	78	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	79	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	79	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	80	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	80	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	81	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	81	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	82	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	82	0	0	4 - Non-Compliant
Cnr	Petrol	Petrol	83	0	0	4 -



# DataSet 10c: 2022 Euro

## Sheet explanation

Imports 2022 Euro Standard Splits from Ricardo AQ Model

Cars & LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6	Euro 6a	Euro 6c	Euro 6d	Euro 1 DPF	Euro 2 DPF	Euro 3 DPF	Euro 4 DPF	ZEC	euro 3	euro 4
Petrol Car	-	-	-	0.02	0.11	0.25	0.62	0.15	0.47								
Diesel Car	-	-	-	0.01	0.09	0.33	0.58	0.20	0.29	0.09			0.00	0.02		0.009019	0.068086
Taxi (Black Cab)	-	-	-	0.03	0.16	0.38	0.43	-	0.43								
Petrol LGV	-	-	-	0.03	0.20	0.30	0.46	0.21	0.26								
Diesel LGV	-	-	-	0.01	0.10	0.28	0.61	0.14	0.47								
Full Hybrid Petrol Car				0.01	0.08	0.08	0.83	0.10	0.73								
Plug-in Hybrid Petrol Car						0.07	0.93	0.10	0.83								
Full Diesel Hybrid Car						0.06	0.94	0.04	0.48	0.43							
E85 Bioethanol Car	-	-	-	0.01	0.06	0.19	0.74	0.13	0.62								
LPG Car	-	-	-	0.01	0.05	0.23	0.71	0.13	0.58								
Full Hybrid Petrol LGV						0.06	0.76	0.15	0.61								
Plug-In Hybrid Petrol LGV						0.20	0.80	0.16	0.65								
E85 Bioethanol LGV	-	-	-	0.02	0.06	0.18	0.74	0.14	0.60								
LPG LGV	-	-	-	0.02	0.06	0.22	0.71	0.14	0.57								

Cars & LGVs	Petrol Car	Diesel Car	Taxi (Black Cab)	Petrol LGV	Diesel LGV	Full Hybrid Petrol Car	Plug-in Hybrid Car	Full Diesel Hybrid Car	E85 Bioethanol Car	LPG Car	Full Hybrid Petrol LGV	Plug-in Hybrid LGV	E85 Bioethanol LGV	LPG LGV
Pre-Euro 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Euro 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Euro 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Euro 3	0.02	0.01	0.03	0.03	0.01	0.01			0.01	0.01			0.02	0.02
Euro 4	0.11	0.09	0.16	0.20	0.10	0.08			0.06	0.05	0.06		0.06	0.06
Euro 5	0.25	0.33	0.38	0.30	0.28	0.08	0.07	0.06	0.19	0.23	0.18	0.20	0.18	0.22
Euro 6	0.62	0.58	0.43	0.46	0.61	0.83	0.93	0.94	0.74	0.71	0.76	0.80	0.74	0.71
Euro 6a	0.15	0.20	-	0.21	0.14	0.10	0.10	0.04	0.13	0.13	0.15	0.16	0.14	0.14
Euro 6c	0.47	0.29	0.43	0.26	0.47	0.73	0.83	0.48	0.62	0.58	0.61	0.65	0.60	0.57
Euro 6d		0.09	-	-	-	-	-	0.43	-	-	-	-	-	-
Euro 1 DPF														
Euro 2 DPF														
Euro 3 DPF		0.00												
Euro 4 DPF		0.02												
ZEC														
euro 3		0.009019												
euro 4		0.068086												

HGVs and Buses	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V EGR	Euro V SCR	Euro VI
Rigid HGV	-	-	-	0.01	0.03	0.02	0.07	0.87
Artic HGV	-	-	0.00	0.01	0.02	0.02	0.05	0.91
Buses	-	-	0.03	0.16	0.13	0.03	0.08	0.57
Coaches	-	-	0.03	0.16	0.13	0.03	0.08	0.57
B100 Rigid HGV	-	-	-	0.01	0.02	0.02	0.07	0.88
B100 Artic HGV	-	-	-	0.00	0.00	0.01	0.03	0.96
Biodiesel Buses	-	-	-	0.04	0.03	0.04	0.11	0.77
Biodiesel Coaches	-	-	-	0.04	0.03	0.04	0.11	0.77
Hybrid Buses - Single Deck						0.20	0.59	0.21
Hybrid Buses - Double Deck						0.20	0.59	0.21
Hybrid Buses - Articulated						0.20	0.59	0.21

HGVs and Buses	Rigid HGV	Artic HGV	Buses	Coaches	B100 Rigid HGV	B100 Artic HGV	Biodiesel Buses	Biodiesel Coaches	Hybrid Buses	Hybrid Buses - Articulated	Hybrid Buses - Double Deck	Hybrid Buses - Single Deck	Articulated Rigid	Artic
Pre-Euro I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Euro I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Euro II	-	0.00	0.03	0.03	-	-	-	-	-	-	-	-	-	-
Euro III	0.01	0.01	0.16	0.16	0.01	0.00	0.04	0.04	-	-	-	-	-	-
Euro IV	0.03	0.02	0.13	0.13	0.02	0.00	0.03	0.03	-	-	-	-	-	-
Euro V	0.0898502266873317	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Euro VI	0.87	0.91	0.57	0.57	0.88	0.96	0.77	0.77	0.21	0.21	0.21	0.21	0.21	0.21
Euro V EGR	0.02	0.02	0.03	0.03	0.02	0.01	0.04	0.04	0.20	0.20	0.20	0.20	0.20	0.20
Euro V SCR	0.07	0.05	0.08	0.08	0.07	0.03	0.11	0.11	0.59	0.59	0.59	0.59	0.59	0.59

vehicle	fuel	euro	euro #	Percentage
Car	Petrol	Pre-Euro 1	0	-
Car	Petrol	Euro 1	1	-
Car	Petrol	Euro 2	2	-
Car	Petrol	Euro 3	3	0.02
Car	Petrol	Euro 4	4	0.11
Car	Petrol	Euro 5	5	0.25
Car	Petrol	Euro 6	6	0.62
Car	Diesel	Pre-Euro 1	0	-
Car	Diesel	Euro 1	1	-
Car	Diesel	Euro 2	2	-
Car	Diesel	Euro 3	3	0.01
Car	Diesel	Euro 4	4	0.09
Car	Diesel	Euro 5	5	0.33
Car	Diesel	Euro 6	6	0.58
HGV	Diesel	Pre-Euro 1	0	-
HGV	Diesel	Euro 1	1	-
HGV	Diesel	Euro 2	2	0.00
HGV	Diesel	Euro 3	3	0.01
HGV	Diesel	Euro 4	4	0.03
HGV	Diesel	Euro 5	5	0.08
HGV	Diesel	Euro 6	6	0.88
HGV	Petrol	Pre-Euro 1	0	-
LGV	Petrol	Euro 1	1	-
LGV	Petrol	Euro 2	2	-
LGV	Petrol	Euro 3	3	0.03
LGV	Petrol	Euro 4	4	0.20
LGV	Petrol	Euro 5	5	0.30
LGV	Petrol	Euro 6	6	0.46
LGV	Diesel	Pre-Euro 1	0	-
LGV	Diesel	Euro 1	1	-
LGV	Diesel	Euro 2	2	-
LGV	Diesel	Euro 3	3	0.01
LGV	Diesel	Euro 4	4	0.10
LGV	Diesel	Euro 5	5	0.28
LGV	Diesel	Euro 6	6	0.61
Taxis	Diesel	Pre-Euro 1	0	-
Taxis	Diesel	Euro 1	1	-
Taxis	Diesel	Euro 2	2	-
Taxis	Diesel	Euro 3	3	0.03
Taxis	Diesel	Euro 4	4	0.16
Taxis	Diesel	Euro 5	5	0.38
Taxis	Diesel	Euro 6	6	0.43
Bus	Diesel	Pre-Euro 1	0	-
Bus	Diesel	Euro 1	1	-
Bus	Diesel	Euro 2	2	0.03
Bus	Diesel	Euro 3	3	0.16
Bus	Diesel	Euro 4	4	0.13
Bus	Diesel	Euro 5	5	0.11
Bus	Diesel	Euro 6	6	0.57

DataSet 10d: baseline vehicle fleet

Check-box	Last User	Date	Status	User Comments
<input checked="" type="checkbox"/>	DB	16/04/20		

Sheet explanation

Taxes data presented / manipulated from different sources to select values to set fleet baseline for analysis  
 Values then feed through into upgrade cost calculations and vehicle fleet projection  
 Where ANPR data used, upfit factors are applied to account for gaps in ANPR data

1. Data Inputs (drawn from)

ANPR

Vehicle	Fuel	Euro	Compliance	2020 Count
Bus Diesel Pre-Euro 1	Non-Compliant	0.0	0.0	
Bus Diesel Euro 1	Non-Compliant	0.0	0.0	
Bus Diesel Euro 2	Non-Compliant	0.0	0.0	
Bus Diesel Euro 3	Non-Compliant	0.0	0.0	
Bus Diesel Euro 4	Non-Compliant	0.0	0.0	
Bus Diesel Euro 5	Non-Compliant	0.0	0.0	
Bus Diesel Euro 6	Compliant	0.0	0.0	
Car Petrol Pre-Euro 1	Non-Compliant	0.0	0.0	
Car Petrol Euro 1	Non-Compliant	0.0	0.0	
Car Petrol Euro 2	Non-Compliant	0.0	0.0	
Car Petrol Euro 3	Non-Compliant	5300.6	5300.6	
Car Petrol Euro 4	Compliant	26992.7	26992.7	
Car Petrol Euro 5	Compliant	80523.0	80523.0	
Car Petrol Euro 6	Compliant	19939.7	19939.7	
Car Diesel Pre-Euro 1	Non-Compliant	0.0	0.0	
Car Diesel Euro 1	Non-Compliant	0.0	0.0	
Car Diesel Euro 2	Non-Compliant	0.0	0.0	
Car Diesel Euro 3	Non-Compliant	3457.7	3457.7	
Car Diesel Euro 4	Non-Compliant	26992.7	26992.7	
Car Diesel Euro 5	Non-Compliant	101843.8	101843.8	
Car Diesel Euro 6	Compliant	19939.7	19939.7	
Coach Diesel Pre-Euro 1	Non-Compliant	0.0	0.0	
Coach Diesel Euro 1	Non-Compliant	0.0	0.0	
Coach Diesel Euro 2	Non-Compliant	0.0	0.0	
Coach Diesel Euro 3	Non-Compliant	0.0	0.0	
Coach Diesel Euro 4	Non-Compliant	0.0	0.0	
Coach Diesel Euro 5	Non-Compliant	0.0	0.0	
Coach Diesel Euro 6	Compliant	0.0	0.0	
HGV Diesel Pre-Euro 1	Non-Compliant	0.0	0.0	
HGV Diesel Euro 1	Non-Compliant	0.0	0.0	
HGV Diesel Euro 2	Non-Compliant	25.2	25.2	
HGV Diesel Euro 3	Non-Compliant	345.2	345.2	
HGV Diesel Euro 4	Non-Compliant	2815.4	2815.4	
HGV Diesel Euro 5	Non-Compliant	8121.9	8121.9	
HGV Diesel Euro 6	Compliant	8792.8	8792.8	
LGV Petrol Pre-Euro 1	Non-Compliant	0.0	0.0	
LGV Petrol Euro 1	Non-Compliant	0.0	0.0	
LGV Petrol Euro 2	Non-Compliant	0.0	0.0	
LGV Petrol Euro 3	Non-Compliant	28.7	28.7	
LGV Petrol Euro 4	Compliant	196.3	196.3	
LGV Petrol Euro 5	Compliant	294.2	294.2	
LGV Petrol Euro 6	Compliant	449.3	449.3	
LGV Diesel Pre-Euro 1	Non-Compliant	0.0	0.0	
LGV Diesel Euro 1	Non-Compliant	0.0	0.0	
LGV Diesel Euro 2	Non-Compliant	0.0	0.0	
LGV Diesel Euro 3	Non-Compliant	1418.5	1418.5	
LGV Diesel Euro 4	Non-Compliant	1789.5	1789.5	
LGV Diesel Euro 5	Non-Compliant	4793.2	4793.2	
LGV Diesel Euro 6	Compliant	16709.6	16709.6	
Taxis Petrol Pre-Euro 1	Non-Compliant	0.0	0.0	
Taxis Petrol Euro 1	Non-Compliant	0.0	0.0	
Taxis Petrol Euro 2	Non-Compliant	0.0	0.0	
Taxis Petrol Euro 3	Non-Compliant	0.0	0.0	
Taxis Petrol Euro 4	Compliant	0.0	0.0	
Taxis Petrol Euro 5	Compliant	0.0	0.0	
Taxis Petrol Euro 6	Compliant	0.0	0.0	
Taxis Diesel Pre-Euro 1	Non-Compliant	0.0	0.0	
Taxis Diesel Euro 1	Non-Compliant	0.0	0.0	
Taxis Diesel Euro 2	Non-Compliant	0.0	0.0	
Taxis Diesel Euro 3	Non-Compliant	0.0	0.0	
Taxis Diesel Euro 4	Non-Compliant	0.0	0.0	
Taxis Diesel Euro 5	Non-Compliant	0.0	0.0	
Taxis Diesel Euro 6	Compliant	0.0	0.0	

CAZ D

Vehicle	Fuel	Euro	Compliance	2020 Count	Vehicle	Fuel	Euro	Standard	Compliance	2020 Count
Bus Diesel Pre-Euro 1	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
Bus Diesel Euro 1	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
Bus Diesel Euro 2	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Euro 2	Non-Compliant	0.0	0.0
Bus Diesel Euro 3	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Euro 3	Non-Compliant	0.0	0.0
Bus Diesel Euro 4	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Euro 4	Compliant	0.0	0.0
Bus Diesel Euro 5	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Euro 5	Compliant	0.0	0.0
Bus Diesel Euro 6	Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Euro 6	Compliant	0.0	0.0
Car Petrol Pre-Euro 1	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
Car Petrol Euro 1	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
Car Petrol Euro 2	Non-Compliant	0.0	Taxes	0.0	Private Hi Car	Petrol	Euro 2	Non-Compliant	0.0	0.0
Car Petrol Euro 3	Non-Compliant	5300.6	Taxes	5300.6	Private Hi Car	Petrol	Euro 3	Non-Compliant	15.1	15.1
Car Petrol Euro 4	Compliant	26992.7	Taxes	26992.7	Private Hi Car	Petrol	Euro 4	Compliant	79.4	79.4
Car Petrol Euro 5	Compliant	80523.0	Taxes	80523.0	Private Hi Car	Petrol	Euro 5	Non-Compliant	192.7	192.7
Car Petrol Euro 6	Compliant	19939.7	Taxes	19939.7	Private Hi Car	Petrol	Euro 6	Compliant	214.4	214.4
Car Diesel Pre-Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
Car Diesel Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
Car Diesel Euro 2	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 2	Non-Compliant	0.0	0.0
Car Diesel Euro 3	Non-Compliant	3457.7	Private Hi Car	3457.7	Private Hi Car	Petrol	Euro 3	Non-Compliant	2.2	2.2
Car Diesel Euro 4	Non-Compliant	26992.7	Private Hi Car	26992.7	Private Hi Car	Petrol	Euro 4	Compliant	15.0	15.0
Car Diesel Euro 5	Non-Compliant	101843.8	Private Hi Car	101843.8	Private Hi Car	Petrol	Euro 5	Compliant	32.9	32.9
Car Diesel Euro 6	Compliant	19939.7	Private Hi Car	19939.7	Private Hi Car	Petrol	Euro 6	Compliant	21.6	21.6
Coach Diesel Pre-Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
Coach Diesel Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
Coach Diesel Euro 2	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 2	Non-Compliant	0.0	0.0
Coach Diesel Euro 3	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 3	Non-Compliant	23.4	23.4
Coach Diesel Euro 4	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 4	Non-Compliant	180.3	180.3
Coach Diesel Euro 5	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 5	Non-Compliant	690.5	690.5
Coach Diesel Euro 6	Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 6	Compliant	1224.0	1224.0
HGV Diesel Pre-Euro 1	Non-Compliant	0.0	Bus	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
HGV Diesel Euro 1	Non-Compliant	0.0	Bus	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
HGV Diesel Euro 2	Non-Compliant	25.2	Bus	25.2	Private Hi Car	Petrol	Euro 2	Non-Compliant	3.8	3.8
HGV Diesel Euro 3	Non-Compliant	345.2	Bus	345.2	Private Hi Car	Petrol	Euro 3	Non-Compliant	29.4	29.4
HGV Diesel Euro 4	Non-Compliant	2815.4	Bus	2815.4	Private Hi Car	Petrol	Euro 4	Non-Compliant	16.2	16.2
HGV Diesel Euro 5	Non-Compliant	8121.9	Bus	8121.9	Private Hi Car	Petrol	Euro 5	Non-Compliant	14.5	14.5
HGV Diesel Euro 6	Compliant	8792.8	Bus	8792.8	Private Hi Car	Petrol	Euro 6	Compliant	73.5	73.5
LGV Petrol Pre-Euro 1	Non-Compliant	0.0	Coach	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
LGV Petrol Euro 1	Non-Compliant	0.0	Coach	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
LGV Petrol Euro 2	Non-Compliant	0.0	Coach	0.0	Private Hi Car	Petrol	Euro 2	Non-Compliant	0.0	0.0
LGV Petrol Euro 3	Non-Compliant	28.7	Coach	28.7	Private Hi Car	Petrol	Euro 3	Non-Compliant	33.6	33.6
LGV Petrol Euro 4	Compliant	196.3	Coach	196.3	Private Hi Car	Petrol	Euro 4	Non-Compliant	269.2	269.2
LGV Petrol Euro 5	Compliant	294.2	Coach	294.2	Private Hi Car	Petrol	Euro 5	Non-Compliant	241.0	241.0
LGV Petrol Euro 6	Compliant	449.3	Coach	449.3	Private Hi Car	Petrol	Euro 6	Compliant	1224.8	1224.8
LGV Diesel Pre-Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
LGV Diesel Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
LGV Diesel Euro 2	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 2	Non-Compliant	0.0	0.0
LGV Diesel Euro 3	Non-Compliant	1418.5	Private Hi Car	1418.5	Private Hi Car	Petrol	Euro 3	Non-Compliant	0.0	0.0
LGV Diesel Euro 4	Non-Compliant	1789.5	Private Hi Car	1789.5	Private Hi Car	Petrol	Euro 4	Non-Compliant	0.0	0.0
LGV Diesel Euro 5	Non-Compliant	4793.2	Private Hi Car	4793.2	Private Hi Car	Petrol	Euro 5	Non-Compliant	0.0	0.0
LGV Diesel Euro 6	Compliant	16709.6	Private Hi Car	16709.6	Private Hi Car	Petrol	Euro 6	Compliant	0.0	0.0
Taxis Petrol Pre-Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
Taxis Petrol Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
Taxis Petrol Euro 2	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 2	Non-Compliant	0.0	0.0
Taxis Petrol Euro 3	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 3	Non-Compliant	0.0	0.0
Taxis Petrol Euro 4	Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 4	Compliant	0.0	0.0
Taxis Petrol Euro 5	Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 5	Compliant	0.0	0.0
Taxis Petrol Euro 6	Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 6	Compliant	0.0	0.0
Taxis Diesel Pre-Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Pre-Euro 1	Non-Compliant	0.0	0.0
Taxis Diesel Euro 1	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 1	Non-Compliant	0.0	0.0
Taxis Diesel Euro 2	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 2	Non-Compliant	0.0	0.0
Taxis Diesel Euro 3	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 3	Non-Compliant	0.0	0.0
Taxis Diesel Euro 4	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 4	Non-Compliant	0.0	0.0
Taxis Diesel Euro 5	Non-Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 5	Non-Compliant	0.0	0.0
Taxis Diesel Euro 6	Compliant	0.0	Private Hi Car	0.0	Private Hi Car	Petrol	Euro 6	Compliant	0.0	0.0

2. 2020 Baseline Vehicle Fleet

Source	Vehicle	Fuel	Euro	Compliance	Annual CAZ D 2022 Count	Annual CAZ D 2022 Count
License Data	Bus Diesel	Pre-Euro 1	Euro 0	Non-Compliant	0.0	0.0
License Data	Bus Diesel	Euro 1	Euro 1	Non-Compliant	0.0	0.0
License Data	Bus Diesel	Euro 2	Euro 2	Non-Compliant	0.0	0.0
License Data	Bus Diesel	Euro 3	Euro 3	Non-Compliant	20.4	20.4
License Data	Bus Diesel	Euro 4	Euro 4	Compliant	16.2	16.2
License Data	Bus Diesel	Euro 5	Euro 5	Non-Compliant	14.5	14.5
ANPR	Car Petrol	Pre-Euro 1	Euro 0	Non-Compliant	0.0	0.0
ANPR	Car Petrol	Euro 1	Euro 1	Non-Compliant	0.0	0.0
ANPR	Car Petrol	Euro 2	Euro 2	Non-Compliant	0.0	0.0
ANPR	Car Petrol	Euro 3	Euro 3	Non-Compliant	5300.6	5300.6
ANPR	Car Diesel	Pre-Euro 1	Euro 0	Non-Compliant	0.0	0.0
ANPR	Car Diesel	Euro 1	Euro 1	Non-Compliant	0.0	0.0
ANPR	Car Diesel	Euro 2	Euro 2	Non-Compliant	0.0	0.0
ANPR	Car Diesel	Euro 3	Euro 3	Non-Compliant	3457.7	3457.7
ANPR	Car Diesel	Euro 4	Euro 4	Non-Compliant	26992.7	26992.7
ANPR	Car Diesel	Euro 5	Euro 5	Non-Compliant	101843.8	101843.8
License Data	Coach Diesel	Pre-Euro 1	Euro 0	Non-Compliant	0.0	0.0
License Data	Coach Diesel	Euro 1	Euro 1	Non-Compliant	0.0	0.0
License Data	Coach Diesel	Euro 2	Euro 2	Non-Compliant	0.0	0.0
License Data	Coach Diesel	Euro 3	Euro 3	Non-Compliant	0.0	0.0
License Data	Coach Diesel	Euro 4	Euro 4	Non-Compliant	0.0	0.0
ANPR	HGV Diesel	Pre-Euro 1	Euro 0	Non-Compliant	0.0	0.0
ANPR	HGV Diesel	Euro 1	Euro 1	Non-Compliant	0.0	0.0
ANPR	HGV Diesel	Euro 2	Euro 2	Non-Compliant	25.2	25.2
ANPR	HGV Diesel	Euro 3	Euro 3	Non-Compliant	345.2	345.2
ANPR	HGV Diesel	Euro 4	Euro 4	Non-Compliant	2815.4	2815.4
ANPR	HGV Diesel	Euro 5	Euro 5	Non-Compliant	8121.9	8121.9
ANPR	LGV Petrol	Pre-Euro 1	Euro 0	Non-Compliant	0.0	0.0
ANPR	LGV Petrol	Euro 1	Euro 1	Non-Compliant	0.0	0.0
ANPR	LGV Petrol	Euro 2	Euro 2	Non-Compliant	0.0	0.0
ANPR	LGV Petrol	Euro 3	Euro 3	Non-Compliant	28.7	28.7
ANPR	LGV Diesel	Pre-Euro 1	Euro 0	Non-Compliant	0.0	0.0
ANPR	LGV Diesel	Euro 1	Euro 1	Non-Compliant	0.0	0.0
ANPR	LGV Diesel	Euro 2	Euro 2	Non-Compliant	0.0	0.0
ANPR	LGV Diesel	Euro 3	Euro 3	Non-Compliant	1418.5	1418.5
ANPR	LGV Diesel	Euro 4	Euro 4	Non-Compliant	1789.5	1789.5
ANPR	LGV Diesel	Euro 5	Euro 5	Non-Compliant	4793.2	4793.2
License Data	Taxis Petrol	Pre-Euro 1	Euro 0	Non-Compliant	0.0	0.0
License Data	Taxis Petrol	Euro 1	Euro 1	Non-Compliant	0.0	0.0
License Data	Taxis Diesel	Euro 1	Euro 1	Non-Compliant	0.0	0.0
License Data	Taxis Diesel	Euro 2	Euro 2	Non-Compliant	0.0	0.0
License Data	Taxis Diesel	Euro 3	Euro 3	Non-Compliant	0.0	0.0
License Data	Taxis Diesel	Euro 4	Euro 4	Non-Compliant	0.0	0.0
License Data						

DocId: 12 - Full and non Full VDCs

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Full VDCs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Non Full VDCs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

1. Total Supply (non-Full VDCs)

2. Total Supply (Full VDCs)

3. Total Supply (All VDCs)

4. Demand (non-Full VDCs)

5. Demand (Full VDCs)

6. Demand (All VDCs)

7. Supply (non-Full VDCs)

8. Supply (Full VDCs)

9. Supply (All VDCs)

10. Demand (non-Full VDCs)

11. Demand (Full VDCs)

12. Demand (All VDCs)

13. Supply (non-Full VDCs)

14. Supply (Full VDCs)

15. Supply (All VDCs)

16. Demand (non-Full VDCs)

17. Demand (Full VDCs)

18. Demand (All VDCs)

19. Supply (non-Full VDCs)

20. Supply (Full VDCs)

21. Supply (All VDCs)

22. Demand (non-Full VDCs)

23. Demand (Full VDCs)

24. Demand (All VDCs)

25. Supply (non-Full VDCs)

26. Supply (Full VDCs)

27. Supply (All VDCs)

28. Demand (non-Full VDCs)

29. Demand (Full VDCs)

30. Demand (All VDCs)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Full VDCs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Non Full VDCs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Full VDCs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Non Full VDCs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

31. Total Supply (non-Full VDCs)

32. Total Supply (Full VDCs)

33. Total Supply (All VDCs)

34. Demand (non-Full VDCs)

35. Demand (Full VDCs)

36. Demand (All VDCs)

37. Supply (non-Full VDCs)

38. Supply (Full VDCs)

39. Supply (All VDCs)

40. Demand (non-Full VDCs)

41. Demand (Full VDCs)

42. Demand (All VDCs)

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. This is essential for ensuring the integrity of the financial statements and for providing a clear audit trail.

2. The second part of the document outlines the various methods used to collect and analyze data. These methods include interviews, surveys, and focus groups, each of which has its own strengths and limitations.

3. The third part of the document provides a detailed description of the data collection process. This includes information about the sample size, the data collection instruments used, and the procedures followed to ensure the reliability and validity of the data.

4. The fourth part of the document discusses the results of the data collection process. This includes a summary of the key findings and a discussion of the implications of these findings for the research project.

5. The fifth part of the document provides a conclusion and a list of references. The conclusion summarizes the main points of the document and provides a final thought on the importance of accurate data collection.

6. The sixth part of the document provides a list of references for the research project. These references include books, articles, and other sources that have been consulted during the course of the research.

7. The seventh part of the document provides a list of references for the research project. These references include books, articles, and other sources that have been consulted during the course of the research.

8. The eighth part of the document provides a list of references for the research project. These references include books, articles, and other sources that have been consulted during the course of the research.

9. The ninth part of the document provides a list of references for the research project. These references include books, articles, and other sources that have been consulted during the course of the research.





DataSet 15: Impl. costs

Sheet explanation

Imports estimated costs of implementing scheme  
 Provided by SWECO

Date	Status	User Comments
15/04/20		

1. Preferred option implementation costs

Preferred Option Cost Summary

Heading	Item	Key lookup	2018 Price Base, 2019 Discount Year, Not Adjust Year	Notes	exclude	%	Final
A50 Victoria Road Bus Gate	Bus Gate ANPR camera (incl TM, PM and civis)	Capital expenditure	94,684.92	2022		1%	103,397.39
A50 Victoria Road Bus Gate	Bus Gate ANPR camera (incl TM, PM and civis)	Capital expenditure	56,810.95	2022		0%	52,035.44
A50 Victoria Road Bus Gate	New TRO bus gate	Capital expenditure	18,936.98	2022		0%	20,679.48
A50 Victoria Road Bus Gate	Bus Gate Signing (VMS)	Capital expenditure	198,838.32	2022		2%	217,134.52
A50 Victoria Road Bus Gate	Bus Gate Advance Signing	Capital expenditure	140,133.68	2022		1%	153,028.14
A50 Victoria Road Bus Gate	TRO costs for Stopping Up and One Way	Capital expenditure	22,724.38	2022		0%	24,815.37
A50 Victoria Road Bus Gate	TTRO costs for temporary road closures	Capital expenditure	5,681.09	2022		0%	6,203.84
A50 Victoria Road Bus Gate	Five year camera replacement costs	Capital expenditure	26,247.11	2022	Taken in 202	0%	28,771.45
A50 Victoria Road Bus Gate	IT Infrastructure and Storage Capacity	Capital expenditure IT	5,049.86	2022		0%	5,514.53
A50 Victoria Road Bus Gate	Prism Sign Costs	Capital expenditure	282,466.59	2022		2%	286,617.57
A50 Victoria Road Bus Gate	General Maintenance	Operating expenditure	79,041.32	2022		1%	86,314.34
A50 Victoria Road Bus Gate	Maintenance ANPR system	Operating expenditure	39,520.66	2022		0%	43,157.17
A50 Victoria Road Bus Gate	Maintenance of Prism Signs	Operating expenditure	158,899.14	2022		1%	173,520.32
A53 Etruria Road Bus Gate	Bus Gate ANPR camera (incl TM, PM and civis)	Capital expenditure	189,369.83	2022		2%	206,794.78
A53 Etruria Road Bus Gate	Bus Gate Advance Signing	Capital expenditure	198,838.32	2022		2%	217,134.52
A53 Etruria Road Bus Gate	Bus Gate Signing (VMS)	Capital expenditure	316,721.04	2022		3%	345,864.28
A53 Etruria Road Bus Gate	New TRO for bus gate	Capital expenditure	18,936.98	2022		0%	20,679.48
A53 Etruria Road Bus Gate	Five year camera replacement costs	Capital expenditure	52,694.21	2022	Taken in 202	0%	57,542.90
A53 Etruria Road Bus Gate	Facilitating Works	Capital expenditure	10,672.17	2022		0%	11,654.18
A53 Etruria Road Bus Gate	IT Infrastructure and Storage Capacity	Capital expenditure IT	5,049.86	2022		0%	5,514.53
A53 Etruria Road Bus Gate	Prism Sign Costs	Capital expenditure	320,792.50	2022		3%	360,310.36
A53 Etruria Road Bus Gate	General Maintenance	Operating expenditure	79,041.32	2022		1%	86,314.34
A53 Etruria Road Bus Gate	Maintenance ANPR system	Operating expenditure	79,041.32	2022		1%	86,314.34
A53 Etruria Road Bus Gate	Maintenance of Prism Signs	Operating expenditure	194,210.06	2022		2%	212,090.39
Traffic Management East and W	Road Hump Regulation Notice	Capital expenditure	7,574.79	2022		0%	8,271.79
Traffic Management East and W	Removal Type A roadhump (excavate)	Capital expenditure	81,807.77	2022		1%	89,335.35
Traffic Management East and W	Removal Type B roadhump (excavate)	Capital expenditure	14,202.74	2022		0%	15,509.81
Traffic Management East and W	Removal of existing illuminated hump signs	Capital expenditure	2,840.55	2022		0%	3,101.32
Traffic Management East and W	Plane out existing c/vay and resurface 50mm	Capital expenditure	965,833.49	2022		8%	1,054,705.10
Traffic Management East and W	EO plane out 100mm deep (25% of total area)	Capital expenditure	193,166.70	2022		2%	210,941.02
Traffic Management East and W	New kerbing to roadhumps	Capital expenditure	45,448.76	2022		0%	49,630.75
Traffic Management East and W	Take down existing sign and post	Capital expenditure	1,893.70	2022		0%	2,067.95
Traffic Management East and W	Take down sign and post including electrics and make safe	Capital expenditure	11,362.19	2022		0%	12,407.69
Traffic Management East and W	New Roadhumps in Bituminous Materials	Capital expenditure	130,665.18	2022		1%	142,688.40
Traffic Management East and W	New kerbing	Capital expenditure	11,362.19	2022		0%	12,407.69
Traffic Management East and W	Removal of existing 20mph zone terminal signs	Capital expenditure	946.85	2022		0%	1,033.97
Traffic Management East and W	New signing for 20mph zone incl post and foundations	Capital expenditure	3,787.40	2022		0%	4,135.90
Traffic Management East and W	Removal of existing illuminated hump signs	Capital expenditure	1,893.70	2022		0%	2,067.95
Traffic Management East and W	Electrical Disconnection for existing illuminated hump signs	Capital expenditure	3,787.40	2022		0%	4,135.90
Traffic Management East and W	New signing for one way sections	Capital expenditure	1,893.70	2022		0%	2,067.95
Traffic Management East and W	Removal of One Way Signs	Capital expenditure	11,362.19	2022		0%	12,407.69
Traffic Management East and W	No Entry Signs	Capital expenditure	11,362.19	2022		0%	12,407.69
Traffic Management East and W	New signing for 7.57 weight limit "Except for Access"	Capital expenditure	18,936.98	2022		0%	20,679.48
Traffic Management East and W	Removal Type A roadhump (excavate) 2	Capital expenditure	13,634.63	2022		0%	14,889.22
Traffic Management East and W	Removal of existing illuminated hump signs	Capital expenditure	8,521.64	2022		0%	9,306.77
Traffic Management East and W	Plane out existing c/vay and resurface 50mm 2	Capital expenditure	447,698.69	2022		4%	488,893.89
Traffic Management East and W	EO plane out 100mm deep (20% of total area)	Capital expenditure	149,232.90	2022		1%	162,964.63
Traffic Management East and W	New kerbing to roadhumps 2	Capital expenditure	20,930.68	2022		0%	22,747.43
Traffic Management East and W	New footway construction to Hitchman Street Closure including kerbing	Capital expenditure	28,405.47	2022		0%	31,019.22
Traffic Management East and W	Take down existing signs	Capital expenditure	1,893.70	2022		0%	2,067.95
Traffic Management East and W	Take down signs including electrics and make safe	Capital expenditure	5,681.09	2022		0%	6,203.84
Traffic Management East and W	New roadhumps in bituminous materials 2	Capital expenditure	85,216.42	2022		1%	93,057.65
Traffic Management East and W	New raised table adjacent to school	Capital expenditure	28,405.47	2022		0%	31,019.22
Traffic Management East and W	New signing for 20mph zone	Capital expenditure	18,936.98	2022		0%	20,679.48
Traffic Management East and W	New signing for road closure	Capital expenditure	3,787.40	2022		0%	4,135.90
Transport Improvements along A	New bus stop	Capital expenditure	37,873.97	2022		0%	41,358.96
Transport Improvements along A	Traffic Signals Slaw Lane/King Street Junction	Capital expenditure	284,054.75	2022		2%	310,192.18
Transport Improvements along A	Plane out and resurface	Capital expenditure	68,173.14	2022		1%	74,446.12
Transport Improvements along A	EO plane out 100mm deep (10% of total area)	Capital expenditure	4,544.88	2022		0%	4,963.07
Transport Improvements along A	Removal Kerbs, tactile slabs and existing footway, and new kerbs,footwa	Capital expenditure	47,342.46	2022		0%	51,698.70
Transport Improvements along A	Traffic Signals Stafford Park Road/Etruria Road (West) Junction	Capital expenditure	321,928.71	2022		1%	351,551.13
Transport Improvements along A	Plane and resurface 2	Capital expenditure	85,216.42	2022		1%	93,057.65
Transport Improvements along A	EO plane out 100mm deep (10% of total area) 2	Capital expenditure	5,681.09	2022		0%	6,203.84
Transport Improvements along A	Removal Kerbs, tactile slabs and existing footway, and new kerbs,footwa	Capital expenditure	56,810.95	2022		0%	62,038.44
Transport Improvements along A	Traffic Sign Maintenance	Operating expenditure	52,694.21	2022		0%	57,542.90
Bus Retrofit Programme	ANPR to monitor bus retrofit compliance - A53 Etruria	Capital expenditure	189,369.83	2022		2%	206,794.78
Bus Retrofit Programme	ANPR to monitor bus retrofit compliance - A50 Victoria Road Bus Gate	Capital expenditure	189,369.83	2022		2%	206,794.78
Bus Retrofit Programme	Bus Gate ANPR camera (incl TM, PM and civis)	Capital expenditure	189,369.83	2022		2%	206,794.78
Bus Retrofit Programme	Five year camera replacement costs	Capital expenditure	158,082.64	2022	Taken in 202	1%	172,628.69
Bus Retrofit Programme	IT Infrastructure and Storage Capacity	Capital expenditure IT	5,049.86	2022		0%	5,514.53
Bus Retrofit Programme	Cost of the e-cooling fan	Capital expenditure	970,717.18	2022	Costs incorp	0%	-
Bus Retrofit Programme	Bus wrap	Capital expenditure	250,574.52	2022	Costs incorp	0%	-
Bus Retrofit Programme	Cost of the e-cooling fan	Capital expenditure	32,933.88	2022	Costs incorp	0%	-
Bus Retrofit Programme	Maintenance ANPR system	Operating expenditure	237,123.96	2022		2%	258,843.03
Bus Infrastructure Improvements	CCTV	Capital expenditure	374,128.92	2022		0%	408,554.56
Bus Infrastructure Improvements	Kerbs	Capital expenditure	313,003.63	2022		3%	341,804.80
Bus Infrastructure Improvements	RTP1	Capital expenditure	691,222.94	2022		6%	754,826.14
Bus Infrastructure Improvements	New Shelters	Capital expenditure	-	2022		0%	-
Bus Infrastructure Improvements	Upgraded Shelters	Capital expenditure	-	2022		0%	-
Bus Infrastructure Improvements	CCTV maintenance	Operating expenditure	210,447.52	2022		2%	229,811.94
Bus Infrastructure Improvements	RTP1 maintenance	Operating expenditure	406,667.60	2022		0%	440,087.30
Monitoring and evaluation	Traffic Data - procurement, installation of the ATC sites	Capital expenditure	96,166.94	2022	Monitoring a	0%	-
Monitoring and evaluation	Additional processing / analysis of the bus patronage data	Operating expenditure	115,927.27	2022	Monitoring a	0%	-
Monitoring and evaluation	Combined Air Quality Monitoring and Evaluation - maintenance tubes	Operating expenditure	577,317.81	2022	Monitoring a	0%	-
Monitoring and evaluation	Traffic Data Collection for Monitoring in 2025	Operating expenditure	118,561.98	2022	Monitoring a	0%	-
Monitoring and evaluation	Traffic Data -maintenance and monitoring of the ATC sites	Operating expenditure	130,418.18	2022	Monitoring a	0%	-
Monitoring and evaluation	Combined Air Quality Monitoring and Evaluation - maintenance staff	Operating expenditure	207,364.91	2022	Monitoring a	0%	-
Back Office Cost for Monitoring, I	Operating Costs New Staff to cover ANPR and Prism signs using existing	Operating expenditure	1,317,355.35	2022		11%	1,438,572.41
Back Office Cost for Monitoring, I	Maintenance, Monitoring, Operation Operating Costs Added PM time	Operating expenditure	513,768.59	2022		4%	561,043.24
Back Office Cost for Monitoring, I	FT staff post for RTP1	Operating expenditure	65,867.77	2022		1%	71,928.62
Communications, engagement a	Marketing	Operating expenditure	158,082.64	2022		1%	172,628.69
Decommissioning costs	Decommissioning / Removal (incl TM and disposal)	Capital expenditure	629,695.86	2022		5%	687,637.61
Risk	Risk Allowance		1,060,000				
Risk - email from Sweco (4/5) @11:56							

2. CAZ D implementation costs

Heading	Item	Key lookup	2018 Price Base, 2019 Discount Year, Not Adjust Year	Notes	exclude	%	Final
CAZ D Boundary Signs	Sign Cost	Capital expenditure	768,842	2022		1%	861,350.24
CAZ D Boundary ANPR	ANPR Cost	Capital expenditure	9,714,672	2022		10%	10,883,563.32
CAZ D Advanced Signing Local	Environmental (Vegetation Clearance, Tree Removal)	Capital expenditure	15,150	2022		0%	16,372.42
CAZ D Advanced Signing Local	Traffic Management (Boundary Installation)	Capital expenditure	232,442	2022		0%	260,409.94
CAZ D Advanced Signing Local	Local Signs	Capital expenditure	826,599	2022		1%	926,057.58
CAZ D Advanced Signing Local	Traffic Management (Local Signs)	Capital expenditure	41,187.94	2022		0%	46,143.76
CAZ D Advanced Signing HE Ne A50 and A500 Signs		Capital expenditure	1,969,446.25	2022		2%	2,206,414.40
CAZ D Advanced Signing HE Ne Alternative Gantry Signs		Capital expenditure	2,367,123	2022		2%	2,651,940.38
CAZ D Advanced Signing HE Ne Traffic Management for Signs (HE)		Capital expenditure	55,864	2022		0%	62,585.79
CAZ D Advanced Signing HE Ne Traffic Management for Gantries (HE)		Capital expenditure	10,936	2022		0%	12,251.96
CAZ D Internal ANPR and Signir ANPR within CAZ D at 25 locations (50 ANPR Cameras)		Capital expenditure	4,908,257.4	2022		5%	5,498,830.20
Back Office Cost for Monitoring, I	Setting up back office / Upgrade to systems	Capital expenditure IT	3,029,917.31	2022		3%	3,394,483.69
Back Office Cost for Monitoring, I	Project Management costs	Operating expenditure	3,029,917.31	2022		3%	3,394,483.69
Back Office Cost for Monitoring, I	Processing	Operating expenditure IT	10,538,843	2022		11%	11,806,899.78
Back Office Cost for Monitoring, I	Maintenance (Internal)	Operating expenditure IT	34,251,239	2022		35%	38,372,424.30
Maintenance	Five year camera replacement costs	Operating expenditure IT	13,173,654	2022		14%	14,768,524.73
Communications, Engagement a	Marketing	Capital expenditure	4,226,912	2022	Taken in 202	4%	4,735,503.99
Communications, Engagement a	Communications	Operating expenditure	1,363,463	2022		1%	1,527,517.66
Monitoring and Evaluation	Air Quality Monitoring	Operating expenditure	1,317,355	2022		1%	1,475,862.47
Monitoring and Evaluation	Annual Monitoring Costs	Operating expenditure	713,348	2022	Monitoring a	0%	85,631.61
Monitoring and Evaluation	Traffic Data Collection for Monitoring in 2025	Operating expenditure	210,777	2022	Monitoring a	0%	25,361.14
Monitoring and Evaluation	Installation Costs	Operating expenditure	118,562	2022	Monitoring a	0%	14,265.64
Decommissioning Costs	Decommissioning / Removal	Capital expenditure	164,669	2022	Monitoring a	0%	19,813.39
Sinking Fund	Sinking Fund	Capital expenditure	2,053,355	2022		2%	2,300,419.46
Risk	Risk Allowance		11,690,000				
Risk - email from Sweco (4/5) @11:56							









### 3d. Upgrade costs results

Check-box	Last User	Date	Status	User Comments
OK	GW	15/04/20		

#### Sheet explanation

Drives data from supporting cost calculation tabs for both CAZ and baseline scenarios and compares CAZ to baseline  
 Compares CAZ scenario to baseline costs to calculate marginal impact  
 Total cost of scenarios then feeds through to summary sheets

#### 3. CAZ D

##### 3a. Scenario Results

		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	v	sk	bp	ce		
													Scrap	Purchase	Sell	Sell		
CAZ D	Bus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	HGV	165,081,220	-	-	-	-	-	-	-	-	-	-	3,546,324	86,232,027	75,302,868	-	-	1
	TAXI	2,262,017	-	-	-	-	-	-	-	-	-	-	96,952	1,306,573	918,493	-	-	1
	Coach	27,615,242	-	-	-	-	-	-	-	-	-	-	270,761	14,703,735	12,640,743	-	-	1
	Private Hire Car	3,391,104	-	-	-	-	-	-	-	-	-	-	127,613	2,779,563	522,231	-	38,302	1
	LGV	119,616,780	-	-	-	-	-	-	-	-	-	-	4,273,204	102,102,359	15,369,536	-	2,126,318	1
	Car	318,359,980	-	-	-	-	-	-	-	-	-	-	11,763,895	281,933,327	48,144,452	-	3,482,714	1
Total	ORR CAZ D	636,347,325	-	-	-	-	-	-	-	-	-	-	20,038,749	469,057,587	152,898,323	-	5,647,334	1

##### 3b. Baseline

		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032					
CAZ D	Bus	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	1
	HGV	153,508,765	-	-	-	-	-	-	-	-	-	-	0	80,498,520	730,102,45	0	1
	TAXI	2,145,211	-	-	-	-	-	-	-	-	-	-	0	125,3419	881,792	0	1
	Coach	26,919,255	-	-	-	-	-	-	-	-	-	-	0	13,229,097	12,293,198	0	1
	Private Hire Car	3,253,600	-	-	-	-	-	-	-	-	-	-	0	27,20918	504,190	28,492	1
	LGV	116,898,724	-	-	-	-	-	-	-	-	-	-	0	101,527,074	150,075,91	350,960	1
	Car	305,265,032	-	-	-	-	-	-	-	-	-	-	0	252,689,504	469,849,413	239,954	1
Total	Baseline ORR CA	607,078,556	-	-	-	-	-	-	-	-	-	-	0	455,715,532	1,483,918,19	297,1205	1

##### 3c. Marginal Impact

		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Scrap	Purchase	Sell	Sell	
CAZ D	Bus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	HGV	11,572,455	-	-	-	-	-	-	-	-	-	-	-	3,546,324	5,733,507	2,292,623	1
	TAXI	136,807	-	-	-	-	-	-	-	-	-	-	-	96,952	53,154	26,791	1
	Coach	1,595,987	-	-	-	-	-	-	-	-	-	-	-	270,761	977,941	347,285	1
	Private Hire Car	137,505	-	-	-	-	-	-	-	-	-	-	-	127,613	58,644	18,042	66,794
	LGV	2,732,056	-	-	-	-	-	-	-	-	-	-	-	4,273,204	575,285	361,845	2,478,377
	Car	13,093,959	-	-	-	-	-	-	-	-	-	-	-	11,763,895	5,345,923	1,459,609	8,673,268
Total	Marginal ORR CA	29,288,768	-	-	-	-	-	-	-	-	-	-	20,038,749	13,342,055	4,506,504	8,618,540	1









7. TUBA

Sheet explanation

This sheet explains TUBA Model Outputs provided by SWECO for use in the CBA

1. Travel time, fuel and non-VOC operating

Preferred Option	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Time	5,704,507	5,392,689	5,100,511	4,825,439	4,734,278	4,649,856	4,571,564	4,496,748	4,427,230	4,368,527	43,868,527
OPEx	3,762,760	3,782,352	3,661,114	3,633,400	3,461,506	3,303,000	3,181,815	3,093,060	3,017,565	2,957,342	28,744,342
Fuel	587,867	570,114	551,535	532,303	511,206	488,884	466,218	447,839	428,482	407,319	4,071,319
Indirect tax	412,259	342,105	274,468	209,565	195,172	187,056	175,053	166,218	156,741	147,327	1,617,327

CAZ D	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Time	5,775,733	4,740,719	3,756,514	2,816,668	2,763,566	2,714,214	2,668,568	2,624,779	2,584,215	2,544,140	32,969,110
OPEx	3,610,365	3,201,385	2,815,761	2,452,794	2,369,739	2,289,634	2,212,177	2,137,321	2,065,008	1,995,163	25,149,336
Fuel	525,797	545,029	562,987	523,997	517,281	493,862	463,300	437,524	412,508	397,569	4,069,487
Indirect tax	3,644,673	3,175,924	2,734,598	2,319,874	2,198,642	2,081,651	1,964,673	1,860,512	1,769,380	1,669,405	23,369,431

CAZ D 0% Upgrade Sensitivity	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Time	10,262,120.30	9,431,088.34	8,659,043.80	7,957,121.08	7,777,476.90	7,538,817.74	7,310,405.53	7,097,364.12	6,892,995.83	6,701,199.48	81,014,630.70
OPEx	5,772,944.84	5,026,922.31	4,522,264.99	4,050,615.15	4,020,615.15	4,020,615.15	4,020,615.15	4,020,615.15	4,020,615.15	4,020,615.15	47,616,914.89
Fuel	119,156.09	21,406.28	66,473.72	149,929.71	143,169.26	135,855.17	128,304.54	122,044.34	114,470.30	108,626.32	828,299.00
Indirect tax	6,442,103.00	5,671,626.27	4,906,944.23	4,191,815.35	3,970,849.80	3,758,055.52	3,545,344.71	3,336,043.74	3,127,065.20	2,920,369.48	42,747,397.40

NOTE: The cost of any EU Allowances (EUAs) purchased to cover traded emissions (i.e. emissions from sectors covered by the EU Emissions Trading System) will be reflected in the purchase price of traded sector goods (such as electricity). Since the purchase price is used in the costs, considered in transport appraisal, the cost of the relevant EUAs will be included in the cost benefit analysis. "Internalising" the costs of emissions from traded sectors. The CO2 EMISSIONS BY TIME PERIOD TRADED reported in the table above are therefore provided for information purposes only - they are not included in the Economic Efficiency of the Transport System (EES) table. For further information, please refer to TAG Unit A.3 para. 4.1.5 and 4.2.9

2. GHG impacts

CAZ D compliant (2018 price base year, 2019 discount year)												
Submode	Year	Emissions			Cost (£000s)			Increase	DM	DS	Increase	
		DM	DS	Increase	DM	DS	Increase					
AM peak	2022	551104	517895	33792	21023	21655	532					
AM peak	2025	445952	556607	9656	21349	21727	378					
PM peak	2022	544218	557909	13691	22600	23220	620					
PM peak	2025	588204	557383	8119	23003	23348	345					
Inter-peak	2022	1094211	1107566	23357	45126	46098	972					
Inter-peak	2025	1170370	1183341	14972	47036	48291	255					
Off-peak	2022	562403	574570	12167	23410	23914	504					
Off-peak	2025	607151	614817	7766	23741	24045	304					
AM peak	Total	5168431	5269335	97506	198373	202138	3765					
PM peak	Total	5564134	5647012	62898	453001	216798	9697					
Inter-peak	Total	11125204	11283628	158324	426842	433073	6131					
Off-peak	Total	5274463	5365296	90733	224484	226664	2180					
											<b>Total GHG benefits</b>	<b>16273</b>

CAZ D non-compliant (2018 price base year, 2019 discount year)												
Submode	Year	Emissions			Cost (£000s)			Increase	DM	DS	Increase	
		DM	DS	Increase	DM	DS	Increase					
AM peak	2022	201784	184543	-17241	8398	7980	-718					
AM peak	2025	127964	144411	21645	4969	4474	-496					
PM peak	2022	221985	203955	-18330	9237	8473	-765					
PM peak	2025	140711	128189	-11922	5502	5007	-495					
Inter-peak	2022	412399	384167	-30422	17161	15906	-1255					
Inter-peak	2025	268318	238147	-10171	10102	9348	-754					
Off-peak	2022	213882	198256	-15626	8902	8251	-651					
Off-peak	2025	134006	124010	-9997	5240	4650	-590					
AM peak	Total	1376767	1223147	-154519	62681	47388	-4193					
PM peak	Total	1491771	1367367	-124398	57779	52037	-4842					
Inter-peak	Total	2796628	2520335	-293759	140739	99887	-7891					
Off-peak	Total	1430085	1324381	-105703	55393	51299	-4093					
											<b>Total GHG benefits</b>	<b>2678</b>

Option 4+ compliant (2018 price base year, 2019 discount year)												
Submode	Year	Emissions			Cost (£000s)			Increase	DM	DS	Increase	
		DM	DS	Increase	DM	DS	Increase					
AM peak	2022	427844	428337	493	17807	17837	28					
AM peak	2025	462445	463071	626	18063	18108	45					
PM peak	2022	423695	424315	619	17634	17660	27					
PM peak	2025	407886	408655	769	17006	17026	20					
Inter-peak	2022	789683	789401	-282	33009	33023	12					
Inter-peak	2025	804206	804206	0	33446	33446	0					
AM peak	Total	437786	438390	603	16800	16824	24					
PM peak	Total	431410	433098	1688	34604	34654	50					
Inter-peak	Total	789127	788801	-276	30246	30248	2					
											<b>Total GHG benefits</b>	<b>378</b>

Option 4+ non-compliant (2018 price base year, 2019 discount year)												
Submode	Year	Emissions			Cost (£000s)			Increase	DM	DS	Increase	
		DM	DS	Increase	DM	DS	Increase					
AM peak	2022	170900	171219	300	714	7126	12					
AM peak	2025	180486	180486	0	428	421	-6					
PM peak	2022	127284	127599	275	7102	7203	101					
PM peak	2025	105469	107356	1897	4283	4291	8					
Inter-peak	2022	204845	205240	395	75	1212	1137	2				
Inter-peak	2025	183204	183181	-19	7165	7164	-1					
AM peak	Total	1150004	1151024	1020	44039	44813	75					
PM peak	Total	1161402	1163354	1952	4982	4959	-23					
Inter-peak	Total	1055411	1055159	-252	2740	2721	-19					
											<b>Total GHG benefits</b>	<b>144</b>

No upgrade compliant (2018 price base year, 2019 discount year)												
Submode	Year	Emissions			Cost (£000s)			Increase	DM	DS	Increase	
		DM	DS	Increase	DM	DS	Increase					
AM peak	2022	551104	54362	493	21023	20987	-34					
AM peak	2025	445952	545137	816	21349	21316	-31					
PM peak	2022	544218	545377	941	22600	22616	16					
PM peak	2025	588204	587562	-612	23003	22980	-23					
Inter-peak	2022	1094211	1093985	-226	45126	45090	-37					
Inter-peak	2025	1170370	1189745	624	45766	45741	-25					
Off-peak	2022	562403	562005	-398	23410	23392	-18					
Off-peak	2025	607151	606826	-325	23741	23729	-12					
AM peak	Total	5168431	5165234	-3200	198373	198009	-364					
PM peak	Total	5564134	5647927	6298	213001	212968	-33					
Inter-peak	Total	11125204	11118799	-6505	426842	426661	-181					
Off-peak	Total	5274463	5268028	-6435	224484	224364	-120					
											<b>Total GHG benefits</b>	<b>838</b>

No upgrade non-compliant (2018 price base year, 2019 discount year)												
Submode	Year	Emissions			Cost (£000s)			Increase	DM	DS	Increase	
		DM	DS	Increase	DM	DS	Increase					
AM peak	2022	201784	195009	-6775	8398	8117	-282					
AM peak	2025	127844	122038	-5805	4909	4772	-226					
PM peak	2022	221985	214407	-7477	9237	8925	-311					
PM peak	2025	140711	138386	-2325	5502	5313	-189					
Inter-peak	2022	412399	400004	-12395	17161	16687	-473					
Inter-peak	2025	258318	251001	-7317	10102	9815	-287					
Off-peak	2022	213882	203005	-10877	8902	8251	-651					
Off-peak	2025	134006	132011	-1995	5240	5091	-148					
AM peak	Total	1376767	1321121	-55656	62681	59402	-3279					
PM peak	Total	1491771	1441184	-50573	57779	55819	-1959					
Inter-peak	Total	2796628	2750010	-46618	140739	137979	-2760					
Off-peak	Total	1430085	1393033	-37052	55393	53869	-1524					
											<b>Total GHG benefits</b>	<b>8652</b>

Source: TUBA outputs (Tara email 11/5)

3. User charges and revenue

Prices are in 2018 price base, 2019 discount year

3a. CAZ D

Annualised Cost to User (CAZ D)											
Year	Car Business	Car Commuter	Car Other	Total	LVG Personal	LVG Freight					

## 8. Bus Retrofits

### Sheet explanation

This sheet compiles Off Model Cost data produced by Ricardo to calculate net costs of Bus Retrofit Measures, using cost data provided by SWECO

Cost	Variable	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Upgrade of Total upgrade		632,704	-	-	-	-	-	-	-	-	-
Additional Fuel costs		-	-	-	52,132	54,124	55,453	-	-	-	-
Operational		-	-	-	7,590	7,590	7,590	-	-	-	-
CO2 Value		-	-	-	23,969	24,344	24,718	-	-	-	-
		- 632,704	-	-	83,691	86,058	87,761	-	-	-	-

#### 1. Net Present Value

	Variable	NPV									
Upgrade of Total upgrade		570,663	-	-	-	-	-	-	-	-	-
Additional Road fuel cost		-	-	-	42,409	42,541	42,112	-	-	-	-
Road vehicle		-	-	-	6,174	5,966	5,764	-	-	-	-
Road CO2		-	-	-	19,499	19,134	18,771	-	-	-	-

#### 3. Summary Table

Option	Warnings	NPV
Preferred	-	773,033

## 9. Welfare loss

Check-box	Last User	Date	Status	User Comments
OK	DB	15/04/20		

### Sheet explanation

takes trip data provided by SWECO from the transport model  
 Combines this with CAZ charge (half) to calculate welfare loss of 'alternative' behavioural responses  
 Results flow through to summary sheet

### 3b. Number of trips - cancelled (daily)

	CAZ D	DAZ D - no upgrade
Car	5,629	10,279
LGV	385	823
HGV	71	252
Taxi	37	137
Source: Sweco email (9/3 @ 15:23)		

### 3b. Number of trips - cancelled (annual)

Car	2,054,610	3,751,729
LGV	140,363	300,571
HGV	25,920	91,855
Taxi	13,501	50,128

### 6a. Welfare cost rate

Car	£/day	£	2.50
LGV	£/day	£	4.50
HGV	£/day	£	17.50
Taxi	£/day	£	2.50
			-

### 7. Charges per year - extrapolated

Projects charge revenue using extrapolation factor - charges reduce as baseline catches up with CAZ scenario

Sensitivity Scenario		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CAZ D	£/annum	6,255,507	7,912,046	8,299,417	5,425,824	2,700,685	990,722	263,286	50,119	6,001	511
CAZ D - no upgrade	£/annum	12,464,678	15,765,485	16,537,358	10,811,458	5,381,366	1,974,105	524,622	99,866	11,958	1,018

## 10. Bus Stop Improvements

### Sheet explanation

Takes benefits of bus stop/RTPI measures provided by SWECO for use in CBA

Source: Sweco model

PVB     £ 34,844,455.00  
PVC     £ 3,119,434.00

Source: Bus infrastructure improvement Appraisal Note - Sweco (email 6/3)

**NPV     £ 31,725,021.00**

2018 prices discounted to 2019 values



