



Wyre Forest
District Council

Worcestershire
Regulatory Services

Supporting and protecting you



Air Quality Action Plan

Technical Appendices

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

2025 - 2030

Wyre Forest District Council

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Appendix G: Source Apportionment Assessment

This 'Source Apportionment Assessment' fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment Act (2021), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents.

Policy guidance (LAQM.PG22) requires a Local Authority to prepare an Air Quality Action Plan (AQAP) to ensure air quality standards or objectives are achieved in Air Quality Management Areas (AQMA). In order to develop an appropriate plan it is necessary to identify the sources contributing to the objective exceedances within the AQMA.

Source Apportionment Approach

Emissions Factor Toolkit

The source apportionment assessment has been undertaken generally following the process outlined in technical guidance. LAQM.TG22 (paragraph 7.111) advises that 'source apportionment may be undertaken using a simple spreadsheet approach. For example, where road traffic emissions are the principal concern, the percentage contribution to total NO_x emissions may be calculated using the appropriate emission factors.' This approach has been adopted for the source apportionment assessment utilising Defra's Emissions Factor Toolkit (EFT) v12.0.1.

Copies of the EFT input and outputs are provided below in Appendix J: Emissions Factor Toolkit – Source Apportionment.

Traffic and Speed Data

Total Traffic Surveys Ltd (TTS) were commissioned to undertake traffic counts and speed averages within each AQMA for the purposes of this source apportionment assessment.

TTS undertook 24-hour road traffic counts at a single location within each AQMA in March 2023. NB PC (peddle cycles) have not been included in the assessment as do not contribute towards emissions of air pollution.

Speed data was also recorded in March 2023 over a weekly period to provide a mean average for Eastbound and Westbound traffic within each AQMA. The average speed data on each link (length of AQMA) has been incorporated into Emissions Factor Toolkit v12.0.1 to determine the percentage contribution from vehicles.

Appendix H: Traffic Data and Appendix I: Speed Data shows the traffic data and speed data recorded and utilised within this source apportionment assessment.

Figure G.1 Summary of vehicle proportions – Welch Gate, Bewdley

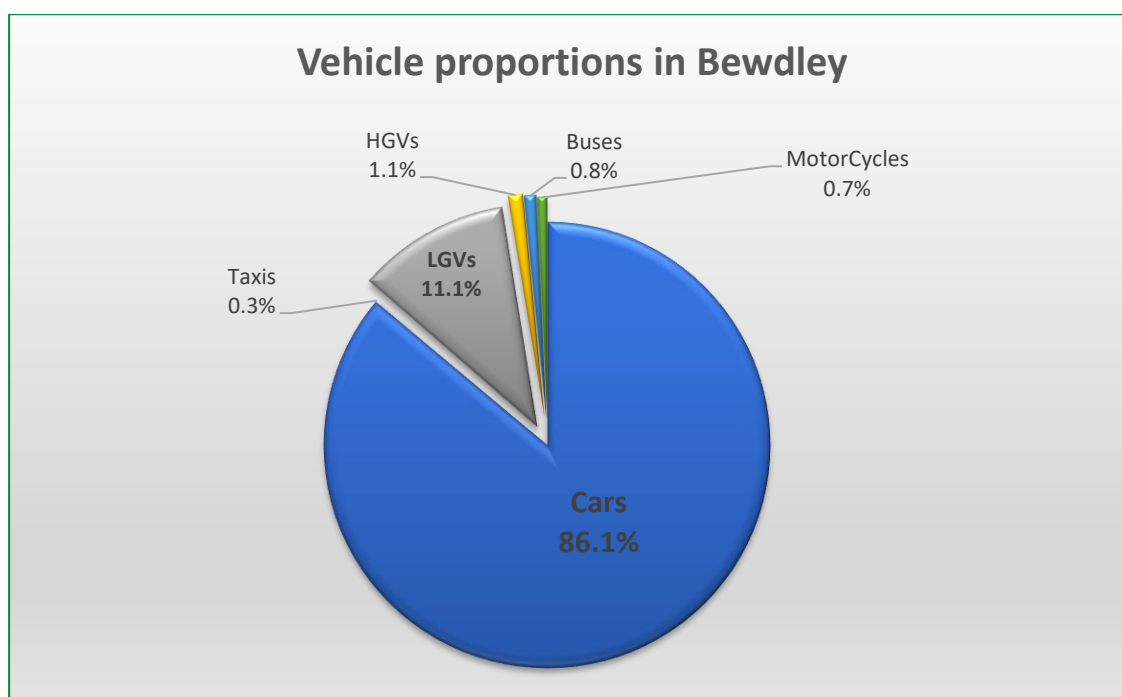
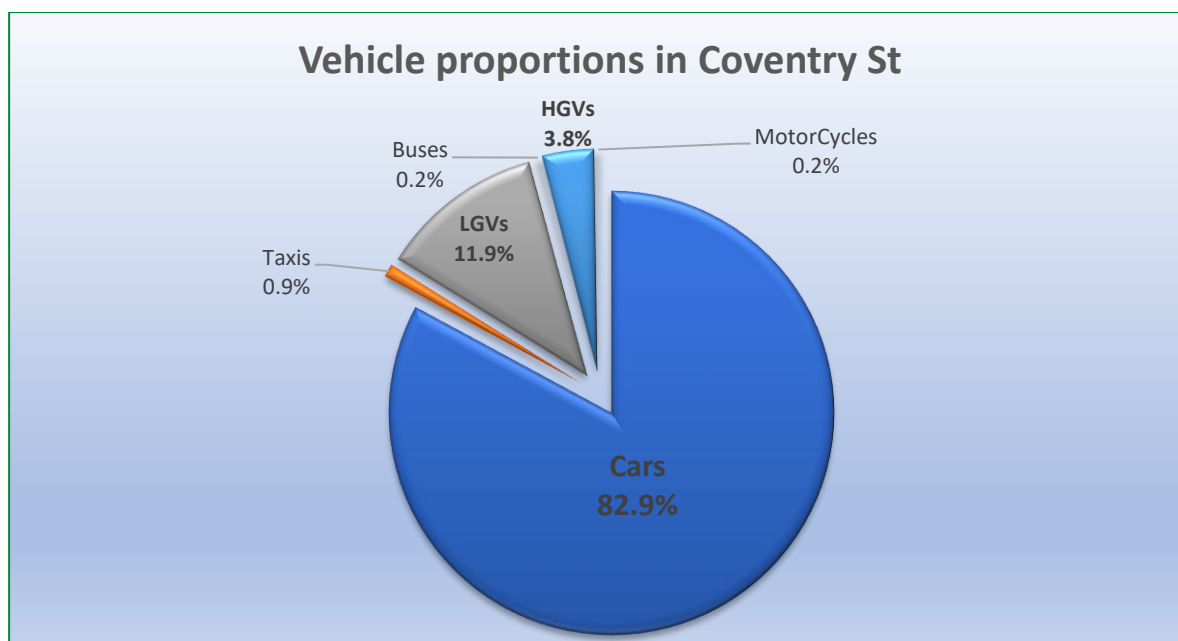


Figure G.2 Summary of vehicle proportions – Coventry Street, Kidderminster

Bus Fleet Data

Worcestershire County Council provided WRS with local bus fleet composition for Diamond Bus Group who are the predominant service provider across the district. This data was used as a proxy for all bus services in the district and the generalised Euro code compositions assumed in the EFT were amended accordingly to reflect the local circumstances providing a more accurate EFT output. A copy of current fleet composition is provided below in Table G.1.

Table G.1 Local Bus Fleet

Diamond Buses	Numbers in fleet	Proportion of Fleet
1Pre-Euro I (Euro 1)		0%
2Euro I (Euro1)		0%
3Euro II (Coaches) (Euro 2)		0%
4Euro III (Euro 3)		0%
5Euro IV (Euro 4)	12	6%
6Euro V _EGR (Euro 5)	30	15%
7Euro V _SCR (Euro 5)		0%
8Euro VI (Euro 6)	157	79%
9Euro II SCRRF (Euro 2)		0%
10Euro III SCRRF (Euro 3)		0%
11Euro IV SCRRF (Euro 4)		0%
12Euro V EGR + SCRRF (Euro 5)		0%
Total	199	100%

Monitoring Data

In 2023, Wyre Forest District Council monitored annual mean nitrogen dioxide concentrations using passive diffusion tubes located across the district supported by one low-cost sensor (Zephyr) located in Horsefair, Kidderminster. Eight diffusion tubes sites are located within the boundary of the Horsefair/Coventry Street AQMA and 1 tube is located within the Welch Gate, Bewdley AQMA. Plans showing the positions of diffusion tube monitoring locations is included in Figures 2.1 and 2.2 of the main report.

Table G.2 below shows the bias adjusted annual averages for nitrogen dioxide at the worst case scenario monitoring locations within each AQMA. These locations have been used for the purposes of the source apportionment exercise.

Table G.2 Highest Annual Mean NO₂ Monitoring Results in each AQMA in 2023

Site ID	Site Name	X OS Grid Ref	Y OS Grid Ref	Distance to Relevant Exposure (m)	NO ₂ Annual Mean Concentration (µg/m ³) in 2023
WG(B)	88 Welch Gate, Bewdley	378465	378465	0.0	38.6
(F)69COV	69 Coventry Street, Kidderminster	383552	383552	0.0	40.8

Notes: Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

Background and Local Contributions

Technical guidance advises that determining ‘...the apportionment for NO₂ is not straightforward due to the non-linear relationship between the emissions of NO₂ and nitrous oxides (NO_x). This is additionally complicated by the different proportions of NO₂ in the NO_x emission for different sources, for example, petrol cars or diesel cars. The following advice therefore applies to NO₂ source apportionment:

Background contributions: the national maps will give the total background NO₂ concentration. This should be apportioned to regional and local background using the ratio of the background NO_x concentrations attributable to these two sources, which are also available in the national maps; and

Local contributions: the local contribution to NO₂ is the difference between the total (measured or modelled) NO₂ and the total background NO₂. This is then apportioned to the local sources, for example, buses, HGVs, taxis, cars, using the relative contributions of these sources to the local NO_x concentration.’

Regional and Total Background contributions of NO_x and NO₂ for 2023, available from Defra website, have been used to calculate the contribution of local nitrogen dioxide for each relevant receptor (monitoring location) in the AQMA following the procedure laid out in LAQM.TG22 Box 7-5. The local contribution has then been apportioned to each vehicle class according to the results of the EFT. Calculations are presented below in Table G.3 and Table G.4 and the results summarised in Figure G.3 to Figure G.6 below.

Source Apportionment Results – Welch Gate, Bewdley

Table G.3 The local contribution apportioned to each vehicle class calculated for monitoring location WG(B) in accordance with LAQM.TG22 Box 7-5.

Box 7-5 calculation - Location: WG (B)	Local Source %	NO ₂ µg/m ³	Total %
T-NO₂ (Total (Monitored) nitrogen dioxide)		40.2	
TB-NO₂ (Total Background nitrogen dioxide ¹)		5.76467	
TB-NOx (Total Background nitrous oxides ¹)		7.276608	
RB-NOx (Regional Background nitrous oxides ¹)		5.997468	
Step 1: LB-NOx ² = TB-NOx – RB-NOx		1.27914	
Step2: RB-NO₂ ³ = TB-NO ₂ × (RB-NOx / TB-NOx)		4.7513105	11.82%
Step2: LB-NO₂ ⁴ = TB-NO ₂ × (LB-NOx / TB-NOx)		1.0133595	2.52%
Step3: L-NO₂ ⁵ = T-NO ₂ – TB-NO ₂		34.43533	
<u>Step4: % of vehicles from EFT</u>			
Petrol Cars (%)	8.81%	3.03	
Petrol Hybrid Petrol Cars (%)	0.21%	0.07	
Plug in Hybrid Petrol Cars (%)	0.05%	0.02	
Diesel Cars (%)	59.16%	20.37	
Diesel Hybrid Diesel Cars (%)	0.38%	<u>0.13</u>	
Total cars	68.61%	23.63	58.77%
Petrol Taxis	0.00%	0.00	
Petrol hybrid Taxis	0.00%	0.00	
Diesel Taxis	0.23%	0.08	
Taxis	0.24%	0.08	0.20%
Petrol LGVs (%)	0.07%	0.02	
Diesel LGVs (%)	<u>18.45%</u>	<u>6.35</u>	
Total LGVs	18.51%	6.37	15.86%
Rigid HGVs (%)	5.81%	2.00	
Artic HGVs (%)	<u>0.12%</u>	<u>0.04</u>	
Total HGVs	5.93%	2.04	5.08%
Buses (%)	3.76%	1.29	
Hybrid Buses (%)	0.08%	0.03	
Biogas Buses (%)	0.00%	0.00	
Coaches (%)	2.74%	0.94	
Hybrid Coaches (%)	0.05%	0.02	
Biogas Coaches (%)	<u>0.00%</u>	0.00	
Total Buses	6.64%	2.28	5.68%

Box 7-5 calculation - Location: WG (B)	Local Source %	NO ₂ µg/m ³	Total %
Motorcycles (%)	<u>0.08%</u>	<u>0.03</u>	<u>0.07%</u>
	100.00%	34.44	100.00%

- 1) Data from Defra 2018 Background Maps for model year of 2023 for relevant local coordinates
- 2) Local Background nitrous oxides
- 3) Regional Background nitrogen dioxide contribution
- 4) Local Background nitrogen dioxide contribution
- 5) Local sources nitrogen dioxide contribution

Figure G.3 Total NO₂ sources in Welch Gate, Bewdley AQMA

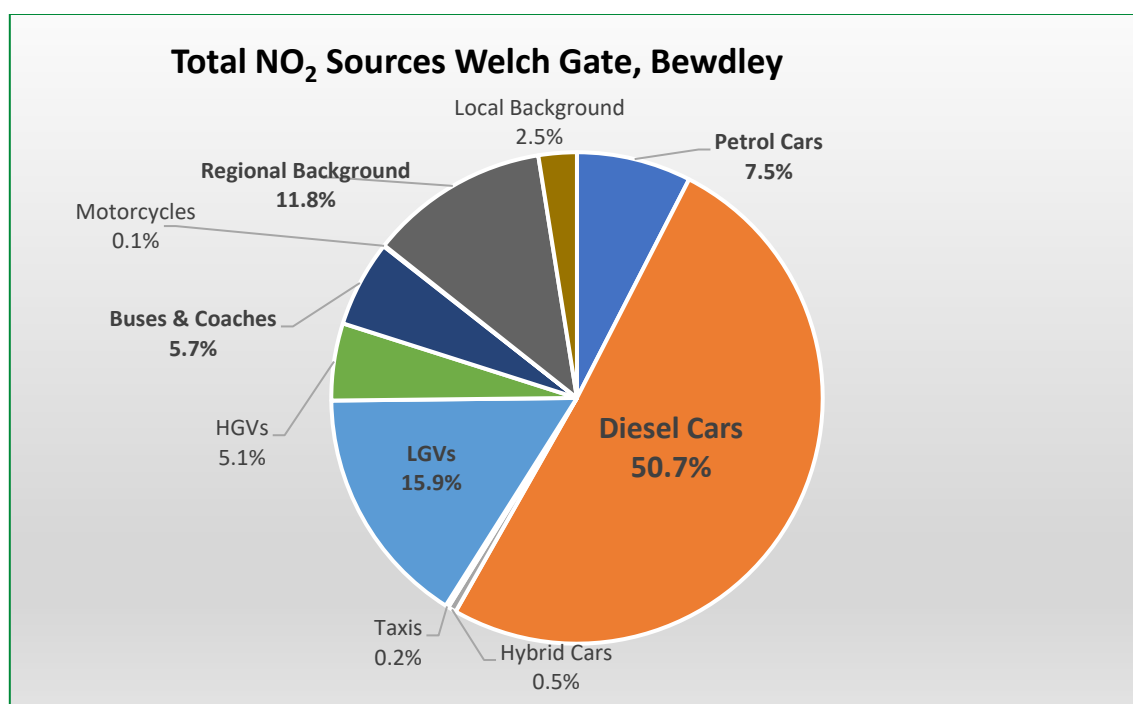


Table G.3 and Figure G.3 above demonstrates that the main contributors of total emissions within the Welch Gate, Bewdley AQMA are Cars with 58.77% of emissions followed by LGVs (15.9%) and Regional and Local Background totalling 14.3%.

As the Local Authority is unable to influence Regional Background concentrations and Local Background concentrations are predominately a result of traffic sources on other local roads, it is more useful to consider the source apportionment of the local traffic sources in isolation for future improvement actions. Figure G.4 below demonstrates the local traffic contribution (i.e. minus the Background contributions) broken down further into petrol and diesel classifications in the EFT.

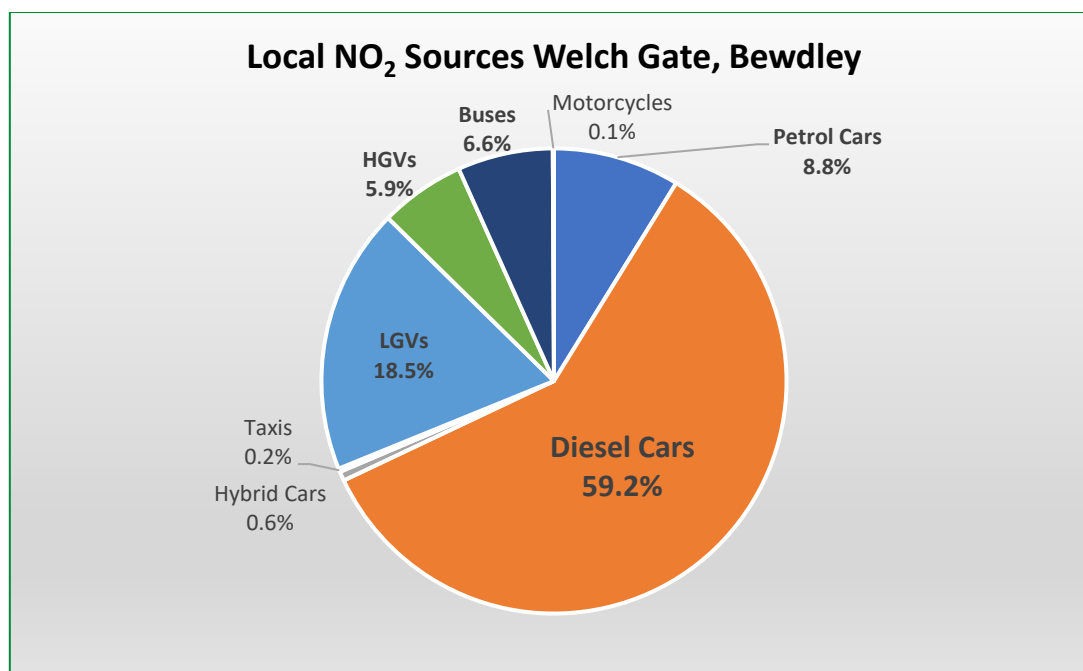
Figure G.4 Local NO₂ sources in Welch Gate, Bewdley AQMA

Table G.3 and Figure G.4 above demonstrate the main contributors of emissions from local sources within the Welch Gate, Bewdley AQMA are diesel cars with 59.2% of emissions followed by LGVs at 18.5%. Petrol Cars 8.8%, Buses 6.6% and HGVs 5.9% also make up sizeable contributions.

Source Apportionment Results – Coventry Street, Kidderminster AQMA

Table G.4 The local contribution apportioned to each vehicle class calculated for monitoring location (F)69COV in accordance with LAQM.TG22 Box 7-5.

Box 7-5 calculation - Location: (F)69Cov	Local Sources %	NO ₂ µg/m ³	Total Emissions %
T-NO₂ (Total (Monitored) nitrogen dioxide)		38.6	
TB-NO₂ (Total Background nitrogen dioxide ¹)		11.60365	
TB-NO_x (Total Background nitrous oxides ¹)		15.44016	
RB-NO_x (Regional Background nitrous oxides ¹)		10.412478	
Step 1: LB-NO_x ² = TB-NO _x – RB-NO _x		5.027682	
Step2: RB-NO₂ ³ = TB-NO ₂ × (RB-NO _x / TB-NO _x)		7.8252266	20.27%
Step2: LB-NO₂ ⁴ = TB-NO ₂ × (LB-NO _x / TB-NO _x)		3.7784234	9.79%
Step3: L-NO₂ ⁵ = T-NO ₂ – TB-NO ₂		26.99635	
<u>Step4: % of vehicles from EFT</u>			
Petrol Cars (%)	8.33%	2.25	

Box 7-5 calculation - Location: (F)69Cov	Local Sources %	NO ₂ µg/m ³	Total Emissions %
Petrol Hybrid Petrol Cars (%)	0.20%	0.05	
Plug in Hybrid Petrol Cars (%)	0.05%	0.01	
Diesel Cars (%)	54.17%	14.62	
Diesel Hybrid Diesel Cars (%)	<u>0.35%</u>	<u>0.09</u>	
Total cars	63.10%	17.03	44.13%
Petrol Taxis	0.00%	0.00	
Petrol hybrid Taxis	0.02%	0.00	
Diesel Taxis	0.82%	0.22	
Taxis	0.84%	0.23	0.59%
Petrol LGVs (%)	0.07%	0.02	
Diesel LGVs (%)	<u>19.28%</u>	<u>5.21</u>	
Total LGVs	19.35%	5.22	13.53%
Rigid HGVs (%)	9.01%	2.43	
Artic HGVs (%)	<u>6.04%</u>	<u>1.63</u>	
Total HGVs	15.05%	4.06	10.53%
Buses (%)	0.93%	0.25	
Hybrid Buses (%)	0.02%	0.01	
Biogas Buses (%)	0.00%	0.00	
Coaches (%)	0.67%	0.18	
Hybrid Coaches (%)	0.01%	0.00	
Biogas Coaches (%)	<u>0.00%</u>	<u>0.00</u>	
Total Buses	1.63%	0.44	1.14%
Motorcycles (%)	<u>0.03%</u>	<u>0.01</u>	<u>0.02%</u>
	100.00%	27.00	100.00%

- 1) Data from Defra 2018 Background Maps for model year of 2023 for relevant local coordinates
- 2) Local Background nitrous oxides
- 3) Regional Background nitrogen dioxide contribution
- 4) Local Background nitrogen dioxide contribution
- 5) Local sources nitrogen dioxide contribution

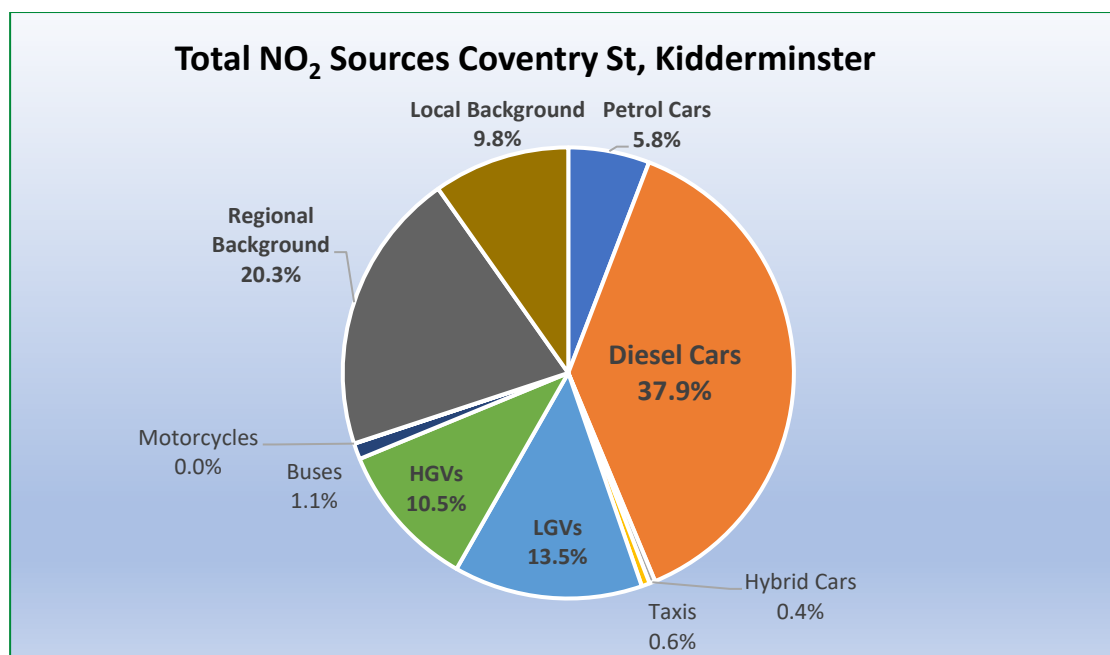
Figure G.5 Total NO₂ sources in Coventry Street, Kidderminster

Table G.4 and Figure G.5 above demonstrates that the main contributors of total emissions within the Coventry Street, AQMA are Cars with 44.13% of emissions followed by Regional and Local Background totalling 30.6% of emissions.

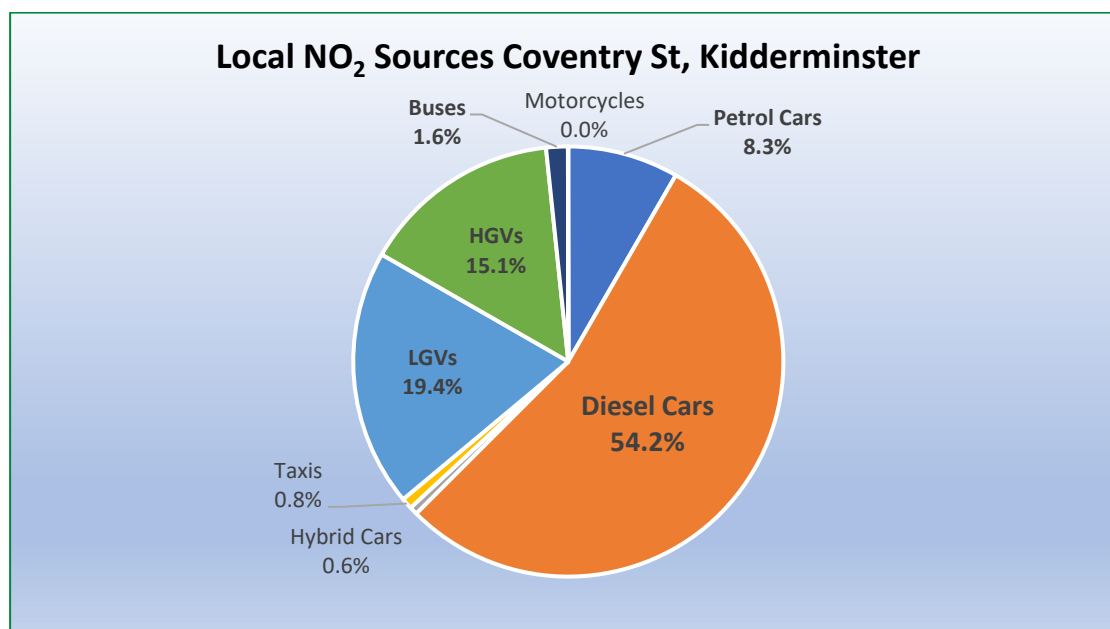
Figure G.6 Local NO₂ sources in Coventry Street, Kidderminster

Table G.4 and Figure G.6 above demonstrate the main contributors of emissions from local sources within the Coventry Street, Kidderminster are Diesel Cars at

54.2% of emissions followed by LGVs at 19.4% and HGVs at 15.1%. Petrol Cars at 8.3% also make up a sizeable contribution.

Air Quality Improvements Required

The degree of improvement required in order for the annual mean objective for nitrogen dioxide to be achieved is the difference between the highest measured or predicted concentration and the objective level.

LAQM.TG22 advises: 'Where NO₂ monitoring is completed using diffusion tubes, to account for the inherent uncertainty associated with the monitoring method, it is recommended that revocation of an AQMA should be considered following three consecutive years of annual mean NO₂ concentrations being lower than 36µg/m³ (i.e. within 10% of the annual mean NO₂ objective).'

Therefore air quality improvements to achieve sustained compliance below current air quality objectives have been calculated to achieve 36µg/m³ in each AQMA. The highest nitrogen dioxide concentration at a representative location in each AQMA in 2023 is 40.2µg/m³ at WG(B) in Welch Gate, Bewdley and 38.6µg/m³ at (F)69Cov in Coventry Street, Kidderminster, requiring a reduction of 4.2µg/m³ and 2.6µg/m³ for -10%AQO to be achieved in each AQMA respectively.

However technical guidance advises that in terms of the reduction in emissions required it is more useful to consider nitrogen oxides (NO_x). Therefore the road NO_x reduction required for compliance with -10%AQO in each AQMA has been calculated in accordance with LAQM.TG22 Box 7-6 utilising Defra's NO_x to NO₂ Conversion Spreadsheet v8.1. Calculations are shown below.

Figure G.7 Defra's NO_x to NO₂ Conversion Spreadsheet v8.1 for LAQM.TG22 Box 7-6 calculation at representative monitoring locations

Local Authority: Wyre Forest District				
Site ID	Diffusion tube NO ₂ , µg m ⁻³	Background	µg m ⁻³	Road NO _x , µg m ⁻³
		NO _x	NO ₂	
WG B	40.02	7.276608	5.76467	70.37
36	36	7.276608	5.76467	60.92
Cov69	38.6	15.44016	11.60365	54.95
36	36	15.44016	11.60365	49.05

Year: 2023	
Traffic Mix: All other urban UK traffic	
User defined local traffic mix fraction emitted as NO ₂ (fNO ₂)	Notes

Table G.5 Box 7-6 Calculation for Welch Gate, Bewdley AQMA

Box 7.6 Calculation – WG(B)	NOx or NO ₂ µg/m ³	Reduction required %
Step1 Total NOx	77.65	
Step2 TB-NOx (Total Background nitrous oxides ¹)	7.28	
Step3 Total Road NOx (Local Sources)	70.37	
Step4 NOx equivalent for NO₂ 36µg/m³	60.92	
Step5 NOx reduction required for 36µg/m³	9.45	13.43%
Local NO ₂ reduction required for 36µg/m ³	4.62	

Table G.6 Box 7-6 Calculation for Coventry Street, Kidderminster

Box 7.6 Calculation – (F)69Cov	NOx or NO ₂ µg/m ³	Reduction required %
Step1 Total NOx	70.39	
Step2 TB-NOx (Total Background nitrous oxides ¹)	15.44	
Step3 Total Road NOx (Local Sources)	54.95	
Step4 NOx equivalent for NO₂ 36µg/m³	49.05	
Step5 NOx reduction required for 36µg/m³	5.9	10.74%
Local NO ₂ reduction required for 36µg/m ³	2.90	

Table G.7 Emission reduction required

Location	Emission Reductions Required to Meet -10% Objective (NO ₂)	All Vehicle Reduction to Meet -10% Objective (NO _x)	Highest Roadside Contributor	2nd Roadside Contributor	Single Vehicle Reduction to Achieve Objective
Welch Gate Bewdley	4.62	13.43%	Diesel Cars – 50.67%	LGV – 15.86%	Cars 20% or LGV 75%
Coventry Street Kidderminster	2.90	10.74%	Diesel Cars – 37.88%	LGV – 13.53%	Cars 20% or LGV 60%

The assessment indicates:

- Reducing total vehicle emissions from all vehicle types by >13.5% or targeting a 20% reduction in cars or 75% of LGVs would be potentially effective measures for achieving -10%AQO in Welch Gate Bewdley.
- Reducing total vehicle emissions from all vehicle types by >10.8% or targeting a 20% reduction in cars or 60% of LGVs would be potentially effective measures for achieving -10%AQO in in Coventry Street, Kidderminster.

Appendix H: Traffic Data

TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION										Job Title: Job Number: Survey Date: Survey Type:										Worcestershire Counts TTS-1529-Mar Tuesday 21st March 2023 Manual Classified Counts									
Site:		9																											
Location:		B4190 Welch Gate, Bewdley																											
Eastbound										Westbound																			
Time	PC	MC	Car	Taxi	LGV	OGV1	OGV2	PSV	Total	PC	MC	Car	Taxi	LGV	OGV1	OGV2	PSV	Total											
00:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1											
00:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2											
00:30	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1											
00:45	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1											
HTot	0	0	1	0	1	0	0	0	2	0	0	5	0	0	0	0	0	5											
01:00	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0											
01:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1											
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
01:45	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1											
HTot	0	0	2	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2											
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
02:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1											
02:30	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0											
02:45	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0											
HTot	0	0	1	0	1	0	0	0	2	0	0	1	0	0	0	0	0	1											
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
03:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1											
03:30	0	0	2	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1											
03:45	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1											
HTot	0	0	3	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3											
04:00	0	0	2	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1											
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
04:30	0	0	7	0	0	0	0	0	7	0	0	1	0	0	0	0	0	1											
04:45	0	0	2	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0											
HTot	0	0	11	0	2	0	0	0	13	0	0	2	0	0	0	0	0	2											
05:00	0	0	3	0	2	0	0	0	5	0	0	2	0	1	0	0	0	3											
05:15	0	0	7	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0											
05:30	0	0	5	0	2	0	0	0	7	1	0	2	0	0	0	0	0	3											
05:45	0	0	14	0	4	0	0	0	18	0	1	4	0	0	0	0	0	5											
HTot	0	0	29	0	8	0	0	0	37	1	1	8	0	1	0	0	0	11											
06:00	0	0	20	0	5	0	0	0	25	0	0	8	0	0	0	0	0	8											
06:15	1	0	31	1	2	0	0	0	35	0	0	7	0	1	0	0	0	8											
06:30	0	0	38	0	4	0	0	0	42	0	0	12	0	0	1	0	0	13											
06:45	0	0	36	0	3	1	0	0	40	0	1	10	0	4	0	0	0	15											
HTot	1	0	125	1	14	1	0	0	142	0	1	37	0	5	1	0	0	44											
07:00	1	1	40	1	4	0	0	0	47	1	0	22	1	7	2	0	0	33											
07:15	0	1	49	0	8	1	0	1	60	0	0	14	0	6	0	0	0	20											
07:30	0	1	50	2	9	0	0	0	62	0	0	21	0	5	0	0	1	27											
07:45	1	0	66	0	6	3	0	2	78	1	0	23	0	13	2	0	1	40											
HTot	2	3	205	3	27	4	0	3	247	2	0	80	1	31	4	0	2	120											
08:00	1	0	65	0	9	0	0	1	76	0	0	38	0	7	4	0	0	49											
08:15	1	1	89	1	5	1	0	1	99	0	0	45	0	7	1	0	0	53											
08:30	0	0	68	1	7	1	0	0	77	0	0	63	0	15	0	0	1	79											
08:45	0	0	56	1	4	6	0	2	69	0	1	64	0	11	1	0	1	78											
HTot	2	1	278	3	25	8	0	4	321	0	1	210	0	40	6	0	2	259											
09:00	0	0	44	0	6	1	0	0	51	0	0	33	1	3	0	0	0	37											
09:15	0	0	49	0	7	2	0	1	59	0	0	32	0	6	2	0	0	40											
09:30	1	0	57	0	2	2	1	0	63	0	0	24	0	4	1	0	1	30											
09:45	0	0	47	1	7	1	0	1	57	0	0	35	0	9	1	0	1	46											
HTot	1	0	197	1	22	6	1	2	230	0	0	124	1	22	4	0	2	153											
10:00	0	0	47	0	11	0	0	0	58	0	0	34	0	8	2	0	0	44											
10:15	0	0	47	0	6	1	0	0	54	0	0	47	0	5	1	0	0	53											
10:30	1	2	50	0	10	2	1	1	67	0	2	36	0	3	0	0	1	42											
10:45	0	0	53	0	6	0	0	1	60	0	0	33	0	5	0	0	0	38											
HTot	1	2	197	0	33	3	1	2	239	0	2	150	0	21	3	0	1	177											
11:00	0	0	35	0	11	0	0	0	46	0	0	28	0	6	0	0	0	34											
11:15	1	0	37	0	3	0	0	1	42	0	1	36	0	4	0	0	1	42											

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11:30	1	0	36	0	5	0	0	0	42	0	1	36	0	7	0	0	1	45
11:45	0	0	35	0	3	2	0	1	41	0	1	34	0	8	0	0	1	44
H/Tot	2	0	143	0	22	2	0	2	171	0	3	134	0	25	0	0	3	165
12:00	0	0	46	0	7	0	0	0	53	0	0	52	0	4	2	0	0	58
12:15	0	1	42	0	6	3	0	0	52	0	0	50	0	4	0	0	0	54
12:30	0	1	52	0	7	1	0	0	61	0	0	41	0	12	0	0	1	54
12:45	0	0	48	0	8	0	0	2	58	0	1	40	0	7	0	0	0	48
H/Tot	0	2	188	0	28	4	0	2	224	0	1	183	0	27	2	0	1	214
13:00	0	0	46	0	8	0	0	0	54	0	0	40	0	8	2	0	0	50
13:15	0	0	62	0	12	0	0	1	75	2	0	46	0	6	0	0	0	54
13:30	1	0	48	0	9	0	0	0	58	0	0	45	0	7	1	0	2	55
13:45	0	0	49	0	11	0	0	1	61	0	0	39	0	3	1	0	1	44
H/Tot	1	0	205	0	40	0	0	2	248	2	0	170	0	24	4	0	3	203
14:00	0	2	48	0	4	0	0	0	54	1	0	42	0	6	0	0	0	49
14:15	2	1	36	0	10	2	0	0	51	1	1	62	0	12	0	0	0	76
14:30	1	1	36	0	9	0	0	0	47	0	0	38	0	6	3	0	1	48
14:45	1	0	52	0	10	1	0	2	66	0	0	45	0	7	0	0	0	52
H/Tot	4	4	172	0	33	3	0	2	218	2	1	187	0	31	3	0	1	225
15:00	0	0	43	0	9	1	0	1	54	0	0	48	0	4	0	0	0	52
15:15	0	1	55	0	5	0	0	0	61	1	0	70	1	4	0	0	0	76
15:30	0	1	58	0	11	2	0	0	72	2	0	60	0	8	1	0	3	74
15:45	0	2	42	0	7	1	0	2	54	0	1	70	0	4	0	0	1	76
H/Tot	0	4	198	0	32	4	0	3	241	3	1	248	1	20	1	0	4	278
16:00	1	1	71	4	4	1	0	0	82	0	0	77	0	7	0	0	0	84
16:15	0	1	45	0	14	2	0	0	62	0	1	67	0	7	0	0	0	75
16:30	0	0	53	0	12	0	0	0	65	0	0	64	0	9	0	0	2	75
16:45	2	0	47	0	8	0	0	2	59	0	1	57	0	7	0	0	0	65
H/Tot	3	2	216	4	38	3	0	2	268	0	2	265	0	30	0	0	2	299
17:00	1	1	49	0	3	0	0	1	55	0	0	75	0	5	0	0	0	80
17:15	1	0	50	0	3	0	0	0	54	0	1	63	0	11	0	0	0	75
17:30	0	2	49	1	6	0	0	0	58	0	0	53	1	5	0	0	3	62
17:45	0	0	43	0	4	0	0	1	48	0	1	60	0	5	0	0	0	66
H/Tot	2	3	191	1	16	0	0	2	215	0	2	251	1	26	0	0	3	283
18:00	0	0	43	0	6	0	0	0	49	0	0	61	0	3	0	0	0	64
18:15	0	1	39	0	5	0	0	0	45	1	0	55	0	2	0	0	0	58
18:30	0	0	43	0	4	0	0	0	47	0	0	50	0	2	0	0	1	53
18:45	0	1	57	0	2	0	0	1	61	0	0	47	0	5	0	0	0	52
H/Tot	0	2	182	0	17	0	0	1	202	1	0	213	0	12	0	0	1	227
19:00	4	0	33	0	1	0	0	1	39	0	0	41	0	3	0	0	0	44
19:15	0	0	43	0	4	0	0	0	47	1	0	48	0	4	0	0	0	53
19:30	0	0	34	0	2	0	0	0	36	0	0	38	0	0	0	0	0	38
19:45	0	0	24	0	4	0	0	0	28	0	0	29	0	4	0	0	0	33
H/Tot	4	0	134	0	11	0	0	1	150	1	0	156	0	11	0	0	0	168
20:00	0	0	21	0	1	0	0	0	22	1	0	26	0	4	0	0	0	31
20:15	0	0	16	0	2	0	0	0	18	3	0	29	0	0	0	0	0	32
20:30	0	0	16	0	0	0	0	0	16	0	0	26	0	2	0	0	0	28
20:45	0	0	19	0	0	0	0	0	19	0	0	29	0	0	0	0	0	29
H/Tot	0	0	72	0	3	0	0	0	75	4	0	110	0	6	0	0	0	120
21:00	0	0	28	0	3	0	0	0	31	0	0	22	0	2	0	0	0	24
21:15	0	0	18	0	2	0	0	0	20	0	0	24	0	0	0	0	0	24
21:30	0	1	15	0	1	0	0	0	17	0	1	27	0	2	0	0	0	30
21:45	0	0	15	0	0	0	0	0	15	0	0	15	0	0	0	0	0	15
H/Tot	0	1	76	0	6	0	0	0	83	0	1	88	0	4	0	0	0	93
22:00	0	0	8	0	0	0	0	0	8	0	0	16	0	1	0	0	0	17
22:15	0	0	8	0	0	0	0	0	8	0	1	17	0	1	0	0	0	19
22:30	0	0	5	0	0	0	0	0	5	1	0	16	0	0	0	0	0	17
22:45	0	0	9	0	0	0	0	0	9	0	0	3	0	0	0	0	0	3
H/Tot	0	0	30	0	0	0	0	0	30	1	1	52	0	2	0	0	0	56
23:00	0	0	1	0	0	0	0	0	1	0	1	8	0	0	0	0	0	9
23:15	0	0	4	0	0	0	0	0	4	0	0	6	0	0	0	0	0	6
23:30	0	0	3	0	0	0	0	0	3	0	1	2	0	0	0	0	0	3
23:45	0	0	1	0	1	0	0	0	2	0	0	4	0	0	0	0	0	4
H/Tot	0	0	9	0	1	0	0	0	10	0	2	20	0	0	0	0	0	22
Total	23	24	2865	13	380	38	2	28	3373	17	19	2699	4	338	28	0	25	3130
									3350									3113

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TOTAL TRAFFIC SURVEYS LTD DATA COLLECTION										Job Title: Job Number: Survey Date: Survey Type:					Worcestershire Counts TTS-1529-Mar Tuesday 21st March 2023 Manual Classified Counts				
Site:		11																	
Location:		A456 Coventry St, Kidderminster																	
Northbound										Southbound									
Time	PC	MC	Car	Taxi	LGV	OGV1	OGV2	PSV	Total	PC	MC	Car	Taxi	LGV	OGV1	OGV2	PSV	Total	
00:00	0	0	7	0	1	1	1	0	10	0	0	7	0	0	0	0	0	7	
00:15	0	0	5	0	0	0	0	0	5	1	0	6	0	1	2	0	0	10	
00:30	0	0	3	0	0	1	0	0	4	0	0	5	0	0	0	1	0	6	
00:45	0	0	5	0	1	1	3	0	10	0	0	7	0	0	0	1	0	8	
HTot	0	0	20	0	2	3	4	0	29	1	0	25	0	1	2	2	0	31	
01:00	0	0	3	0	2	0	1	1	7	0	0	2	0	0	0	0	0	2	
01:15	0	0	6	0	0	0	0	0	6	0	0	10	0	0	0	2	0	12	
01:30	0	0	7	0	0	1	1	0	9	0	0	4	0	1	0	0	0	5	
01:45	0	0	4	0	0	1	0	0	5	0	0	3	0	1	2	2	0	8	
HTot	0	0	20	0	2	2	2	1	27	0	0	19	0	2	2	4	0	27	
02:00	0	0	5	0	1	1	0	0	7	0	0	2	0	1	0	1	0	4	
02:15	0	0	6	0	0	1	0	0	7	0	0	5	0	0	0	0	0	5	
02:30	0	0	1	0	1	0	0	0	2	0	0	2	0	0	0	0	0	2	
02:45	0	0	1	0	0	0	1	0	2	0	0	2	0	0	0	1	0	3	
HTot	0	0	13	0	2	2	1	0	18	0	0	11	0	1	0	2	0	14	
03:00	0	0	2	0	1	0	1	0	4	0	0	2	0	0	0	0	0	2	
03:15	0	0	4	0	0	0	4	0	8	1	0	3	0	1	0	1	0	6	
03:30	0	0	1	1	0	0	3	0	5	0	0	1	0	1	0	1	0	3	
03:45	0	0	2	0	0	0	1	0	3	0	0	3	0	1	0	0	0	4	
HTot	0	0	9	1	1	0	9	0	20	1	0	9	0	3	0	2	0	15	
04:00	0	0	9	0	3	0	0	0	12	0	0	4	0	1	1	1	0	7	
04:15	0	0	11	0	1	1	0	0	13	0	0	6	0	0	1	2	0	9	
04:30	0	0	9	0	4	0	0	0	13	0	0	4	0	2	2	3	0	11	
04:45	0	0	14	0	5	0	2	0	21	0	0	10	0	3	0	0	0	13	
HTot	0	0	43	0	13	1	2	0	59	0	0	24	0	6	4	6	0	40	
05:00	0	0	22	0	2	1	5	0	30	0	1	7	0	4	0	2	0	14	
05:15	0	0	23	0	8	0	3	0	34	1	0	15	0	3	5	2	0	26	
05:30	1	0	25	0	4	1	2	0	33	0	0	26	0	8	1	0	0	35	
05:45	0	0	40	0	11	1	0	0	52	0	1	40	0	5	1	0	0	47	
HTot	1	0	110	0	25	3	10	0	149	1	2	88	0	20	7	4	0	122	
06:00	1	1	72	0	22	6	1	0	103	0	0	19	0	5	0	0	0	24	
06:15	0	0	81	0	19	2	2	0	104	0	1	41	0	8	1	1	0	52	
06:30	0	0	99	0	24	2	4	0	129	1	1	39	1	13	8	2	0	65	
06:45	0	0	97	1	32	4	3	0	137	1	0	61	3	21	4	2	0	92	
HTot	1	1	349	1	97	14	10	0	473	2	2	160	4	47	13	5	0	233	
07:00	0	0	131	2	30	1	1	0	165	0	0	57	1	17	2	1	0	78	
07:15	0	1	124	1	27	5	3	1	162	0	0	81	0	26	6	4	0	117	
07:30	0	0	134	2	22	3	3	1	165	0	1	99	1	23	7	6	1	138	
07:45	0	1	137	4	26	5	5	0	178	0	0	130	2	28	6	2	0	168	
HTot	0	2	526	9	105	14	12	2	670	0	1	367	4	94	21	13	1	501	
08:00	0	0	134	5	25	3	5	1	173	1	0	112	1	22	6	4	2	148	
08:15	0	1	121	4	17	6	5	0	154	0	0	138	3	17	1	0	0	159	
08:30	1	0	104	3	20	2	1	0	131	0	2	137	1	30	4	4	0	178	
08:45	0	1	103	2	21	5	2	1	135	0	0	150	2	18	2	2	0	174	
HTot	1	2	462	14	83	16	13	2	593	1	2	537	7	87	13	10	2	659	
09:00	0	0	125	6	22	0	4	1	158	0	0	149	0	23	2	0	1	175	
09:15	0	0	108	1	26	6	6	0	147	0	0	107	0	13	4	5	0	129	
09:30	0	0	100	7	22	5	5	1	140	0	0	133	0	23	3	1	0	160	
09:45	0	0	114	1	17	7	9	0	148	0	0	126	0	21	4	1	0	152	
HTot	0	0	447	15	87	18	24	2	593	0	0	515	0	80	13	7	1	616	
10:00	0	0	110	3	20	5	5	0	143	0	0	128	2	29	2	2	1	164	
10:15	0	0	104	2	17	4	3	0	130	0	0	126	0	24	7	4	3	164	
10:30	0	0	89	2	16	1	5	0	113	0	0	129	0	19	0	6	0	154	
10:45	0	0	113	3	14	3	2	0	135	0	2	134	1	18	4	4	0	163	
HTot	0	0	416	10	67	13	15	0	521	0	2	517	3	90	13	16	4	645	
11:00	0	0	112	4	26	6	2	0	150	0	0	119	0	22	1	4	0	146	
11:15	0	0	119	2	20	2	9	0	152	0	0	115	0	30	5	3	0	153	
11:30	0	0	114	4	17	8	2	0	145	0	0	111	0	23	4	3	0	141	
11:45	0	0	127	5	25	7	3	0	167	0	1	145	0	20	5	3	0	174	
HTot	0	0	472	15	88	23	16	0	614	0	1	490	0	95	15	13	0	614	
12:00	1	1	122	7	24	0	4	0	159	0	0	112	2	16	0	2	1	133	
12:15	0	0	121	5	23	1	4	0	154	0	0	132	0	19	5	2	0	158	
12:30	0	0	127	2	21	3	7	0	160	0	0	145	3	19	3	0	1	171	
12:45	0	0	134	3	26	3	1	2	169	0	2	124	2	11	1	2	0	142	
HTot	1	1	504	17	94	7	16	2	642	0	2	513	7	65	9	6	2	604	

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13:00	0	0	110	4	1	4	1	0	120	1	0	116	0	20	5	2	0	144
13:15	0	0	118	4	15	0	4	0	141	0	0	128	1	21	2	4	0	156
13:30	0	0	112	8	23	4	0	0	147	1	1	125	2	18	5	4	0	156
13:45	0	1	138	2	26	4	3	1	175	0	0	113	1	17	0	0	1	132
H/Tot	0	1	478	18	65	12	8	1	583	2	1	482	4	76	12	10	1	588
14:00	0	3	107	4	24	3	4	0	145	0	0	97	0	16	5	3	2	123
14:15	1	1	118	2	16	7	3	1	149	0	0	122	2	18	2	3	0	147
14:30	0	0	122	5	27	3	2	0	159	0	1	114	2	21	0	4	2	144
14:45	0	1	143	5	28	1	3	0	181	0	0	114	1	15	3	1	0	134
H/Tot	1	5	490	16	95	14	12	1	634	0	1	447	5	70	10	11	4	548
15:00	0	0	170	0	17	4	2	1	194	0	0	119	1	18	1	2	0	141
15:15	0	0	161	2	20	3	3	1	190	1	0	111	1	15	3	1	0	132
15:30	0	0	150	0	19	0	2	2	173	0	0	128	0	20	3	2	0	153
15:45	0	0	139	1	21	3	1	2	167	0	0	150	1	21	2	1	0	175
H/Tot	0	0	620	3	77	10	8	6	724	1	0	508	3	74	9	6	0	601
16:00	0	1	160	1	24	3	5	1	195	0	0	173	0	21	1	1	1	197
16:15	0	0	164	0	23	1	2	0	190	0	0	122	0	24	2	0	1	149
16:30	0	0	170	0	19	3	0	0	192	0	1	127	1	22	1	0	0	152
16:45	0	0	146	0	17	1	2	0	166	0	2	144	1	15	2	3	1	168
H/Tot	0	1	640	1	83	8	9	1	743	0	3	566	2	82	6	4	3	666
17:00	0	0	180	0	21	1	0	0	202	0	0	156	1	16	2	0	0	175
17:15	0	0	184	1	14	1	0	0	200	0	0	166	2	21	1	3	2	195
17:30	0	1	165	1	1	0	1	0	169	0	4	133	1	12	1	0	0	151
17:45	0	2	141	1	16	0	0	0	160	0	0	145	1	11	1	0	0	158
H/Tot	0	3	670	3	52	2	1	0	731	0	4	600	5	60	5	3	2	679
18:00	1	0	153	1	12	0	2	0	169	1	0	142	0	22	3	2	0	170
18:15	1	0	141	2	6	1	1	0	152	0	0	134	0	7	0	1	0	142
18:30	0	0	120	0	5	1	0	0	126	1	0	145	1	11	0	1	0	159
18:45	0	0	131	0	5	1	0	0	137	0	0	138	0	6	1	0	0	145
H/Tot	2	0	545	3	28	3	3	0	584	2	0	559	1	46	4	4	0	616
19:00	0	0	102	0	2	0	0	3	107	0	0	113	0	7	0	1	1	122
19:15	1	1	111	0	5	0	2	0	120	0	0	92	0	8	0	0	2	102
19:30	0	0	88	0	2	1	0	0	91	0	0	80	0	6	1	2	0	89
19:45	1	1	80	0	2	2	2	0	88	0	0	58	0	5	0	0	1	64
H/Tot	2	2	381	0	11	3	7	0	406	0	0	343	0	26	1	3	4	377
20:00	0	0	74	0	5	0	1	0	80	0	0	81	0	8	0	0	0	89
20:15	0	0	74	0	3	1	2	0	80	0	0	50	0	6	0	5	0	61
20:30	1	1	38	1	8	1	0	0	50	0	0	59	0	6	6	2	0	73
20:45	0	0	46	0	2	0	1	0	49	0	0	46	0	1	0	1	0	48
H/Tot	1	1	232	1	18	2	4	0	259	0	0	236	0	21	6	8	0	271
21:00	0	0	47	0	1	0	1	0	49	0	0	39	0	2	0	0	0	41
21:15	0	0	49	0	5	0	2	0	56	1	0	55	0	7	0	0	0	63
21:30	0	0	58	0	1	0	2	0	61	1	0	37	0	3	0	1	0	42
21:45	0	0	33	0	5	1	1	0	40	0	0	32	0	4	0	2	0	38
H/Tot	0	0	187	0	12	1	6	0	206	2	0	163	0	16	0	3	0	184
22:00	0	1	55	0	0	0	0	0	56	0	0	27	0	2	0	2	0	31
22:15	0	0	41	0	1	0	2	0	44	0	0	26	0	1	0	1	0	28
22:30	0	0	23	0	1	0	0	0	24	0	0	26	1	4	0	0	0	31
22:45	0	0	36	0	1	1	1	0	39	0	0	17	0	1	0	0	0	18
H/Tot	0	1	155	0	3	1	3	0	163	0	0	96	1	8	0	3	0	108
23:00	0	0	25	0	1	0	2	0	28	0	1	25	0	1	1	0	0	28
23:15	0	0	11	0	0	1	2	0	14	0	0	19	0	0	0	1	0	20
23:30	0	0	12	0	0	0	2	1	15	0	0	11	0	0	0	1	0	12
23:45	0	0	9	0	1	0	1	0	11	0	0	13	0	4	0	0	0	17
H/Tot	0	0	57	0	2	1	7	1	68	0	1	68	0	5	1	2	0	77
Total	10	20	7846	127	1112	173	202	19	9509	13	22	7343	46	1075	166	147	24	8836
									9499									8823

Appendix I: Speed Data

Figure I.1 Location of Automatic Traffic Counter



Figure I.2 Welch Gate, Bewdley - Eastbound

* Virtual Week (1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin

Figure I.3 Welch Gate, Bewdley – Westbound

[illegible]

Figure I.4 Location of Automatic Traffic Counter – Coventry Street, Kidderminster



Figure I.5 Coventry Street, Kidderminster – Eastbound Summary

Virtual Week [1]																																											
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSLI	>SLI	>SL1%	>SL2	>SL2%	Mean	Vpp
<-		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80		85	30	30	30	30	30	30	30	30	30	30	85		
Mon	9667	7	29	6519	2753	214	33	5	36	0	58	13	191	759	1823	3561	2825	447	56	4	0	0	0	0	0	0	0	0	22.5	27.5	508	5.255	508	5.255	508	5.255	508	5.255	22.5	27.5			
Tue	9454	11	16	6140	2967	191	22	2	26	0	67	12	157	783	1638	3454	2887	489	39	4	1	0	0	0	0	0	0	1	22.7	27.7	535	5.659	535	5.659	535	5.659	535	5.659	22.7	27.7			
Wed	9635	9	28	6382	2888	196	35	4	23	1	49	20	116	624	1729	3607	3016	495	40	3	1	0	0	2	0	0	0	0	23	27.8	543	5.636	543	5.636	543	5.636	543	5.636	23	27.8			
Thu	9621	8	27	6516	2737	195	41	3	29	1	41	23	177	606	1610	3729	2930	512	46	5	2	2	0	0	1	0	1	1	22.9	27.8	569	5.914	569	5.914	569	5.914	569	5.914	22.9	27.8			
Fri	10559	12	22	7840	2439	117	53	6	18	0	44	8	140	656	1873	4182	3156	503	41	5	0	1	0	0	0	2	0	0	22.8	27.6	552	5.228	552	5.228	552	5.228	552	5.228	22.8	27.6			
[Sat	9235	4	13	6812	2292	51	17	4	12	0	24	6	221	559	1375	3512	3120	406	30	5	3	0	2	1	0	0	1	1	23	27.6	448	4.851	448	4.851	448	4.851	448	4.851	23	27.6			
Sun	7932	3	28	5318	2475	58	15	2	17	0	16	0	71	357	878	2740	3227	587	58	6	5	0	2	0	0	0	1	1	24.3	28.6	659	8.308	659	8.308	659	8.308	659	8.308	24.3	28.6			
--	66103	54	163	45527	18551	1022	216	26	161	2	299	82	1073	4344	10926	24785	21161	3439	310	32	12	3	4	3	1	2	4	23	27.8	3814	5.77	3814	5.77	3814	5.77	3814	5.77	23	27.8				
Vehicles = 66103																																											
Posted speed limit = 30 mph, Exceeding = 3814 (5.770%), Mean Exceeding = 32.30 mph																																											
Maximum = 99.9 mph, Minimum = 5.0 mph, Mean = 23.0 mph																																											
85% Speed = 27.85 mph, 95% Speed = 30.31 mph, Median = 23.71 mph																																											
10 mph Pace = 19 - 29, Number in Pace = 46700 (70.65%)																																											
Variance = 27.33, Standard Deviation = 5.23 mph																																											
* Grand Total																																											
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSLI	>SLI	>SL1%	>SL2	>SL2%	Mean	Vpp	
<-		1	2	3	4	5	6	7	8	9	10	11	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80		85	30	30	30	30	30	30	30	30	30	30	85		
--	66103	54	163	45527	18551	1022	216	26	161	2	299	82	1073	4344	10926	24785	21161	3439	310	32	12	3	4	3	1	2	4	23	27.8	3814	5.77	3814	5.77	3814	5.77	3814	5.77	23	27.8				
Vehicles = 66103																																											
37kph																																											

Figure I.6 Coventry Street, Kidderminster – Westbound Summary

* Virtual Week (1)																																										
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp
<-		1	2	3	4	5	6	7	8	9	10	11	12	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80					85	30	30	30	30	30	30		85
Mon	8979	22	35	5109	3459	196	60	18	12	1	40	27	830	1917	2098	2307	1433	346	38	7	0	0	0	0	0	2	0	19.1	26.2	394	4.388	394	4.388	394	4.388	394	4.388	19.1	26.2			
Tue	8922	16	36	4673	3889	223	28	7	32	0	46	22	757	1774	2083	2430	1500	320	46	6	3	1	0	0	0	0	2	19.4	26.4	378	4.237	378	4.237	378	4.237	378	4.237	19.4	26.4			
Wed	9125	10	55	4827	3889	212	43	9	25	3	35	21	802	1995	2158	2246	1502	366	41	7	2	2	1	1	0	0	0	19.1	26.3	422	4.625	422	4.625	422	4.625	422	4.625	19.1	26.3			
Thu	9172	15	31	5174	3607	195	51	16	17	0	46	20	950	1858	1962	2247	1557	356	42	6	5	2	1	0	0	1	3	0	19.2	26.6	418	4.557	418	4.557	418	4.557	418	4.557	19.2	26.6		
Fri	9948	14	36	6562	3121	122	35	6	19	2	21	10	997	2158	2034	2683	1615	384	65	6	4	0	0	0	0	2	0	19.1	26.4	461	6.304	461	6.304	461	6.304	461	6.304	19.1	26.4			
[Sat	9101	13	23	5452	3435	70	57	7	12	1	22	9	1098	1807	1475	2033	1862	479	60	8	6	0	1	0	0	0	1	19.6	27.2	556	6.109	556	6.109	556	6.109	556	6.109	19.6	27.2			
[Sun	7214	8	35	3756	3304	44	38	5	12	1	10	1	583	1074	1211	1826	1951	511	51	4	1	0	1	0	0	0	1	21.1	28.3	569	7.887	569	7.887	569	7.887	569	7.887	21.1	28.3			
--	62461	98	251	35553	24650	1062	312	68	129	8	220	110	6017	12583	13021	16222	11420	2762	343	44	21	5	4	1	1	7	4	19.5	26.8	3198	5.12	3198	5.12	3198	5.12	3198	5.12	19.5	26.8			
Vehicles = 62461																																										
Posted speed limit = 30 mph, Exceeding = 3198 (5.120%), Mean Exceeding = 32.77 mph																																										
Maximum = 99.8 mph, Minimum = 5.0 mph, Mean = 19.5 mph																																										
85% Speed = 26.84 mph, 95% Speed = 30.09 mph, Median = 19.91 mph																																										
10 mph Pace = 17 - 27, Number in Pace = 29902 (47.87%)																																										
Variance = 47.78, Standard Deviation = 6.91 mph																																										
* Grand Total																																										
Time	Total	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Cls	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Vbin	Mean	Vpp	>PSL	>PSL%	>SL1	>SL1%	>SL2	>SL2%	Mean	Vpp	
<-		1	2	3	4	5	6	7	8	9	10	11	12	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80					85	30	30	30	30	30	30		85
--	62461	98	251	35553	24650	1062	312	68	129	8	220	110	6017	12583	13021	16222	11420	2762	343	44	21	5	4	1	1	7	4	19.5	26.8	3198	5.12	3198	5.12	3198	5.12	3198	5.12	3198	5.12	19.5	26.8	
Vehicles = 62461																																										
31.4kph																																										

Appendix J: Emissions Factor Toolkit – Source Apportionment

Figure J.1 EFT Input – Source Apportionment

Primary Inputs		Pollutants	Selected	Standard Outputs	Selected	Additional Outputs	Selected
Area	England (not London)	NO _x	Y	Air Quality Modelling (g/km/s)		Breakdown by Vehicle	Y
Year	2023	PM ₁₀		Emissions Rates (g/km)	Y	Source Apportionment	Y
Traffic Format	Detailed Option 2	PM _{2.5}		Annual Link Emissions		PM by Source	
All must be selected		CO ₂				Primary NO ₂ Fraction	
						Export Outputs	

SourceID	Road Type	Traffic Flow	% Car	% Taxi (black cab)	% LGV	% Rigid HGV	% Artic HGV
Coventry St Eastbou	Urban (not London)	9499	82.59816823	1.33698284	11.70649542	1.821244342	2.126539636
Coventry St Westbou	Urban (not London)	8823	83.22566021	0.521364615	12.18406438	1.88144622	1.666099966
Coventry St combine	Urban (not London)	18322	82.90033839	0.944220063	11.93646982	1.850234691	1.904813885
Bewdley Eastbound	Urban (not London)	3350	85.52238806	0.388059701	11.34328358	1.134328358	0.059701493
Bewdley Westbound	Urban (not London)	3313	86.70093158	0.128493415	10.85769354	0.899453903	0
Bewdley combined	Urban (not London)	6463	86.09005106	0.263035742	11.10939192	1.021197586	0.030945381

Advanced Options	Selected	Click the button to:					
Bespoke Base Fleets		 Run EFT					
Bespoke Euro Fleet	Y						
Fleet Projection Tool		 Clear Input Data					

% Bus and Coach	% Motorcycle	Speed(kph)	No of Hours	Link Length (km)	% Gradient	Flow Direction	% Load
0.200021055	0.210548479	23	24				
0.272016321	0.249848294	19.5	24				
0.234690536	0.229232617	21.25	24				
0.835820896	0.71541791	16.2	24				
0.803083842	0.61034372	17.5	24				
0.820052607	0.6653257	16.85	24				

Figure J.2 Bespoke Euro Fleet – Source Apportionment

Populate with Defaults										OK																	
Default Euro Proportions 2023 - England (not London)										User Euro Proportions 2023 - England (not London)																	
Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d	Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d								
Conventional Petrol	-	-	-	0.02	0.10	0.23	0.31	0.16	0.19	Conventional Petrol	-	-	-	0.02	0.10	0.23	0.31	0.16	0.19	OK							
Hybrid Petrol				0.00	0.02	0.11	0.23	0.21	0.43	Hybrid Petrol				0.00	0.02	0.11	0.23	0.21	0.43	OK							
Plugin Hybrid Petrol					0.00	0.02	0.16	0.14	0.68	Plugin Hybrid Petrol					0.00	0.02	0.16	0.14	0.68	OK							
Conventional Diesel	-	-	-	0.01	0.10	0.34	0.37	0.09	0.08	Conventional Diesel	-	-	-	0.01	0.10	0.34	0.37	0.09	0.08	OK							
Hybrid Diesel				0.00	0.00	0.01	0.10	0.23	0.65	Hybrid Diesel				0.00	0.00	0.01	0.10	0.23	0.65	OK							
LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6.1	Euro 6.2	Euro 6.3	LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6.1	Euro 6.2	Euro 6.3								
Petrol LGV	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50	Petrol LGV	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50	OK							
Diesel LGV	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36	Diesel LGV	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36	OK							
Petrol Taxi	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50	Petrol Taxi	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50	OK							
Diesel Taxi	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36	Diesel Taxi	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36	OK							
Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRFF	Euro III SCRFF	Euro IV SCRFF	Euro V SCRFF to EGR	Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRFF	Euro III SCRFF	Euro IV SCRFF	Euro V SCRFF to EGR		
Rigid HGVs	-	-	0.01	0.03	0.02	0.03	0.08	0.84	-	-	-	-	Rigid HGVs	-	-	0.01	0.03	0.02	0.03	0.08	0.84	-	-	-	-	OK	
Artic HGVs	-	-	0.00	0.00	0.00	0.01	0.03	0.96	-	-	-	-	Artic HGVs	-	-	0.00	0.00	0.00	0.01	0.03	0.96	-	-	-	-	OK	
Conventional Buses	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-	Conventional Buses	-	-			0.06	0.15			0.79	-	-	-	-	OK
Hybrid Buses						0.20	0.59	0.21					Hybrid Buses					0.20	0.59	0.21						OK	
Conventional Coaches	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-	Conventional Coaches	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-	OK	
Hybrid Coaches						0.20	0.59	0.21					Hybrid Coaches					0.20	0.59	0.21						OK	
Default Vehicle Size Classes 2023 - England (not London)										User Vehicle Size Class 2023 - England (not London)																	
	<1400	1400-2000	>2000								<1400	1400-2000	>2000														
Petrol Car	0.59	0.32	0.09							Petrol Car	0.59	0.32	0.09								OK						
Diesel Car	0.11	0.60	0.28							Diesel Car	0.11	0.60	0.28								OK						
	NL (I)	NL (II)	NL (III)								NL (I)	NL (II)	NL (III)														
Petrol LGV	0.17	0.21	0.62							Petrol LGV	0.17	0.21	0.62								OK						
Diesel LGV	0.06	0.26	0.68							Diesel LGV	0.06	0.26	0.68								OK						
	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t			3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t									
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06		Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06			OK						
	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t						14-20 t	20-28 t	28-34 t	34-40 t	40-50 t												
Artic HGV	0.01	0.02	0.01	0.10	0.86					Artic HGV	0.01	0.02	0.01	0.10	0.86						OK						
	Midi <=15 t	Standard 15-18 t	Articulated >18 t								Midi <=15 t	Standard 15-18 t	Articulated >18 t														
Buses	0.31	0.69	-							Buses	0.31	0.69	-								OK						
	Standard <=18 t	Articulated >18 t									Standard <=18 t	Articulated >18 t															
Coaches	0.50	0.50								Coaches	0.50	0.50									OK						

Figure J.3 EFT Output – Source Apportionment

Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)
Coventry St Eastbound	NOx	3,050.25512	2,550.18777	500.06735	257.15642	6.18826	1.42550	1,650.92122	10.61925	-
Coventry St Westbound	NOx	3,031.54512	2,516.96460	514.58053	249.71346	6.01415	1.38692	1,643.50738	10.56606	-
Coventry St combined	NOx	6,079.20471	5,065.71543	1,013.48927	506.84047	12.20074	2.81197	3,293.88328	21.18034	-
Bewdley Eastbound	NOx	1,177.53849	1,017.57774	159.96075	101.28703	2.44303	0.56410	683.93717	4.39769	-
Bewdley Westbound	NOx	1,108.87867	980.88246	127.99621	99.95493	2.40927	0.55601	667.92503	4.29406	-
Bewdley combined	NOx	2,216.79101	1,937.89621	278.89479	195.13797	4.70504	1.08611	1,310.70500	8.42697	-

Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)	Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)
0.00918	0.72450	36.34625	-	2.17904	-	-	583.87674	-	260.71522	-	199.00889	-
0.00351	0.27830	13.72203	-	2.14998	-	-	588.75556	-	287.24472	-	168.51489	-
0.01284	1.01571	50.48562	-	4.32753	-	-	1,171.35932	-	545.78324	-	369.84903	-
0.00105	0.08355	4.07848	-	0.77765	-	-	218.99031	-	76.91497	-	2.71127	-
0.00034	0.02670	1.30711	-	0.72916	-	-	202.85252	-	56.49239	-	-	-
0.00136	0.10792	5.27473	-	1.46225	-	-	409.19046	-	129.19884	-	2.61690	-

Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)
23.05699	0.50752	-	0.01603	16.43238	0.32409	-	0.00623	-	-	-	-	0.74143
33.54532	0.73278	-	0.02024	24.03702	0.47769	-	0.00787	-	-	-	-	0.86724
55.90373	1.22485	-	0.03627	39.88854	0.78950	-	0.01411	-	-	-	-	1.59761
45.42018	0.99161	-	0.02362	33.22418	0.66574	-	0.00918	-	-	-	-	1.01767
40.60782	0.88602	-	0.02244	29.39175	0.58706	-	0.00873	-	-	-	-	0.82732
83.35863	1.81911	-	0.04471	60.62631	1.21291	-	0.01739	-	-	-	-	1.79840

Appendix K: Modelled Measures

Measures supporting transition to Electric Vehicle Parc

Figure K.1 Summary Forecast Data from NEVIS

	Petrol Cars (g/km)	Diesel Cars (g/km)	Taxis (g/km)	Petrol LGVs (g/km)	Diesel LGVs (g/km)	Rigid HGVs (g/km)	Artic HGVs (g/km)	Buses/Coaches (g/km)	Motorcycles (g/km)	Full Hybrid Petrol Cars (g/km)	Plug-In Hybrid Petrol Cars (g/km)
2023 Q1 Wyre Forest	58.47%	35.18%	0.00%	3.58%	95.14%	0.00%	0.00%	0.00%	0.00%	0.00%	1.21%
2023 Q1 County	57.88%	34.97%	0.00%	3.66%	95.09%	0.00%	0.00%	0.00%	0.00%	0.00%	1.31%
2023 Avg	58.17%	35.07%	0.00%	3.62%	95.11%	0.00%	0.00%	0.00%	0.00%	0.00%	1.26%
2029 Low	49.85%	29.99%	0.00%	3.35%	74.67%	0.00%	0.00%	0.00%	0.00%	0.00%	2.41%
2029 Medium	45.02%	27.08%	0.00%	3.10%	69.04%	0.00%	0.00%	0.00%	0.00%	0.00%	3.11%
2029 High	40.81%	24.54%	0.00%	2.87%	64.01%	0.00%	0.00%	0.00%	0.00%	0.00%	8.45%

	Battery EV Cars (g/km)	FCEV Cars (g/km)	E85 Bioethanol Cars (g/km)	LPG Cars (g/km)	Full Hybrid Petrol LGVs (g/km)	Plug-In Hybrid Petrol LGVs (g/km)	Battery EV LGVs (g/km)	FCEV LGVs (g/km)	E85 Bioethanol LGVs (g/km)	LPG LGVs (g/km)
Full Hybrid Diesel Cars (g/km)	0.00%	1.92%	0.00%	0.00%	3.23%	0.00%	0.07%	1.02%	0.00%	0.19%
	0.00%	2.18%	0.00%	0.00%	3.66%	0.00%	0.06%	1.05%	0.00%	0.14%
	0.00%	2.05%	0.00%	0.00%	3.45%	0.00%	0.07%	1.04%	0.00%	0.16%
	0.00%	15.70%	0.00%	0.00%	2.05%	0.00%	3.33%	18.25%	0.00%	0.40%
	0.00%	22.95%	0.00%	0.00%	1.85%	0.00%	0.00%	27.48%	0.00%	0.37%
	0.00%	24.52%	0.00%	0.00%	1.68%	0.00%	5.06%	27.72%	0.00%	0.35%

Figure K.2 Vehicle Growth Factors, HGV Fleet Forecast, Local Taxi data

								DfT avg increase in miles	
					Low	Medium	High	B Road	A Road
Vehicle Growth	2023	2029_L	2029_M	2029_H	Δ2023-2029	Δ2023-2029	Δ2023-2029	Δ2023-2029	
Cars Wyre Forest	60,797	63,161	63,301	63,167	3.89%	4.12%	3.90%	4.03%	5.65%
LGVs Wyre Forest	9,669	11,194	11,189	11,186	15.77%	15.72%	15.69%	21.46%	16.41%
Cars County	365,708	369,090	369,910	369,160	0.92%	1.15%	0.94%	Avg DfT vs Med Nevis	
LGVs County	54,975	57,459	57,388	57,339	4.52%	4.39%	4.30%		
Avg Cars					4.81%	5.27%	4.84%	4.65%	5.46%
Avg LGVs					10.15%	10.05%	9.99%	15.76%	13.23%

		Taxis 2023 - Wyre Forest		Totals	%		
HGV EV 12/2023%	0.95%	HCVEH	DIESEL	43	100.0%	PHVEH	DIESEL
HGV Diesel 12/2023%	99.05%	HCVEH	ELECTR	0	0.0%	PHVEH	ELECTR
HGV EV 2029%	4.11%	HCVEH	HYBRID	0	0.0%	PHVEH	HYBRID
HGV Diesel 2029%	95.89%	HCVEH	LPG	0	0.0%		
		HCVEH	PETROL	0	0.0%	PHVEH	PETROL
				43			

Figure K.3 Proportion of Vehicle Types for EFT (All Vehicles) including fleet growth by 2029 – Welch Gate, Bewdley

Source Apportionment Volumes			Growth scenario 1		Growth scenario 2		For EFT All Vehicles			
Area	Welch Gate,	Bewdley	Δ2023-2029 Medium NEVIS		Δ2023-2029 DfT avg increase in miles		Nevis Med	DfT	Total vehicle types NEVIS	DfT
AADT	6463		AADT	6828.284	AADT	6841.997	% Petrol Car	2636.733742	2605.733742	
Year	2023						% Petrol Hybrid Car	0		
No. vehicles			No. vehicles		No. vehicles		% Petrol Plugin Hybrid Car	181.9887405	179.8491043	2818.722483
Cars	5564		Cars	5857.091	Cars	5788.229	% Diesel Car	1586.018338	1567.371567	
Taxis	17		Taxis	17	Taxis	17.6851	% Diesel Hybrid Car	0	0	
LGVs	718		LGVs	790.1935	LGVs	872.0828	% Electric Car	1343.961322	1328.160409	
HGVs - Rigid (OGV1)	66		HGVs	66	HGVs	66	% Petrol Taxi (black cab)	5.957264957	6.197342735	
HGVs - Artics (OGV2)	2		Arctic	2	Arctic	2	% Petrol Hybrid Taxi (black cab)	0.435897436	0.453464103	
Buses	53		Buses	53	Buses	53	% Diesel Taxi (black cab)	10.60683761	11.03429316	
Motorcycles	43		Motorcycle	43	Motorcycle	43	% Electric Taxi (black cab)	0	0	17
% vehicles			% vehicles		% vehicles		% Petrol LGV	24.48123708	27.01827548	
Cars	0.860900511		Cars	0.857769	Cars	0.845985	% Petrol Hybrid LGV	0	0	
Taxis	0.002630357		Taxis	0.00249	Taxis	0.002585	% Petrol Plugin Hybrid LGV	0	0	
LGVs	0.111093919		LGVs	0.115724	LGVs	0.12746	% Diesel LGV	545.5878491	602.1281832	
HGVs - Rigid (OGV1)	0.010211976		HGVs - Rigid	0.009666	HGVs - Rigid	0.009646	% Electric LGV	217.1829075	239.6899962	787.2519937
HGVs - Artics (OGV2)	0.000309454		HGVs - Arctic	0.000293	HGVs - Arctic	0.000292	% Rigid HGV (Diesel)	63.28909953	63.28909953	
Buses	0.008200526		Buses	0.007762	Buses	0.007746	% Rigid HGV Electric	2.710900474	2.710900474	66
Motorcycles	0.006653257		Motorcycle	0.006297	Motorcycle	0.006285	% Artic HGV (Diesel)	1.917851501	1.917851501	
							% Artic HGV Electric	0.082148499	0.082148499	2
							% Conventional Bus	53	53	
							% Motorcycle	43	43	
							% LPG Car	108.388701	107.1143783	
							% LPG LGV	2.941510578	3.246345063	

Figure K.4 Proportion of Vehicle Types for EFT (All Vehicles) including fleet growth by 2029 – Coventry Street, Kidderminster

Source Apportionment Volumes		Growth scenario 1		Growth scenario 2		For EFT All Vehicles			
Area	Coventry St Kiddy	Δ2023-2029 Medium NEVIS		Δ2023-2029 DfT avg increase in miles		Coventry Street	Nevis Med	DfT	Total vehicle types NEVIS DfT
AADT	18322	AADT	19342	AADT	19548.84	% Petrol Car	7197.941915	7224.087546	
Year	2023					% Petrol Hybrid Car	0		
No. vehicles		No. vehicles		No. vehicles		% Petrol Plugin Hybrid Car	496.8057117	498.6102968	7694.747626 7722.698
Cars	15189	Cars	15989.1	Cars	16047.18	% Diesel Car	4329.624826	4345.351651	
Taxis	173	Taxis	173	Taxis	182.7745	% Diesel Hybrid Car	0	0	
LGVs	2187	LGVs	2406.899	LGVs	2545.887	% Electric Car	3668.840497	3682.167105	
HGVs - Rigid (OGV1)	339	HGVs	339	HGVs	339	% Petrol Taxi (black cab)	60.62393162	64.04918376	
HGVs - Artics (OGV2)	349	Arctic	349	Arctic	349	% Petrol Hybrid Taxi (black cab)	4.435897436	4.686525641	
Buses	43	Buses	43	Buses	43	% Diesel Taxi (black cab)	107.9401709	114.0387906	
Motorcycles	42	Motorcycle	42	Motorcycle	42	% Electric Taxi (black cab)	0	0	173 182.7745
% vehicles		% vehicles		% vehicles		% Petrol LGV	74.56889346	78.87492817	
Cars	0.829003384	Cars	0.826652	Cars	0.820876	% Petrol Hybrid LGV	0	0	
Taxis	0.009442201	Taxis	0.008944	Taxis	0.00935	% Petrol Plugin Hybrid LGV	0	0	
LGVs	0.119364698	LGVs	0.124439	LGVs	0.130232	% Diesel LGV	1661.839312	1757.803426	
HGVs - Rigid (OGV1)	0.018502347	HGVs - Rigid	0.017527	HGVs - Rigid	0.017341	% Electric LGV	661.5306666	699.7312337	2397.938872 2536.41
HGVs - Artics (OGV2)	0.019048139	HGVs - Arctic	0.018044	HGVs - Arctic	0.017853	% Rigid HGV (Diesel)	325.0758294	325.0758294	
Buses	0.002346905	Buses	0.002223	Buses	0.0022	% Rigid HGV Electric	13.92417062	13.92417062	339 339
Motorcycles	0.002292326	Motorcycle	0.002171	Motorcycle	0.002148	% Arctic HGV (Diesel)	334.6650869	334.6650869	
						% Arctic HGV Electric	14.33491311	14.33491311	349 349
						% Conventional Bus	43	43	
						% Motorcycle	42	42	
						% LPG Car	295.8871279	296.9619012	
						% LPG LGV	8.95972651	9.477112401	

Figure K.5 EFT Input – Measures supporting transition to Electric Vehicle Parc

Area	England (not London)	NO _x	Y	Air Quality Modelling (g/km/s)		Breakdown by Vehicle	Y	Bespoke Base Fleets		 
Year	2029	PM ₁₀		Emissions Rates (g/km)	Y	Source Apportionment	N	Bespoke Euro Fleet	N	
Traffic Format	All Vehicle Types	PM _{2.5}		Annual Link Emissions	Y	PM by Source		Fleet Projection Tool		
All must be selected		CO ₂				Primary NO ₂ Fraction	Y			
						Export Outputs				

SourceID	Road Type	Traffic Flow	% Petrol Car	% Petrol Hybrid Car	% Petrol Plugin Hybrid Car	% Diesel Car	% Diesel Hybrid Car	% Electric Car	% Petrol Taxi (black cab)	% Petrol Hybrid Taxi (black cab)	% Diesel Taxi (black cab)
Welch Gate NEVIS M	Urban (not London)	6828.284348	38.61487905	0	2.665219128	23.22718646	0	19.68226942	0.08724395	0.006383704	0.155336788
Welch Gate DfT	Urban (not London)	6841.9971	38.08440289	0	2.628605386	22.90810043	0	19.41188208	0.09057798	0.006627657	0.161272988
Coventry Street NEV	Urban (not London)	19341.99868	37.21405443	0	2.56853348	22.38457824	0	18.96825948	0.313431578	0.022934018	0.558061102
Coventry Street DfT	Urban (not London)	19548.8397	36.95404769	0	2.550587679	22.22818192	0	18.83573226	0.327636754	0.023973421	0.583353244

% Electric Taxi (black cab)	% Petrol LGV	% Petrol Hybrid LGV	% Petrol Plugin Hybrid LGV	% Diesel LGV	% Electric LGV	% Rigid HGV (Diesel)	% Rigid HGV Electric	% Artic HGV (Diesel)	% Artic HGV Electric	% Conventional Bus	% Hybrid Bus	% Electric Bus	% Biogas Bus	% Conventional Coach
0	0.35852691	0	0	7.99011613	3.180636546	0.926866784	0.03970105	0.028086872	0.001203062	0.776183259	0	0	0	0
0	0.39488873	0	0	8.800474108	3.503216864	0.925009155	0.03962148	0.02803058	0.001200651	0.77462763	0	0	0	0
0	0.38552838	0	0	8.59186964	3.420177396	1.680673413	0.07198931	1.7302508	0.074112884	0.22231415	0	0	0	0
0	0.40347626	0	0	8.991855541	3.579400335	1.662890659	0.07122761	1.711943481	0.073328716	0.219961904	0	0	0	0

% Hybrid Coach	% Electric Coach	% Biogas Coach	% Motorcycle	% Biomethane Car	% LPG Car	% Biomethane LGV	% LPG LGV	% Biodiesel Rigid HGV	% Biodiesel Artic HGV	% Biodiesel Bus	% Biomethane Bus	% Biodiesel Coach	Speed(kph)	No of Hours	Link Length (km)	% Gradient	Flow Direction	% Load
0	0	0	0.629733588	0	1.58734897	0	0.043078326	0	0	0	0	0	20.8	24	0.062			
0	0	0	0.628471474	0	1.56554259	0	0.047447332	0	0	0	0	0	20.8	24	0.062			
0	0	0	0.217144054	0	1.52976501	0	0.046322651	0	0	0	0	0	20.8	24	0.288			
0	0	0	0.214846511	0	1.51907686	0	0.048479156	0	0	0	0	0	20.8	24	0.288			

Figure K.6 EFT Output - Measures supporting transition to Electric Vehicle Parc

Source Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)	Petrol LGVs (g/km)
Welch Gate NEVIS	940.18268	843.26619	96.91650	154.06217	-	1.05110	549.03389	-	-	0.15015	0.00548	2.48496	-	1.25363
Welch Gate DfT	945.66194	848.74544	96.91650	152.25086	-	1.03874	542.57892	-	-	0.15620	0.00570	2.58510	-	1.38355
Coventry Street NE	2,917.67735	2,361.67273	556.00462	420.56978	-	2.86937	1,498.79148	-	-	1.52800	0.05578	25.28807	-	3.81851
Coventry Street DfT	2,949.44858	2,393.44395	556.00462	422.09745	-	2.87979	1,504.23565	-	-	1.61433	0.05893	26.71685	-	4.03902

Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)	Conventi onal Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventi onal Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)
-	-	130.79003	-	53.39747	-	1.41879	-	42.10024	-	-	-	-	-	-	-
-	-	144.34406	-	53.39747	-	1.41879	-	42.10024	-	-	-	-	-	-	-
-	-	398.38134	-	274.26881	-	247.57902	-	34.15680	-	-	-	-	-	-	-
-	-	421.38616	-	274.26881	-	247.57902	-	34.15680	-	-	-	-	-	-	-

TfL Conventi onal Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcyc les (g/km)	Bioethan ol Cars (g/km)	LPG Cars (g/km)	Bioethan ol LGVs (g/km)	LPG LGVs (g/km)	Biodiesel Rigid HGVs (g/km)	Biodiesel Artic HGVs (g/km)	Biodiesel Buses (g/km)	Biometh ane Buses (g/km)	Biodiesel Coaches (g/km)
-	-	-	-	1.00253	-	3.36390	-	0.06834	-	-	-	-	-
-	-	-	-	1.00253	-	3.32435	-	0.07543	-	-	-	-	-
-	-	-	-	0.97922	-	9.18301	-	0.20817	-	-	-	-	-
-	-	-	-	0.97922	-	9.21637	-	0.22020	-	-	-	-	-

Figure K.7 Calculating Impact - Measures supporting transition to Electric Vehicle Parc

Source Apportionment																
Source Name	Pollu	All Vehicles (	All LDVs (g/k	All HDVs (g/k	Total Cars	Total Petrol C	Total diesel C	Total LGVs	Total Taxis	Total HGVs	Petrol Cars (g	Petrol Hyt	Petrol Plugin Hy	Diesel Cars (g/	Diesel Hybric	Electric Cars (g/km)
Bewdley combined	NOx	2,225.40110	1,937.89621	287.50488	1,520.06110	200.92913	1,319.13198	410.65271	5.38400	131.81574	195.13797	4.70504	1.08611	1,310.70500	8.42697	-
Coventry St combined	NOx	6,085.76242	5,065.71543	1,020.04699	3,836.91681	521.85319	3,315.06362	1,175.68685	51.51417	915.63228	506.84047	12.20074	2.81197	3,293.88328	21.18034	-

% change 2023-2029																
Source Name	Pollu	All Vehicles (	All LDVs (g/k	All HDVs (g/k	Total Cars	Total Petrol C	Total diesel C	Total LGVs	Total Taxis	Total HGVs	Petrol Cars (g	Petrol Hyt	Petrol Plugin Hy	Diesel Cars (g/	Diesel Hybric	Electric Cars (
Welch Gate NEVIS Med		-57.75%	-56.49%	-66.29%	-53.46%	-22.80%	-58.38%	-67.83%	-50.95%	-58.41%	-21.05%	-100.00%	-3.22%	-58.11%	-100.00%	-
Welch Gate DfT		-57.51%	-56.20%	-66.29%	-54.00%	-23.71%	-58.87%	-64.49%	-48.98%	-58.41%	-21.98%	-100.00%	-4.36%	-58.60%	-100.00%	-
Average		-57.63%	-56.34%	-66.29%	-53.73%	-23.26%	-58.62%	-66.16%	-49.97%	-58.41%	-21.51%	-100.00%	-3.79%	-58.36%	-100.00%	0.00%
Coventry Street NEVIS Med		-52.06%	-53.38%	-45.49%	-49.66%	-18.86%	-54.79%	-65.77%	-47.84%	-43.01%	-17.02%	-100.00%	2.04%	-54.50%	-100.00%	-
Coventry Street DfT		-51.54%	-52.75%	-45.49%	-49.48%	-18.56%	-54.62%	-63.80%	-44.89%	-43.01%	-16.72%	-100.00%	2.41%	-54.33%	-100.00%	-
Average		-51.80%	-53.07%	-45.49%	-49.57%	-18.71%	-54.71%	-64.78%	-46.36%	-43.01%	-16.87%	-100.00%	2.23%	-54.42%	-100.00%	0.00%

Absolute Difference																
Source Name	Pollu	All Vehicles (	All LDVs (g/k	All HDVs (g/k	Total Cars	Total Petrol C	Total diesel C	Total LGVs	Total Taxis	Total HGVs	Petrol Cars (g	Petrol Hyt	Petrol Plugin Hy	Diesel Cars (g/	Diesel Hybric	Electric Cars (
Welch Gate NEVIS Med		-1285.21841	-1094.63003	-190.58839	-812.55004	-45.81586	-770.09808	-278.54070	-2.74342	-76.99948	-41.07581	-4.70504	-0.03501	-761.67111	-8.42697	-
Welch Gate DfT		-1279.73916	-1089.15077	-190.58839	-820.86823	-47.63952	-776.55306	-264.84967	-2.63700	-76.99948	-42.88711	-4.70504	-0.04737	-768.12609	-8.42697	-
Average		-1282.47879	-1091.8904	-190.58838	-816.709134	-46.7276883	-773.325572	-271.695184	-2.69020813	-76.9994808	-41.9814594	-4.70504	-0.041188722	-764.8985995	-8.42697265	0
Coventry Street NEVIS Med		-3168.08507	-2704.04270	-464.04237	-1905.50317	-98.41404	-1816.27214	-773.27882	-24.64232	-393.78445	-86.27069	-12.20074	0.05740	-1795.09180	-21.18034	-
Coventry Street DfT		-3136.31385	-2672.27148	-464.04237	-1898.48755	-96.87595	-1810.82797	-750.04148	-23.12406	-393.78445	-84.74302	-12.20074	0.06782	-1789.64763	-21.18034	-
Average		-3152.19946	-2688.15709	-464.042366	-1901.99536	-97.644991	-1813.55006	-761.66015	-23.8831913	-393.784447	-85.5068565	-12.2007	0.062608343	-1792.369715	-21.180341	0

Source Apportionment													
Petrol Taxis (g	Petrol Hyt	Diesel Tax	Electric Ta	Petrol LG\	Petrol Hyt	Petrol Plu	Diesel LGVs	Electric LGVs (g/km)	Rigid HGVs (g	Rigid Elec	Artic HGVs (	Artic Elect	
0.00136	0.10792	5.27473	-	1.46225	-	-	409.19046	-	129.19884	-	2.61690	-	
0.01284	1.01571	50.48562	-	4.32753	-	-	1,171.35932	-	545.78324	-	369.84903	-	

% change 2023-2029													
Petrol Taxis (g	Petrol Hyt	Diesel Tax	Electric Ta	Petrol LG\	Petrol Hyt	Petrol Plu	Diesel LGVs	Electric LG	LPG LGVs	Rigid HGVs (g	Rigid Elec	Artic HGVs (	Artic Elect
10975.83%	-94.92%	-52.89%	-	-14.27%	-	-	-68.04%	-	-	-58.67%	-	-45.78%	-
11422.19%	-94.72%	-50.99%	-	-5.38%	-	-	-64.72%	-	-	-58.67%	-	-45.78%	-
11199.01%	-94.82%	-51.94%	0.00%	-9.82%	0.00%	0.00%	-66.38%	0.00%	0.00%	-58.67%	0.00%	-45.78%	0.00%
11800.15%	-94.51%	-49.91%	-	-11.76%	-	-	-65.99%	-	-	-49.75%	-	-33.06%	-
12472.51%	-94.20%	-47.08%	-	-6.67%	-	-	-64.03%	-	-	-49.75%	-	-33.06%	-
12136.33%	-94.35%	-48.50%	0.00%	-9.21%	0.00%	0.00%	-65.01%	0.00%	0.00%	-49.75%	0.00%	-33.06%	0.00%

Absolute Difference													
Petrol Taxis (g/km)	Petrol Hybrids (g/km)	Diesel Taxis (g/km)	Electric Taxis (g/km)	Petrol LGVs (g/km)	Petrol Hybrids LGVs (g/km)	Petrol Plugs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	LPG LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)
0.14879	-0.10244	-2.78977	0.00000	-0.20862	0.00000	0.00000	-278.40043	0.00000	0.06834	-75.80137	-	-1.19811	-
0.15485	-0.10222	-2.68963	0.00000	-0.07870	0.00000	0.00000	-264.84640	0.00000	0.07543	-75.80137	-	-1.19811	-
0.151819708	-0.10233	-2.7397	0	-0.14366	0	0	-271.62341	0	0.071886	-75.80136982	0	-1.198111	0
1.51516	-0.95993	-25.19754	0.00000	-0.50902	0.00000	0.00000	-772.97798	0.00000	0.20817	-271.51443	-	-122.27001	-
1.60149	-0.95678	-23.76877	0.00000	-0.28852	0.00000	0.00000	-749.97316	0.00000	0.22020	-271.51443	-	-122.27001	-
1.558321188	-0.95836	-24.4832	0	-0.39877	0	0	-761.47557	0	0.214185	-271.5144334	0	-122.27001	0

Source Apportionment													
Conventional	Hybrid Buses	Electric Buses	Biogas Buses	Conventional	Hybrid Coaches	Electric Coaches	Biogas Coaches	Motorcycles	TfL Conventional	TfL Hybrid	TfL Electric	TfL Biogas	Buses (g/km)
91.96872	1.81911	-	0.04471	60.62631	1.21291	-	0.01739	1.79840	-	-	-	-	
62.46145	1.22485	-	0.03627	39.88854	0.78950	-	0.01411	1.59761	-	-	-	-	

% change 2023-2029																				
Conventional	Hybrid Buses	Electric Buses	Biogas Buses	Conventional	Hybrid Coaches	Electric Coaches	Biogas Coaches	Motorcycles	TfL Conventional	TfL Hybrid	TfL Electric	TfL Biogas	Bioethanol	Bioethanol	Biodiesel	Biodiesel	Biodiesel	Biomethane	Biodiesel Coaches	(g/km)
-54.22%	-100.00%	-	-100.00%	-100.00%	-100.00%	-	-100.00%	-44.25%												
-54.22%	-100.00%	-	-100.00%	-100.00%	-100.00%	-	-100.00%	-44.25%												
-54.22%	-100.00%	0.00%	-100.00%	-100.00%	-100.00%	0.00%	-100.00%	-44.25%												
-45.32%	-100.00%	-	-100.00%	-100.00%	-100.00%	-	-100.00%	-38.71%												
-45.32%	-100.00%	-	-100.00%	-100.00%	-100.00%	-	-100.00%	-38.71%												
-45.32%	-100.00%	0.00%	-100.00%	-100.00%	-100.00%	0.00%	-100.00%	-38.71%												

Absolute Difference																				
Conventional	Hybrid Buses	Electric Buses	Biogas Buses	Conventional	Hybrid Coaches	Electric Coaches	Biogas Coaches	Motorcycles	TfL Conventional	TfL Hybrid	TfL Electric	TfL Biogas	Bioethanol	Bioethanol	Biodiesel	Biodiesel	Biodiesel	Biomethane	Biodiesel Coaches	(g/km)
-49.86848	-1.81911	0.00000	-0.04471	-60.62631	-1.21291	0.00000	-0.01739	-0.79587												
-49.86848	-1.81911	0.00000	-0.04471	-60.62631	-1.21291	0.00000	-0.01739	-0.79587												
-49.8685	-1.81911	0	-0.04471	-60.6263	-1.21291	0	-0.01739	-0.79587												
-28.30465	-1.22485	0.00000	-0.03627	-39.88854	-0.78950	0.00000	-0.01411	-0.61839												
-28.30465	-1.22485	0.00000	-0.03627	-39.88854	-0.78950	0.00000	-0.01411	-0.61839												
-28.3046	-1.22485	0	-0.03627	-39.8885	-0.7895	0	-0.01411	-0.61839												

Table K.1 Summary of Impact - Measures supporting transition to Electric Vehicle Parc

Total Cars and LGV Δ	Total Reduction	% Change 2023-29		
Welch Gate, Bewdley	-1088.40432	-48.91%		
Coventry Street Kidderminster	-2663.65551	-43.77%		
Total/Road NOx Ratio		% Change 2023-29 Total NOx	Banding	Compliant
Total EV Δ Bewdley	91%	-44.32%	Very Large	Y
Total EV Δ Coventry St	78%	-34.17%	Very Large	Y

Bus Fleet Improvements

Figure K.8 EFT Input – Bus Fleet Improvements

Primary Inputs		Pollutants	Selected	Standard Outputs	Selected	Additional Outputs	Selected
Area	England (not London)	NO _x	Y	Air Quality Modelling (g/km/s)		Breakdown by Vehicle	Y
Year	2029	PM ₁₀		Emissions Rates (g/km)	Y	Source Apportionment	Y
Traffic Format	Detailed Option 2	PM _{2.5}		Annual Link Emissions		PM by Source	
All must be selected		CO ₂				Primary NO ₂ Fraction	
						Export Outputs	

SourceID	Road Type	Traffic Flow	% Car	% Taxi (black cab)	% LGV	% Rigid HGV	% Artic HGV
Coventry St Eastbou	Urban (not London)	9499	82.59816823	1.33698284	11.70649542	1.821244342	2.126539636
Coventry St Westbo	Urban (not London)	8823	83.22566021	0.521364615	12.18406438	1.88144622	1.666099966
Coventry St combine	Urban (not London)	18322	82.90033839	0.944220063	11.93646982	1.850234691	1.904813885
Bewdley Eastbound	Urban (not London)	3350	85.52238806	0.388059701	11.34328358	1.134328358	0.059701493
Bewdley Westbound	Urban (not London)	3313	86.70093158	0.128493415	10.85769354	0.899453903	0
Bewdley combined	Urban (not London)	6463	86.09005106	0.263035742	11.10939192	1.021197586	0.030945381

Advanced Options	Selected	Click the button to:	
Bespoke Base Fleets			
Bespoke Euro Fleet	Y		
Fleet Projection Tool			

% Bus and Coach	% Motorcycle	Speed(kph)	No of Hours	Link Length (km)	% Gradient	Flow Direction	% Load
0.200021055	0.210548479	23	24				
0.272016321	0.249348294	19.5	24				
0.234690536	0.229232617	21.25	24				
0.835820896	0.71641791	16.2	24				
0.803083842	0.61034372	17.5	24				
0.820052607	0.6653257	16.85	24				

Figure K.9 Bespoke Euro Fleet – Bus Fleet Improvements

Populate with Defaults		OK										
Default Euro Proportions 2029 - England (not London)												
Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d			
Conventional Petrol	-	-	-	-	0.00	0.06	0.20	0.12	0.62			
Hybrid Petrol	-	-	-	-	0.00	0.02	0.09	0.10	0.79			
Plugin Hybrid Petrol	-	-	-	-	0.00	0.00	0.04	0.05	0.91			
Conventional Diesel	-	-	-	-	0.01	0.13	0.32	0.10	0.44			
Hybrid Diesel	-	-	-	-	0.00	0.00	0.05	0.14	0.80			
LGV's	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6.1	Euro 6.2	Euro 6.3			
Petrol LGV	-	-	-	-	0.00	0.01	0.01	0.03	0.94			
Diesel LGV	-	-	-	-	0.00	0.05	0.05	0.11	0.79			
Petrol Taxi	-	-	-	-	0.00	0.01	0.01	0.03	0.94			
Diesel Taxi	-	-	-	-	0.00	0.05	0.05	0.11	0.79			
Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRRF	Euro III SCRRF	Euro IV SCRRF	Euro V SCRRF to EGR
Rigid HGVs	-	-	-	0.00	0.01	0.00	0.01	0.97	-	-	-	-
Artic HGVs	-	-	-	0.00	0.00	0.00	0.00	1.00	-	-	-	-
Conventional Buses	-	-	-	0.00	0.01	0.01	0.03	0.95	-	-	-	-
Hybrid Buses	-	-	-	-	-	0.18	0.54	0.27	-	-	-	-
Conventional Coaches	-	-	-	0.00	0.01	0.01	0.03	0.95	-	-	-	-
Hybrid Coaches	-	-	-	-	-	0.18	0.54	0.27	-	-	-	-
Default Vehicle Size Classes 2029 - England (not London)												
	<1400	1400-2000	>2000									
Petrol Car	0.59	0.32	0.09									
Diesel Car	0.11	0.60	0.28									
	NL (I)	NL (II)	NL (III)									
Petrol LGV	0.17	0.21	0.62									
Diesel LGV	0.06	0.26	0.68									
	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t				
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06				
	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t							
Artic HGV	0.01	0.02	0.01	0.10	0.86							
	Midi <=15 t	Standard 15-18 t	Articulated >18 t									
Buses	0.31	0.69	-									
	Standard <=18 t	Articulated >18 t										
Coaches	0.50	0.50										
User Euro Proportions 2029 - England (not London)												
Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 a/b/c	Euro 6 d-temp	Euro 6 d			
Conventional Petrol	-	-	-	-	0.00	0.06	0.20	0.12	0.62		OK	
Hybrid Petrol	-	-	-	-	0.00	0.02	0.09	0.10	0.79		OK	
Plugin Hybrid Petrol	-	-	-	-	0.00	0.00	0.04	0.05	0.91		OK	
Conventional Diesel	-	-	-	-	0.01	0.13	0.32	0.10	0.44		OK	
Hybrid Diesel	-	-	-	-	0.00	0.00	0.05	0.14	0.80		OK	
LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6.1	Euro 6.2	Euro 6.3			
Petrol LGV	-	-	-	-	0.00	0.01	0.01	0.03	0.94		OK	
Diesel LGV	-	-	-	-	0.00	0.05	0.05	0.11	0.79		OK	
Petrol Taxi	-	-	-	-	0.00	0.01	0.01	0.03	0.94		OK	
Diesel Taxi	-	-	-	-	0.00	0.05	0.05	0.11	0.79		OK	
Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRRF	Euro III SCRRF	Euro IV SCRRF	Euro V SCRRF to EGR
Rigid HGVs	-	-	-	0.00	0.01	0.00	0.01	0.97	-	-	-	-
Artic HGVs	-	-	-	0.00	0.00	0.00	0.00	1.00	-	-	-	-
Conventional Buses	-	-	-	-	-	-	-	1.00	-	-	-	-
Hybrid Buses	-	-	-	-	-	-	-	1.00	-	-	-	-
Conventional Coaches	-	-	-	-	-	-	-	1.00	-	-	-	-
Hybrid Coaches	-	-	-	-	-	-	-	1.00	-	-	-	-
User Vehicle Size Class 2029 - England (not London)												
	<1400	1400-2000	>2000									
Petrol Car	0.59	0.32	0.09								OK	
Diesel Car	0.11	0.60	0.28								OK	
	NL (I)	NL (II)	NL (III)									
Petrol LGV	0.17	0.21	0.62								OK	
Diesel LGV	0.06	0.26	0.68								OK	
	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t				
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06			OK	
	14-20 t	20-28 t	28-34 t	34-40 t	40-50 t							
Artic HGV	0.01	0.02	0.01	0.10	0.86						OK	
	Midi <=15 t	Standard 15-18 t	Articulated >18 t									
Buses	0.31	0.69	-								OK	
	Standard <=18 t	Articulated >18 t										
Coaches	0.50	0.50									OK	

Figure K.10 EFT Output – Bus Fleet Improvements

Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)
Coventry St Eastbound	NOx	1,428.36592	1,152.92309	275.44283	213.68471	9.66846	3.44833	663.88381	11.15825	-
Coventry St Westbound	NOx	1,419.40063	1,141.13550	278.26513	207.41678	9.38628	3.34869	660.59472	11.10236	-
Coventry St combined	NOx	2,846.87959	2,293.15500	553.72459	421.03147	19.05152	6.79589	1,324.18186	22.25539	-
Bewdley Eastbound	NOx	522.44067	461.85816	60.58251	84.17229	3.80972	1.35957	274.93356	4.62091	-
Bewdley Westbound	NOx	492.16515	446.75734	45.40782	83.03970	3.75819	1.34103	268.46304	4.51201	-
Bewdley combined	NOx	983.60253	881.04667	102.55586	162.13679	7.33820	2.61863	526.84451	8.85470	-

Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)	Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)
0.00053	0.93129	4.81159	-	1.84895	-	-	243.03820	-	131.68330	-	135.01969	-
0.00020	0.35774	1.81427	-	1.82170	-	-	244.76783	-	149.59009	-	115.95806	-
0.00075	1.30562	6.67833	-	3.66914	-	-	487.21677	-	279.82811	-	252.70664	-
0.00006	0.10740	0.53927	-	0.65839	-	-	91.04753	-	41.37132	-	1.89162	-
0.00002	0.03432	0.17279	-	0.61748	-	-	84.32068	-	29.98407	-	-	-
0.00008	0.13872	0.69735	-	1.23812	-	-	170.10185	-	69.02427	-	1.82063	-

Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)
4.85437	0.02120	-	0.00758	3.83700	0.01675	-	0.00295	-	-	-	-	0.44897
7.06427	0.03085	-	0.00957	5.58418	0.02438	-	0.00372	-	-	-	-	0.52493
11.77703	0.05143	-	0.01715	9.29698	0.04060	-	0.00667	-	-	-	-	0.96825
9.54533	0.04168	-	0.01117	7.68350	0.03355	-	0.00434	-	-	-	-	0.60946
8.54015	0.03729	-	0.01061	6.80186	0.02970	-	0.00413	-	-	-	-	0.49809
17.52320	0.07652	-	0.02114	14.02066	0.06122	-	0.00822	-	-	-	-	1.07772

Figure K.11 Calculating Impact – Bus Fleet Improvements

Welch Gate Bewdley Combined															
Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Total Buses	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)							
Source Apportionment	NOx	2216.791008	1937.896213	278.8947949	147.07906	195.1379745	4.705040207	1.086111543							
2029 Forecast	NOx	983.60253	881.04667	102.55586	31.71095628	162.13679	7.33820	2.61863							
% diff		-56%	-55%	-63%	-78%	-17%	56%	141%							
Coventry St combined															
Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Total Buses	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)							
Source Apportionment	NOx	6,079.20471	5,065.71543	1,013.48927	97.85700	506.84047	12.20074	2.81197							
2029 Forecast	NOx	2,846.87959	2,293.15500	553.72459	21.18984	421.03147	19.05152	6.79589							
% diff		-53%	-55%	-45%	-78%	-17%	56%	142%							
Welch Gate Bewdley Combined															
Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxis (g/km)	Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)
1310.705003	8.426972651	0	0.00135565	0.10792	5.274726	0	1.462247	0	0	409.19046	0	129.19884	0	2.6169019	0
526.84451	8.85470	-	0.00008	0.13872	0.69735	-	1.23812	-	-	170.10185	-	69.02427	-	1.82063	-
-60%	5%	0%	-94%	29%	-87%	0%	-15%	0%	0%	-58%	0%	-47%	0%	-30%	0%
Coventry St combined															
Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxis (g/km)	Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)
3,293.88328	21.18034	-	0.01284	1.01571	50.48562	-	4.32753	-	-	#####	-	545.78324	-	369.84903	-
1,324.18186	22.25539	-	0.00075	1.30562	6.67833	-	3.66914	-	-	487.21677	-	279.82811	-	252.70664	-
-60%	5%	0%	-94%	29%	-87%	0%	-15%	0%	0%	-58%	0%	-49%	0%	-32%	0%
Welch Gate Bewdley Combined															
Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)			
83.3586336	1.819106	0	0.044706	60.62631185	1.212912	0	0.017386	0	0	0	0	1.798403107			
17.52320	0.07652	-	0.02114	14.02066	0.06122	-	0.00822	-	-	-	-	1.07772			
-79%	-96%	0%	-53%	-77%	-95%	0%	-53%	0%	0%	0%	0%	-40%			
Coventry St combined															
Conventional Buses (g/km)	Hybrid Buses (g/km)	Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)			
55.90373	1.22485	-	0.03627	39.88854	0.78950	-	0.01411	-	-	-	-	1.59761			
11.77703	0.05143	-	0.01715	9.29698	0.04060	-	0.00667	-	-	-	-	0.96825			
-79%	-96%	0%	-53%	-77%	-95%	0%	-53%	0%	0%	0%	0%	-39%			

Table K.2 Summary of Impact – Bus Fleet Improvements

Total Bus Δ	Total Reduction	% Change 2023-29		
Welch Gate, Bewdley	-115.36810	-5.20%		
Coventry Street Kidderminster	-76.66715	-1.26%		
Total/Road NOx Ratio		% Change 2023-29 Total NOx	Banding	Compliant
Welch Gate, Bewdley	91%	-4.72%	Small	N
Coventry Street Kidderminster	78%	-0.98%	Small	N

Bus Service Improvement Plan

Figure K.12 EFT Input - Bus Service Improvement Plan

Primary Inputs		Pollutants	Selected	Standard Outputs	Selected	Additional Outputs	Selected
Area	England (not London)	NO _x	Y	Air Quality Modelling (g/km/s)		Breakdown by Vehicle	Y
Year	2023	PM ₁₀		Emissions Rates (g/km)	Y	Source Apportionment	Y
Traffic Format	Detailed Option 2	PM _{2.5}		Annual Link Emissions		PM by Source	
All must be selected		CO ₂				Primary NO ₂ Fraction	
						Export Outputs	

SourceID	Road Type	Traffic Flow	% Car	% Taxi (black cab)	% LGV	% Rigid HGV	% Artic HGV
Bewdley	Urban (not London)	6431.2852	86.02145649	0.264332858	11.16417602	1.02623345	0.031097983
Coventry St	Urban (not London)	18235.4227	82.81915341	0.948702988	11.99314124	1.85901915	1.913857473

Advanced Options	Selected	Click the button to:					
Bespoke Base Fleets			 				
Bespoke Euro Fleet	Y						
Fleet Projection Tool							

% Bus and Coach	% Motorcycle	Speed(kph)	No of Hours	Link Length (km)	% Gradient	Flow Direction	% Load
0.824096558	0.668606642	16.85	24				
0.235804789	0.230320957	21.25	24				

Figure K.13 Bespoke Euro Fleet - Bus Service Improvement Plan

Populate with Defaults

OK

Default Euro Proportions 2023 - England (not London)

Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 ab/c	Euro 6 d-temp	Euro 6 d
Conventional Petrol	-	-	-	0.02	0.10	0.23	0.31	0.16	0.19
Hybrid Petrol				0.00	0.02	0.11	0.23	0.21	0.43
Plugin Hybrid Petrol					0.00	0.02	0.16	0.14	0.68
Conventional Diesel	-	-	-	0.01	0.10	0.34	0.37	0.09	0.08
Hybrid Diesel				0.00	0.00	0.01	0.10	0.23	0.65

LGV's	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6.1	Euro 6.2	Euro 6.3
Petrol LGV	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50
Diesel LGV	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36
Petrol Taxi	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50
Diesel Taxi	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36

Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRFF	Euro III SCRFF	Euro IV SCRFF	Euro V SCRFF to EGR
Rigid HGVs	-	-	0.01	0.03	0.02	0.03	0.08	0.84	-	-	-	-
Artic HGVs	-	-	0.00	0.00	0.00	0.01	0.03	0.96	-	-	-	-
Conventional Buses	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-
Hybrid Buses					-	0.20	0.59	0.21				
Conventional Coaches	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-
Hybrid Coaches					-	0.20	0.59	0.21				

User Euro Proportions 2023 - England (not London)

Cars	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6 ab/c	Euro 6 d-temp	Euro 6 d
Conventional Petrol	-	-	-	0.02	0.10	0.23	0.31	0.16	0.19
Hybrid Petrol				0.00	0.02	0.11	0.23	0.21	0.43
Plugin Hybrid Petrol					0.00	0.02	0.16	0.14	0.68
Conventional Diesel	-	-	-	0.01	0.10	0.34	0.37	0.09	0.08
Hybrid Diesel				0.00	0.00	0.01	0.10	0.23	0.65

LGVs	Pre-Euro 1	Euro 1	Euro 2	Euro 3	Euro 4	Euro 5	Euro 6.1	Euro 6.2	Euro 6.3
Petrol LGV	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50
Diesel LGV	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36
Petrol Taxi	-	-	-	0.03	0.08	0.12	0.07	0.21	0.50
Diesel Taxi	-	-	-	0.01	0.06	0.19	0.12	0.26	0.36

Heavy Duty Vehicles	Pre-Euro I	Euro I	Euro II	Euro III	Euro IV	Euro V_EGR	Euro V_SCR	Euro VI	Euro II SCRFF	Euro III SCRFF	Euro IV SCRFF	Euro V SCRFF to EGR
Rigid HGVs	-	-	0.01	0.03	0.02	0.03	0.08	0.84	-	-	-	-
Artic HGVs	-	-	0.00	0.00	0.00	0.01	0.03	0.96	-	-	-	-
Conventional Buses	-	-	-	-	0.06	0.15	0.79	-	-	-	-	-
Hybrid Buses					-	0.20	0.59	0.21				
Conventional Coaches	-	-	0.01	0.03	0.04	0.05	0.15	0.72	-	-	-	-
Hybrid Coaches					-	0.20	0.59	0.21				

Default Vehicle Size Classes 2023 - England (not London)

	<1400	1400-2000	>2000					
Petrol Car	0.59	0.32	0.09					
Diesel Car	0.11	0.60	0.28					
	NL (I)	NL (II)	NL (III)					
Petrol LGV	0.17	0.21	0.62					
Diesel LGV	0.06	0.26	0.68					
	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06
Artic HGV	0.01	0.02	0.01	0.10	0.86			
	Midi <=15 t	Standard 15-18 t	Articulated >18 t					
Buses	0.31	0.69	-					
	Standard <=18 t	Articulated >18 t						
Coaches	0.50	0.50						

User Vehicle Size Class 2023 - England (not London)

	<1400	1400-2000	>2000					
Petrol Car	0.59	0.32	0.09					
Diesel Car	0.11	0.60	0.28					
	NL (I)	NL (II)	NL (III)					
Petrol LGV	0.17	0.21	0.62					
Diesel LGV	0.06	0.26	0.68					
	3.5-7.5 t	7.5-12 t	12-14 t	14-20 t	20-26 t	26-28 t	28-32 t	>32 t
Rigid HGV	0.23	0.05	0.02	0.12	0.18	0.11	0.23	0.06
Artic HGV	0.01	0.02	0.01	0.10	0.86			
	Midi <=15 t	Standard 15-18 t	Articulated >18 t					
Buses	0.31	0.69	-					
	Standard <=18 t	Articulated >18 t						
Coaches	0.50	0.50						

Figure K.14 EFT Output - Bus Service Improvement Plan

Source Name	Pollutant Name	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)	Diesel Cars (g/km)	Diesel Hybrid Cars (g/km)	Electric Cars (g/km)	Petrol Taxis (g/km)	Petrol Hybrid Taxis (g/km)	Diesel Taxis (g/km)	Electric Taxi (g/km)
Bewdley	NOx	2,208.12666	1,929.23186	278.89479	194.02569	4.67822	1.07992	1,303.23398	8.37894	-	0.00136	0.10792	5.27473	-
Coventry St	NOx	6,057.33428	5,043.84501	1,013.48927	503.95148	12.13120	2.79595	3,275.10814	21.05961	-	0.01284	1.01571	50.48562	-

Petrol LGVs (g/km)	Petrol Hybrid LGVs (g/km)	Petrol Plugin Hybrid LGVs (g/km)	Diesel LGVs (g/km)	Electric LGVs (g/km)	Rigid HGVs (g/km)	Rigid Electric HGVs (g/km)	Artic HGVs (g/km)	Artic Electric HGVs (g/km)	Conventional Buses (g/km)	Hybrid Buses (g/km)
1.46225	-	-	409.19046	-	129.19884	-	2.61690	-	83.35863	1.81911
4.32753	-	-	1,171.35932	-	545.78324	-	369.84903	-	55.90373	1.22485

Electric Buses (g/km)	Biogas Buses (g/km)	Conventional Coaches (g/km)	Hybrid Coaches (g/km)	Electric Coaches (g/km)	Biogas Coaches (g/km)	TfL Conventional Buses (g/km)	TfL Hybrid Buses (g/km)	TfL Electric Buses (g/km)	TfL Biogas Buses (g/km)	Motorcycles (g/km)
-	0.04471	60.62631	1.21291	-	0.01739	-	-	-	-	1.79840
-	0.03627	39.88854	0.78950	-	0.01411	-	-	-	-	1.59761

Figure K.15 Calculating Impact - Bus Service Improvement Plan

Welch Gate Bewdley Combined														
Source Name	Pollut	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Total Cars	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)						
Source Apportionment	NOx	2216.791008	1937.896213	278.8947949	1,520.06110	195.1379745	4.705040207	1.086111543						
Eft Less cars (BSIP)	NOx	2208.126659	1929.231864	278.8947949	1,511.39675	194.0256881	4.678221478	1.079920707						
		-0.39%	-0.45%	0.00%	-0.57%	-0.57%	-0.57%	-0.57%						
Coventry St combined														
Source Name	Pollut	All Vehicles (g/km)	All LDVs (g/km)	All HDVs (g/km)	Total Cars	Petrol Cars (g/km)	Petrol Hybrid Cars (g/km)	Petrol Plugin Hybrid Cars (g/km)						
Source Apportionment	NOx	6,079.20471	5,065.71543	1,013.48927	3,836.91681	506.84047	12.20074	2.81197						
Eft Less cars (BSIP)	NOx	6057.33428	5043.845007	1013.489273	3,815.04638	503.9514803	12.13119858	2.795946363						
		-0.36%	-0.43%	0.00%	-0.57%	-0.57%	-0.57%	-0.57%						
Welch Gate Bewdley Combined														
Diesel Cars (g/km)	Diesel Hybrid Cars	Electric Cars (g/km)	Petrol Taxis	Petrol Hybrid	Diesel Tax	Electric Tax	Petrol LGVs	Petrol Hybrid	Petrol Plugin	Diesel LGVs	Electric LGVs	Rigid HGVs	Rigid Electric	
1310.705003	8.426972651	0	0.00135565	0.10792031	5.274726	0	1.46224713	0	0	409.190459	0	129.19884	0	
1303.233984	8.378938907	0	0.00135565	0.10792031	5.274726	0	1.46224713	0	0	409.190459	0	129.19884	0	
-0.57%	-0.57%		0.00%	0.00%	0.00%		0.00%			0.00%		0.00%		
Coventry St combined														
Diesel Cars (g/km)	Diesel Hybrid Cars	Electric Cars (g/km)	Petrol Taxis	Petrol Hybrid	Diesel Tax	Electric Tax	Petrol LGVs	Petrol Hybrid	Petrol Plugin	Diesel LGVs	Electric LGVs	Rigid HGVs	Rigid Electric	
3,293.88328	21.18034	-	0.01284	1.01571	50.48562	-	4.32753	-	-	1,171.35932	-	545.78324	-	
3275.108143	21.05961306	0	0.01284013	1.01571002	50.48562	0	4.3275341	0	0	1171.35932	0	545.78324	0	
-0.57%	-0.57%		0.00%	0.00%	0.00%		0.00%			0.00%		0.00%		
Welch Gate Bewdley Combined														
Artic HGVs (g/km)	Artic Electric	Conventional	Hybrid Bus	Electric Bus	Biogas Bus	Conventional C	Hybrid Co	Electric Co	Biogas Co	TfL Conve	TfL Hybrid	TfL Electric	TfL Biogas	Motorcycles (g/km)
2.61690191	0	83.3586336	1.819106	0	0.044706	60.62631185	1.212912	0	0.017386	0	0	0	0	1.798403
2.61690191	0	83.3586336	1.819106	0	0.044706	60.62631185	1.212912	0	0.017386	0	0	0	0	1.798403
0.00%		0.00%	0.00%		0.00%	0.00%	0.00%		0.00%					0.00%
Coventry St combined														
Artic HGVs (g/km)	Artic Electric	Conventional	Hybrid Bus	Electric Bus	Biogas Bus	Conventional C	Hybrid Co	Electric Co	Biogas Co	TfL Conve	TfL Hybrid	TfL Electric	TfL Biogas	Motorcycles (g/km)
369.84903	-	55.90373	1.22485	-	0.03627	39.88854	0.78950	-	0.01411	-	-	-	-	1.59761
369.849031	0	55.90372821	1.224851	0	0.036271	39.88853802	0.789504	0	0.014105	0	0	0	0	1.597609
0.00%		0.00%	0.00%		0.00%	0.00%	0.00%		0.00%					0.00%

Table K.3 Summary of Impact - Bus Service Improvement Plan

Total BSIP Δ	Total Reduction	% Change 2023-29		
Welch Gate, Bewdley	-8.66435	-0.39%		
Coventry Street Kidderminster	-21.87043	-0.36%		
Total/Road NOx Ratio		% Change 2023-29 Total NOx	Banding	Compliant
Welch Gate, Bewdley	91%	-0.35%	Small	N
Coventry Street Kidderminster	78%	-0.28%	Small	N