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¹

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Data Input Table – Do Not Delete

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Report Title or Heading – second line	Left aligned in headers	HL2		
Group Name	Right aligned in headers – first line	HR1		Mott MacDonald
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Project Number	Footers	PRJNR		47995/025
Report Number	Footers	RPTNR		01
Revision Letter	Issue and Revision Record on page ii and footers	REV		A
Date of issue or report	Page i, Issue and Revision Record on page ii and footers	DATE		January 2002
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List of Contents

Summary	S-1
Chapters and Appendices	
1 Introduction	1
2 Methodology	1
3 Background	1
4 Results	2
4.1 Daily and Hourly Variations	6
4.2 Patterns of Travel	8
4.3 Mode of travel	8
4.4 Occupancy Levels	12
5 Appendix 1 Position of Cordon Sites	14
6 Appendix 2 Estimates of Vehicle Type from Passage Count Data	16
7 Appendix 3 Estimates of Person Trips from Manual Occupancy Data	19
8 Appendix 4: Modal Share	21

Tables

Table 1	Number of vehicles crossing the cordon in the Morning Peak Period (07.00 - 09.30).....	2
Table 2	Number of vehicles crossing the cordon in the Morning Off-Peak Period (10.00-12.00).....	2
Table 3	Total Vehicles by Time Period on an Average Weekday.....	3
Table 4	Variations in traffic flow, by time of day 2001	6
Table 5	Net loss / gain and accumulation in vehicles crossing the cordon, by hour	6
Table 6	Net loss / gain in vehicles on an average weekday, by site	8
Table 7	Summary of Inbound mode of transport data from manual surveys	9
Table 8	Estimated Inbound mode of transport figures.....	9
Table 9	Summary of Outbound mode of transport data from manual surveys.....	10
Table 10	Estimated Outbound mode of transport figures	11
Table 11	Automatic count sites	14
Table 12	Manual Count sites	14
Table 13	Inbound Modal Share Figures (1997- 2001) 0730-0930	21
Table 14	Inbound Modal Share Figures (1997- 2001) 1000-1200	21
Table 15	Estimates of Numbers of Persons by Modal Split 0700-1230.....	22

Figures

Figure 1	Inbound Morning Peak Period: Vehicle Volumes by Quarter Hour.....	4
Figure 2	Outbound Evening Peak Period: Vehicle Volumes by Quarter Hour.....	4
Figure 3	Inbound levels of vehicles, by hour	5
Figure 4	Outbound levels of vehicles, by hour	5
Figure 5	Net loss / gain in vehicles crossing the cordon, by hour.....	7
Figure 6	Net accumulation of vehicles, by hour	7
Figure 7	Estimated Inbound mode of transport figures.....	10
Figure 8	Estimated Outbound mode of transport figures.....	11
Figure 9	Estimated persons in Light Vehicles Inbound Morning Peak Period	12
Figure 10	Estimated persons in Light Vehicles Outbound Morning Peak Period	12
Figure 11	Estimated persons in Heavy vehicles – inbound morning peak	13
Figure 12	Estimated persons in Heavy Vehicles – outbound morning peak.....	13
Figure 13	Location of Coventry ATC Cordon Sites	15

Summary

The following is a summary of the information contained in this report. Estimates of people have only been calculated for the inbound and outbound morning peak periods. The estimates are calculated using manual surveys. The extent of these surveys defines the extent of information available. For details on methodology and a breakdown of the time periods, see the main report.

0700-0930 inbound

total vehicles	34049
estimated pedal cycles	268
estimated bus	737
estimated light vehicles	31933
estimated goods vehicles	1111
estimated persons (light vehicles)	41107
estimated persons (heavy vehicles)	1255

0700-0930 outbound

total vehicles	24890
estimated pedal cycles	167
estimated bus	829
estimated light vehicles	22857
estimated goods vehicles	1037
estimated persons (light vehicles)	29357
estimated persons (heavy vehicles)	1231

1000-1200 inbound

total vehicles	19388
estimated pedal cycles	83
estimated bus	445
estimated light vehicles	17886
estimated goods vehicles	974

1000-1200 outbound

total vehicles	18698
estimated pedal cycles	78
estimated bus	466
estimated light vehicles	17352
estimated goods vehicles	802

1630-1830 inbound

total vehicles	23989
estimated pedal cycles	133
estimated bus	546
estimated light vehicles	22934
estimated goods vehicles	375

1630-1830 outbound

total vehicles	32198
estimated pedal cycles	232
estimated bus	540
estimated light vehicles	31072
estimated goods vehicles	354

1 Introduction

This report is being undertaken as part of the Local Transport Plan monitoring process. The purpose of the report is to give an indication of the level of vehicular activity in the town centre, to indicate existing and future levels of transport demand and to monitor the effects of transport policy. The surveys and analysis have been undertaken by the **jdt**.

2 Methodology

Counts of vehicles crossing a cordon around Coventry City Centre are undertaken every two years using automatic Traffic Counts (ATC's) installed on all major and most minor roads crossing the cordon.

The counters record vehicles continuously, by direction, for a seven-day period. The location of the sites is shown in Figure 13.

Four sites are also surveyed manually by Coventry City Council staff. This data is used to estimate the modal split of the automatic data and also to estimate the number of people travelling into the town centre by vehicle.

A complementary bus cordon survey is undertaken by CENTRO, into which this report feeds.

Results of the 2001 Coventry Cordon Survey are presented on the following pages. Where appropriate, comparisons with previous data have been made.

3 Background

Collection of the data took place in the week beginning Monday 8th October. It is important to avoid school holidays and the Christmas shopping season. In future the intention will be to keep to the same week each year. The exact position of the automatic counts can be seen in Appendix 1. In 2001 two new sites were created (CC23 and CC24) to replace CC20 and CC21 in order to reflect new traffic management measures. The intention will be to use the same sites for this monitoring purpose each time the cordon survey is carried out.

4 Results

In Table 1 the figures for the number of vehicles crossing the cordon line in the morning peak period are presented. Traditionally, the morning peak period has been considered as being 07.00-09.30. The figures show there has been very little change in levels of traffic since 1995. Outbound traffic increased by % in 2001 suggesting that more traffic is travelling through the city centre during the morning peak period.

Table 1 Number of vehicles crossing the cordon in the Morning Peak Period (07.00 - 09.30)

	1987	1989	1991	1993	1995	1997	1999	2001
Inbound Total	33856	35239	35534	31861	34337	34764	34623	34049
Outbound Total	19941	21451	21530	22385	23364	23880	23836	24890

These figures have been collected in the same manner from 1993-1999. Pre1993 data was collected by the use of manual surveys and did not include buses and cyclists in the outbound direction.

Table 2 shows the number of vehicles crossing the cordon line in the traditional off-peak morning period (10.00-12.00). After a decrease in 1999, levels of traffic have now returned to levels seen in 1997 in both inbound and outbound directions.

Table 2 Number of vehicles crossing the cordon in the Morning Off-Peak Period (10.00-12.00)

	1987	1989	1991	1993	1995	1997	1999	2001
Inbound Total	17109	17607	18807	19159	19711	19656	18804	19388
Outbound Total	15911	16098	17307	18746	18257	18549	18087	18698

These figures have been collected in the same manner from 1993-1999. Pre1993 data was collected by the use of manual surveys and did not include buses and cyclists in the outbound direction.

The figures in Table 3 show that in 2001 around 20% of traffic flowing into the town centre on a typical weekday is crossing the cordon line between the hours of 7.00a.m. and 9.30a.m. This corresponds to the figure outbound in the evening peak period (4p.m. to 6p.m.), which is 19.1%.

The off-peak time period considered (1000-1200) shows around 12% of the daily traffic travelling into the town centre. Around 80% of an average day's traffic crosses the cordon during the main 12hr day.

Whilst the net figure over 24 hours might be expected to be zero, the figures are an average of the flow characteristics over five weekdays and the net figure is within the expected level of accuracy of automatic counts.

Table 3 Total Vehicles by Time Period on an Average Weekday

	07.00 - 09.30	10.00 - 12.00	16.00 - 18.00	07.00 – 19.00 (12 hour)	00.00 – 24.00 (24 hour)
1997					
Inbound	34764	19656	24156	135789	165549
% of 24 hr	21.0	11.9	14.6	82.0	100
Outbound	23880	18549	32613	136129	168228
% of 24 hr	14.2	11.0	19.4	80.9	100
NET	10884	1107	-8457	-340	-2679
1999					
Inbound	34623	18804	24246	133643	162878
% of 24hr	21.3	11.5	14.9	82.1	100
Outbound	23836	18087	32135	134018	165811
% of 24hr	14.4	10.9	19.4	80.8	100
NET	10787	717	-7889	-375	-2933
2001					
Inbound	34049	19388	24849	136379	167083
% of 24hr	20.4	11.6	14.9	81.6	100
Outbound	24890	18698	33183	139339	173283
% of 24hr	14.4	10.8	19.1	80.4	100
NET	9159	690	-8334	-2960	-6200

Figure 1 and Figure 2 show the two main peak periods by quarter hour. The morning figures are given from 7a.m. until 10a.m. and the evening from 4p.m. to 7p.m. These time periods are wider than those presented in previous tables. This allows a check on the traditional time periods as peak spreading may be seen on these graphs. Both Figure 1 and Figure 2 show fluctuating changes in traffic over time over the quarter hour periods.

Figure 1 Inbound Morning Peak Period: Vehicle Volumes by Quarter Hour

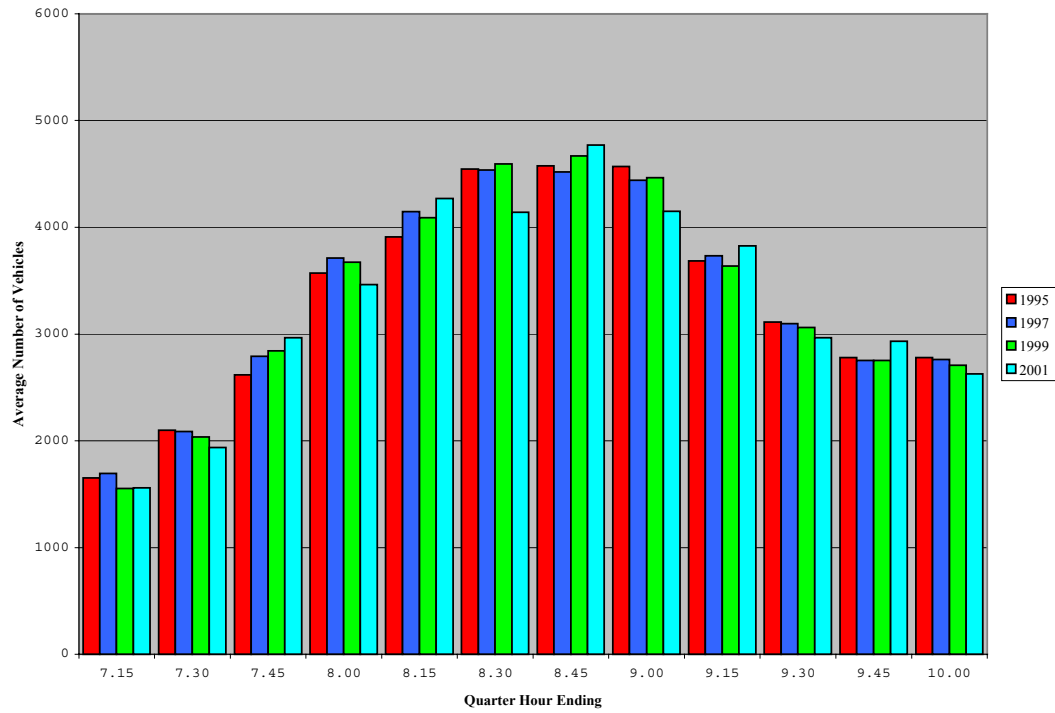


Figure 2 Outbound Evening Peak Period: Vehicle Volumes by Quarter Hour

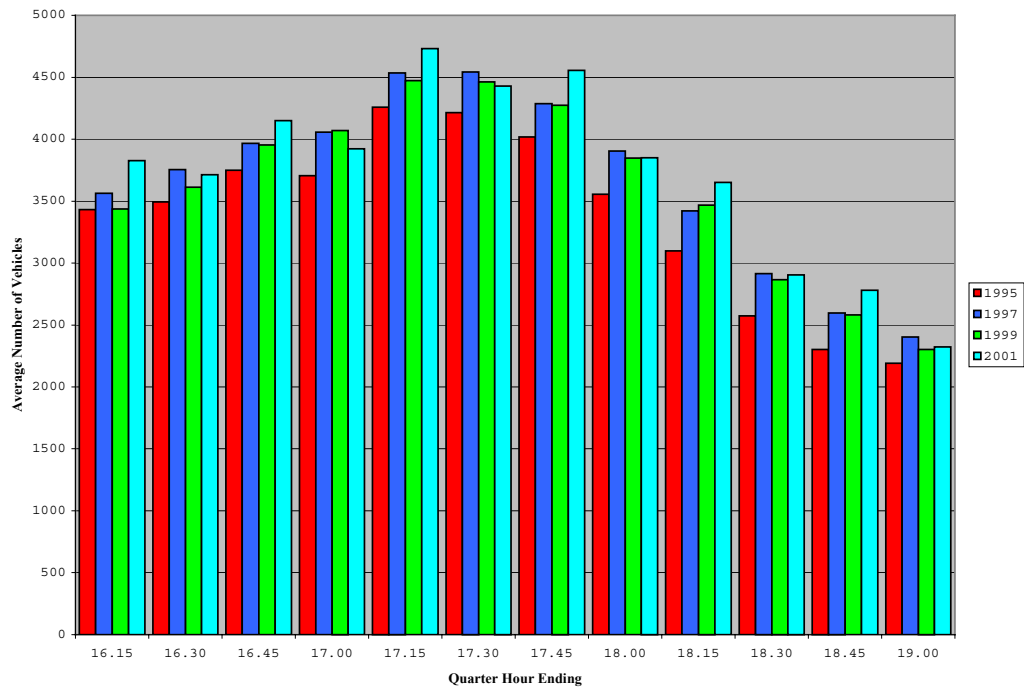


Figure 3 Inbound levels of vehicles, by hour

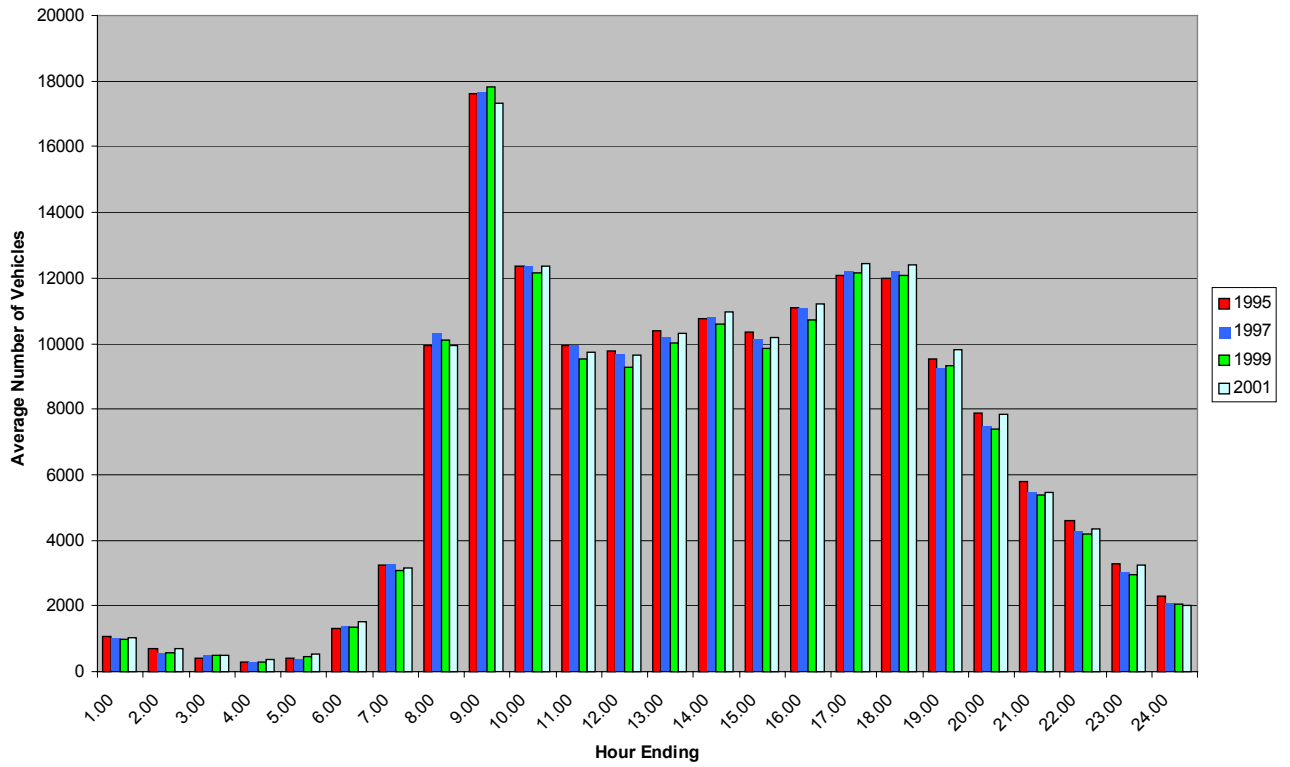
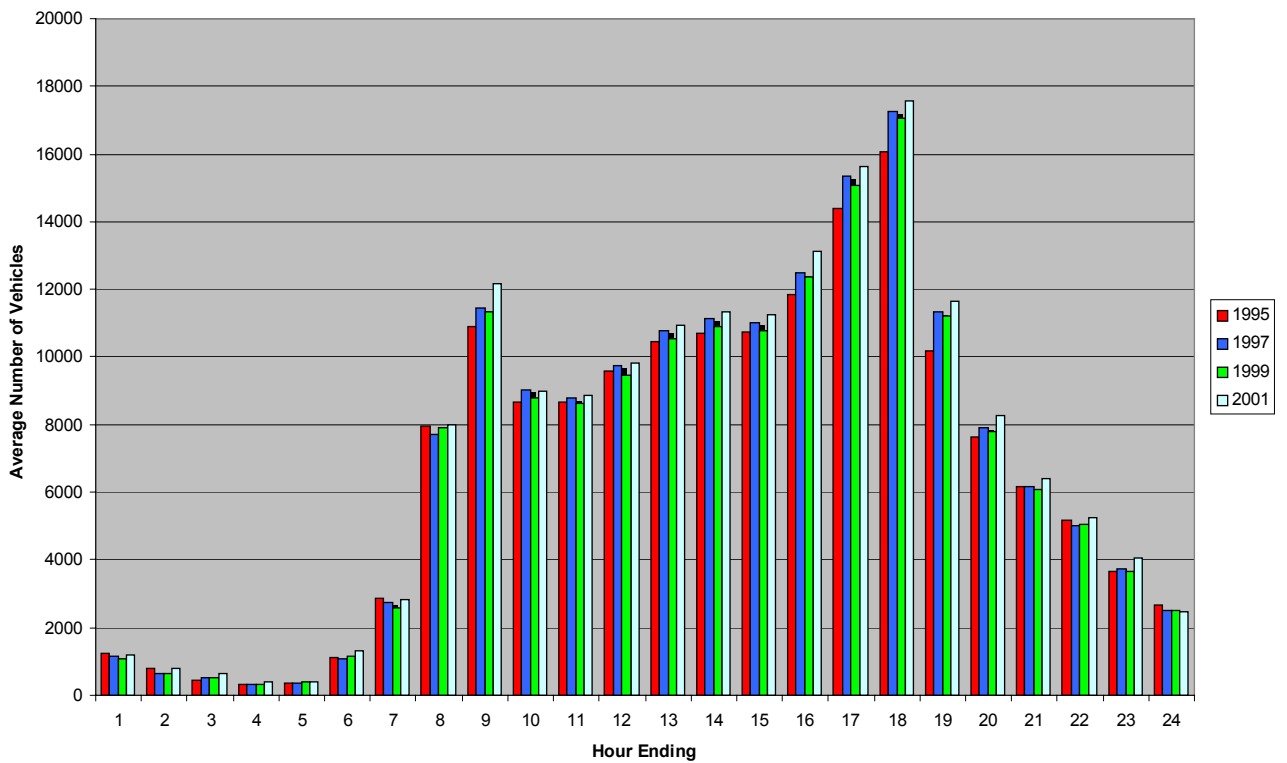


Figure 4 Outbound levels of vehicles, by hour



4.1 Daily and Hourly Variations

The figures in Table 4 give the proportions that each day contributes to an average weekday (Mon-Fri) for each of the traditional time periods. These figures can be used to factor a count taken on any particular day to an average weekday. The figures also show which days have the heaviest flows during each time period.

Table 4 Variations in traffic flow, by time of day 2001

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
<u>Inbound</u>							
07.00 - 09.30	1.003	1.019	1.003	0.994	0.982	0.419	0.146
10.00 - 12.00	1.011	0.998	0.983	0.969	1.039	1.180	0.816
16.00 - 18.00	0.987	1.030	1.006	1.006	0.971	0.681	0.560
07.00 - 19.00	0.987	1.012	0.989	0.982	1.030	0.816	0.568
00.00 - 24.00	0.967	1.012	0.984	0.988	1.050	0.860	0.623
<u>Outbound</u>							
07.00 - 09.30	0.980	0.996	1.008	1.012	1.004	0.445	0.185
10.00 - 12.00	0.995	0.986	0.989	0.975	1.054	1.118	0.742
16.00 - 18.00	0.991	1.015	1.003	1.005	0.988	0.663	0.437
07.00 - 19.00	0.977	0.995	0.998	0.988	1.043	0.816	0.560
00.00 - 24.00	0.958	1.004	0.993	0.996	1.050	0.854	0.624

Figure 5 and Figure 6 show the net loss or gain in vehicles to the cordon by hour and the total accumulation of vehicles within the cordon. The figures used in these graphs are given in Table 5.

Table 5 Net loss / gain and accumulation in vehicles crossing the cordon, by hour

hour ending	inbound	outbound	net loss/gain	accumulation
1.00	1018	1188	-170	-170
2.00	679	777	-98	-268
3.00	508	640	-132	-400
4.00	350	403	-53	-453
5.00	531	400	131	-322
6.00	1531	1294	237	-85
7.00	3161	2835	326	241
8.00	9929	7993	1936	2177
9.00	17327	12169	5158	7335
10.00	12352	8986	3366	10701
11.00	9727	8862	965	11566
12.00	9661	9836	-175	11391
13.00	10328	10949	-621	10770
14.00	10983	11340	-357	10413
15.00	10190	11253	-1063	9350
16.00	11208	13109	-1901	7449
17.00	12436	15613	-3177	4272
18.00	12413	17570	-5157	-885
19.00	9825	11659	-1834	-2719
20.00	7833	8252	-419	-3138
21.00	5479	6402	-923	-4061
22.00	4367	5246	-879	-4940
23.00	3233	4051	-818	-5758
24.00	2014	2456	-442	-6200

Figure 5 Net loss / gain in vehicles crossing the cordon, by hour

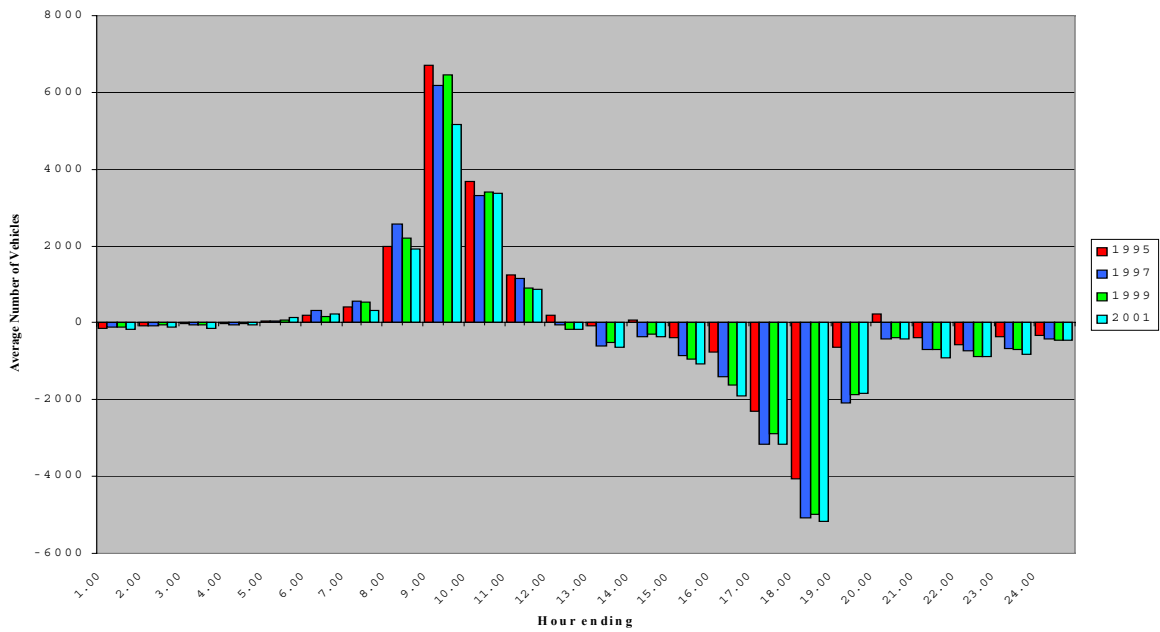
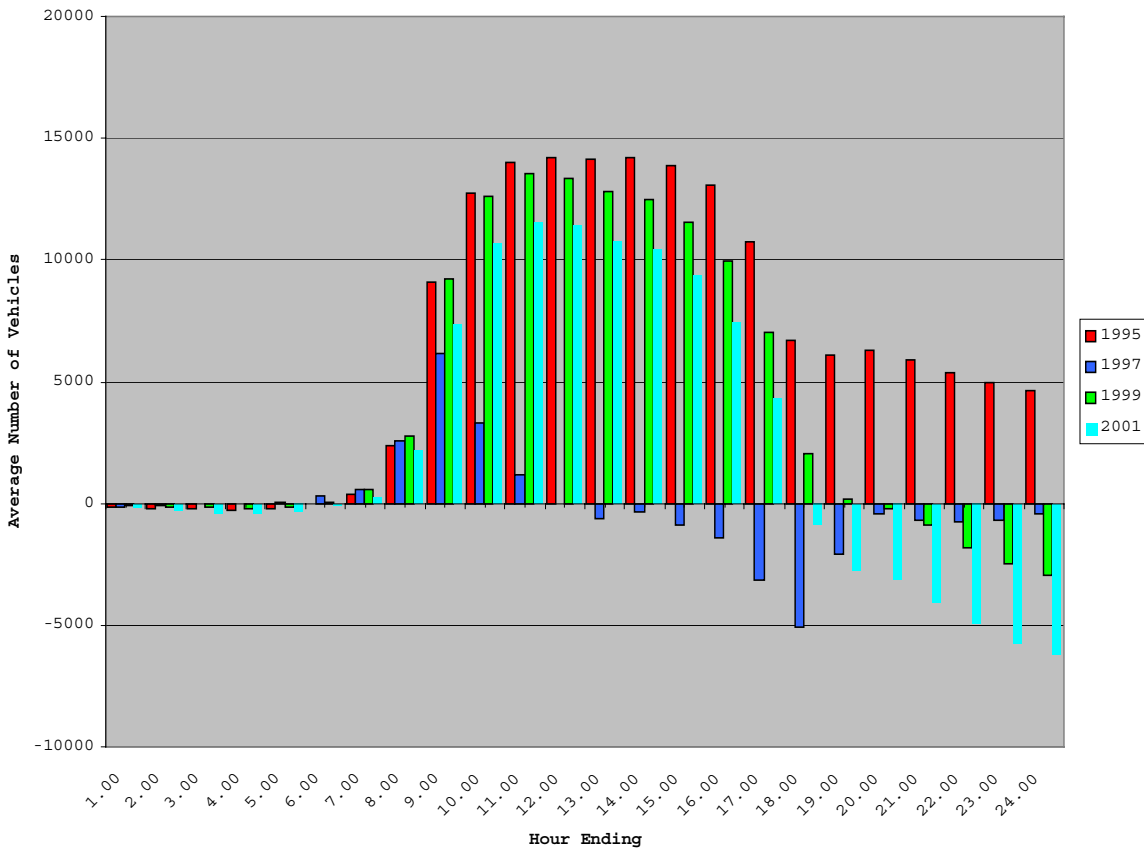


Figure 6 Net accumulation of vehicles, by hour



4.2 Patterns of Travel

The figures in Table 6 show the number of vehicles travelling into and out of the town centre by each individual site on an average weekday. By examining these figures, some patterns of travel may be evident. For example, people may prefer to use a particular road inbound in the morning, but choose a different route for their outward evening journey.

Table 6 Net loss / gain in vehicles on an average weekday, by site

		In dir	In Count	Out Dir	Out count
CC01	Foleshill Road	S	13805	N	14676
CC02	Stoney Stanton Road	S	9266	N	10239
CC03	Swan Lane	S	4259	N	5081
CC04	Heath Road	W	5318	E	6666
CC06	Walsgrave Road	W	15223	E	10279
CC07	Binley Road	W	16208	E	16204
CC08	Terry Road	W	3316	E	2323
CC09	London Road	N	17936	S	21121
CC10	Quarryfield Road	N	431	S	334
CC11	Mile Lane	N	3188	S	3391
CC12	Quinton Road	N	4072	S	7144
CC13	Stoney Road	N	3185	S	3576
CC14	Warwick Road	N	14028	S	13038
CC15	Albany Road	N	6465	S	6080
CC16	Spon End	E	16840	W	16413
CC17	Holyhead Road	E	11381	W	13607
CC18	Coundon Road	S	4614	N	5538
CC19	Radford Road	S	9450	N	9295
CC23	Sandy Lane	S	4761	N	4923
CC24	Kingfield Road	S	3487	N	3462

4.3 Mode of travel

The four manual surveys give us an indication of mode of travel data.

Table 7 summarises the combined counts at the three manual sites. For the purpose of this table, 'light vehicles' includes motorcycles, cars, taxis and light vans less than 1.5T. The Heavy goods category includes all vehicles over 1.5T. These are the usual categories for light and heavy vehicles.

In Table 7 the percentage each vehicle category contributes to the total vehicles in that ¼ hour is given in brackets. In Table 8 these percentages are multiplied by the number of vehicles counted by the automatic counters, giving an estimate of the number of vehicles of that type crossing the cordon line in that ¼ hour.

Table 7 Summary of Inbound mode of transport data from manual surveys

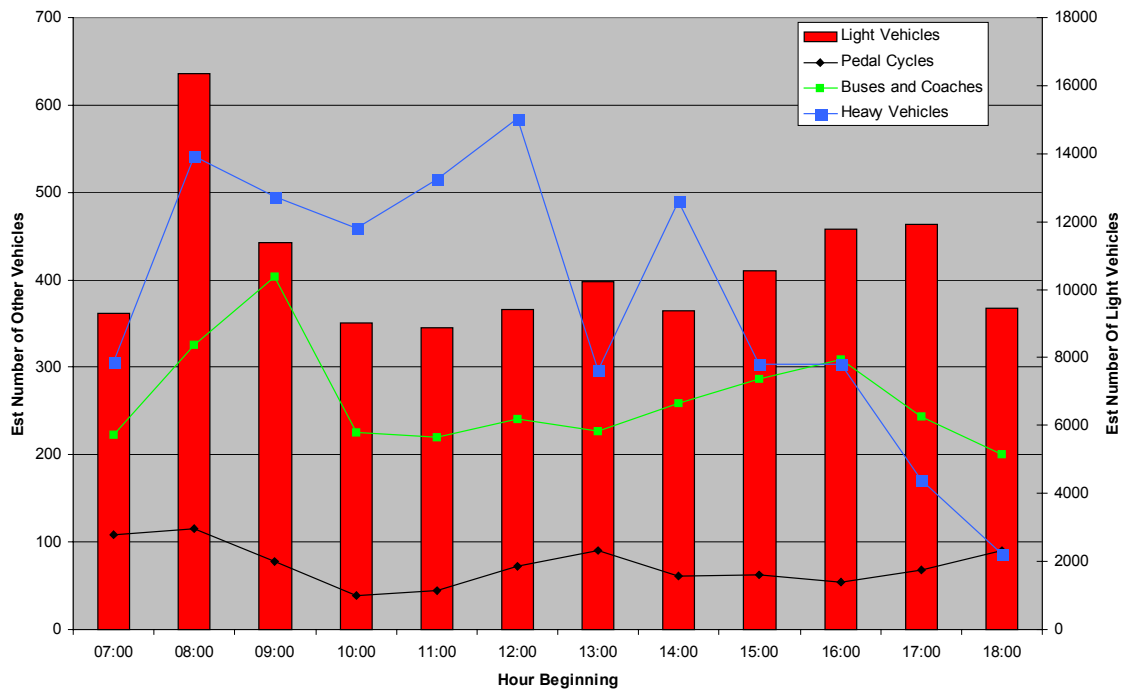
TIME STARTING	TOTAL VEH	PEDAL CYC	BUS & COACH	Light Vehs	Heavy Vehs	% pedal cycle	% bus	% light	% goods
7.00	1916	21	43	1793	59	1.10	2.24	93.58	3.08
8.00	3453	23	65	3257	108	0.67	1.88	94.32	3.13
9.00	2543	16	83	2342	102	0.63	3.26	92.10	4.01
10.00	2287	9	53	2117	108	0.39	2.32	92.57	4.72
11.00	2159	10	49	1985	115	0.46	2.27	91.94	5.33
12.00	2277	16	53	2078	129	0.70	2.33	91.26	5.67
13.00	2663	22	55	2484	72	0.83	2.07	93.28	2.70
14.00	2328	14	59	2143	112	0.60	2.53	92.05	4.81
15.00	2692	15	69	2535	73	0.56	2.56	94.17	2.71
16.00	2741	12	68	2594	67	0.44	2.48	94.64	2.44
17.00	2752	15	54	2645	38	0.55	1.96	96.11	1.38
18.00	2405	22	49	2313	21	0.91	2.04	96.17	0.87
0700-0930	6726	53	145	6308	220	0.79	2.16	93.79	3.27
1000-1200	4446	19	102	4102	223	0.43	2.29	92.6	5.02
1630-1830	5381	30	123	5145	83	0.56	2.29	95.61	1.54

Table 8 Estimated Inbound mode of transport figures

TIME STARTING	number of automatic vehs	estimated ped cyc	estimated bus	estimated light	estimated heavy
7.00	9929	109	223	9292	306
8.00	17327	115	326	16343	542
9.00	12352	78	403	11376	495
10.00	9727	38	225	9004	459
11.00	9661	45	219	8882	515
12.00	10328	73	240	9425	585
13.00	10983	91	227	10245	297
14.00	10190	61	258	9380	490
15.00	11208	62	287	10554	304
16.00	12436	54	309	11769	304
17.00	12413	68	244	11930	171
18.00	9825	90	200	9449	86
0700-0930	34049	268	737	31933	1111
1000-1200	19388	83	445	17886	974
1630-1830	23989	133	546	22934	375

The figures in Table 7 and Table 8 are represented in Figure 7. As the numbers for Light Vehicles are so much higher than the other categories, the light vehicles are read from the right hand axis and all the other categories form the left-hand axis.

Figure 7 Estimated Inbound mode of transport figures



The summary for outbound modes from the manual data can be found in Table 9 with the estimated outbound in Table 10 and the graph representing these figures in Figure 8. The figures collected in the manual surveys can be found in Appendix 2.

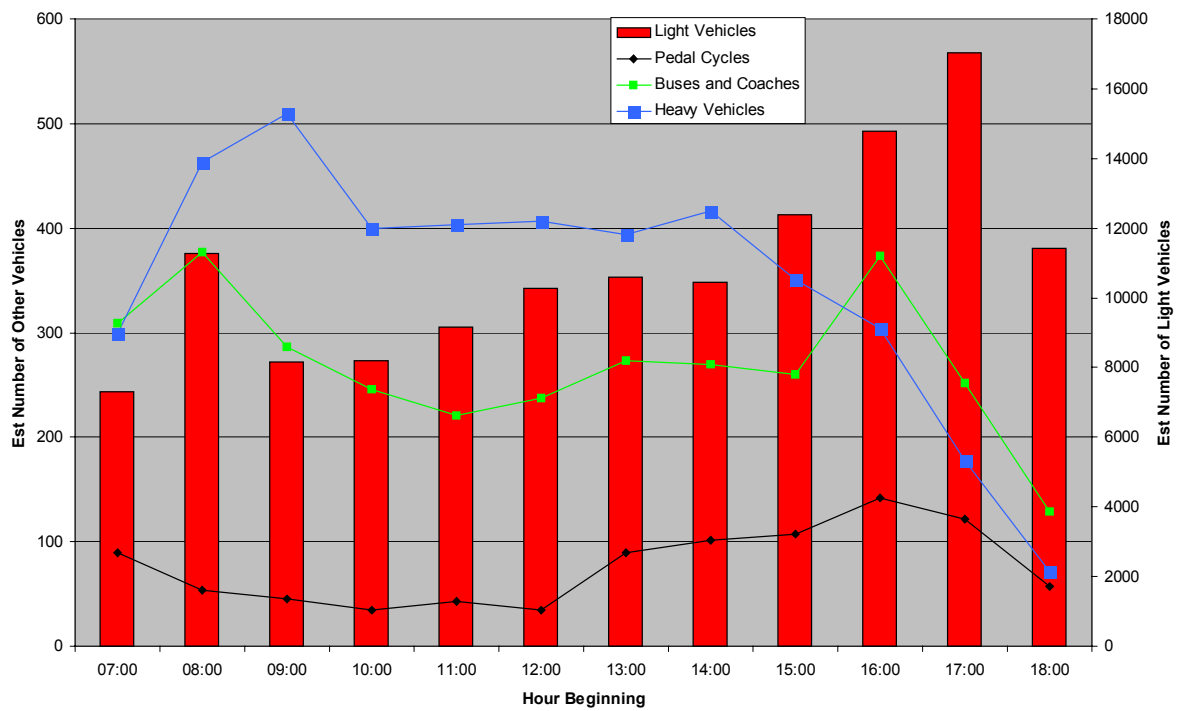
Table 9 Summary of Outbound mode of transport data from manual surveys

TIME STARTING	TOTAL VEH	PEDAL CYC	BUS & COACH	Light Vehs	Heavy Vehs	% pedal cycle	% bus	% light	% goods
7.00	1602	18	62	1462	60	1.12	3.87	91.26	3.75
8.00	2263	10	70	2097	86	0.44	3.09	92.66	3.80
9.00	1975	10	63	1790	112	0.51	3.19	90.63	5.67
10.00	2018	8	56	1863	91	0.40	2.78	92.32	4.51
11.00	2320	10	52	2163	95	0.43	2.24	93.23	4.09
12.00	2532	8	55	2375	94	0.32	2.17	93.80	3.71
13.00	2534	20	61	2365	88	0.79	2.41	93.33	3.47
14.00	2543	23	61	2365	94	0.90	2.40	93.00	3.70
15.00	3175	26	63	3001	85	0.82	1.98	94.52	2.68
16.00	3183	29	76	3016	62	0.91	2.39	94.75	1.95
17.00	3765	26	54	3647	38	0.69	1.43	96.87	1.01
18.00	2622	13	29	2564	16	0.50	1.11	97.79	0.61
0700-0930	4897	33	162	4495	207	0.67	3.31	91.79	4.23
1000-1200	4338	18	108	4026	186	0.41	2.49	92.81	4.29
1630-1830	6941	50	116	6699	76	0.72	1.67	96.51	1.09

Table 10 Estimated Outbound mode of transport figures

TIME STARTING	No. auto vehs.	estimated ped cyc	estimated bus	estimated light	estimated goods
7.00	7993	90	309	7294	299
8.00	12169	54	376	11276	462
9.00	8986	45	287	8144	510
10.00	8862	35	246	8181	400
11.00	9836	42	220	9170	403
12.00	10949	35	238	10270	406
13.00	11340	90	273	10584	394
14.00	11253	102	270	10465	416
15.00	13109	107	260	12391	351
16.00	15613	142	373	14794	304
17.00	17570	121	252	17019	177
18.00	11659	58	129	11401	71
0700-0930	24890	167	829	22857	1037
1000-1200	18698	78	466	17352	802
1630-1830	32198	232	540	31072	354

Figure 8 Estimated Outbound mode of transport figures



4.4 Occupancy Levels

Figures 9 and 10 show the estimated numbers of persons crossing the cordon calculated from the occupancy counts at the three manual sites and the number of vehicles counted automatically per time period.

Figure 9 Estimated persons in Light Vehicles Inbound Morning Peak Period

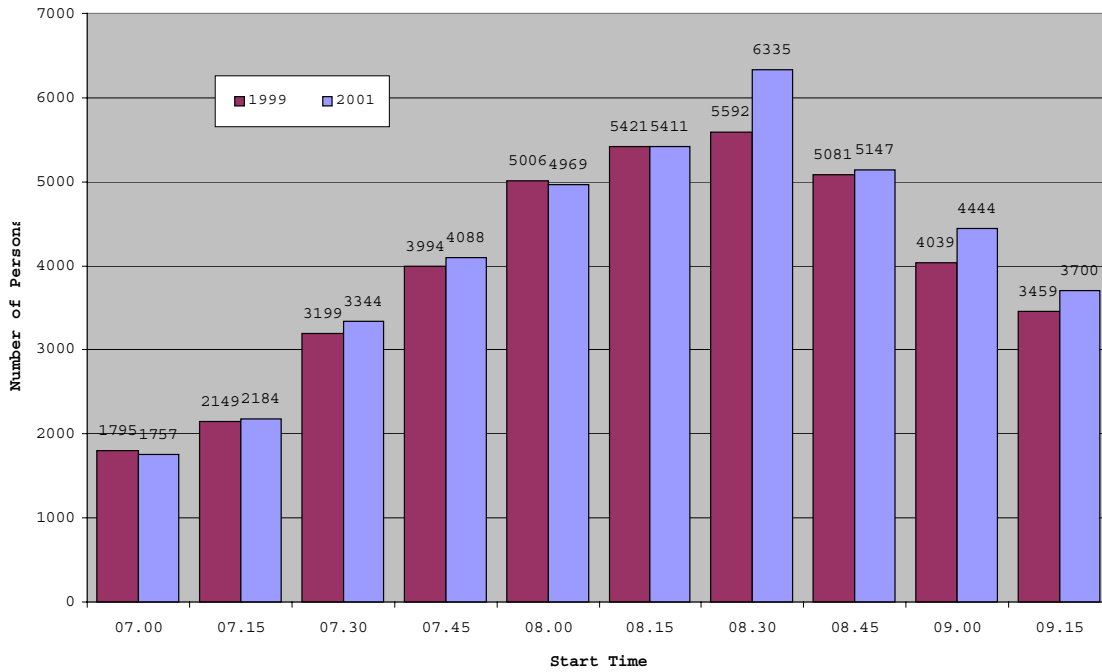


Figure 10 Estimated persons in Light Vehicles Outbound Morning Peak Period

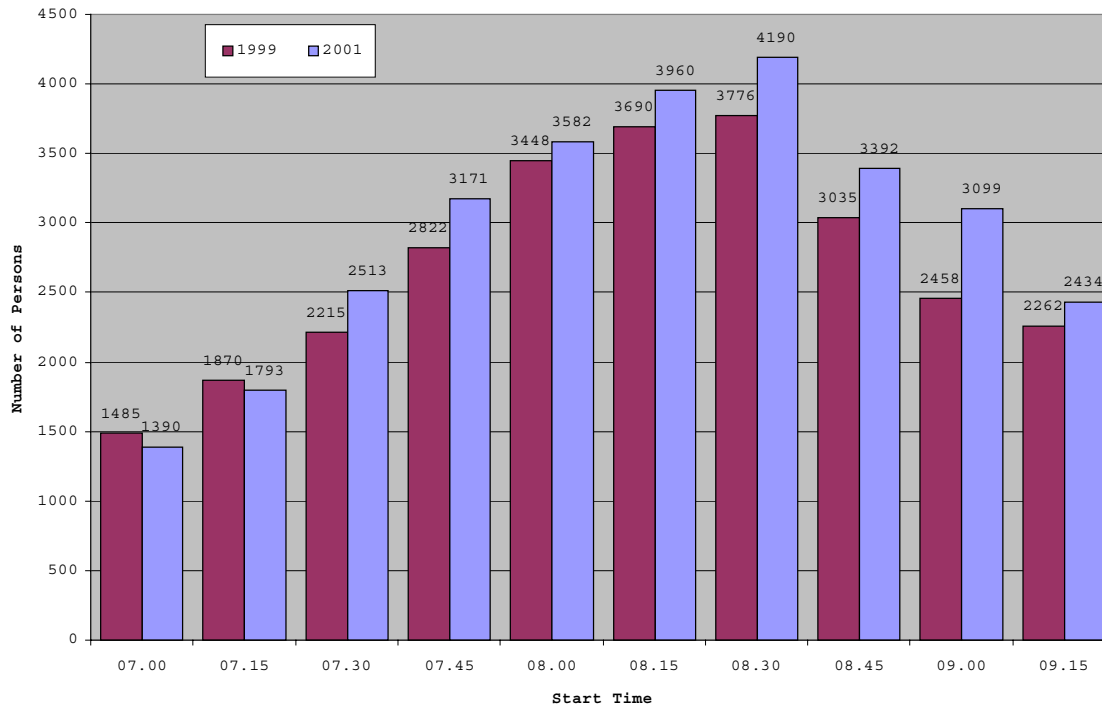


Figure 11 Estimated persons in Heavy vehicles – inbound morning peak

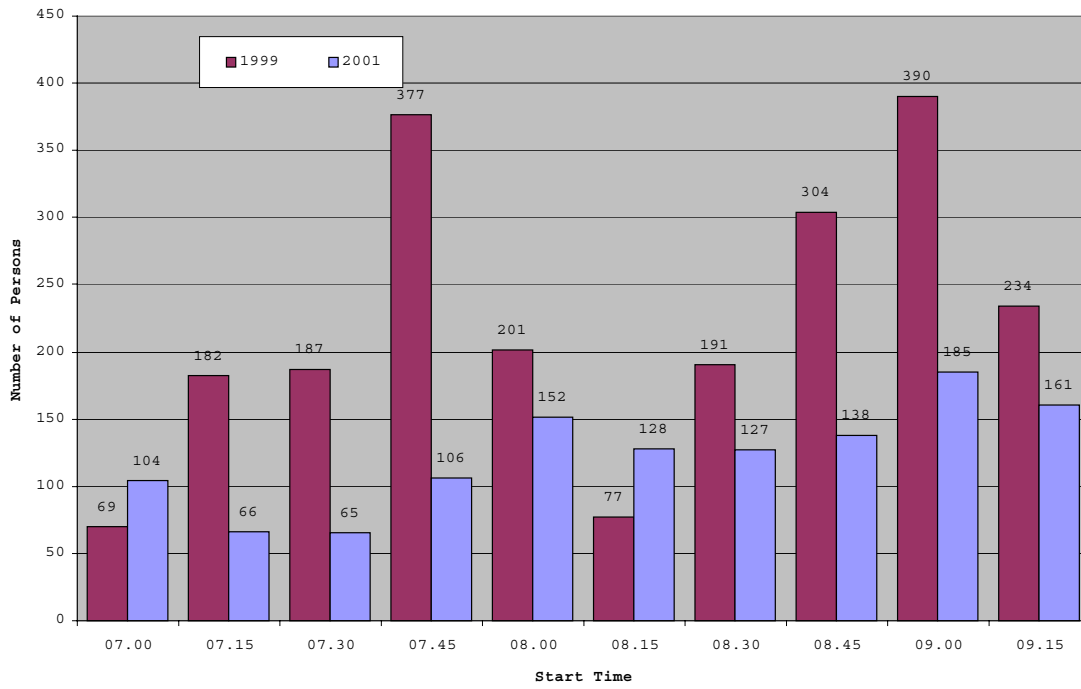
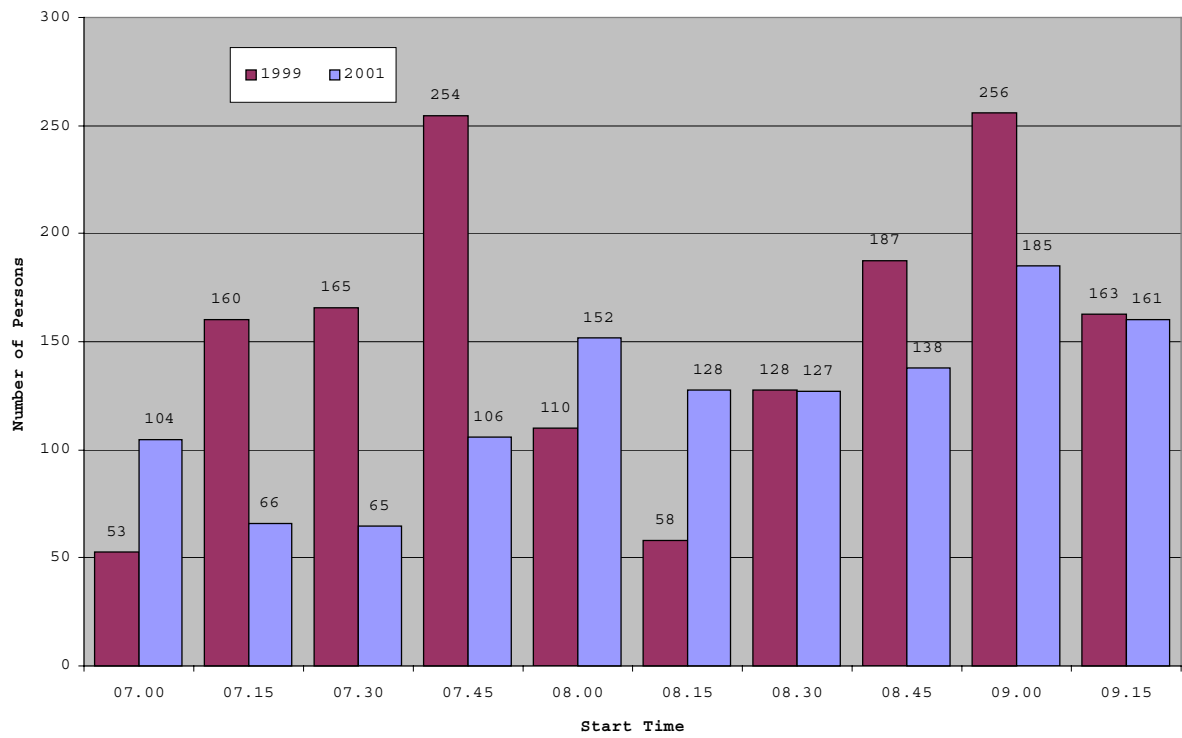


Figure 12 Estimated persons in Heavy Vehicles – outbound morning peak



5 Appendix 1 Position of Cordon Sites

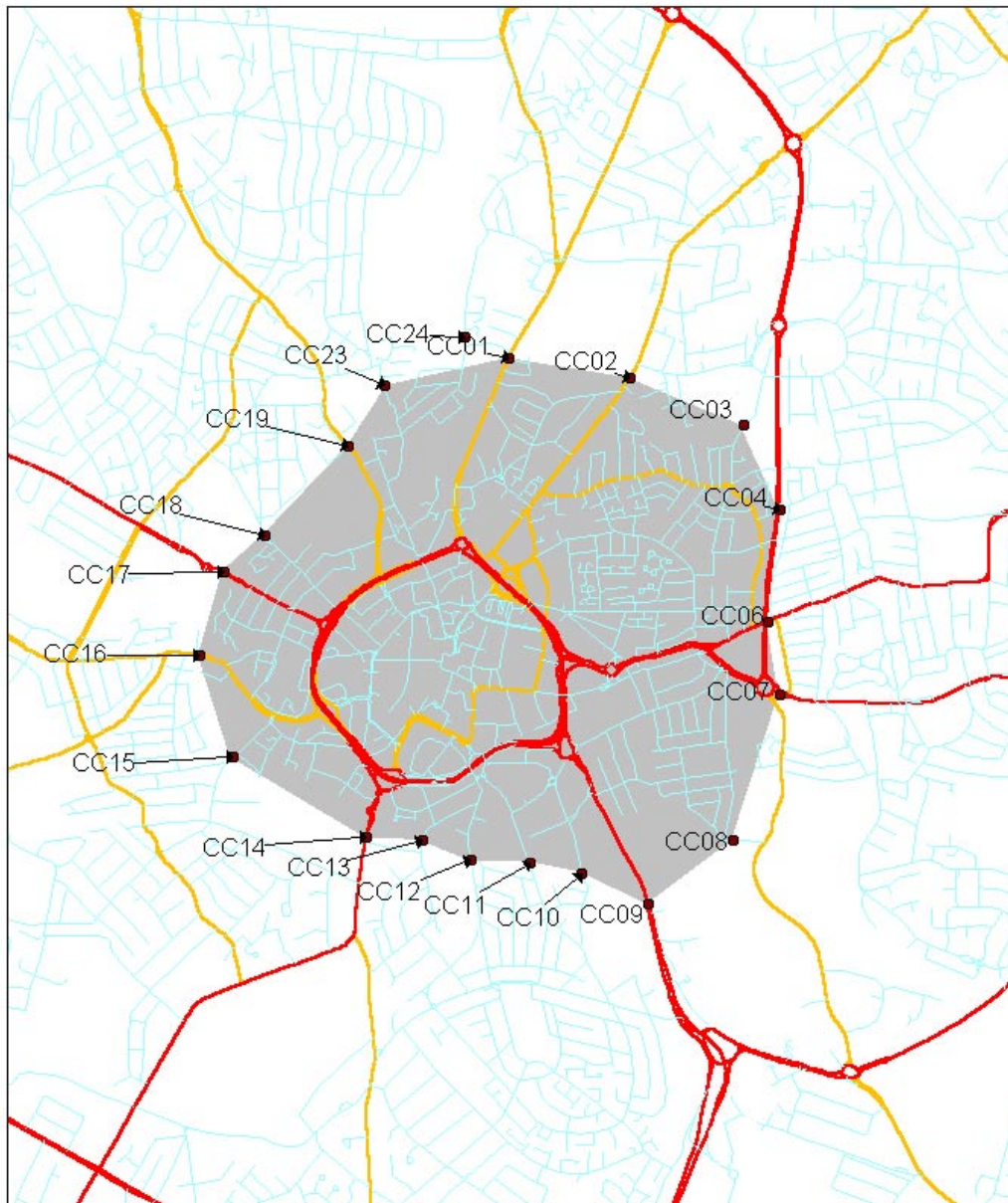
Table 11 Automatic count sites

CC01	Foleshill Road	between Honey Street and Edmund Street
CC02	Stoney Stanton Road	south of Red Lane
CC03	Swan Lane	north of Newham Road
CC04	Heath Road	west of Stepney Road
CC06	Walsgrave Road	between Kingsway and Swan Lane
CC07	Binley Road	west of Humber Road
CC08	Terry Road	near St. George's Road
CC09	London Road	south of Acacia Avenue
CC10	Quarryfield Road	between Puma Road and St. Christians Croft
CC11	Mile Lane	between Puma Road and Thomas Lansdail Street
CC12	Quinton Road	between Hornchurch Close and Joan Ward Street
CC13	Stoney Road	north of Michaelmas Road
CC14	Warwick Road	just north of Michaelmas Road
CC15	Albany Road	between Broomfield Road and Bedford Street
CC16	Spon End	at railway bridge
CC17	Holyhead Road	at railway bridge
CC18	Coundon Road	between Butts Lane and Chester Street
CC19	Radford Road	south of Swillinton Road
CC23	Sandy Lane	south of Caldecote Road
CC24	Kingfield Road	north of Cash's Lane

Table 12 Manual Count sites

CC08 (R8810)	Terry Road	Between George's Road and Humber Road
CC14 (R3931)	Warwick Road	North of Michaelmas Road
CC17 (R8811)	Holyhead Road	At railway bridge
CC02 (R4503)	Stoney Stanton Road	South of Red Lane

Figure 13 **Location of Coventry ATC Cordon Sites**



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 W:\dc01\projects\47995\users\monitoring\Coventry_Cordon_2001\map.wor

Title Coventry Cordon 2001					 Mott MacDonald Limited Canterbury House 85 Newhall Street, Birmingham, B3 1LZ		Telephone 0121-237-4002 Fax 0121-237-4003	
Date	Drawn	Checked	Approved	Status	Drawing no.	page 15 of 19		Rev.
20/02/02	DMK	BWS	BWS	Final	47995/BC05/01			A

6 Appendix 2 Estimates of Vehicle Type from Passage Count Data

Inbound		Tot Vehs	Pedal Cyc	Bus & Coach	Light Vehs	Heavy Vehs	% Pedal Cyc	% Bus & Coach	% Light Vehs	% Heavy Vehs	No. Auto Vehs	Est. Ped Cyc	Est. Bus & Coach	Est. Light Vehs	Est. Heavy Vehs
07:00	1916	21	43	1793	59	1.10%	2.24%	93.56%	3.08%	9929	109	223	9292	306	
08:00	3453	23	65	3257	108	0.67%	1.88%	94.32%	3.13%	17327	115	326	16343	542	
09:00	2543	16	83	2342	102	0.63%	3.26%	92.10%	4.01%	12352	78	403	11376	495	
10:00	2287	9	53	2117	108	0.39%	2.32%	92.57%	4.72%	9727	38	225	9004	459	
11:00	2159	10	49	1985	115	0.46%	2.27%	91.94%	5.33%	9661	45	219	8882	515	
12:00	2277	16	53	2078	129	0.70%	2.33%	91.26%	5.67%	10328	73	240	9425	585	
13:00	2663	22	55	2484	72	0.83%	2.07%	93.28%	2.70%	10983	91	227	10245	297	
14:00	2328	14	59	2143	112	0.60%	2.53%	92.05%	4.81%	10190	61	258	9380	490	
15:00	2692	15	69	2535	73	0.56%	2.56%	94.17%	2.71%	11208	62	287	10554	304	
16:00	2741	12	68	2594	67	0.44%	2.48%	94.64%	2.44%	12436	54	309	11769	304	
17:00	2752	15	54	2645	38	0.55%	1.96%	96.11%	1.38%	12413	68	244	11930	171	
18:00	2405	22	49	2313	21	0.91%	2.04%	96.17%	0.87%	9825	90	200	9449	86	
Total	30216	195	700	28286	1004	0.65%	2.32%	93.61%	3.32%	136379	884	3162	127650	4554	
10-12 Total	4446	19	102	4102	223	0.43%	2.29%	92.26%	5.02%	19388	83	445	17886	974	
07:00	288	6	7	269	6	2.08%	2.43%	93.40%	2.08%	1561	33	38	1458	33	
07:15	391	6	8	364	13	1.53%	2.05%	93.09%	3.32%	1939	30	40	1805	64	
07:30	559	2	14	523	20	0.36%	2.50%	93.56%	3.58%	2967	11	74	2776	106	
07:45	678	7	14	637	20	1.03%	2.06%	93.95%	2.95%	3462	36	71	3253	102	
08:00	801	5	20	740	36	0.62%	2.50%	92.38%	4.49%	4268	27	107	3943	192	
08:15	834	6	18	789	21	0.72%	2.16%	94.60%	2.52%	4140	30	89	3917	104	
08:30	900	6	12	858	24	0.67%	1.33%	95.33%	2.67%	4770	32	64	4547	127	
08:45	918	6	15	870	27	0.65%	1.63%	94.77%	2.94%	4149	27	68	3932	122	
09:00	701	4	20	655	22	0.57%	2.85%	93.44%	3.14%	3825	22	109	3574	120	
09:15	656	5	17	603	31	0.76%	2.59%	91.92%	4.73%	2968	23	77	2728	140	
Total	6726	53	145	6308	220	0.79%	2.16%	93.79%	3.27%	34049	268	737	31933	1111	
16:30	668	2	15	635	16	0.30%	2.25%	95.06%	2.40%	3243	10	73	3083	78	
16:45	673	4	18	632	19	0.59%	2.67%	93.91%	2.82%	3154	19	84	2962	89	
17:00	712	2	14	686	10	0.28%	1.97%	96.35%	1.40%	3377	9	66	3254	47	
17:15	744	4	16	714	10	0.54%	2.15%	95.97%	1.34%	3067	16	66	2943	41	
17:30	699	5	11	670	13	0.72%	1.57%	95.85%	1.86%	3131	22	49	3001	58	
17:45	597	4	13	575	5	0.67%	2.18%	96.31%	0.84%	2838	19	62	2733	24	
18:00	650	6	20	623	1	0.92%	3.08%	95.85%	0.15%	2796	26	86	2680	4	
18:15	638	3	16	610	9	0.47%	2.51%	95.61%	1.41%	2383	11	60	2278	34	
Total	5381	30	123	5145	83	0.56%	2.29%	95.61%	1.54%	23989	133	546	22934	375	

Start Time	Tot Vehs	PedalCyc	Bus & Coach	Light Vehs	Heavy Vehs	% Pedal Cyc	% Bus & Coach	%Light Vehs	% Heavy Vehs	No. Auto Vehs	Est. Ped Cyc	Est. Bus & Coach	Est. Light Vehs	Est. Heavy Vehs
07:00	1602	18	62	1462	60	1.12%	3.87%	91.26%	3.75%	7993	90	309	7294	299
08:00	2263	10	70	2097	86	0.44%	3.09%	92.66%	3.80%	12169	54	376	11276	462
09:00	1975	10	63	1790	112	0.51%	3.19%	90.63%	5.67%	8986	45	287	8144	510
10:00	2018	8	56	1863	91	0.40%	2.78%	92.32%	4.51%	8862	35	246	8181	400
11:00	2320	10	52	2163	95	0.43%	2.24%	93.23%	4.09%	9836	42	220	9170	403
12:00	2532	8	55	2375	94	0.32%	2.17%	93.80%	3.71%	10949	35	238	10270	406
13:00	2534	20	61	2365	88	0.79%	2.41%	93.33%	3.47%	11340	90	273	10584	394
14:00	2543	23	61	2365	94	0.90%	2.40%	93.00%	3.70%	11253	102	270	10465	416
15:00	3175	26	63	3001	85	0.82%	1.98%	94.52%	2.68%	13109	107	260	12391	351
16:00	3183	29	76	3016	62	0.91%	2.39%	94.75%	1.95%	15613	142	373	14794	304
17:00	3765	26	54	3647	38	0.69%	1.43%	96.87%	1.01%	17570	121	252	17019	177
18:00	2622	13	29	2564	16	0.50%	1.11%	97.79%	0.61%	11659	58	129	11401	71
Total	30532	201	702	28708	921	0.66%	2.30%	94.03%	3.02%	139339	921	3233	130991	4194
10-12 Total	4338	18	108	4026	186	0.41%	2.49%	92.81%	4.29%	18698	78	466	17352	
07:00	276	2	13	242	19	0.72%	4.71%	87.68%	6.88%	1357	10	64	1190	93
07:15	347	3	13	318	13	0.86%	3.75%	91.64%	3.75%	1609	14	60	1475	60
07:30	419	5	20	384	10	1.19%	4.77%	91.65%	2.39%	2215	26	106	2030	53
07:45	560	8	16	518	18	1.43%	2.86%	92.50%	3.21%	2812	40	80	2601	90
08:00	582	3	19	536	24	0.52%	3.26%	92.10%	4.12%	3152	16	103	2903	130
08:15	537	1	18	498	20	0.19%	3.35%	92.74%	3.72%	3072	6	103	2849	114
08:30	585	4	22	540	19	0.68%	3.76%	92.31%	3.25%	3236	22	122	2987	105
08:45	559	2	11	523	23	0.36%	1.97%	93.56%	4.11%	2709	10	53	2535	111
09:00	560	2	14	511	33	0.36%	2.50%	91.25%	5.89%	2573	9	64	2348	152
09:15	472	3	16	425	28	0.64%	3.39%	90.04%	5.93%	2155	14	73	1940	128
Total	4897	33	162	4495	207	0.67%	3.31%	91.79%	4.23%	24890	167	829	22857	1037
16:30	863	9	21	817	16	1.04%	2.43%	94.67%	1.85%	4149	43	101	3928	77
16:45	867	7	20	827	13	0.81%	2.31%	95.39%	1.50%	3922	32	90	3741	59
17:00	953	5	16	919	13	0.52%	1.68%	96.43%	1.36%	4732	25	79	4563	65
17:15	993	6	18	958	11	0.60%	1.81%	96.48%	1.11%	4431	27	80	4275	49
17:30	966	6	9	944	7	0.62%	0.93%	97.72%	0.72%	4557	28	42	4453	33
17:45	853	9	11	826	7	1.06%	1.29%	96.83%	0.82%	3850	41	50	3828	32
18:00	759	4	14	737	4	0.53%	1.84%	97.10%	0.53%	3651	19	67	3545	19
18:15	687	4	7	671	5	0.58%	1.02%	97.67%	0.73%	2906	17	30	2838	21
Total	6941	50	116	6699	76	0.72%	1.67%	96.51%	1.09%	32198	232	540	31072	354

7 Appendix 3 Estimates of Person Trips from Manual Occupancy Data

Total Inbound	Number of vehicles with					Total Veh	Total Pass	Average Occupancy	No. Vehicles (automatic count)	A	B	C	D	E	F	G	H		Est People Light & Heavy
	1	2	3	4	5												B+C	Est. Light Vehicles.	
Start Time	1	2	3	4	5	Total Veh	Total Pass	Average Occupancy	No. Vehicles (automatic count)	A	B	C	D	E	F	G	H	Est People Heavy Vehs	Est People Light & Heavy
Occupants																			
07.00	227	36	5	1	0	269	318	1.18	1561	38	33	71	1458	1724	1757	33	33	1757	
07.15	312	59	7	0	0	378	451	1.19	1939	40	30	70	1805	2154	2184	64	64	2218	
07.30	430	91	6	1	0	528	634	1.20	2967	74	11	85	2776	3333	3344	106	131	3464	
07.45	512	109	18	3	1	643	801	1.25	3462	71	36	107	3253	4052	4088	102	117	4169	
08.00	601	131	20	3	3	758	950	1.25	4268	107	27	134	3943	4942	4969	192	225	5167	
08.15	565	161	39	11	5	781	1073	1.37	4140	89	30	119	3917	5381	5411	104	120	5501	
08.30	631	170	43	24	2	870	1206	1.39	4770	64	32	96	4547	6303	6335	127	140	6443	
08.45	658	178	30	6	2	874	1138	1.30	4149	68	27	95	3932	5120	5147	122	148	5267	
09.00	524	121	16	0	1	662	819	1.24	3825	109	22	131	3574	4422	4444	120	127	4549	
09.15	429	147	17	4	4	601	810	1.35	2968	77	23	100	2728	3677	3700	140	151	3828	
07.30-09.30	4350	1108	189	52	18	5717	7431	1.30	30549	659	208	867	28670	37230	37438	1013	1158	38388	
07.00-09.30	4889	1203	201	53	18	6364	8200	1.29	34049	737	271	1008	31933	41107	41378	1110	1255	42362	
09.30	422	112	14	3	1	552	705	1.28											
09.45	424	85	7	1	1	518	624	1.20											
10.00	380	125	9	0	0	514	657	1.28											
10.15	406	157	17	2	2	584	789	1.35											
10.30	349	107	7	1	1	465	593	1.28											
10.45	395	125	14	5	0	539	707	1.31											
11.00	308	123	13	3	3	450	620	1.38											
11.15	290	135	18	5	2	450	644	1.43											
11.30	374	144	18	4	1	541	737	1.36											
11.45	350	110	15	5	3	483	650	1.35											
10.00-12.00	2852	1026	111	25	12	4026	5397	1.34											
12.00	332	131	10	7	4	484	672	1.39											
12.15	346	137	14	7	2	506	700	1.38											
07.00-12.30	9265	2694	357	96	38	12450	16298	1.31											

Number of vehicles with										B+C		Est People		Estimated		Est People		Est People	
2	3	4	5	Total Veh	Total Pass	Average Occupancy	No. Vehicles (automatic count)	Estimated No. of Buses	Estimated No. Pedal Cycles	Est. Light Vehicles.	Est. Ave Occ	Light Vehs + Ped Cyc	Heavy Vehs	Heavy Vehs	Light & Heavy	Heavy Vehs	Light & Heavy	Heavy Vehs	Light & Heavy
0	16	1	0	1	138	1.16	1357	64	10	74	1190	1360	1390	93	104	1484			
0	27	6	1	0	204	1.21	1609	60	14	74	1475	1779	1793	60	66	1845			
9	45	6	0	1	271	1.23	2215	106	26	132	2030	2487	2513	53	65	2552			
9	55	6	3	0	373	1.20	2812	80	40	120	2601	3131	3171	90	106	3237			
0	61	4	0	2	337	1.23	3152	103	16	119	2903	3566	3582	130	152	3718			
9	72	20	2	2	325	1.39	3072	103	6	109	2849	3954	3960	114	128	4081			
9	72	29	5	2	387	1.40	3236	122	22	144	2987	4168	4190	105	127	4295			
6	66	12	8	1	353	1.33	2709	53	10	63	2535	3382	3392	111	138	3520			
3	67	13	3	2	348	1.32	2573	64	9	73	2348	3090	3099	152	185	3275			
7	51	8	0	1	287	1.25	2155	73	14	87	1940	2420	2434	128	161	2580			
2	489	98	21	11	2681	1.30	21924	704	143	847	20193	26198	26341	883	1061	27259			
2	532	105	22	12	3023	1.28	24890	828	167	995	22858	29357	29524	1036	1231	30588			
9	46	9	2	1	267	1.28													
1	55	5	2	2	285	1.28													
7	52	23	2	2	266	1.42													
0	78	11	1	2	322	1.34													
9	66	10	1	1	307	1.30													
5	82	9	3	1	310	1.36													
3	75	10	4	0	332	1.32													
1	103	13	8	1	366	1.43													
9	79	9	2	1	310	1.35													
3	101	16	4	2	406	1.38													
7	636	101	25	10	2619	1.36													
7	109	15	3	1	375	1.41													
5	76	15	5	1	352	1.36													
1	1454	250	59	27	6921	1.32													

8 Appendix 4: Modal Share

Table 13 Inbound Modal Share Figures (1997- 2001) 0730-0930

Mode of Trip	Number of Trips Inbound			Number of Trips Outbound		
	1997	1999	2001	1997	1999	2001
Car Trips	30,881	31,727	33,836	20,570	20,725	23,228
Light Vehicle Trips	N/A	35,742	37,251	N/A	23,396	26,240
Occupancy Factor	1.27	1.27	1.30	1.22	1.24	1.30
Bus Trips	9,505	9,367	8,436	6,231	6,590	6,328
Train Trips	968	1,089	1,092	1,448	1,308	1,190
Total Trips (car,bus,train)	41,354	42,183	43,364	28,249	28,623	30,746
Car Share	74.7%	75.2%	78.0%	72.8%	72.4%	75.5%
Bus Share	23.0%	22.2%	19.5%	22.1%	23.0%	20.6%
Train Share	2.3%	2.6%	2.5%	5.1%	4.6%	3.9%

Table 14 Inbound Modal Share Figures (1997- 2001) 1000-1200

Mode of Trip	Number of Trips Inbound			Number of Trips Outbound		
	1997	1999	2001	1997	1999	2001
Car Trips	20,968	19,623	20,966	19,133	18,121	20,597
Light Vehicle Trips	N/A	22,167	23,970	N/A	58,939	65,010
Occupancy Factor	1.32	1.29	1.34	1.28	1.24	1.36
Bus Trips	8,719	7,676	7,194	5,749	6,103	4,997
Train Trips	578	771	675	717	986	557
Total Trips (car, bus, train)	30,265	28,070	28,835	25,599	25,210	26,151
Car Share	69.3%	69.9%	72.7%	74.7%	71.9%	78.8%
Bus Share	28.8%	27.3%	24.9%	22.5%	24.2%	19.1%
Train Share	1.9%	2.7%	2.4%	2.8%	3.9%	2.1%

Table 15 Estimates of Numbers of Persons by Modal Split 0700-1230

Mode of Trip	Number of Trips Inbound			Number of Trips Outbound		
	1997	1999	2001	1997	1999	2001
Car Trips	69,845	65,996	69,592	53,015	51,341	57,081
Light Vehicle Trips	N/A	74,539	78,014	N/A	58,939	65,010
Occupancy Factor	1.29	1.28	1.31	1.24	1.26	1.32
Bus Trips	24,394	22,649	20,974	15,246	15,847	14,377
Train Trips	1,979	2,290	2,301	2,837	3,028	2,400
Total Trips (car, bus, train)	96,218	90,935	92,867	71,098	70,216	73,858
Car Share	72.6%	72.6%	74.9%	74.6%	73.1%	77.3%
Bus Share	25.4%	24.9%	22.6%	21.4%	22.6%	19.5%
Train Share	2.1%	2.5%	2.5%	4.0%	4.3%	3.2%