Birmingham City Council
1 Lancaster Circus
Birmingham B4 7DJ

Birmingham Cordon 2001

Mott MacDonald
Canterbury House
85 Newhall Street
Birmingham B3 1LZ
Tel 0121 237 4002
Fax 0121 237 4003

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Summary

The following is a summary of the information contained in this report. Estimates of persons have only been calculated for the inbound and outbound morning peak and off-peak periods. The estimates are calculated using manual surveys. The extent of these surveys defines the extent of information available. Variations from year to year can be more accurately calculated if the same manual sites are used for monitoring each year. Using different sites on a rotational basis can result in both wide variations in proportions of traffic and occupancies and imbalances of inbound/outbound traffic depending on the road type mix of the sites surveyed that particular year. For details on methodology and a breakdown of the time periods, see the main report.

0730-0930 inbound		0730-0930 outbound	
total vehicles	50,198	total vehicles	26,031
estimated pedal cycles	423	estimated pedal cycles	86
estimated bus	1,790	estimated bus	2,006
estimated light vehicles	46,168	estimated light vehicles	21,594
estimated goods vehicles	1,817	estimated goods vehicles	2,345
estimated persons light vehicles	57,668	estimated persons light vehicles	26,431
estimated persons heavy vehicles	2,209	estimated persons heavy vehicles	2,837

1000-1200 inbound		1000-1200 outbound	
total vehicles	31,218	total vehicles	27,360
estimated pedal cycles	75	estimated pedal cycles	43
estimated bus	2,071	estimated bus	2,057
estimated light vehicles	26,371	estimated light vehicles	22,684
estimated goods vehicles	2,701	estimated goods vehicles	2,577
estimated persons light vehicles	35,083	estimated persons light vehicles	29,759
estimated persons heavy vehicles	3,193	estimated persons heavy vehicles	3,040

Summary of Main Points

Total Vehicles

24 Hour

2001 inbound figures showed an increase of 1.4% on 1999 figures. Compared with 1995, vehicle numbers have changed by less than 1%. (page 3, Table 3)

AM Peak (0730-0930)

Inbound morning peak figures have decreased by 2.3% on 1999 figures and have returned to levels seen in 1995. (page 3, Table 3)

Off-Peak (1000-1200)

Off-peak traffic has remained virtually unchanged since 1995 with the number of vehicles travelling into the city centre in 2001 remaining within the 31-32,000 level seen in previous years. (page 3, Table 3)

Saturday

Compared with 1999,there has been a considerable increase in the amount of traffic over the 24hr period (8.5%). The increase was less marked compared with 1997 (1.8%), but are higher than any year since 1994. (page 8, Table 7)

Sunday

Again, traffic travelling on a Sunday during 2001 has increased considerably in all time periods compared with 1999 (19.7%). It has also increased significantly (16.0%) compared with 1997 which was previously the highest year before 2001. (page 8, Table 8)

People Trips

Unfortunately it is not possible to compare 2001 figures with previous years as a full bus and rail survey was not carried out by Centro due to lack of police resources.

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**. Manual counts were undertaken by Birmingham City Council.

Methodology

Counts of vehicles crossing a cordon around Birmingham City Centre are undertaken every two years using Automatic Traffic Counters (ATC'S) installed on all major and most minor roads crossing the cordon. The counts record vehicles continuously, by direction, for a seven day period. The location of the sites is shown in Figure 13.

Eight sites were also surveyed manually by Birmingham City Council staff. Inbound occupancy data was collected at these sites. 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 complimentary bus cordon survey is usually undertaken by CENTRO at the same time as the bus survey, but in 2001 this had to be postponed due to lack of police resources. A sample of sites for comparison purposes was surveyed however, so that factors, if necessary, can be applied when the complete survey is undertaken. (Probably in November 2002)

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

Background

Collection of the data took place in the two weeks beginning Monday 5th and 12th November 2001. Due to bomb threats in the city centre, there was some disruption to traffic during certain days of the cordon survey. This may have resulted in some abnormal flows being observed at a few sites during certain time periods especially the evening peak. Some caution should therefore be applied when looking at 2001 figures.

In future the intention will be to keep to the same weeks each year although it is likely that the Birmingham cordon survey will be repeated before the due date of November 2003.

The exact position of the automatic counts can be seen in Appendix 1. Again, the intention will be to use the same sites for this monitoring purpose each time the cordon survey is carried out.

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 07.30-09.30. The figures show a 2.3% decrease in inbound traffic and 1.7% increase in outbound traffic during this time period compared with 1999. Traffic now stands at the same levels seen in 1995 with very little change being seen since 1993.

Table 1 Number of vehicles crossing the cordon in the Morning Peak Period (07.30 - 09.30)

	1993	1994	1995	1997	1999	2001
Inbound Total	50,093	51,937	50,292	48,460	51,364	50,198
Outbound Total	25,817	28,072	26,501	26,660	25,587	26,031

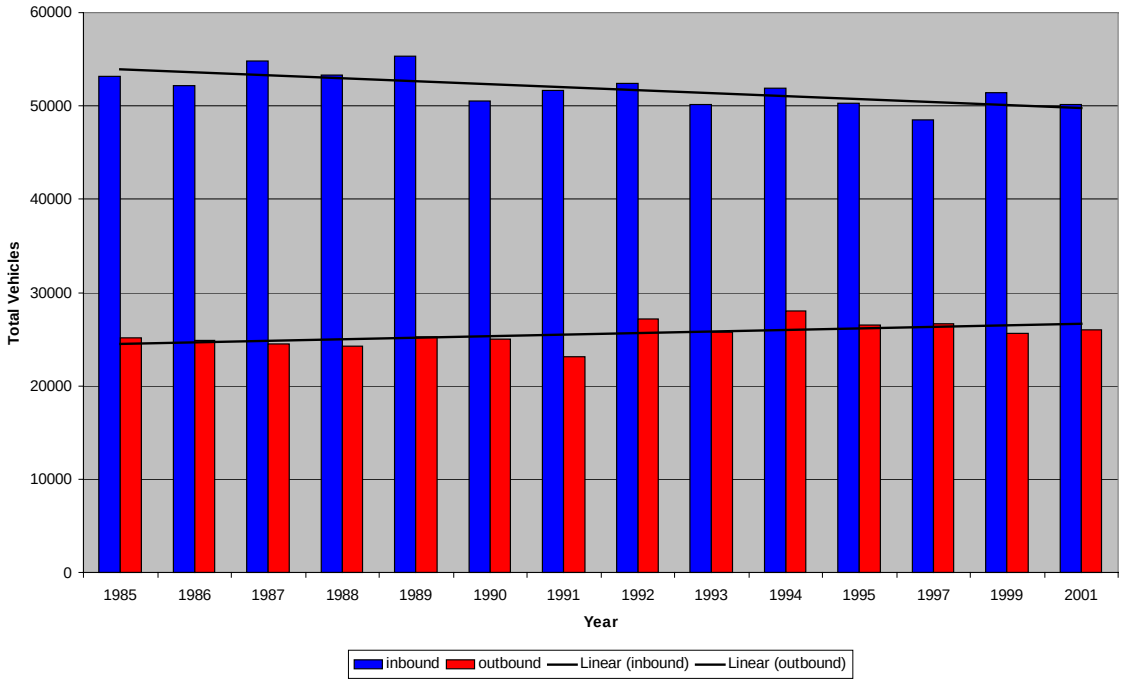
Table 2 shows the number of vehicles crossing the cordon line in the traditional off-peak morning period (10.00-12.00). The figures show a very slight increase compared with the data collected two years ago but again have shown very little change since 1993.

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

	1993	1994	1995	1997	1999	2001
Inbound Total	31,166	32,302	32,033	31,483	31,090	31,218
Outbound Total	27,018	29,036	27,781	26,994	26,331	27,360

Figure 1 illustrates the trend in vehicles travelling into and out of the centre over the last 16 years.

Figure 1 Number of Vehicles Crossing the Cordon Line, AM Peak by Year.



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 7.30a.m. and 9.30a.m. This corresponds to the figure outbound in the evening peak period (4p.m. to 6p.m.), which is 18.5%. The off-peak time period considered (1000-1200) shows 12.3% of the daily traffic travelling into the town centre. A similar percentage is evident in the outbound direction for this time period. Around 80% of an average day's traffic is crossing the cordon during the main 12hr day. The figures in this table show that, overall, the numbers of vehicles counted in 2001 were slightly higher in the inbound direction and considerably higher in the outbound direction when compared with those counted in 1999.
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

	07.30 - 09.30	10.00 - 12.00	16.00 - 18.00	07.00 – 1900 (12 hour)	00.00 – 24.00 (24 hour)
1995					
Inbound	50,292	32,033	29,113	203,829	252,505
% of 24 hr	19.9	12.7	11.5	80.7	100
Outbound	26,501	27,781	45,534	196,830	249,165
% of 24 hr	10.6	11.1	18.3	79.0	100
NET	23,791	4,252	-16,421	6,999	3,340
1997					
Inbound	48,460	31,483	30,319	201,709	252,726
% of 24 hr	19.2	12.4	12.0	79.8	100
Outbound	26,660	26,994	44,061	192,289	246,484
% of 24 hr	10.8	11.0	17.9	78.0	100
NET	21,800	4,489	-13,742	9,420	6,242
1999					
Inbound	51,364	31,090	29,373	201,524	250,874
% of 24hr	20.5	12.4	11.7	80.3	100
Outbound	25,587	26,331	46,781	193,193	247,470
% of 24hr	10.3	10.6	18.9	78.1	100
NET	25,777	4,759	-17,408	8,331	3,404
2001					
Inbound	50,198	31,218	28,056	201,795	254,386
% of 24hr	19.7	12.3	11.0	79.3	100
Outbound	26,031	27,360	47,696	199,807	257,966
% of 24hr	10.1	10.6	18.5	77.4	100
NET	24,167	3,858	-19,640	1,988	-3,580

Figure 2 Inbound Morning Peak Period: Vehicle Volumes by Quarter Hour - Average Weekday

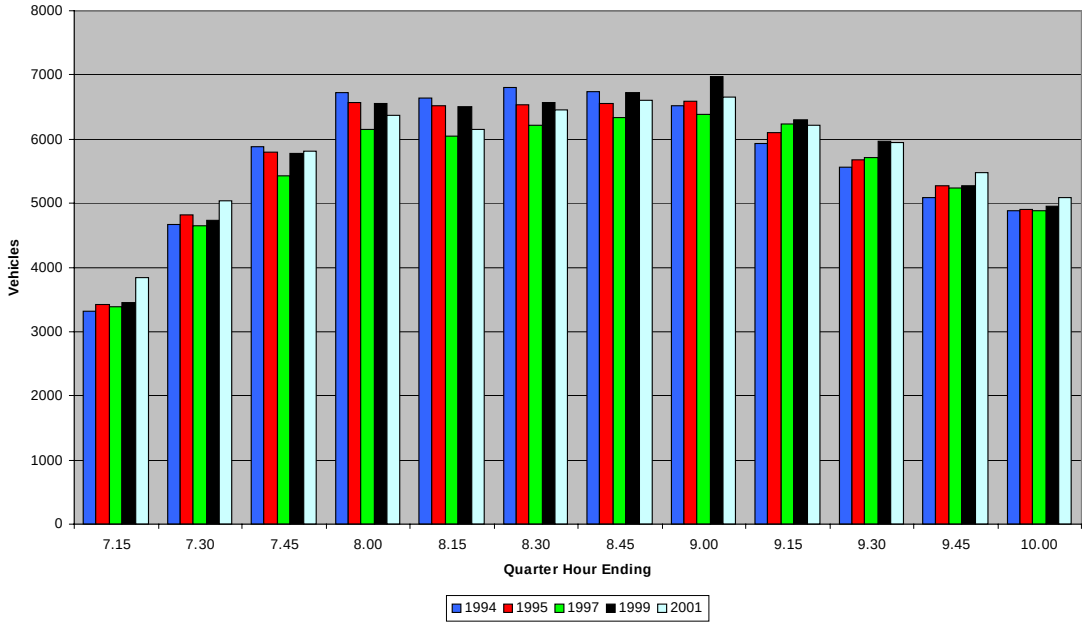


Figure 2and Figure 3 show the two main peak periods by quarter hour. The morning figures are given from 7a.m. until 10a.m. and the evening from 4p.m. to 7p.m. These time periods are wider than those presented in previous tables. This allows a check on the traditional time periods as peak spreading may be seen on these graphs.

Figure 2 shows increases in traffic during the early and late morning time periods compared with previous years. Similarly, in the outbound direction, (Figure 3) increases compared with previous years can be seen in the early and late evening peak periods.

Figure 3 Outbound Evening Peak Period: Vehicle Volumes by Quarter Hour – Average Weekday

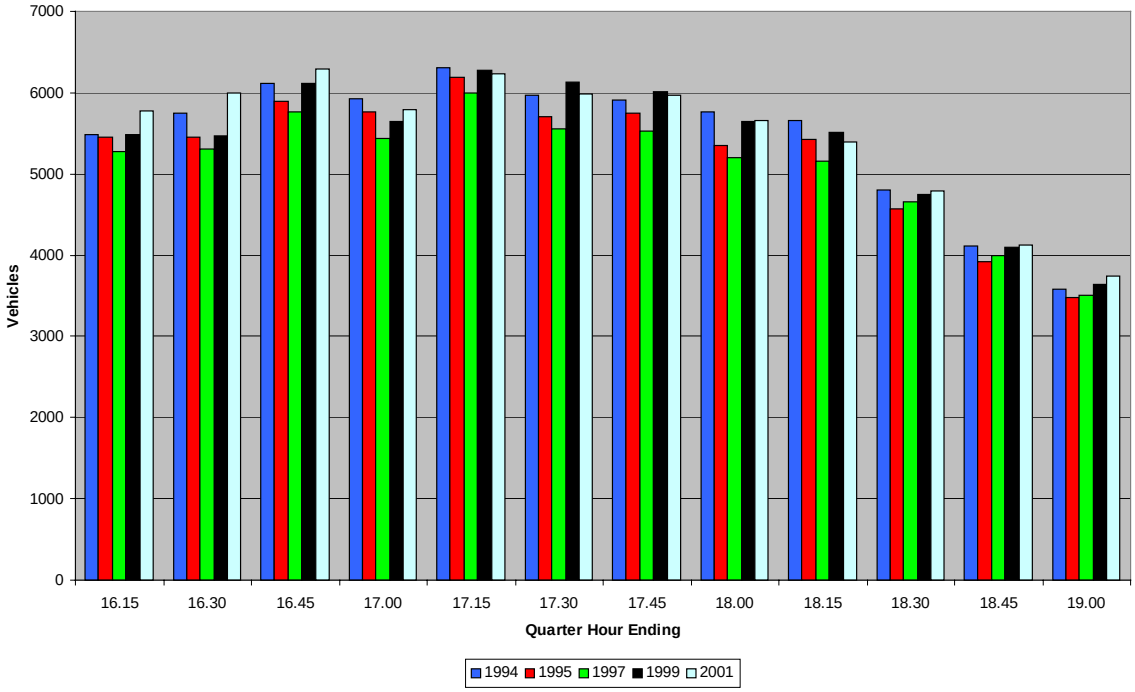


Figure 4 Inbound levels of vehicles, by hour – Average Weekday

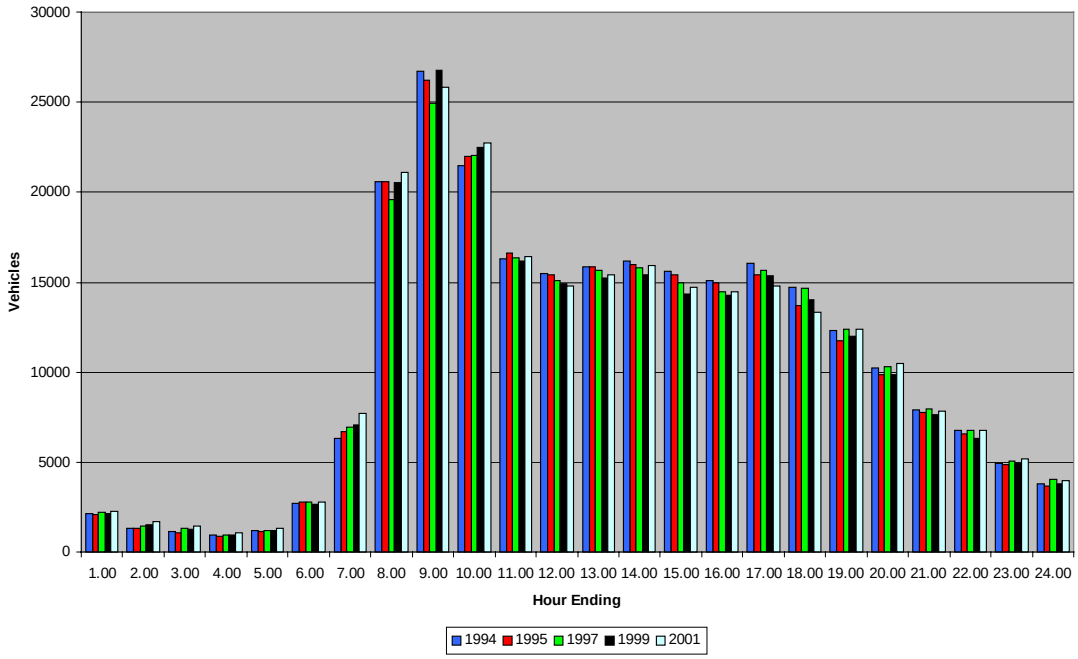
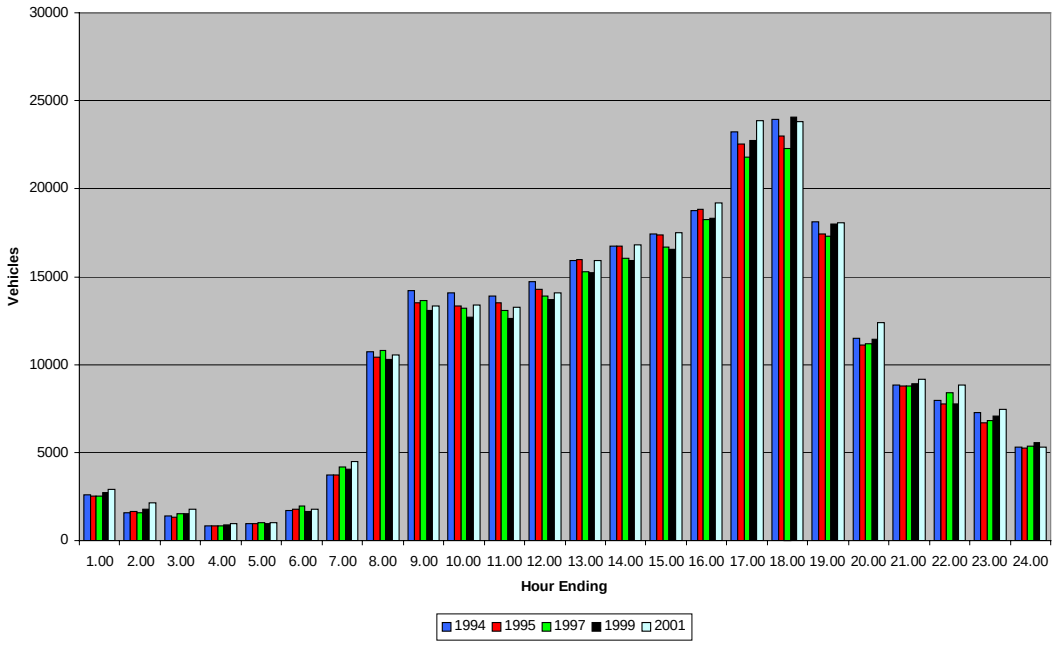


Figure 4 and Figure 5 show levels of traffic travelling inbound and outbound during the 24 hour period. In 2001 the peak hours for inbound and outbound traffic was 8-9 am and 4-6 pm respectively.

Figure 5 Outbound levels of vehicles, by hour – Average Weekday



1.1 Analysis by Corridor

Table 4 and Table 5 show the number of vehicles travelling inbound and outbound by corridor. There appears to be various changes in flows between corridors over the six year period although the overall total remains around the same.

Table 4 Total Vehicles Inbound by Time Period by Corridor 1995-2001

Corridor	0730-0930	1000-1200	1600-1800	0700-1900	24 hour
1995 A	**5,425**	**4,292**	**3,983**	**26,243**	**34,363**
1997 A	**5,134**	**4,104**	**3,710**	**25,186**	**35,014**
1999 A	**5,416**	**3,949**	**4,097**	**25,068**	**34,029**
2001 A	**5,174**	**3,715**	**3,906**	**24,513**	**34,376**
1995 B	**7,126**	**4,404**	**3,792**	**27,804**	**33,122**
1997 B	**7,024**	**4,937**	**5,719**	**32,249**	**38,386**
1999 B	**8,250**	**4,669**	**4,276**	**30,467**	**36,295**
2001 B	**9,320**	**5,055**	**4,598**	**33,868**	**40,440**
1995 C	**7,501**	**4,413**	**4,237**	**29,299**	**36,130**
1997 C	**6,217**	**3,714**	**3,458**	**24,307**	**30,078**
1999 C	**8,663**	**4,228**	**3,924**	**29,099**	**35,501**
2001 C	**6,683**	**3,212**	**3,425**	**25,976**	**31,765**
1995 D	**11,943**	**7,599**	**6,587**	**47,284**	**57,488**
1997 D	**13,168**	**7,757**	**7,233**	**50,361**	**61,528**
1999 D	**11,724**	**6,734**	**6,356**	**44,043**	**53,573**
2001 D	**12,371**	**7,424**	**6,198**	**46,880**	**57,667**
1995 E	**1,743**	**1,429**	**1,171**	**7,995**	**9,166**
1997 E	**1,609**	**1,137**	**1,075**	**6,828**	**7,873**
1999 E	**1,659**	**1,456**	**1,127**	**8,025**	**9,386**
2001 E	**1,786**	**1,348**	**1,174**	**7,686**	**8,931**
1995 F	**7,240**	**4,343**	**3,809**	**27,730**	**33,848**
1997 F	**5,441**	**3,394**	**2,850**	**21,161**	**26,277**
1999 F	**5,980**	**3,955**	**3,211**	**24,146**	**29,856**
2001 F	**5,502**	**3,507**	**3,064**	**22,220**	**27,863**
1995 G	**9,315**	**5,550**	**5,530**	**37,494**	**48,424**
1997 G	**9,870**	**6,443**	**6,281**	**41,651**	**53,626**
1999 G	**9,676**	**6,101**	**6,384**	**40,690**	**52,273**
2001 G	**9,367**	**6,167**	**5,696**	**40,567**	**53,346**
Total 1995	**50,293**	**32,030**	**29,115**	**203,849**	**252,541**
Total 1997	**48,463**	**31,486**	**30,326**	**201,743**	**252,782**
Total 1999	**51,368**	**31,092**	**29,375**	**201,538**	**250,913**
Total 2001	**50,198**	**31,218**	**28,060**	**201,802**	**254,386**

N.B Totals do not necessarily correspond with totals on summary page due to rounding errors

Table 5 Total Vehicles Outbound by Time Period by Corridor 1995-2001

Corridor	0730-0930	1000-1200	1600-1800	0700-1900	24 hour
1995 A	**2,810**	**2,477**	**4,477**	**19,141**	**26,188**
1997 A	**2,290**	**2,079**	**3,625**	**15,609**	**22,535**
1999 A	**2,489**	**2,111**	**3,578**	**15,538**	**22,285**
2001 A	**3,324**	**2,889**	**4,486**	**21,070**	**31,451**
1995 B	**3,001**	**3,802**	**6,947**	**26,644**	**32,655**
1997 B	**4,896**	**4,435**	**6,750**	**30,747**	**37,989**
1999 B	**3,207**	**4,065**	**8,169**	**29,693**	**36,544**
2001 B	**3,067**	**3,735**	**6,992**	**27,109**	**34,315**
1995 C	**3,566**	**3,621**	**6,277**	**26,179**	**32,453**
1997 C	**3,076**	**3,215**	**5,675**	**23,284**	**28,893**
1999 C	**3,222**	**3,270**	**6,403**	**24,848**	**30,708**
2001 C	**3,061**	**3,260**	**5,870**	**23,790**	**29,923**
1995 D	**6,705**	**6,709**	**9,694**	**46,729**	**58,840**
1997 D	**6,698**	**6,550**	**11,319**	**48,539**	**61,075**
1999 D	**6,882**	**6,389**	**11,560**	**48,224**	**61,563**
2001 D	**6,556**	**6,687**	**11,333**	**49,220**	**61,694**
1995 E	**842**	**933**	**971**	**5,564**	**6,518**
1997 E	**633**	**791**	**1,110**	**5,160**	**5,963**
1999 E	**761**	**1,012**	**1,313**	**6,337**	**7,387**
2001 E	**862**	**924**	**1,610**	**6,731**	**7,905**
1995 F	**3,450**	**4,171**	**7,641**	**29,463**	**36,015**
1997 F	**2,717**	**3,419**	**5,932**	**24,038**	**29,896**
1999 F	**2,776**	**3,843**	**6,406**	**24,742**	**30,698**
2001 F	**2,481**	**3,218**	**6,489**	**23,770**	**29,271**
1995 G	**6,123**	**6,067**	**9,524**	**43,128**	**56,522**
1997 G	**6,356**	**6,511**	**9,651**	**44,936**	**60,180**
1999 G	**6,254**	**6,106**	**9,353**	**43,828**	**58,325**
2001 G	**6,678**	**6,645**	**10,918**	**48,117**	**63,406**
Total 1995	**26,497**	**27,780**	**45,531**	**196,848**	**249,191**
Total 1997	**26,666**	**27,000**	**44,062**	**192,313**	**246,531**
Total 1999	**25,591**	**26,337**	**46,782**	**193,210**	**247,510**
Total 2001	**26,031**	**27,360**	**47,701**	**199,812**	**257,966**

N.B Totals do not necessarily correspond with totals on summary page due to rounding errors

1.2 Daily and Hourly Variations

The figures in Table 6 give the proportions that each day contributes to an average weekday (Mon-Fri) for each of the traditional time periods. They 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. For example, the inbound flow on a Monday between the hours of 7.30 and 9.30 was 52,127 vehicles. The proportion that Monday contributes to the average week day in this time period is 52,127/50,195 which appears as 1.038 in the table. The average weekday figures are calculated by all weekday figures added together and divided by five.

Table 6 Variations in traffic flow, by time of day 2001

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Inbound							
07.30 - 09.30	1.038	0.978	0.984	0.965	1.034	0.378	0.198
10.00 - 12.00	0.953	1.014	1.013	0.985	1.036	0.922	0.737
16.00 - 18.00	0.887	1.000	1.044	1.054	1.016	0.799	0.746
07.00 - 19.00	0.969	0.982	1.007	1.003	1.040	0.742	0.569
00.00 - 24.00	0.947	0.965	1.003	1.005	1.080	0.852	0.648
Outbound							
07.30 - 09.30	1.054	0.991	1.002	0.959	0.995	0.495	0.229
10.00 - 12.00	1.001	1.025	0.981	0.983	1.011	0.818	0.595
16.00 - 18.00	0.854	1.064	1.002	1.050	1.030	0.589	0.560
07.00 - 19.00	0.963	1.014	1.000	0.986	1.037	0.704	0.581
00.00 - 24.00	0.949	0.997	1.003	0.996	1.055	0.812	0.687

Table 7 Numbers and Average Weekday Proportions of Inbound Saturday Traffic 1994-2001

	1994	1995	1997	1999	2001
Inbound					
0730-0930	21,542 (0.415)	21,883 (0.435)	21,320 (0.440)	19,634 (0.382)	18,956 (0.378)
1000-1200	27,788 (0.860)	27,672 (0.864)	28,030 (0.890)	25,069 (0.806)	28,788 (0.922)
1600-1800	19,651 (0.630)	19,072 (0.655)	20,144 (0.664)	18,680 (0.636)	22,426 (0.799)
0700-1900	144,233 (0.687)	143,166 (0.702)	144,524 (0.717)	131,486 (0.652)	140,753 (0.704)
0000-2400	201,802 (0.777)	201,845 (0.799)	205,702 (0.814)	193,019 (0.769)	209,473 (0.812)

Table 8 Numbers and Average Weekday Proportions of Inbound Sunday Traffic 1994-2001

	1994	1995	1997	1999	2001
Inbound					
0730-0930	7,712 (0.148)	7,680 (0.153)	7,758 (0.160)	7,820 (0.152)	9,927 (0.198)
1000-1200	20,827 (0.645)	21,927 (0.685)	22,011 (0.699)	15,050 (0.572)	23,012 (0.737)
1600-1800	17,330 (0.556)	17,098 (0.587)	17,501 (0.577)	15,800 (0.538)	20,920 (0.746)
0700-1900	103,596 (0.494)	104,780 (0.514)	105,147 (0.521)	100,054 (0.496)	116,184 (0.581)
0000-2400	150,413 (0.579)	150,501 (0.596)	152,709 (0.604)	148,001 (0.590)	177,154 (0.687)

Figure 6 Proportions of Inbound Saturday Traffic 1993-2001

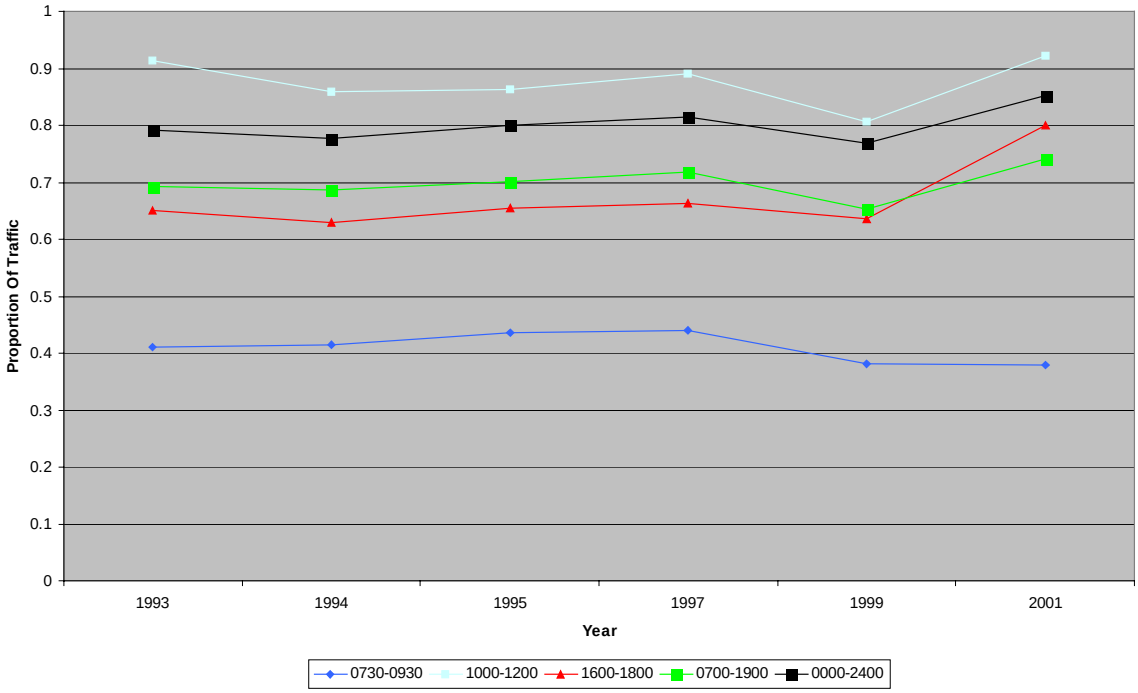


Figure 6 and Figure 7 show Table 7 and Table 8 in graphical format. Both Saturday and Sunday traffic levels have increased significantly during 2001.

Figure 7 Proportions of Inbound Sunday Traffic 1993-2001

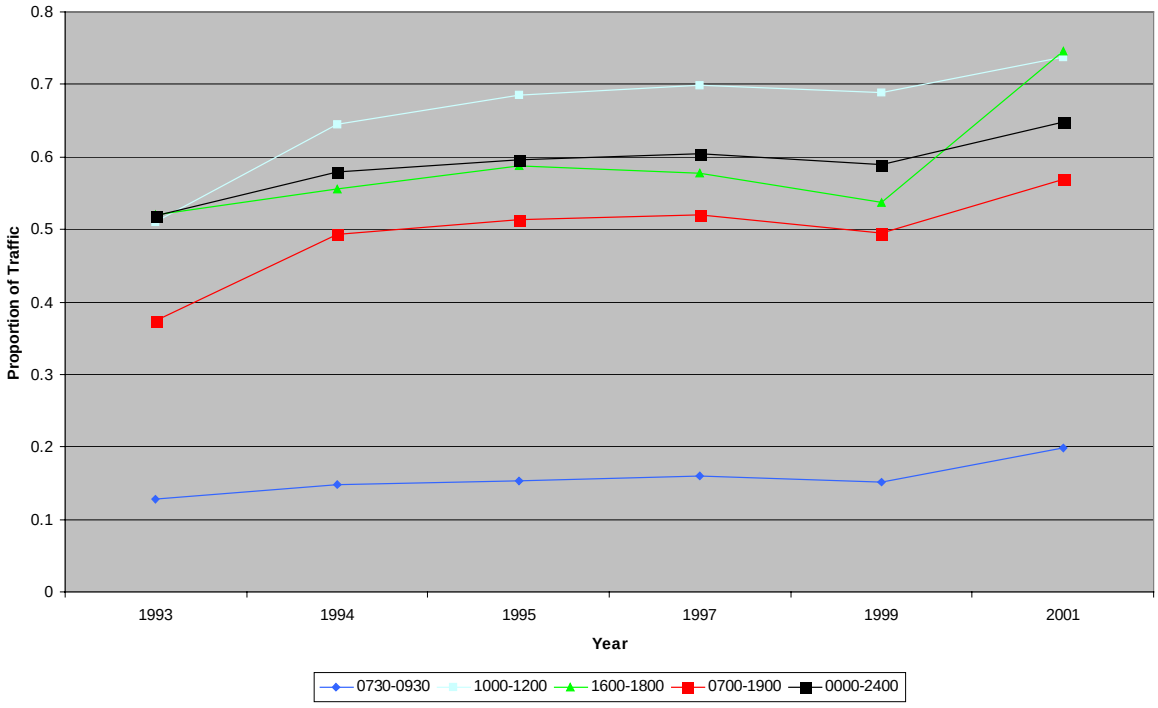


Figure 8 and

Figure 9 show the gain in vehicles to the cordon by hour and the total accumulation of vehicles to the cordon. The figures used in these graphs are given in Table 9.

Table 9 Net loss / gain and accumulation in vehicles crossing the cordon, by hour – Average Weekday

Hour ending	Inbound	Outbound	Net	Cum
1.00	2285	2892	-607	-607
2.00	1687	2137	-450	-1057
3.00	1433	1751	-318	-1375
4.00	1053	950	103	-1272
5.00	1354	1024	330	-942
6.00	2809	1777	1032	90
7.00	7714	4467	3247	3337
8.00	21068	10521	10547	13884
9.00	25849	13324	12525	26409
10.00	22735	13385	9350	35759
11.00	16415	13279	3136	38895
12.00	14803	14081	722	39617
13.00	15396	15937	-541	39076
14.00	15902	16830	-928	38148
15.00	14699	17484	-2785	35363
16.00	14484	19210	-4726	30637
17.00	14749	23865	-9116	21521
18.00	13311	23836	-10525	10996
19.00	12391	18060	-5669	5327
20.00	10473	12399	-1926	3401
21.00	7860	9170	-1310	2091
22.00	6747	8866	-2119	-28
23.00	5196	7422	-2226	-2254
24.00	3973	5299	-1326	-3580

Figure 8 Net loss / gain in vehicles crossing the cordon, by hour – Average Weekday

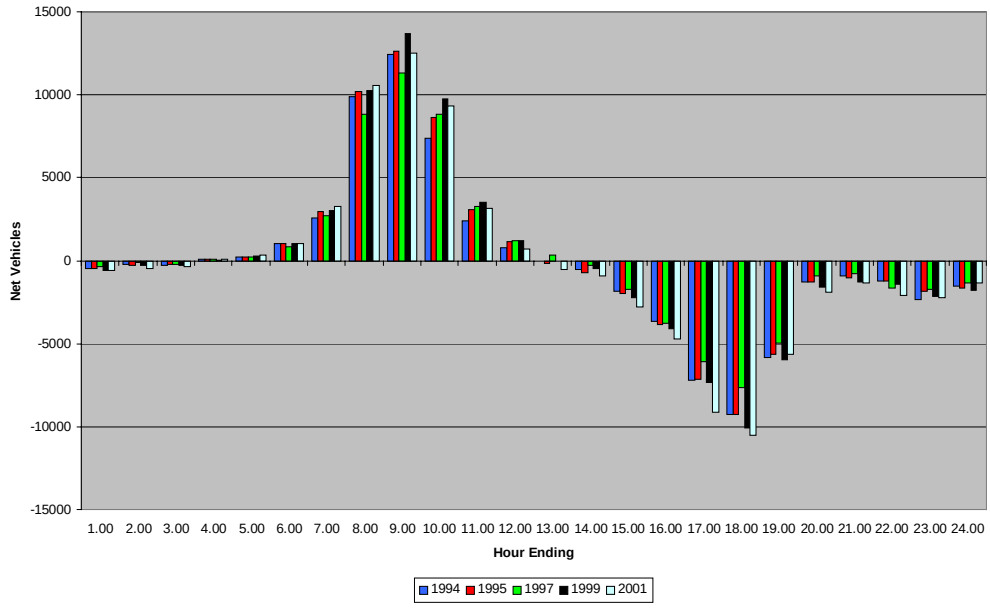
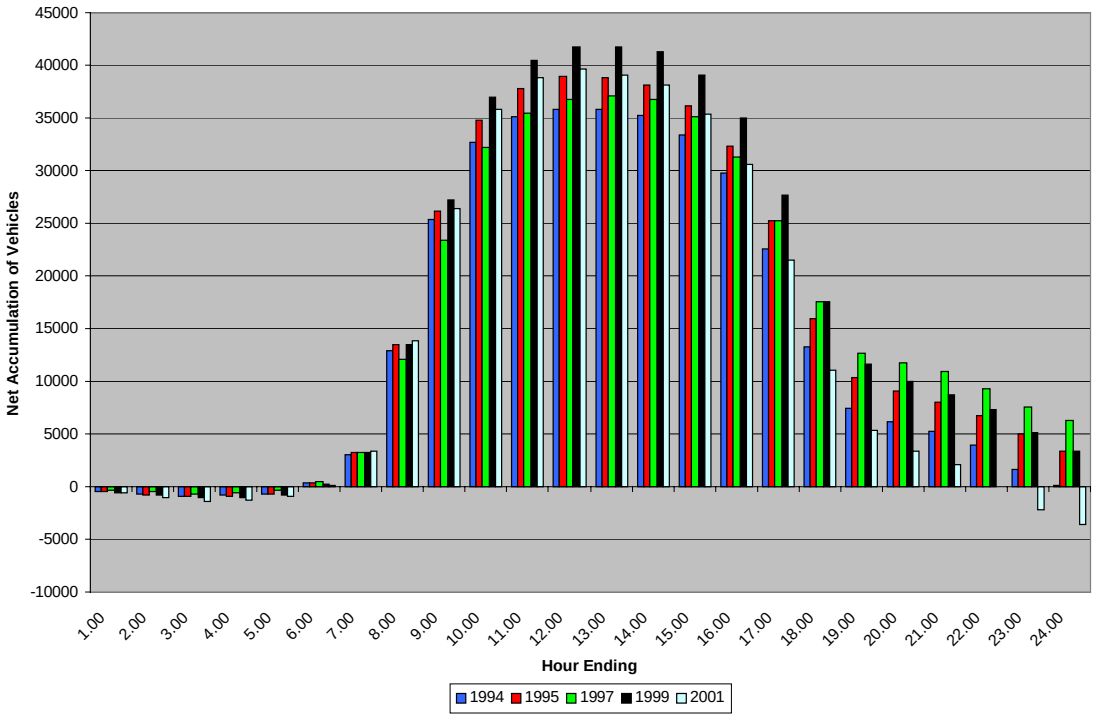


Figure 9 Net accumulation of vehicles, by hour – Average Weekday



1.3 Patterns of Travel

The figures in Table 10 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. Some of the roads are showing quite considerable differences in net traffic compared with 1999. This may be due to the disruption in traffic described earlier caused by bomb scares in the city centre.

Table 10 Net loss / gain in vehicles on an average weekday, by site 1999&2001

Site	Location	Inbound 1999	Inbound 2001	Outbound 1999	Outbound 2001	Net 1999	Net 2001
MR1S	A38M Aston Exp	9633	10572	11118	11957	-1485	-1385
EX01	A38M Aston Exp	25731	29492	32230	29595	-6499	-103
MR02	A34 Newtown Row	21043	16290	18489	17771	2554	-1481
MR03	Summer Lane	8263	8484	6184	7631	2079	853
MR06	A41 Hockley Circus	12776	10526	11596	12143	1180	-1617
MR08	Pitsford Street	1054	974	724	779	330	195
MR09	Warstone Lane	4394	4446	7160	5061	-2766	-615
MR10	Carver Street	1159	1231			1159	1231
MR11	Pope Street			791	815	-791	-815
MR12	Camden Street	690	516			690	516
MR13	A457 Summer Hill	13758	15333	13498	13295	260	2038
MR14	King Edward Road	1381	1097	1069	868	-36	229
MR15	Ledsam Street	1083	1817	1358	1354	-275	463
MR19	A456 Broad Street	18982	18984	15476	23399	3506	-4415
MR20	Tennant Street	2623	2744	1275	1284	1348	1460
MR21	B4127 Bath Row	9512	8769	1428	1357	115	7412
MR22	Wheeleys Lane			8413	7843	-8413	-7843
MR23	Elvetham Road	275	242	292	296	-17	-54
MR24	Spring Street	89	162	741	813	-652	-651
MR25	A38 Bristol Street	37133	34755	36537	38911	596	-4156
MR26	A441 Pershore Road	14772	18188	12343	15544	2429	2644
MR27	St Lukes Road	202	319	270	343	-68	-24
MR28	Gooch Street	1334	1635	3019	2883	-1685	-1248
MR29	Frank Street	630	918	1748	2260	-1118	-1342
MR31	Conybere Street	2607	3056	981	556	1626	2500
MR32	Leopold Street	1234	1605	1764	2710	-530	-1105
MR34	Moseley Road	3107	2421	1150	1415	1957	1006
MR36	A41 Camp Hill	10888	9997	12509	10802	-1621	-805
MR37	A45 Coventry Road	9858	7912	9256	8307	602	-395
MR43	Curzon Street	4744	4144	6633	7655	-1889	-3511
MR46	A47 Jennens Road	11263	11006	8662	9219	2601	1787
MR48	Lister Street	2203	2455	2920	3296	-717	-841
MR49	Blews Street	880	1588			880	1588
MR50	Adderley Street	1298	1012	828	758	470	254
MR51	Great Barr Street	8090	7915	6563	7145	1527	770
MR52	St Vincent Street	1743	2783	1040	1934	703	849
MR53	Grosvenor Street	1171	1096	3068	3479	-1897	-2383
MR54	Well Street	5315	5403	5777	4521	-462	882

1.4 Mode of travel

The eight manual surveys give us an indication of mode of travel data. The eight sites counted manually are shown in Table 18.

Table 11 summarises the data recorded at the eleven 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 11 the percentage each vehicle category contributes to the total vehicles in that ¼ hour is given in brackets. In Table 12 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 11 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
07.00	4617	60	173	4239	145	1.30	3.75	91.81	3.14
08.00	6063	49	188	5612	214	0.81	3.10	92.56	3.53
09.00	5068	33	262	4519	254	0.65	5.17	89.17	5.01
10.00	3515	7	236	2977	295	0.20	6.71	84.69	8.39
11.00	3132	9	205	2638	280	0.29	6.55	84.23	8.94
12.00	3090	6	214	2616	254	0.19	6.93	84.66	8.22
13.00	3149	18	193	2730	208	0.57	6.13	86.69	6.61
14.00	2974	10	204	2518	242	0.34	6.96	84.67	8.14
15.00	2709	11	186	2306	206	0.41	6.87	85.12	7.60
16.00	2972	16	213	2604	139	0.54	7.17	87.62	4.68
17.00	2703	17	165	2454	67	0.63	6.10	90.79	2.48
18.00	2291	7	140	2091	53	0.31	6.11	91.27	2.31
Total	42283	243	2379	37304	2357	0.57	5.63	88.22	5.57

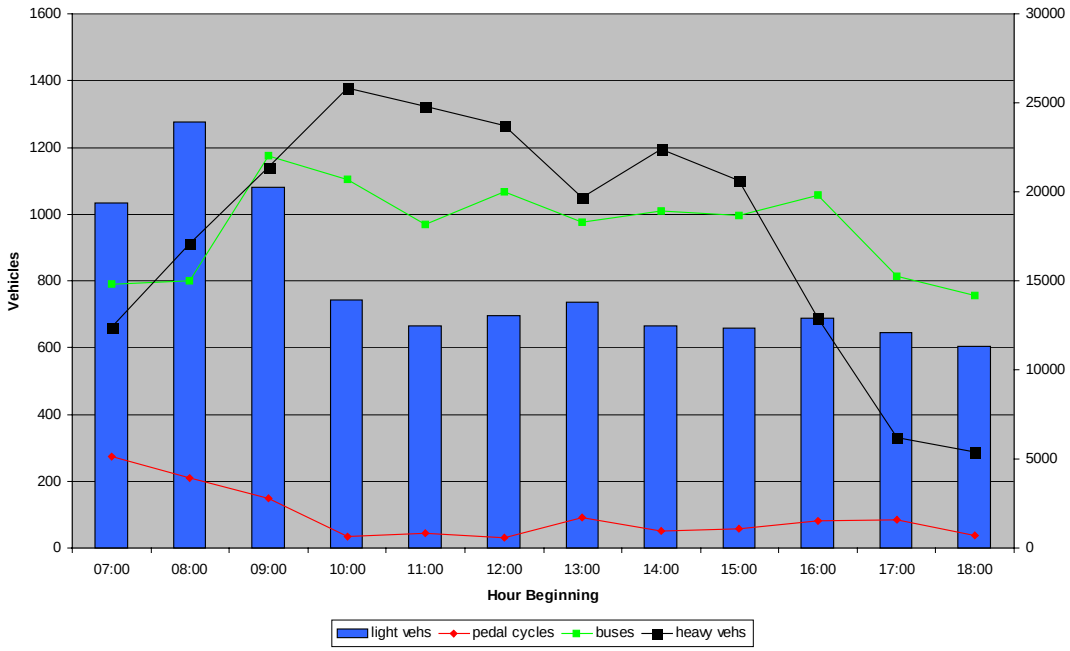
Table 12 Estimated Inbound mode of transport figures

TIME STARTING	number of automatic vehs	estimated ped cyc	estimated bus	estimated light	Estimated Heavy
07.00	21068	274	789	19343	662
08.00	25849	209	802	23926	912
09.00	22735	148	1175	20272	1139
10.00	16415	33	1102	13903	1378
11.00	14803	43	969	12468	1323
12.00	15396	30	1066	13034	1266
13.00	15902	91	975	13786	1050
14.00	14699	49	1008	12445	1196
15.00	14484	59	994	12329	1101
16.00	14749	79	1057	12923	690
17.00	13311	84	813	12085	330
18.00	12391	38	757	11309	287
Total	201802	1136	11219	177824	11334

The figures in Table 12 are represented in Figure 10. 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 10 Estimated Inbound mode of transport figures



The summary for outbound modes from the manual data can be found in Table 13 with the estimated outbound in Table 14 and the graph representing these figures in Figure 11.

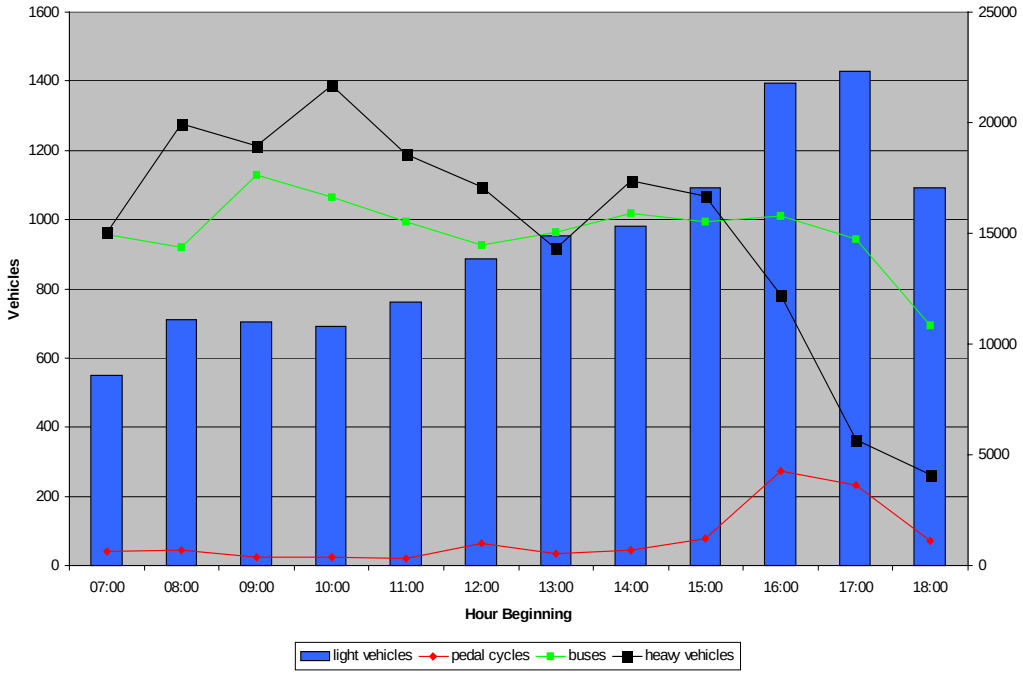
Table 13 Summary of Outbound mode of transport data from manual surveys

TIME STARTING	TOTAL VEH	PEDAL CYC	BUS & COACH	Light Vehs	Heavy Vehs	% pedal cycle	% bus	% light	% goods
07.00	1856	7	169	1510	170	0.38	9.11	81.36	9.16
08.00	2653	9	183	2207	254	0.34	6.90	83.19	9.57
09.00	2719	5	229	2239	246	0.18	8.42	82.35	9.05
10.00	2783	5	223	2264	291	0.18	8.01	81.35	10.46
11.00	2951	4	208	2490	249	0.14	7.05	84.38	8.44
12.00	3218	13	187	2797	221	0.40	5.81	86.92	6.87
13.00	3524	7	202	3123	192	0.20	5.73	88.62	5.45
14.00	3597	9	209	3150	229	0.25	5.81	87.57	6.37
15.00	3977	16	206	3534	221	0.40	5.18	88.86	5.56
16.00	4821	55	204	4404	158	1.14	4.23	91.35	3.28
17.00	5001	49	198	4678	76	0.98	3.96	93.54	1.52
18.00	4002	16	154	3774	58	0.40	3.85	94.30	1.45
Total	41102	195	2372	36170	2365	0.47	5.77	88.00	5.75

Table 14 Estimated Outbound mode of transport figures

TIME STARTING	No. auto vehs.	estimated ped cyc	estimated bus	estimated light	estimated goods
07.00	10521	40	958	8560	964
08.00	13324	45	919	11084	1276
09.00	13385	25	127	11022	1211
10.00	13279	24	1064	10803	1388
11.00	14081	19	992	11881	1188
12.00	15937	64	926	13852	1094
13.00	16830	33	965	14915	917
14.00	17484	44	1016	15311	1113
15.00	19210	77	995	17070	1067
16.00	23865	272	1010	21801	782
17.00	23836	234	944	22297	362
18.00	18060	72	695	17031	262
Total	199812	949	11611	175626	11625

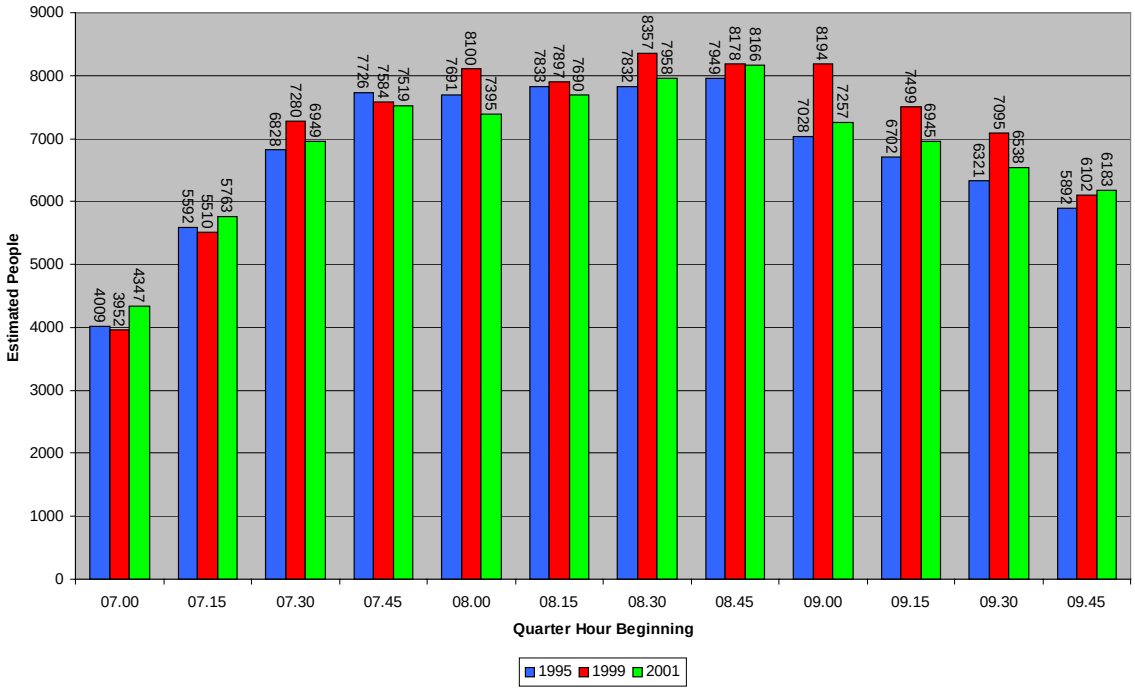
Figure 11 Estimated Outbound mode of transport figures



1.5 Occupancy Levels

Figure 12 shows the estimated numbers of persons crossing the cordon calculated from the occupancy counts at the eight manual sites and the number of vehicles counted automatically per time period

Figure 12 Estimates of persons Travelling in Private Vehicles - Inbound Morning Peak Period



1.6 Birmingham Modal Split Results 1997-2001

Table 15 and Table 16 show numbers of trips into and out of Birmingham City Centre by mode of travel. Trips by rail do not include through trips (e.g. Inter City). Centro's bus counts do not include coach or taxi but do include through bus trips. All vehicle trips exclude ring road trips. People travelling on foot are excluded. Light vehicles include cars and taxis, motor cycles and light goods<30cwt.

There are no public transport data for 2001 as Centro did not carry out a full bus and rail count.

Table 15 Estimates of Numbers of Persons by Modal Split 07.30-09.30

Mode of Trip	Number of Trips Inbound			Number of Trips Outbound		
	1997	1999	2001	1997	1999	2001
Light Vehicles (of which in cars)	57,913 (52,710)	60,722 (54,827)	57,245 (51,663)	28,992 (24,702)	27,314 (23,534)	26,344 (21,912)
Heavy Vehicles	1,783	2,367	2,209	2,466	1,928	2,837
Cycles	193	209	423	53	63	86
Buses	31,387	31,048		10,006	9,886	
Total	91,276	94,346		41,517	39,191	
Rail	16,813*	18,987		5,124*	4,854	
Metro	N/A	998		N/A	256	

* These figures have been changed by Centro

Table 16 Estimates of Numbers of Persons by Modal Split 10.00-12.00

Mode of Trip	Number of Trips Inbound			Number of Trips Outbound		
	1997	1999	2001	1997	1999	2001
Light Vehicles (of which in cars)	34,184 (28,626)	38,823 (32,475)	35,008 (29,479)	28,684 (23,328)	29,914 (24,355)	29,716 (24,014)
Heavy Vehicles	2,440	2,744	3,193	2,789	2,440	3,040
Cycles	62	86	75	26	34	43
Buses	20,928	21,096		11,197	11,372	
Total	57,614	62,749		42,696	43,760	
Rail	7,504*	7,388		5,007*	3,974	
Metro	N/A	720		N/A	487	

* These figures have been changed by Centro

Bus, Metro and rail figures have been supplied by Centro.

Appendix 1 Position of Cordon Sites

Table 17 Automatic count sites

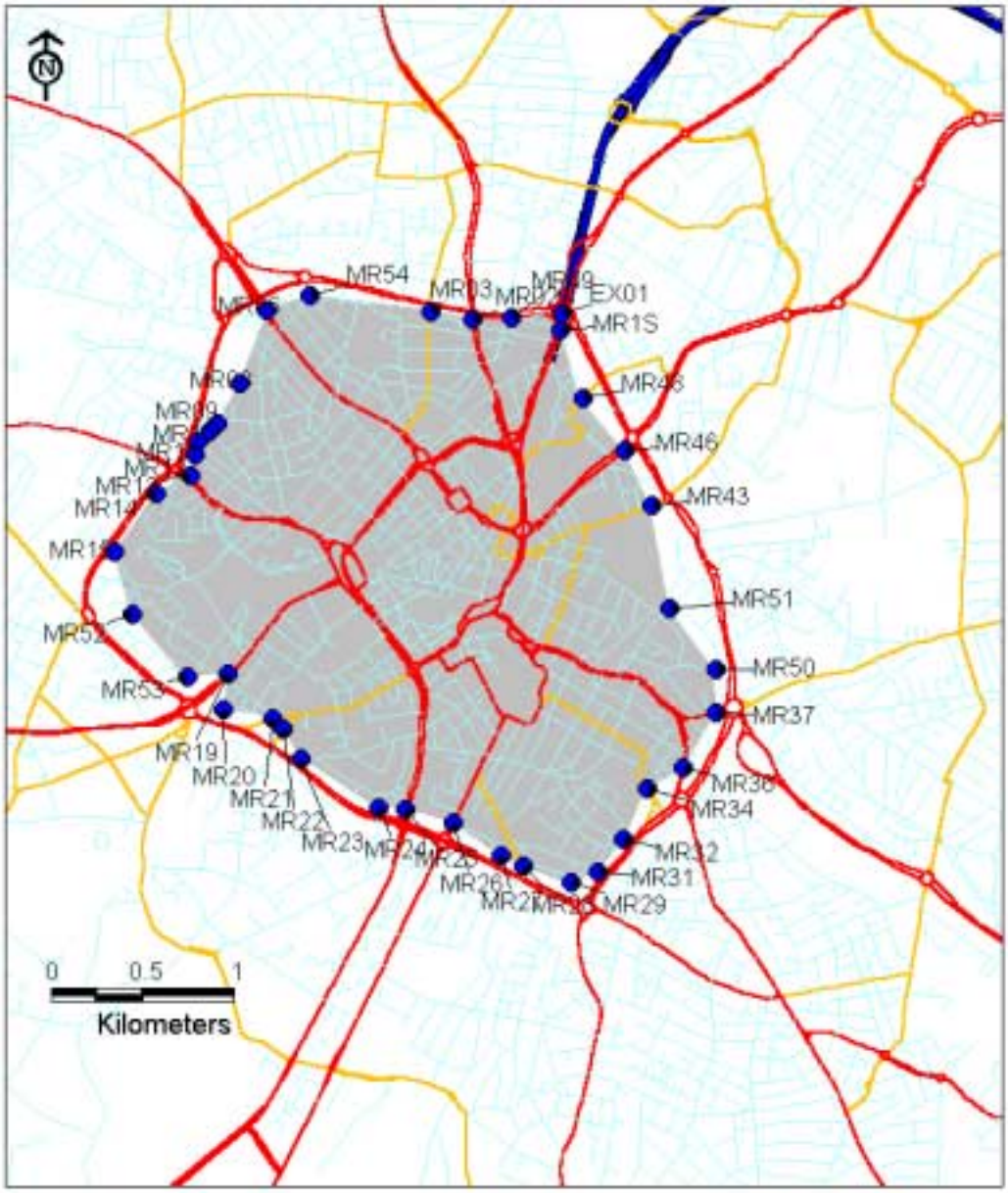
Site	Sector	Corridor	Road Used	Exact Position
MR1S	**NE**	**D**	**A38M Aston Expressway**	**Dartmouth Circus South Slips**
MR1U	*****	**D**	**A38M Aston Expressway**	**Dartmouth Circus Underpass**
MR02	**NW**	**C**	**A34 Newtown Row**	**New John St West - Hatchett St**
MR03*	**NW**	**C**	**Summer Lane**	**New John St West - Hatchett St**
MR06	*****	**B**	**A41 Soho Hill**	**North of Hockley Circus**
MR08	**W**	**B**	**Pitsford St**	**Icknield St - Vyse St**
MR09	**W**	**B**	**Warstone Lane**	**Carver St - Tenby St**
MR10	**W**	**B**	**Carver St**	**Warstone Lane - Tenby St North**
MR11	**W**	**B**	**Pope St**	**Icknield St - Moreton St**
MR12	**W**	**B**	**Camden St**	**Icknield St - Powell St**
MR13	**W**	**B**	**A457 Summer Hill**	**Icknield St - St Marks St**
MR14	**W**	**B**	**King Edward Road**	**Ladywood M'way - St Marks Crescent**
MR15	**W**	**B**	**Ledsam St**	**Ladywood M'way - Rodeney Close**
MR19*	**W**	**A**	**A456 Broad St**	**East of Bishopsgate St**
MR20	**W**	**A**	**Tennant St**	**Islington Row - Bishopsgate St**
MR21	**W**	**A**	**B4127 Bath Row**	**Islington Row - Bishopsgate St**
MR22	**W**	**G**	**Wheeleys Lane**	**Islington Row - Bath Row**
MR23	**SW**	**G**	**Elvetham Rd**	**Bell Barn Lane - Lee Bank Rd**
MR24	**SW**	**G**	**Spring St**	**Rickman Drive - Sun Street West**
MR25	**SW**	**G**	**A38 Bristol Street**	**Belgrave Rd - Rickman Drive**
MR26	**SW**	**G**	**A441 Pershore Rd**	**Belgrave Rd - Hope St**
MR27	**SE**	**F**	**St Lukes Road**	**Belgrave Rd - Berrington Walk**
MR28	**SE**	**F**	**Gooch St**	**Belgrave Rd - Highgate St**
MR29	**SE**	**F**	**Frank St**	**Belgrave Rd - Highgate St**
MR31	**SE**	**F**	**Conybere St**	**Link Rd - Highgate Middleway**
MR32	**SE**	**F**	**Leopold St**	**Upper Highgate St - Highgate M'way**
MR34	**SE**	**F**	**Moseley Road**	**Chandos St - Moseley St**
MR36*	**SE**	**F**	**A41 Camp Hill**	**Ravenhurst St - Bradford St**
MR37	**E**	**F**	**A45 Coventry Rd**	**Bowyer St - New Bond St**
MR43*	**E**	**D**	**Curzon St**	**Penn St - Lawley St**
MR46	**E**	**D**	**A47 Jennens Rd**	**Holt St - Dartmouth St**
MR48*	**E**	**D**	**Lister Street**	**Oxygen St - Dartmouth St**
MR49	**NW**	**C**	**Blews St**	**Turn at New John St**
MR50*	**E**	**E**	**Adderley St**	**Glover St - Liverpool St**
MR51*	**E**	**E**	**Great Barr St**	**Glover St - Liverpool St**
MR52	**W**	**A**	**St Vincent St West**	**Gilby Rd - Ledsam St**
MR53	**W**	**A**	**Grosvenor St West**	**Ruston St - Ryland St**
MR54*	**NW**	**C**	**Unett St**	**South of New John Street**

* Sites also counted manually.

Table 18 Manual Count sites

MR03	R817	Summer Lane	Between New John St West and Hatchett St
MR19	R4718	Broad Street	East of Bishopsgate St
MR36	R4	Camp Hill	South of Bradford Street
MR43	R5053	Curzon Street	Between Penn St and Lawley St
MR48	R5825	Lister Street	Between Oxygen Street and Dartmouth St
MR50	R3712	Adderley St	Between Glover St and Liverpool St
MR51	R3707	Great Barr St	Between Glover St and Liverpool St
MR54	R5033	Unett Street	South of New John Street

Figure 13 Location of Automatic Traffic Counters



Y:\pdc01\users\monitoring\47995\Birmingham Cordon 2001\map.wor

Title						
Birmingham 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.	Rev.
15/01/2002	DMK	JTB	BWS	Final	47995/BC01/01	A

Appendix 2 Estimates of Vehicle Type from Passage Count Data

Inbound

Start Time	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	4617	60	173	4239	145	1.30%	3.75%	91.81%	3.14%	21068	274	789	19343	662
08:00	6063	49	188	5612	214	0.81%	3.10%	92.56%	3.53%	25849	209	802	23926	912
09:00	5068	33	262	4519	254	0.65%	5.17%	89.17%	5.01%	22735	148	1175	20272	1139
10:00	3515	7	236	2977	295	0.20%	6.71%	84.69%	8.39%	16415	33	1102	13903	1378
11:00	3132	9	205	2638	280	0.29%	6.55%	84.23%	8.94%	14803	43	969	12468	1323
12:00	3090	6	214	2616	254	0.19%	6.93%	84.66%	8.22%	15396	30	1066	13034	1266
13:00	3149	18	193	2730	208	0.57%	6.13%	86.69%	6.61%	15902	91	975	13786	1050
14:00	2974	10	204	2518	242	0.34%	6.86%	84.67%	8.14%	14699	49	1008	12445	1196
15:00	2709	11	186	2306	206	0.41%	6.87%	85.12%	7.60%	14484	59	994	12329	1101
16:00	2972	16	213	2604	139	0.54%	7.17%	87.62%	4.68%	14749	79	1057	12923	690
17:00	2703	17	165	2454	67	0.63%	6.10%	90.79%	2.48%	13311	84	813	12085	330
18:00	2291	7	140	2091	53	0.31%	6.11%	91.27%	2.31%	12391	38	757	11309	287
Total	**42283**	**243**	**2379**	**37304**	**2357**	**0.57%**	**5.63%**	**88.22%**	**5.57%**	**201802**	**1136**	**11508**	**177824**	**11334**
10-12 Total	**6647**	**16**	**441**	**5615**	**575**	**0.24%**	**6.63%**	**84.47%**	**8.65%**	**31218**	**75**	**2071**	**26371**	**2701**
07:00	769	11	42	686	30	1.43%	5.46%	89.21%	3.90%	3848	55	210	3433	150
07:15	1095	21	43	995	36	1.92%	3.93%	90.87%	3.29%	5038	97	198	4578	166
07:30	1313	10	46	1217	40	0.76%	3.50%	92.69%	3.05%	5814	44	204	5389	177
07:45	1440	18	42	1341	39	1.25%	2.92%	93.13%	2.71%	6368	80	186	5930	172
08:00	1421	10	45	1312	54	0.70%	3.17%	92.33%	3.80%	6146	43	195	5675	234
08:15	1543	19	55	1418	51	1.23%	3.56%	91.90%	3.31%	6456	79	230	5933	213
08:30	1516	11	43	1412	50	0.73%	2.84%	93.14%	3.30%	6595	48	187	6143	218
08:45	1583	9	45	1470	59	0.57%	2.84%	92.86%	3.73%	6652	38	189	6177	248
09:00	1453	16	68	1303	66	1.10%	4.68%	89.68%	4.54%	6217	68	291	5575	282
09:15	1311	5	68	1178	60	0.38%	5.19%	89.86%	4.58%	5950	23	309	5346	272
09.30	1229	5	63	1096	65	0.41%	5.13%	89.18%	5.29%	5479	22	281	4886	290
09.45	1075	7	63	942	63	0.65%	5.86%	87.63%	5.86%	5089	33	298	4459	298
7.00-10.00	15748	142	623	14370	613	0.90%	3.96%	91.25%	3.89%	69652	631	2777	63524	2720
7.30-9.30 Total	**11580**	**98**	**412**	**10651**	**419**	**0.85%**	**3.56%**	**91.98%**	**3.62%**	**50198**	**423**	**1790**	**46168**	**1817**
16.00	698	2	50	604	42	0.29%	7.16%	86.53%	6.02%	3858	11	276	3338	232
16.15	661	2	66	565	28	0.30%	9.98%	85.48%	4.24%	3701	11	370	3163	157
16:30	848	5	55	752	36	0.59%	6.49%	88.68%	4.25%	3696	22	240	3278	157
16:45	765	7	42	683	33	0.92%	5.49%	89.28%	4.31%	3494	32	192	3119	151
17:00	631	3	44	563	21	0.48%	6.97%	89.22%	3.33%	3570	17	249	3185	119
17:15	713	3	37	654	19	0.42%	5.19%	91.73%	2.66%	3301	14	171	3028	88
17:30	662	6	44	599	13	0.91%	6.65%	90.48%	1.96%	3222	29	214	2915	63
17:45	697	5	40	638	14	0.72%	5.74%	91.54%	2.01%	3218	23	185	2946	65
18:00	702	0	37	642	23	0.00%	5.27%	91.45%	3.28%	3130	0	165	2862	103
18:15	591	2	42	536	11	0.34%	7.11%	90.69%	1.86%	3069	10	218	2783	57
18.30	539	3	34	492	10	0.56%	6.31%	91.28%	1.86%	3016	17	190	2753	56
18.45	459	2	27	421	9	0.44%	5.88%	91.72%	1.96%	3176	14	187	2913	62
Tot 16.3-18.3	**5609**	**31**	**341**	**5067**	**170**	**0.55%**	**6.08%**	**90.34%**	**3.03%**	**26700**	**147**	**1634**	**24117**	**802**

Outbound

Start Time	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	1856	7	169	1510	170	0.38%	9.11%	81.36%	9.16%	10521	40	958	8560	964
08:00	2653	9	183	2207	254	0.34%	6.90%	83.19%	9.57%	13324	45	919	11084	1276
09:00	2719	5	229	2239	246	0.18%	8.42%	82.35%	9.05%	13385	25	1127	11022	1211
10:00	2783	5	223	2264	291	0.18%	8.01%	81.35%	10.46%	13279	24	1064	10803	1388
11:00	2951	4	208	2490	249	0.14%	7.05%	84.38%	8.44%	14081	19	992	11881	1188
12:00	3218	13	187	2797	221	0.40%	5.81%	86.92%	6.87%	15937	64	926	13852	1094
13:00	3524	7	202	3123	192	0.20%	5.73%	88.62%	5.45%	16830	33	965	14915	917
14:00	3597	9	209	3150	229	0.25%	5.81%	87.57%	6.37%	17484	44	1016	15311	1113
15:00	3977	16	206	3534	221	0.40%	5.18%	88.86%	5.56%	19210	77	995	17070	1067
16:00	4821	55	204	4404	158	1.14%	4.23%	91.35%	3.28%	23865	272	1010	21801	782
17:00	5001	49	198	4678	76	0.98%	3.96%	93.54%	1.52%	23836	234	944	22297	362
18:00	4002	16	154	3774	58	0.40%	3.85%	94.30%	1.45%	18060	72	695	17031	262
Total	**41102**	**195**	**2372**	**36170**	**2365**	**0.47%**	**5.77%**	**88.00%**	**5.75%**	**199812**	**949**	**11611**	**175626**	**11625**
10-12 Total	**5734**	**9**	**431**	**4754**	**540**	**0.16%**	**7.52%**	**82.91%**	**9.42%**	**27360**	**43**	**2057**	**22684**	**2577**
07:00	341	2	36	269	34	0.59%	10.56%	78.89%	9.97%	2095	12	221	1653	209
07:15	426	0	41	347	38	0.00%	9.62%	81.46%	8.92%	2518	0	242	2051	225
07:30	509	3	47	411	48	0.59%	9.23%	80.75%	9.43%	2837	17	262	2291	268
07:45	580	2	45	483	50	0.34%	7.76%	83.28%	8.62%	3071	11	238	2557	265
08:00	618	2	36	520	60	0.32%	5.83%	84.14%	9.71%	3285	11	191	2764	319
08:15	625	1	56	510	58	0.16%	8.96%	81.60%	9.28%	3264	5	292	2663	303
08:30	698	3	43	581	71	0.43%	6.16%	83.24%	10.17%	3354	14	207	2792	341
08:45	712	3	48	596	65	0.42%	6.74%	83.71%	9.13%	3421	14	231	2864	312
09:00	740	2	59	623	56	0.27%	7.97%	84.19%	7.57%	3427	9	273	2885	259
09:15	692	1	64	570	57	0.14%	9.25%	82.37%	8.24%	3372	5	312	2778	278
09.30	640	1	47	517	75	0.16%	7.34%	80.78%	11.72%	3257	5	239	2631	382
09.45	647	1	59	529	58	0.15%	9.12%	81.76%	8.96%	3329	5	304	2722	298
7.00-10.00	**7228**	**21**	**581**	**5956**	**670**	**0.29%**	**8.04%**	**82.40%**	**9.27%**	**37230**	**109**	**3013**	**30650**	**3458**
7.30-9.30 Total	**5174**	**17**	**398**	**4294**	**465**	**0.33%**	**7.69%**	**82.99%**	**8.99%**	**26031**	**86**	**2006**	**21594**	**2345**
16.00	1132	15	50	1022	45	1.33%	4.42%	90.28%	3.98%	5782	74	1984	21934	2459
16.15	1127	6	45	1038	38	0.53%	3.99%	92.10%	3.37%	5992	69	2049	22099	2493
16:30	1293	15	57	1180	41	1.16%	4.41%	91.26%	3.17%	6295	73	278	5745	200
16:45	1269	19	52	1164	34	1.50%	4.10%	91.73%	2.68%	5796	87	238	5316	155
17:00	1278	14	55	1187	22	1.10%	4.30%	92.88%	1.72%	6235	68	268	5791	107
17:15	1259	14	35	1183	27	1.11%	2.78%	93.96%	2.14%	5976	66	166	5615	128
17:30	1332	12	47	1259	14	0.90%	3.53%	94.52%	1.05%	5973	54	211	5646	63
17:45	1132	9	61	1049	13	0.80%	5.39%	92.67%	1.15%	5652	45	305	5238	65
18:00	1010	3	43	945	19	0.30%	4.26%	93.56%	1.88%	5398	16	230	5051	102
18:15	1060	6	39	1003	12	0.57%	3.68%	94.62%	1.13%	4793	27	176	4535	54
18.30	1006	4	35	952	15	0.40%	3.48%	94.63%	1.49%	4119	16	143	3898	61
18.45	926	3	37	874	12	0.32%	4.00%	94.38%	1.30%	3750	12	150	3539	49
Tot 16.3-18.3	**9633**	**92**	**389**	**8970**	**182**	**0.96%**	**4.04%**	**93.12%**	**1.89%**	**46118**	**436**	**1871**	**42937**	**874**

Appendix 3 Estimates of Persons from Occupancy data

Vehicle Classes Surveyed
02 - Motor cycles etc
03 - Cars & taxis
05 - GV <30 cwt

Total Inbound									**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**		
	Number of vehicles with								Automatically	Estimated	Estimated	B+C			Est People	Estimated	Est People	Est People
Start Time	1	2	3	4	5	Total Veh	Total Pass	Ave Occupancy	Counted Vehicles	Number of Buses	Pedal Cycles		Est. Light Vehs.	Est.Ave Occ	Light Vehs + Ped Cyc	Heavy Vehs	Heavy Vehs	Light&Heavy
	Occupants																	
07.00	486	90	9	3	0	588	705	1.20	3848	210	55	265	3433	4116	4171	150	176	4347
07.15	726	137	15	1	0	879	1049	1.19	5038	198	97	294	4578	5463	5560	166	203	5763
07.30	821	202	22	2	0	1047	1299	1.24	5814	204	44	248	5389	6686	6730	177	219	6949
07.45	960	217	15	4	0	1196	1455	1.22	6368	186	80	265	5930	7214	7294	172	225	7519
08.00	913	244	17	3	0	1177	1464	1.24	6146	195	43	238	5675	7058	7101	234	293	7395
08.15	979	231	19	4	3	1236	1529	1.24	6456	230	79	310	5933	7339	7419	213	271	7690
08.30	1013	250	25	4	2	1294	1614	1.25	6595	187	48	235	6143	7662	7709	218	249	7958
08.45	994	241	37	8	1	1281	1624	1.27	6652	189	38	227	6177	7831	7869	248	298	8166
09.00	929	208	22	3	2	1164	1433	1.23	6217	291	68	359	5575	6864	6932	282	325	7257
09.15	830	182	24	4	0	1040	1282	1.23	5950	309	23	331	5346	6590	6613	272	332	6945
07.30-09.30	**7439**	**1775**	**181**	**32**	**8**	**9435**	**11700**	**1.24**	**50198**	**1790**	**423**	**2213**	**46168**	**57245**	**57668**	**1817**	**2209**	**59877**
09.30	719	176	25	6	0	926	1170	1.26	5479	281	22	303	4886	6174	6196	290	342	6538
09.45	633	171	24	3	2	833	1069	1.28	5089	298	33	331	4459	5723	5756	298	427	6183
10.00	520	136	21	1	3	681	874	1.28										
10.15	450	140	24	4	0	618	818	1.32										
10.30	424	155	14	4	3	600	807	1.35										
10.45	391	128	20	12	1	552	760	1.38										
11.00	402	123	23	4	0	552	733	1.33										
11.15	384	112	13	5	2	516	677	1.31										
11.30	378	118	19	3	1	519	688	1.33										
11.45	413	125	22	4	2	566	755	1.33										
10.00-12.00	**3362**	**1037**	**156**	**37**	**12**	**4604**	**6112**	1.33	31218	2071	75	2146	26371	35008	35083	2701	3193	38276
12.00	979	231	19	4	3	1236	1529	1.24										
12.15	1013	250	25	4	2	1294	1614	1.25										
07.00-12.30	**15357**	**3867**	**454**	**90**	**27**	**19795**	**24948**	1.26										
Outbound	**Light Vehs**																	
07.30-09.30								1.22			86		21594	26344	26431	2345	2837	29268
10.00-12.00								1.31			43		22684	29716	29759	2577	3040	32799
07.00-12.30								1.28										

N.B. Occupancy factors for outbound direction are from 1999 surveys. Outbound occupancy surveys were not undertaken in 2001.

Heavy Vehicles

Vehicle Classes Surveyed

06 - GV 30 cwt- >3 tons	09 - HGV 4-axle rigid
07 - HGV 2-axle >3 tons	10 - HGV 3-axle artic
08 - HGV 3-axle rigid	11 - HGV 4-axle artic

Total Inbound

	Number of vehicles with							Ave
Start Time	1	2	3	4	5	Total Veh	Total Pass	Occupancy
	Occupants							
07.00	24	5	0	0	0	29	34	1.17
07.15	24	7	0	0	0	31	38	1.23
07.30	30	7	1	0	0	38	47	1.24
07.45	27	7	2	0	0	36	47	1.31
08.00	38	7	1	1	0	47	59	1.26
08.15	37	9	2	0	0	48	61	1.27
08.30	49	6	1	0	0	56	64	1.14
08.45	37	7	1	0	0	45	54	1.20
09.00	52	7	1	0	0	60	69	1.15
09.15	50	6	2	1	0	59	72	1.22
07.30-09.30	320	56	11	2	0	389	473	1.22
09.30	50	11	0	0	0	61	72	1.18
09.45	44	9	2	0	3	58	83	1.43
10.00	46	11	1	0	2	60	81	1.35
10.15	57	8	0	0	0	65	73	1.12
10.30	54	8	0	0	0	62	70	1.13
10.45	46	6	0	0	0	52	58	1.12
11.00	45	7	1	0	0	53	62	1.17
11.15	36	5	1	0	0	42	49	1.17
11.30	53	12	0	0	1	66	82	1.24
11.45	48	8	0	0	0	56	64	1.14
10.00-12.00	385	65	3	0	3	456	539	1.18
12.00	49	6	0	0	0	55	61	1.11
12.15	37	7	0	0	0	44	51	1.16
07.00-12.30	933	166	16	2	6	1123	1351	1.20

Outbound	**Heavy Vehs**
07.30-09.30	1.21
10.00-12.00	1.18
07.00-12.30	1.19