

15. Cycling

15.1 Introduction

This chapter reviews the data about changes in cycling in the three towns.

The primary data used comes from automatic cycle counters. There were 17 automatic cycle counters in Darlington, eight in Peterborough and 10 in Worcester, though, in all cases, some or all of these were not operational from the beginning of the Sustainable Travel Towns work, or had periods when they were not working.

In Darlington, a series of manual counts was carried out at a town centre cordon, initially annually and then several times a year, whilst in Peterborough, annual manual counts were carried out at two screenlines each year.

In addition, manual counts of cyclists were available from survey work commissioned by the Department for Transport in order to generate the National Road Traffic Estimates (referred to throughout this chapter as NRTE data). More details about this data source were given in Chapter 10. The major road counts took place at variable times of year, and the seasonal nature of cycling makes their interpretation problematic. We have therefore only used the ‘minor road’ data, and even this may show large fluctuations as a result of low numbers of cyclists on some routes and the effects of weather. We have therefore treated the NRTE manual counts on minor roads as an interesting corroboratory data source only. There were 15 minor road NRTE sites in Peterborough, and six sites in both Darlington and Worcester.

More detail about the data sets is given in each of the sections below. There has been a substantial volume of correspondence, to ensure that the data provided are accurate, and to understand counter location, changes in counter location and gaps in data for individual counters. Inevitably, analysis has been limited by the nature of the information available. Missing values in the data series have been interpolated by assuming a linear trend between the values on either side of the data gap¹. For automatic cycle counter data, gaps of up to three months have been interpolated. For NRTE manual counts, which are roughly annual, the maximum gap for which data have been interpolated is two years. Where the councils had their own interpolation processes for missing data, we have replaced these values using our own process, in order to ensure consistency of treatment, and to avoid the risk that the interpolation processes used by the councils might artificially generate a semblance of stability, if the process utilises data from previous or subsequent years.

In this chapter, information about Darlington is presented first, followed by information about Peterborough and Worcester. The tables and graphics that inform the analysis are given at the end of the relevant section. The approach has involved looking both at overall changes, and changes recorded at individual sites. Both year-on-year changes, and changes in relation to a 2004/5 baseline, have been calculated. (There is a case for using 2003/4 as the baseline year, rather than 2004/5. However, there are a number of datasets where information is not available for 2003/4, and so 2004/5 has been adopted to ensure consistency. In Peterborough, it was necessary to use a 2005/2006 baseline for the automatic counter data because the counters only became operational in January 2005.) Where possible, changes since 2004/5 are placed in the context of longer-term, historic trends. Key headline results have been tested for statistical significance.

¹ There is one exception, in Peterborough, as described in section 15.3.2.

Given the prominence of personal travel planning in the towns' programmes, analysis has been undertaken to try to discern specific effects from this work. This has involved examination of both changes over time (before/after personal travel planning) and relative to changes elsewhere. Inevitably, this is an imperfect process, not least since the count sites were not put in place to detect the effects of personal travel planning activity.

The results from the count data are compared briefly with the results from the household travel surveys (as already discussed in Chapter 13). Section 15.5 draws together the results from all three towns.

15.2 Evidence from Darlington cycle count data

15.2.1 Introduction

The primary data about cycle use in Darlington comes from 17 automatic cycle counters. In addition, a series of manual counts were undertaken in a cordon around the town centre from June 2000, and manual counts took place annually at six NRTE minor road sites.

15.2.2 Nature of the data

Of the 17 automatic cycle counters operating in Darlington during the Sustainable Travel Towns project, 11 only began operation in August 2006, and only two (Yarm Road (a) and Haughton Road (a)) provide a continuous series dating back to May 2004. Data was provided as the monthly *weekday* 24-hour averages. Missing values have been interpolated for data gaps of three months or less. The full data set is given in the annex to this chapter.

To generate some measure of annual cycling (as in Table 15.2), we used the period May–April (rather than April–March), given the first available data point. We multiplied each daily average by five-sevenths of the number of days per month, to give a guide to total weekday cycling that month, and then aggregated to give an annual figure.

Darlington carried out 12-hour (7am to 7pm) manual counts of cyclists at a cordon of points around the city centre from 2000. Initially counts were only undertaken once a year (in June/July). Since April 2006, they have been undertaken four times a year (in January, April, July and October), at a total of 12 locations. The aim was that the town centre was sealed – i.e. cyclists were counted at all crossing points of the river or ring road into the town centre. In relation to individual counts, the following points should be noted:

- There is some confusion over town centre cordon totals for June 2005 and April 2006. Here, we used values derived from the numbers recorded at the individual sites.
- The figures for April 2006 should be treated with caution, as Darlington officers were unhappy with the quality of the data collection.
- In July 2006, an extra site was added (Site 9), following the introduction of a new crossing near Sainsbury's. Previously, Sites 8 and 10 should have captured the majority of cyclists crossing at this point. (A few people might have ventured to cross the dual carriageway before then, but the numbers would have been negligible.)
- In July 2006, 15-hour counts were undertaken – however, the figures given here are for the relevant 12-hour period.

- In 2007, a college closed which was located close to Site 12 (Duke Street). This may have affected flows.
- There is some confusion over the results for Site 11, as outlined in more detail in discussion of the town centre cordon counts for walking in Chapter 16. Consequently, as well as using the council figures, we have created our own set of total figures, which exclude the results from Site 11.

In order to compare the recent town centre count data with that from earlier years, a ‘false June’ has been created for 2006 onwards. This has involved interpolating data between the April and July counts in that year, assuming that there was a linear trend between the two data points.

As well as the council data, there were six NRTE minor road sites in Darlington, where manual counts were carried out annually, at a date between March and October.

Figure 15.1 shows the location of the automatic counters. Figure 15.3 shows the location of the town centre cordon sites and the NRTE sites.

In terms of contextual factors, the population of Darlington was stable between 2004 and 2007 (2008 data are not available). In 2005, Darlington was designated a Cycling Demonstration Town, although most of the infrastructure improvements associated with this were not put in place until fairly late in the Sustainable Travel Town period.

15.2.3 Data presentation

On subsequent pages, the following data are presented:

- Table 15.2 – a table of the annual weekday flows at each of the automatic cycle counters, together with a calculation of the % change compared with the preceding year, and an index of the data compared with the data for 2004/5;
- Table 15.3 – a table showing the annual change in cycle flows estimated from all sites with data for each two-year period;
- Figure 15.4 – a graph showing the raw data for the automatic cycle counters;
- Figure 15.5 – a graph showing the data for the automatic counters indexed to April 2004;
- Figure 15.6 – a graph showing an index of the 12-month rolling average recorded at each of the individual counters;
- Table 15.4 – a table giving the counts recorded at the town centre sites, according to the June data (including the ‘false June’ data) together with a calculation of the % change compared with the preceding year, and an index of the data compared with the data for June 2004;
- Table 15.5 – a table of the counts recorded at the town centre sites from April 2006 onwards, together with a calculation of the % change compared with the relevant quarter in the preceding year;
- Figure 15.7 – a graph showing the changes recorded at the town centre cordon over time, using all of the available data;
- Figure 15.8 – a graph showing the changes recorded at the town centre cordon over time using the June/false June totals;
- Figure 15.9 – an index of the cycle flows recorded at the individual town centre count sites;
- Table 15.6 – a table giving the NRTE cycle counts on the minor roads, together with a calculation of the % change compared with the preceding year, and an index of the data compared with the data for 2004/5;

- Figure 15.10 – a graph showing the NRTE minor roads cycle counts data indexed to 2004;
- Table 15.7 – a table giving the average quarterly data recorded at the individual counters (i.e. the three-month daily weekday average), together with a calculation of the % change compared to the same quarter in the preceding year;
- Table 15.8 – a table giving analysis of the quarterly data in relation to personal travel planning work;
- Table 15.9 – a table giving analysis of the town centre count sites in relation to personal travel planning work;
- Figure 15.11 – a graph showing the trends at the counters depending on their relevance to Phase 3 personal travel planning work;
- Table 15.10 – a table giving the results from Socialdata & Sustrans survey work;
- Figure 15.12 – a graph showing the timing of capital (infrastructure) investment in cycling in Darlington.

15.2.4 Data analysis

Overall effects on cycling

Data from the 17 automatic counters is given in Tables 15.2, 15.3 and 15.7, and Figures 15.4-15.6. As evident from Table 15.2, there has clearly been a substantial increase in cycling in Darlington. The three counters with data for the periods 2004/5 and 2008/9 show increases of 35%, 57% and 131%. Of the 17 counters, 14 show an annual increase during the period for which they have data, and in every case it is in excess of 10%. Of the three counters not showing growth, two are located on the opposite side of the road to counters where substantial growth has been recorded, whilst one (at Hurworth Neasham) is located outside the main Darlington urban area. The three counters showing the greatest growth (Yarm Road (a), Cemetery Lane and Haughton Road (b)) are located in different parts of Darlington.

There are several ways of calculating an overall change in cycle figures from the automatic counter data. One is to average the data from the three counters with data in 2004/5 and 2008/9: this gives a value of 57.1%. An alternative is to calculate the cumulative effect of the percentage changes occurring in each year, based on the data in Table 15.3. This gives an increase of 51.2%².

Table 15.3 indicates that the increase in cycling primarily took place between 2005/6 and 2006/7, and between 2007/8 and 2008/9. In both periods, annual growth was in excess of 20%. Figure 15.6 illustrates that there were different trends at different sites, but three of the four sites with data show a surge around Spring 2006, with a further surge recorded at many sites in Spring 2008.

Using a paired sample, one-tailed T-test to compare the 12-months of combined data for the counters at Yarm Road (a), Haughton Road (a) and Grasmere Road from 2004/5 with 2008/9 gives a p-value of 0.000, indicating that the increase can be taken as statistically significant.

Data from the town centre cordon sites are given in Tables 15.4-15.5, and Figures 15.7-15.9. Between June 2001 and June 2005, cycle flows appear to have been reasonably stable. Since that time, there has been a major increase, with an overall growth in cycle flows between June 2004 and June 2009 of between 83.9% and 116.1%. Individually, increases have been recorded at 10 of the 12 sites over the period for which they have data. Of the two sites not showing an increase, there is confusion over whether the specification of one changed (Site 11), whilst the other interacts closely

² This is consistent with analysis by Cope et al. (2009) for Cycling England/Department for Transport, using the same data but a slightly different method, which reports a 56.8% increase in cycling as measured by automatic counts between 2005 and 2009.

with two neighbouring sites, where big increases were recorded (Site 9, which interacts with Sites 8 and 10). As evident from Figure 15.8, the timing of the increases is broadly consistent with that recorded by the automatic counters – namely, particularly big increases between June 2005 and 2006, and between June 2007 and 2008. Figure 15.7 indicates that there have been steady increases in cyclists recorded in January and October, indicating that Darlington’s cycle growth is not just a summer phenomenon. The greatest growth has occurred at the sites around the north of the town centre (Sites 1, 2 and 5).

Data from the six minor road NRTE sites are given in Table 15.6 and Figure 15.10. Overall, these have recorded an increase in cycling of 35.8%. Again, this data set also shows particular growth between 2005 and 2006 (+23.1%) and between 2007 and 2008 (+9.6%). The two counters that do not show an increase, Barmpton Lane and Stockton Road, are both located on the north-east periphery of the town.

In short, the picture that emerges is that there has been substantial growth in cycling in Darlington (probably in the order of at least 50%) with cycle flows into the town centre potentially doubling, and with particular surges in Spring 2006 and Spring 2008. Trends in different parts of the town have varied, but there is evidence of growth occurring across the whole urban area (with the few sites that show decreases being mainly located on the urban periphery).

Assessment of personal travel planning effects

Table 15.1 indicates the timing of the personal travel planning phases, and the count sites that are most relevant and that had available data.

Table 15.1: Relating cycle counter sites to Darlington personal travel planning work

Personal travel planning phase	Timing	Automatic counter sites	Town centre manual count sites
1	Apr-Aug 2005	West Auckland Road Whessoe Road	12, 1, 2, 3
2	Apr-Sep 2006	Haughton Road (a)	1-5
3	May-Sep 2007	Yarm Road (b+c) McMullen Road (a+b) Grasmere Road Hurworth Neasham Nunnery Lane Cemetery Lane	6-10

The data for these sites are analysed in Tables 15.8, 15.9 and Figure 15.11.

The data appear to show an effect from the Phase 1 personal travel planning work. As evident in Figure 15.5, flows at both Whessoe Road and West Auckland Road appear to have increased more in Spring 2005 than the increases that occurred at the other sites with data at that time (Yarm Road (a) and Haughton Road (a)). The sites in the personal travel planning area show growth of 23% between Q2 2005 and Q3 2005, compared with 14.1% at the other two sites over the same period. Manual count sites around the town centre also showed substantial growth (+29.1%) from the north-west (that is, from the direction of the Phase 1 personal travel planning area), compared with a decline of 23.1% recorded at sites around the east and the south. The Brinkburn Road NRTE manual count site, located in the Phase 1 personal travel planning area, also shows growth between 2004 and 2005.

To assess the effects of Phase 2 personal travel planning work, there is only one automatic counter with available data, at Haughton Road (a). This does not show any particular increase in cycle flows in Q2 or Q3 of 2006 (and the substantial growth that it has recorded appears to have taken place in early 2008). Meanwhile, there was substantial growth occurring at sites elsewhere. The analysis of the town centre manual count sites also fails to show any clear differentiation between those likely to have been more affected by the personal travel planning activities and those that were less likely to have been affected.

To assess Phase 3, there are considerably more automatic counter sites with data. We have therefore amalgamated data from eight sites that fall within the target areas (as listed in Table 15.1). Data from five sites (West Auckland Road, Haughton Road (a), Skerne River Route, Honey Pot Lane and Whinfield School) are used as the control. The remaining four sites either had incomplete data for the relevant period, or fell on the boundary of the target areas, such that it was unclear how they should be categorised. The trend lines for the two groups of counters are shown in Figure 15.11. These data suggest an effect from the Phase 3 personal travel planning work in boosting cycling, with growth of 21.7% between Q2 and Q3 of 2007 at sites within the target areas, compared with growth of only 2.1% over the same period at the control sites. The town centre manual counts also appear to show greater growth at sites more likely to have been affected by the personal travel planning work.

Comparison with the household travel survey data

The results from the household travel surveys are given in Table 15.10. These suggest the following:

- Cycle trips per person increased by 89%-113% between 2004 and 2008 (depending on whether weighted or unweighted data are used)³.
- The change in distance cycled per person was either 76% (unweighted data) or 112% (weighted data).
- The survey data do not show a clear effect from the Phase 1 or Phase 3 personal travel planning work⁴. However, they do show an effect from the Phase 2 work, with more rapid growth between Autumn 2004 and Autumn 2006 in the Phase 2 area than in the (control) Phase 3 area.
- The survey data also suggest increases in cycling in particular areas at times that do not coincide with personal travel planning (that is, in the Phase 1 area, between Autumn 2005 and Autumn 2007; and in the Phase 3 area, between Autumn 2004 and Autumn 2006).

The household travel survey data are consistent with the other data in showing a large increase in cycling. The order of magnitude is closer to that recorded at the town centre cordon sites, than at the three automatic counters with data for 2004/5 and 2008/9 (which are located further from the centre). One implication is that there may have been particularly strong growth in cycling in the central area of Darlington.

In relation to the Phase 2 work, it is unclear how far this is a personal travel planning effect, and how far it may relate to general increases in cycling, particularly in the central area, prompted by a range of initiatives. Meanwhile, the household surveys are consistent with the other data in that they show a general increase in cycling between 2005 and 2006.

³ This is equivalent to an increase from 4.0 to 7.6 cycle trips per 100 persons per day (unweighted), or from 4.5 to 9.6 cycle trips per 100 persons per day (weighted).

⁴ This seems slightly surprising, given the indications of an effect from the count data. One possible explanation is that any increase in cycling in these areas was more pronounced in the summer and had 'died away' by the time the household surveys took place in the autumn.

Factors that may have contributed to cycling growth

It is notable that growth in cycling levels seems to become evident from about Spring 2006. This was shortly after Darlington's designation as a Cycling Demonstration Town (CDT) in October 2005. CDT funding in Darlington was mainly for cycling infrastructure, but delays in scheme design meant that spending on cycling infrastructure improvements in Darlington was slow to get underway, with infrastructure investment in the first half of 2006 largely confined to the McMullen Road cycle path. Thus the large growth in cycling seen in Spring 2006 (at sites other than McMullen Road) cannot be attributed to improvements in cycling infrastructure, and seems more likely to have been the result of a strong cycling focus in terms of events, information resources, increased cycle initiatives at schools, and increased cycle parking, supported by the first phase of personal travel planning activity.

It is, however, notable that the increase in cycling in Spring 2008 appears to coincide with the period when Darlington had begun to install substantial amounts of cycling infrastructure (after a period of slow progress in delivery of engineering schemes). This is apparent from retrospective quarterly claim data to Cycling England/Department for Transport, which shows no capital claims between July 2006 and June 2007, but then a series of claims from July 2007, including a particularly substantial claim for the period Jan-Mar 2008 (Figure 15.12).

Thus it seems plausible that the observed cycling growth in Darlington was a product of a combination of ongoing non-infrastructure activity, starting from early 2006, supplemented by personal travel planning, and boosted by infrastructure improvements from mid-2007 onwards.

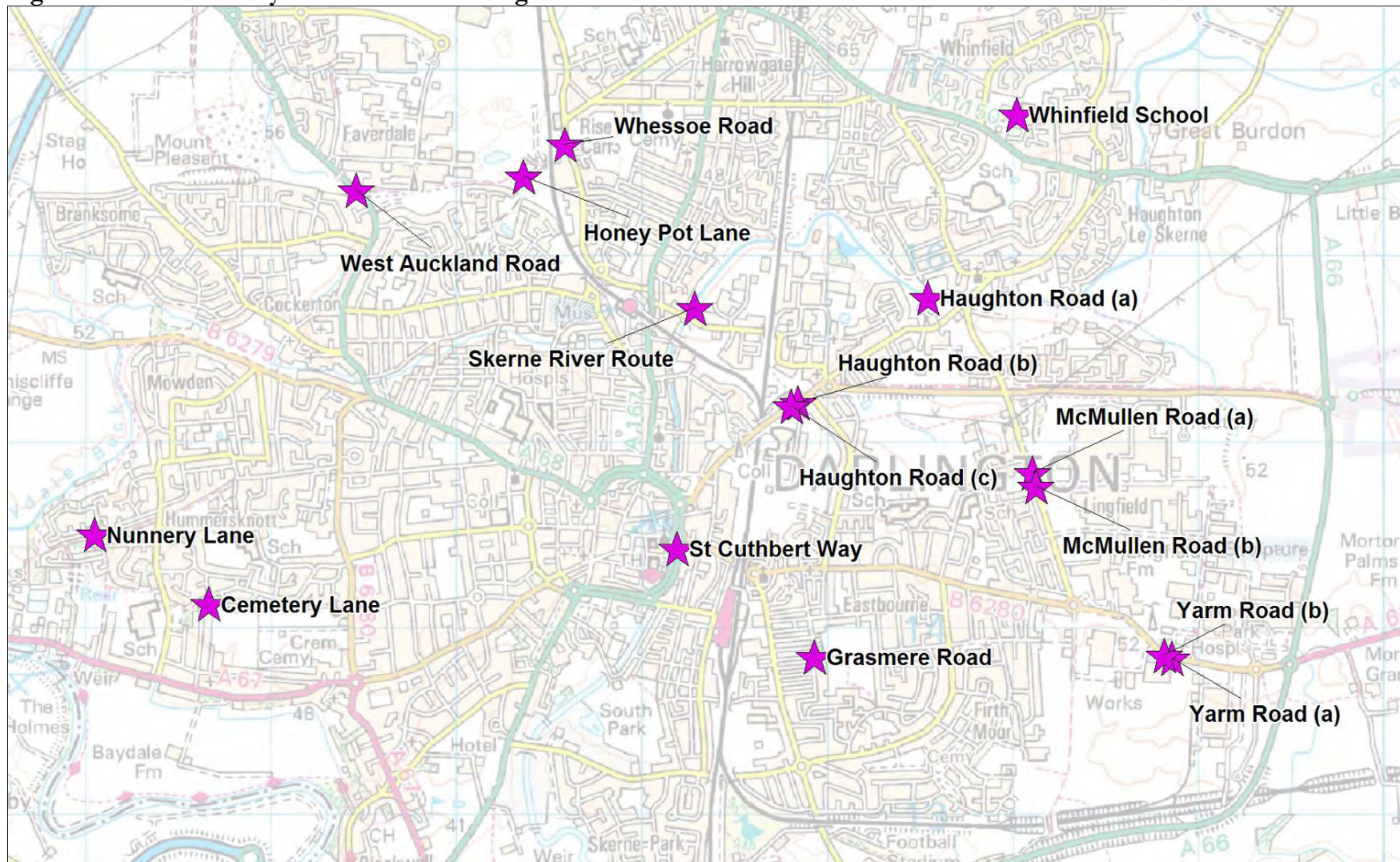
15.2.5 Summary

In summary, the analysis suggests the following points:

- Before 2006, the town centre counts indicate that cycling levels in Darlington were relatively stable.
- From Spring 2006, there seems to have been substantial growth in cycling levels across the whole town, with a further major increase in Spring 2008, and with ongoing increases in cycling in autumn and winter.
- Automatic traffic counter data shows a statistically significant increase in the order of 50% between 2004/5 and 2008/9. Meanwhile, town centre cordon data shows growth in the order of 83.9-116.1%. The increase recorded at the town centre cordon matches reasonably closely with the increase recorded in the household travel surveys. This suggests that there may have been particularly high growth in short cycle trips focused on the central urban area.
- The on-street data show a significant effect from the Phase 1 and Phase 3 personal travel planning work. This is not reflected in the household surveys – possibly indicating that the work was mainly effective at promoting summer cycling, which had died away by the time of the autumn surveys. Meanwhile, the household surveys do suggest an effect from the Phase 2 work, which is not clear from the on-street data, partly because there appear to have been town-wide increases in cycling at that time.

It seems likely that all three phases of personal travel planning work helped to boost cycle use, particularly in the summers when they took place, and possibly providing resources and incentives that encouraged people to try cycling in the following spring/summer as well. However, it seems unlikely that personal travel planning accounts for all of the growth which has taken place. Other factors which may have contributed include cycling events, information resources, cycle initiatives at schools, and increased cycle parking, which may have become more intensive after the town was designated a Cycling Demonstration Town in October 2005; and improvements to cycling infrastructure from mid-2007.

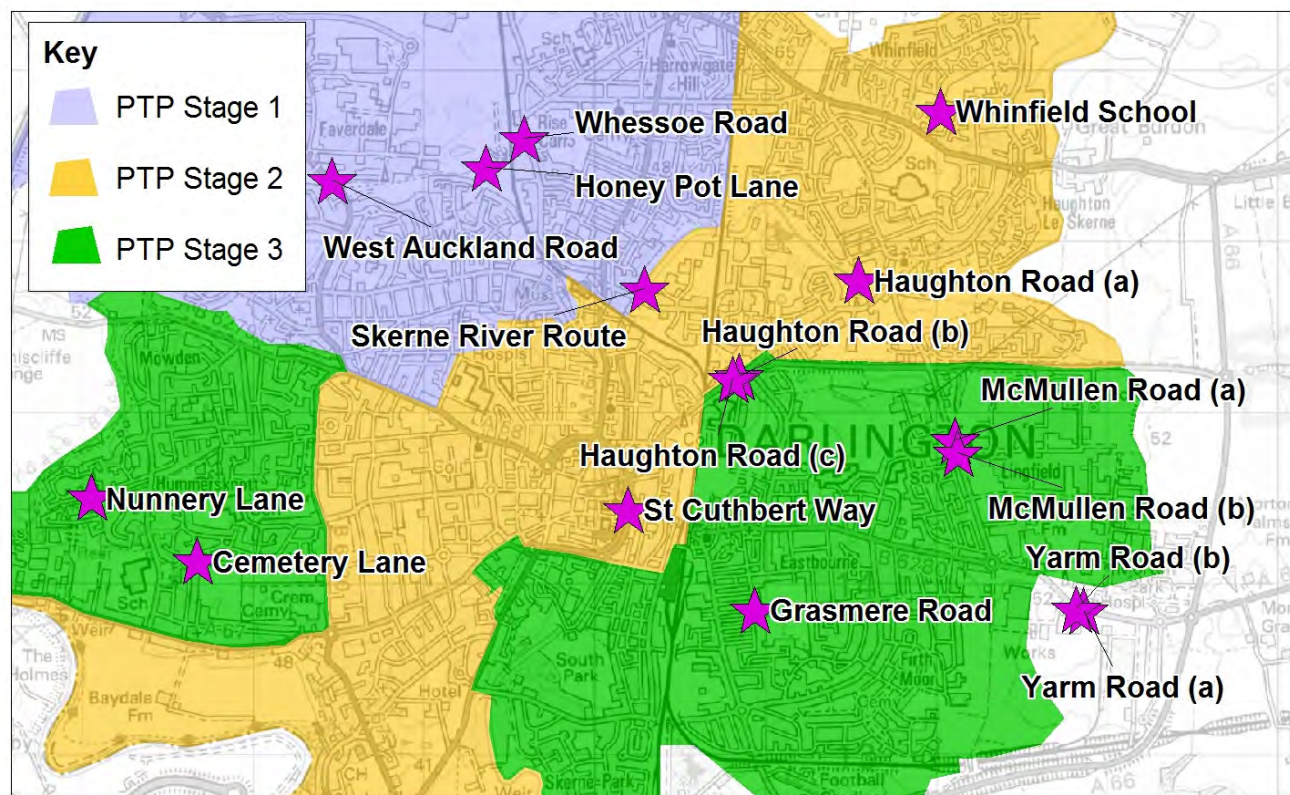
Figure 15.1: Automatic cycle counters in Darlington



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Note: Purple stars indicate automatic cycle counters.

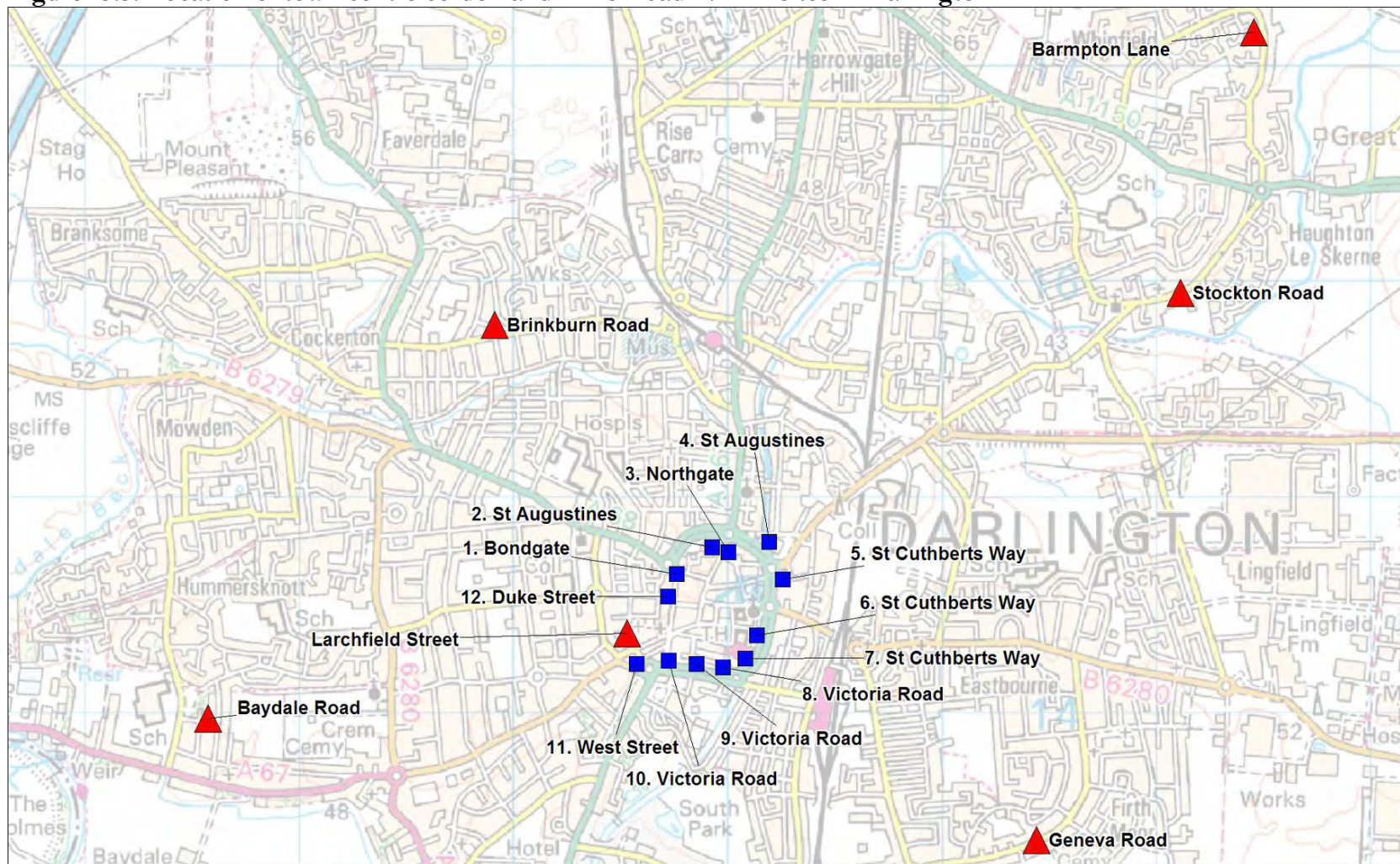
Figure 15.2: Automatic cycle counters in Darlington with personal travel planning areas marked



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Note: Purple stars indicate automatic cycle counters.

Figure 15.3: Location of town centre cordon and minor road NRTE sites in Darlington



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Notes: Red triangles represent minor road NRTE count sites; blue squares indicate town centre cordon count sites.

Table 15.2: Annual weekday cycle flows at Darlington automatic cycle counters, percentage changes and comparison with 2004/5

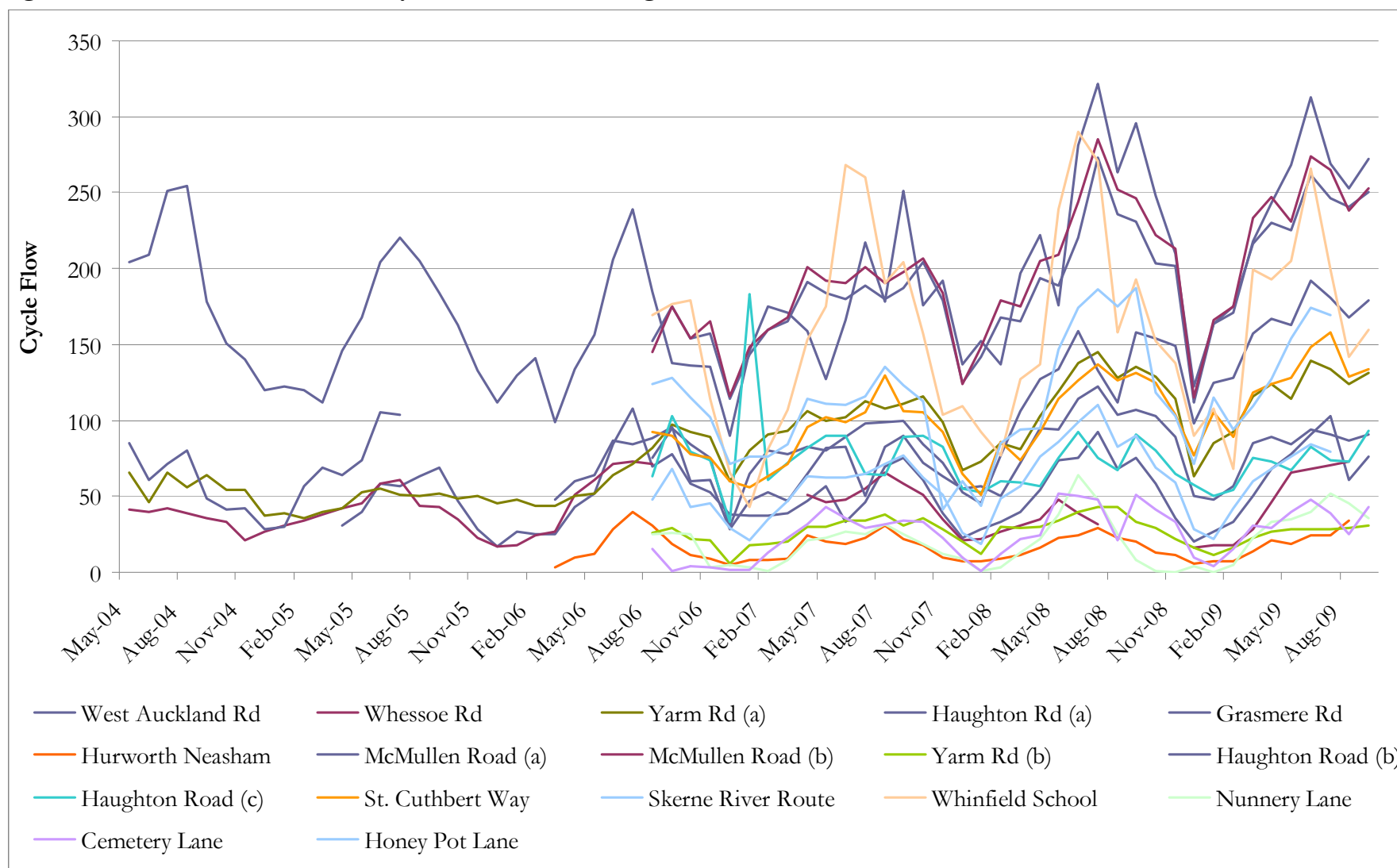
	West Auckland Rd	Whessoe Rd	Yarm Road (a)	Haughton Road (a)	Grasmere Rd	Hurworth Neasham	McMullen Road (a)	McMullen Road (b)	Yarm Rd (b)	Haughton Road (b)	Haughton Road (c)	St. Cuthbert Way	Skene River Route	Whinfield School	Nunnery Lane	Cemetery Lane	Honey Pot Lane
2004/05		9216	13061	43703	14714												
2005/06	10854	9699	12844	41146													
2006/07	15256		21184	42038	16926	4443											
2007/08	12187	10796	25224	46862	18569	4213	45665	47749	7664	22420	18619	24111	14731	41452	4606	6520	24570
2008/09	14716		30172	58994	23109	4315	53266	56673	7341	36341	18576	29931	17753	45751	5428	8376	34938
% change compared with the previous year																	
2005/06		5.2	-1.7	-5.8													
2006/07	40.6		64.9	2.2													
2007/08	-20.1		19.1	11.5	9.7	-5.2											
2008/09	20.8		19.6	25.9	24.4	2.4	16.6	18.7	-4.2	62.1	-0.2	24.1	20.5	10.4	17.8	28.5	42.2
Index compared with 2004/05																	
2004/05		100.0	100.0	100.0	100.0												
2005/06		105.2	98.3	94.2													
2006/07			162.2	96.2	115.0												
2007/08		117.1	193.1	107.2	126.2												
2008/09			231.0	135.0	157.0												

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that cycling levels were higher than in 2004/5; red indicates that cycling levels were greater by 10% or more than in 2004/5.

Table 15.3: Annual changes in Darlington cycle flows using all counters with available data

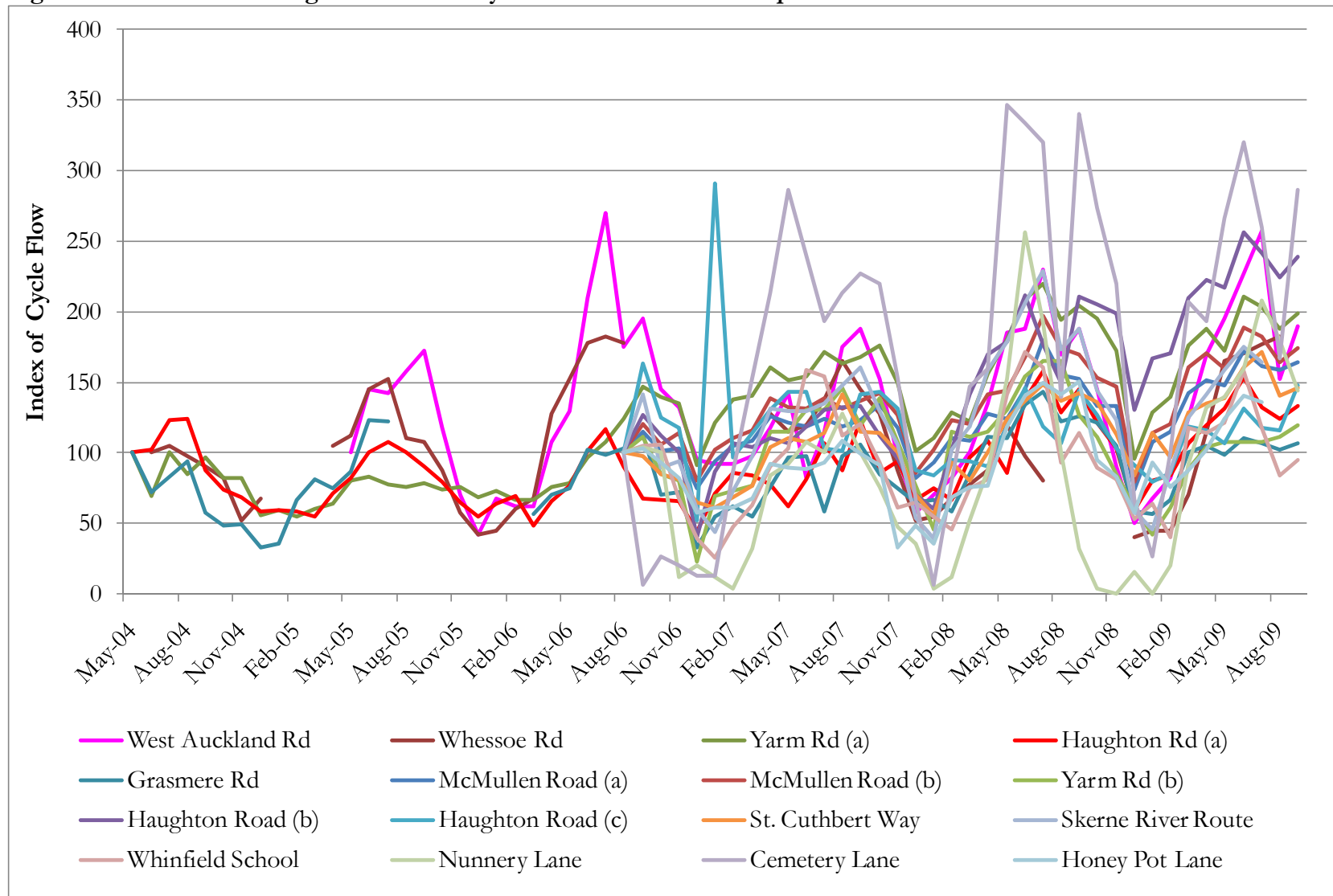
	Number of sites	First year	Second year	% change
2004/5-2005/6	3	92373	89166	-3.5
2005/6-2006/7	3	90783	109869	+21.0
2006/7-2007/8	5	139786	149876	+7.2
2007/8-2008/9	16	17062	20603	+20.8

Figure 15.4: Raw data for automatic cycle counters in Darlington



Note: Figures are monthly weekday 24-hour averages.

Figure 15.5: Data for Darlington automatic cycle counters indexed to April 2004



Note: Data for Hurworth Neasham have been excluded from this graph, because of the dramatic variation in cycle flows recorded.

Figure 15.6: 12-month rolling average Darlington cycle counter data

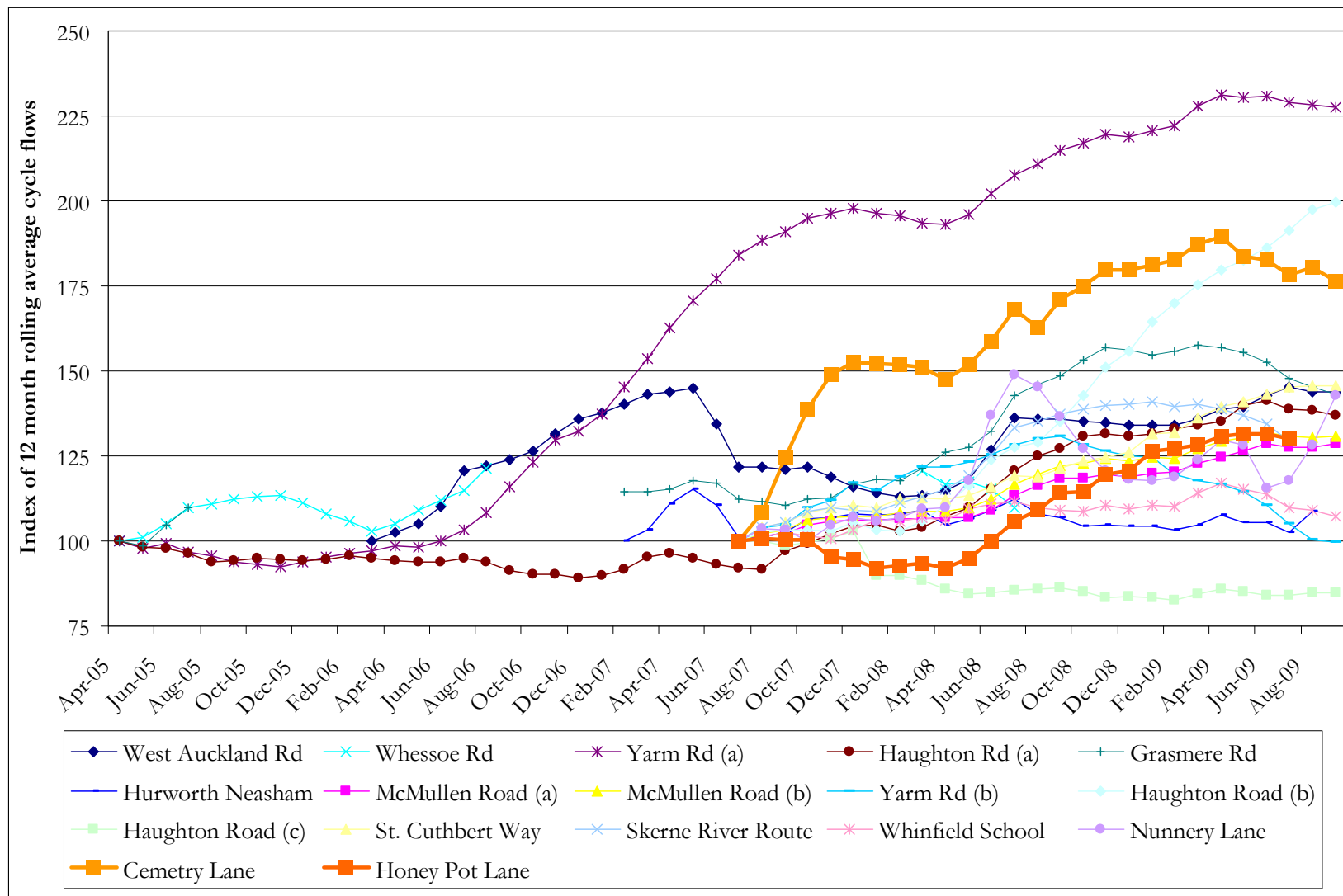


Table 15.4: Manual cycle counts at Darlington town centre cordon sites (including June data created by interpolation between April and July counts)

	1	2	3	4	5	6	7	8	9	10	11	12	Total	Total exc Site 11
Jun-01													465	
Jun-02													621	
Jun-03													508	
Jun-04	17	14	60	72	29	110	30	26		23	137	94	612	475
Jun-05	80	24	64	19	57	97	21	15		14	56	71	518	462
Jun-06	112	57	99	73	80	146	37	23	37	37	110	138	948	838
Jun-07	141	62	109	110	78	135	56	24	17	42	144	81	998	854
Jun-08	169	46	149	103	108	171	73	78	35	46	104	102	1184	1080
Jun-09	154	59	138	98	127	194	56	34	19	49	99	100	1125	1027
% change compared to preceding year														
Jun-05	370.6	71.4	6.7	-73.6	96.6	-11.8	-30.0	-42.3		-39.1	-59.1	-24.5	-15.4	-2.7
Jun-06	40.0	137.5	54.7	284.2	39.8	50.9	74.6	53.3		164.3	97.0	93.9	83.1	81.4
Jun-07	25.9	8.8	9.8	50.2	-1.7	-8.0	51.8	5.8	-52.7	12.6	30.8	-41.4	5.3	1.9
Jun-08	19.9	-26.3	36.8	-6.1	37.9	27.2	30.5	220.5	103.8	10.4	-27.9	26.4	18.6	26.4
Jun-09	-8.9	29.2	-7.2	-4.5	17.3	13.0	-23.4	-56.8	-46.2	6.5	-5.1	-2.3	-4.9	-4.9
Index compared to 2004														
Jun-04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0	100.0	100.0	100.0	100.0
Jun-05	470.6	171.4	106.7	26.4	196.6	88.2	70.0	57.7		60.9	40.9	75.5	84.6	97.3
Jun-06	658.8	407.1	165.0	101.4	274.7	133.0	122.2	88.5		160.9	80.5	146.5	155.0	176.4
Jun-07	829.4	442.9	181.1	152.3	270.1	122.4	185.6	93.6		181.2	105.4	85.8	163.1	179.8
Jun-08	994.1	326.2	247.8	143.1	372.4	155.8	242.2	300.0		200.0	75.9	108.5	193.4	227.3
Jun-09	905.9	421.4	230.0	136.6	436.8	176.1	185.6	129.5		213.0	72.0	106.0	183.9	216.1

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that cycling levels were higher than in 2004; red indicates that cycling levels were greater by 10% or more than in 2004.

Table 15.5: Changes in cycle flows at Darlington town centre cordon sites using quarterly data collected since April 2006

Location	1	2	3	4	5	6	7	8	9	10	11	12	Total
Apr-06	126	33	75	33	57	99	38	13		33	33	59	599
Jul-06	105	69	111	93	91	170	36	28	55	39	149	177	1123
Oct-06	102	39	65	55	86	104	30	20	26	43	113	62	745
Jan-07	26	26	53	31	58	75	21	32	8	29	43	37	439
Apr-07	135	48	86	113	81	116	37	33	12	55	127	56	899
Jul-07	144	69	120	108	77	144	65	20	20	35	153	93	1048
Oct-07	138	29	65	68	86	156	46	47	17	45	86	67	850
Jan-08	39	30	60	59	66	66	22	17	19	34	48	105	565
Apr-08	99	43	76	75	94	140	38	42	48	56	100	78	889
Jul-08	204	47	185	117	115	187	90	96	29	41	106	114	1331
Oct-08	77	59	112	111	91	150	44	27	30	38	92	98	929
Jan-09	63	50	87	55	71	150	21	18	6	23	50	94	688
Apr-09	190	63	120	103	212	153	69	47	21	51	94	93	1216
Jul-09	136	57	147	96	84	214	49	27	18	48	101	103	1080
% change compared to the relevant quarter in the previous year													
Apr-07	7.1	45.5	14.7	242.4	42.1	17.2	-2.6	153.8		66.7	284.8	-5.1	50.1
Jul-07	37.1	0.0	8.1	16.1	-15.4	-15.3	80.6	-28.6	-63.6	-10.3	2.7	-47.5	-6.7
Oct-07	35.3	-25.6	0.0	23.6	0.0	50.0	53.3	135.0	-34.6	4.7	-23.9	8.1	14.1
Jan-08	50.0	15.4	13.2	90.3	13.8	-12.0	4.8	-46.9	137.5	17.2	11.6	183.8	28.7
Apr-08	-26.7	-10.4	-11.6	-33.6	16.0	20.7	2.7	27.3	300.0	1.8	-21.3	39.3	-1.1
Jul-08	41.7	-31.9	54.2	8.3	49.4	29.9	38.5	380.0	45.0	17.1	-30.7	22.6	27.0
Oct-08	-44.2	103.4	72.3	63.2	5.8	-3.8	-4.3	-42.6	76.5	-15.6	7.0	46.3	9.3
Jan-09	61.5	66.7	45.0	-6.8	7.6	127.3	-4.5	5.9	-68.4	-32.4	4.2	-10.5	21.8
Apr-09	91.9	46.5	57.9	37.3	125.5	9.3	81.6	11.9	-56.3	-8.9	-6.0	19.2	36.8
Jul-09	-33.3	21.3	-20.5	-17.9	-27.0	14.4	-45.6	-71.9	-37.9	17.1	-4.7	-9.6	-18.9

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year.

Figure 15.7: Manual cycle counts at Darlington town centre cordon

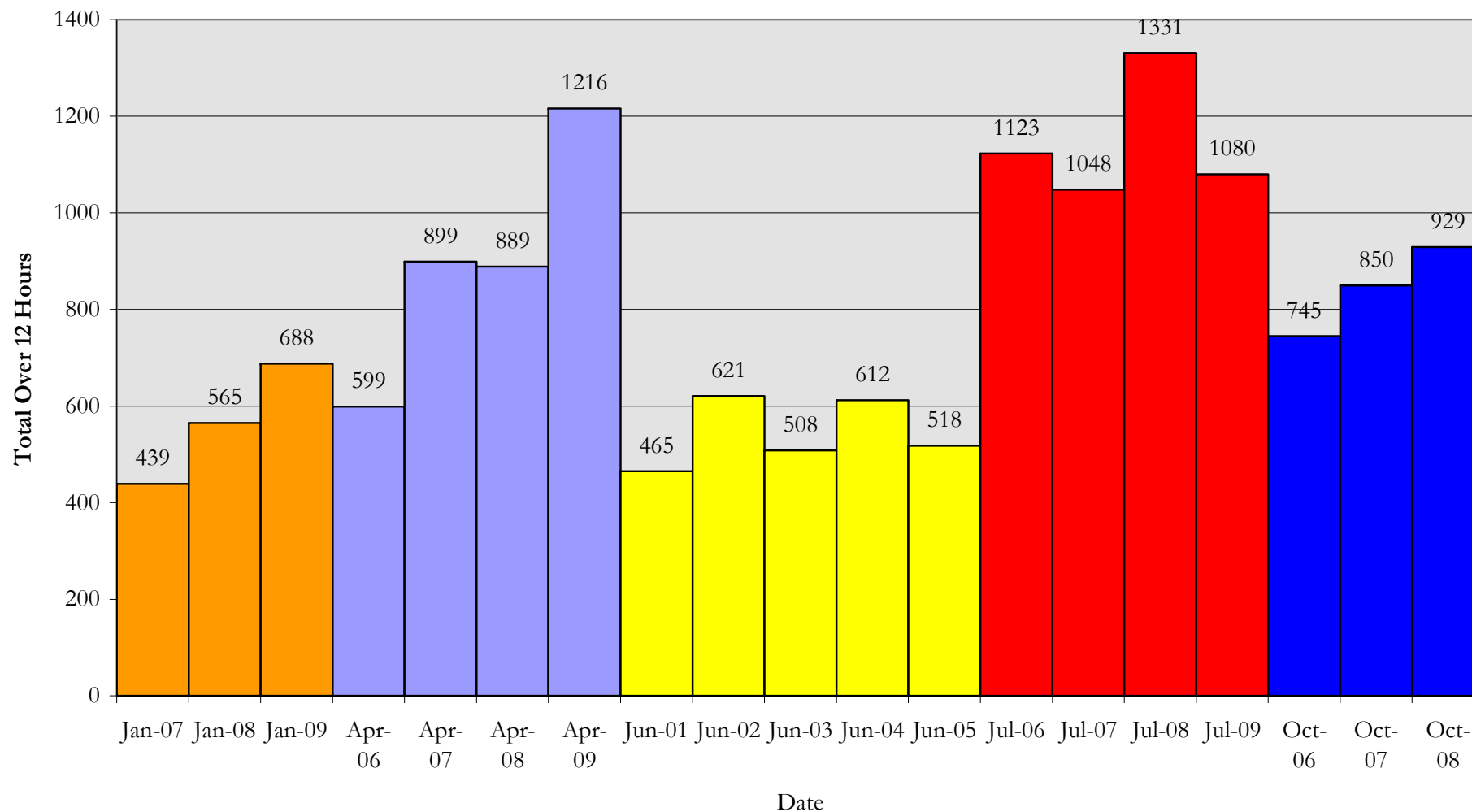


Figure 15.8: Darlington cordon total over time



Figure 15.9: Index of cycle flows recorded at individual counters in Darlington

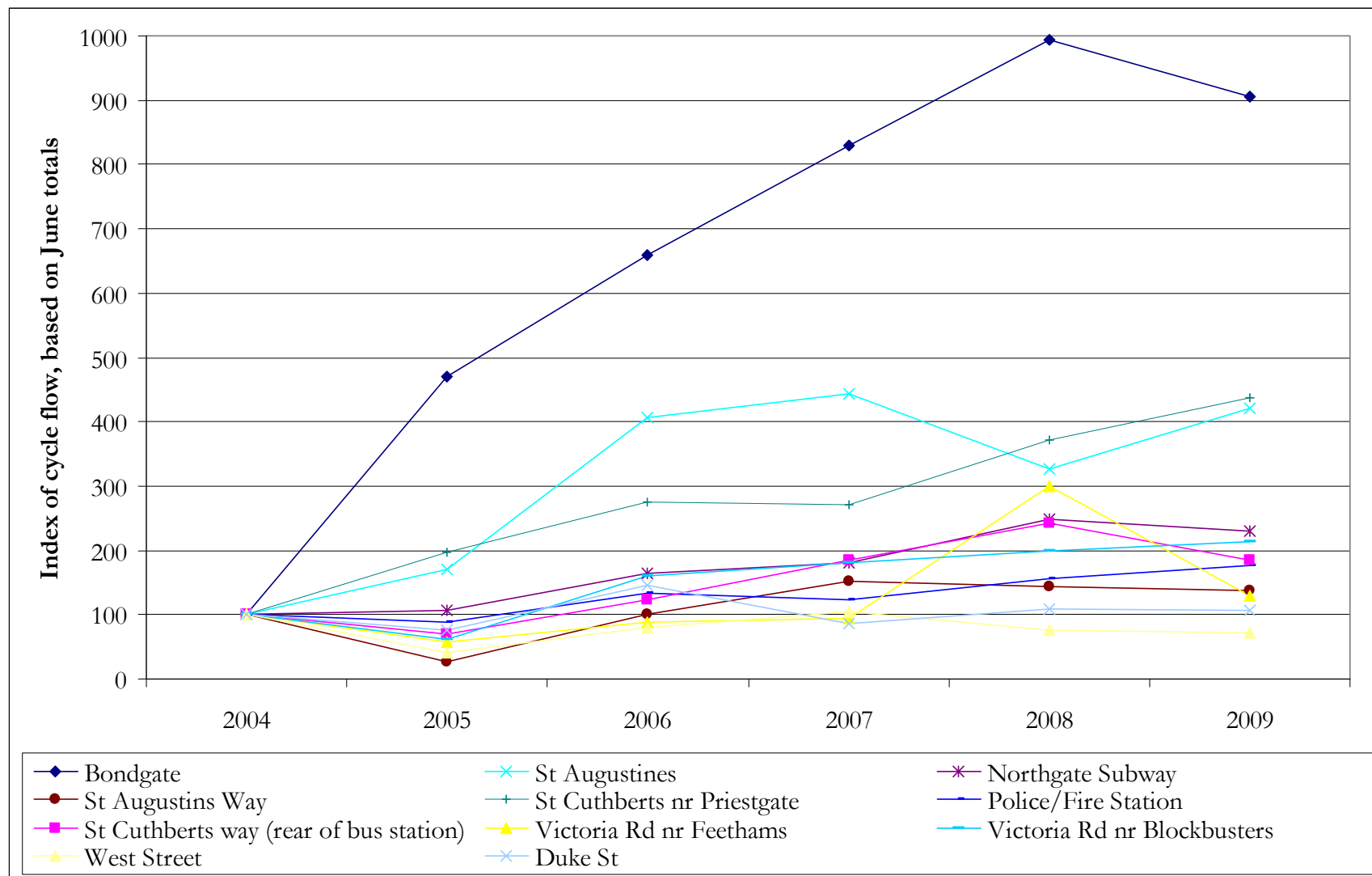


Table 15.6: NRTE minor road cycle counts in Darlington

	Barmpton Lane	Geneva Road	Baydale Road	Brinkburn Road	Larchfield Street	Stockton Road	Sum of 6 sites
Date of count	May	Mar	Jun	May/Jun	Mar	Sep/Oct	
2000	37		18	60	21	43	
2001	11		29	34	18	32	
2002	16		19	68	31	79	
2003	19	47	24	57	22	43	212
2004	18	41	9	38	30	57	193
2005	9	41	19	53	40	37	199
2006	15	52	26	76	12	64	245
2007	8	64	18	44	36	69	239
2008	11	90	18	72	35	36	262
% change compared with previous year							
2001	-70.3		61.1	-43.3	-14.3	-25.6	
2002	45.5		-34.5	100.0	72.2	146.9	
2003	18.8		26.3	-16.2	-29.0	-45.6	
2004	-5.3	-12.8	-62.5	-33.3	36.4	32.6	-9.0
2005	-50.0	0.0	111.1	39.5	33.3	-35.1	3.1
2006	66.7	26.8	36.8	43.4	-70.0	73.0	23.1
2007	-46.7	23.1	-30.8	-42.1	200.0	7.8	-2.4
2008	37.5	40.6	0.0	63.6	-2.8	-47.8	9.6
Index compared with 2004							
2000	205.6		200.0	157.9	70.0	75.4	
2001	61.1		322.2	89.5	60.0	56.1	
2002	88.9		211.1	178.9	103.3	138.6	
2003	105.6	114.6	266.7	150.0	73.3	75.4	109.8
2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2005	50.0	100.0	211.1	139.5	133.3	64.9	103.1
2006	83.3	126.8	288.9	200.0	40.0	112.3	126.9
2007	44.4	156.1	200.0	115.8	120.0	121.1	123.8
2008	61.1	219.5	200.0	189.5	116.7	63.2	135.8

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that cycling levels were higher than in 2004; red indicates that cycling levels were greater by 10% or more than in 2004.

Figure 15.10: NRTE minor road cycle counts in Darlington

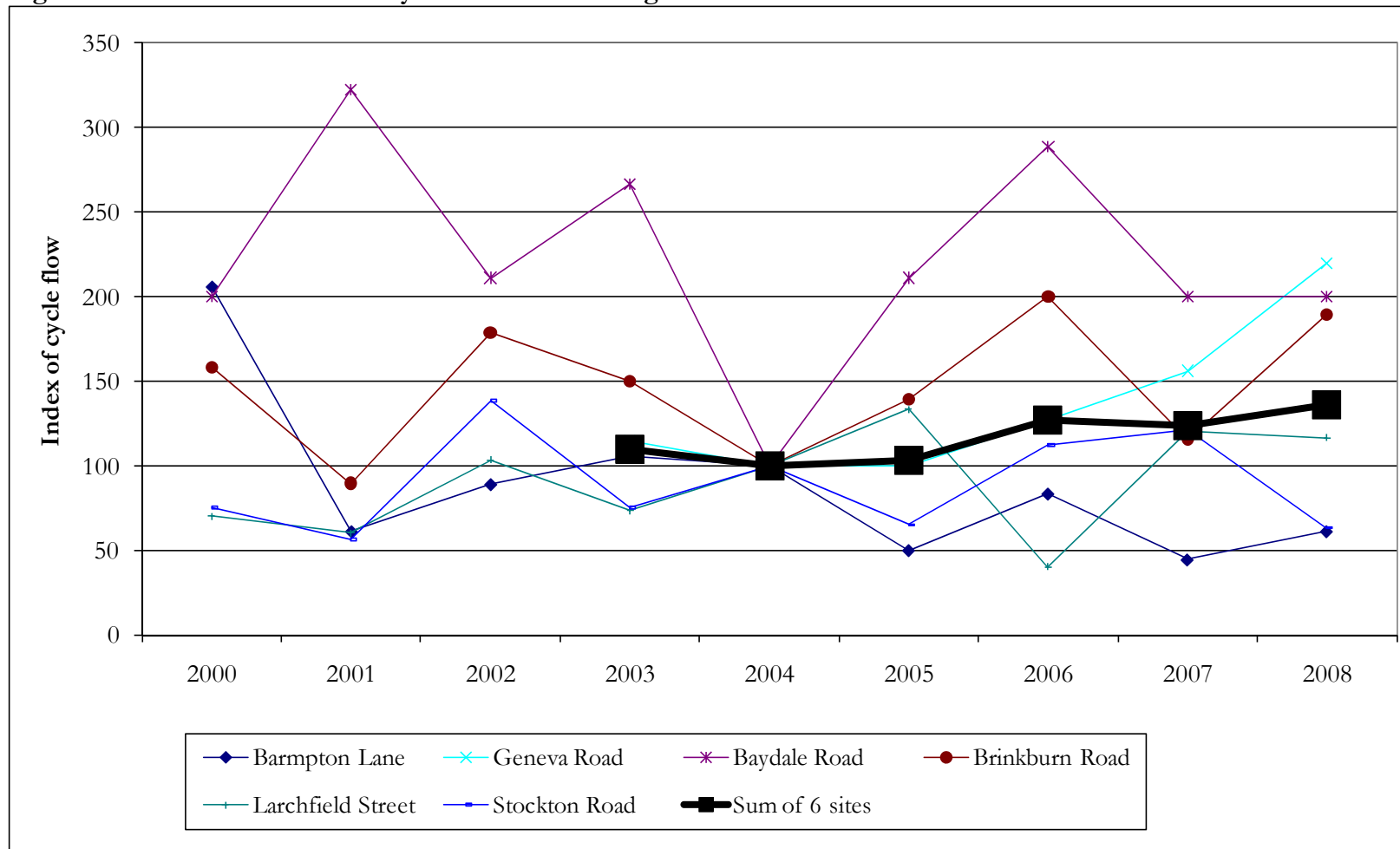


Table 15.7: Changes in quarterly cycle data in Darlington

	West Auckland Rd	Whessoe Rd	Yarm Rd (a)	Haughton Rd (a)	Grasmere Rd	Hurworth Neasham	McMullen Road (a)	McMullen Road (b)	Yarm Rd (b)	Haughton Road (b)	Haughton Road (c)	St Cuthbert Way	Skerne River Route	Whinfield School	Nunnery Lane	Cemetery Lane	Honey Pot Lane
Q3 2004		39.0	62.0	227.7	66.7												
Q4 2004		27.0	48.3	137.0	37.0												
Q1 2005			38.3	118.0	52.0												
Q2 2005	43.0	48.3	50.0	172.7	81.0												
Q3 2005	63.0	49.3	51.0	203.0													
Q4 2005	30.7	25.0	48.0	136.0													
Q1 2006	25.7	23.0	45.3	123.3													
Q2 2006	59.7	61.0	55.3	165.3	70.3	16.7											
Q3 2006	85.3		83.3	187.3	89.3	30.0											
Q4 2006	49.7		80.3	120.3	49.7	8.3	141.7	145.0	16.3	63.0	62.0	71.0	39.0	119.7	11.0	3.0	96.0
Q1 2007	37.7		88.0	164.0	49.0	8.3	156.0	158.7	19.0	74.3	105.3	63.3	34.3	77.0	4.0	12.7	78.7
Q2 2007	45.7	48.3	102.7	150.7	76.5	21.0	185.0	194.3	31.3	84.0	87.3	99.0	62.3	198.7	23.7	37.0	111.7
Q3 2007	63.7	59.7	110.7	215.3	74.3	25.3	185.3	196.3	34.3	99.0	72.7	113.7	71.0	218.0	27.3	31.7	124.7
Q4 2007	41.0	35.7	94.0	168.3	63.5	11.7	169.3	171.7	28.0	69.7	76.0	87.3	46.3	123.3	13.3	22.0	71.3
Q1 2008	33.7	26.7	79.7	162.0	59.7	9.0	158.3	167.3	23.7	76.0	57.3	70.3	41.7	98.7	5.7	11.7	74.3
Q2 2008	67.7	40.7	120.0	226.3	101.0	21.0	201.0	219.3	34.7	140.0	74.7	110.7	87.0	222.0	41.3	42.0	138.7
Q3 2008	78.3		136.0	293.7	111.0	24.0	246.7	261.0	39.7	134.3	77.7	131.3	94.3	207.3	27.0	40.0	182.7
Q4 2008	38.0		102.0	193.3	80.7	10.0	172.3	183.3	22.3	133.7	67.5	102.0	52.0	126.7	1.7	28.0	97.3
Q1 2009	36.7	21.3	97.7	184.3	63.3	9.3	185.0	191.3	16.7	136.7	59.7	104.0	41.3	125.0	9.3	16.7	106.0
Q2 2009	79.0	60.1	125.7	274.7	89.0	21.3	239.0	250.7	27.7	174.0	74.3	133.3	76.0	221.3	36.0	39.0	151.7
Q3 2009	80.0		129.7	264.7	89.7		245.7	252.0	29.3	176.0	80.0	140.3		167.0	44.3	35.7	

Note: The first part of the table, above, provides the baseline data: three-month averages of weekday 24-hour flows. The second part of the table, below, indicates the timing of any increases.

Table 15.7: Changes in quarterly cycle data in Darlington (continued)

% change compared to same quarter previous year																	
	West Auckland Rd	Whessoe Rd	Yarm Rd (a)	Haughton Rd (a)	Grasmere Rd	Hurworth Neasham	McMullen Road (a)	McMullen Road (b)	Yarm Rd (b)	Haughton Road (b)	Haughton Road (c)	St Cuthbert Way	Skerne River Route	Whinfield School	Nunnery Lane	Cemetery Lane	Honey Pot Lane
Q3 2005		26.5	-17.7	-10.8													
Q4 2005		-7.4	-0.7	-0.7													
Q1 2006			18.3	4.5													
Q2 2006	38.8	26.2	10.7	-4.2	-13.2												
Q3 2006	35.4		63.4	-7.7													
Q4 2006	62.0		67.4	-11.5													
Q1 2007	46.8		94.1	33.0													
Q2 2007	-23.5	-20.8	85.5	-8.9	8.8	26.0											
Q3 2007	-25.4		32.8	14.9	-16.8	-15.6											
Q4 2007	-17.4		17.0	39.9	27.9	40.0	19.5	18.4	71.4	10.6	22.6	23.0	18.8	3.1	21.2	633.3	-25.7
Q1 2008	-10.6		-9.5	-1.2	21.8	8.0	1.5	5.5	24.6	2.2	-45.6	11.1	21.4	28.1	41.7	-7.9	-5.5
Q2 2008	48.2	-15.9	16.9	50.2	32.0	0.0	8.6	12.9	10.6	66.7	-14.5	11.8	39.6	11.7	74.6	13.5	24.2
Q3 2008	23.0		22.9	36.4	49.3	-5.3	33.1	32.9	15.5	35.7	6.9	15.5	32.9	-4.9	-1.2	26.3	46.5
Q4 2008	-7.3		8.5	14.9	27.0	-14.3	1.8	6.8	-20.2	91.9	-11.2	16.8	12.2	2.7	-87.5	27.3	36.4
Q1 2009	8.9	-20.0	22.6	13.8	6.1	3.7	16.8	14.3	-29.6	79.8	4.1	47.9	-0.8	26.7	64.7	42.9	42.6
Q2 2009	16.7	47.8	4.7	21.4	-11.9	1.6	18.9	14.3	-20.2	24.3	-0.4	20.5	-12.6	-0.3	-12.9	-7.1	9.4
Q3 2009	2.1		-4.7	-9.9	-19.2		-0.4	-3.4	-26.1	31.0	3.0	6.9		-19.5	64.2	-10.8	

Note: Yellow indicates growth compared to the relevant quarter in the preceding year; orange indicates growth of 10% or more compared to the relevant quarter in the preceding year.

Table 15.8: Analysis of Darlington quarterly automatic cycle count data in relation to personal travel planning effects

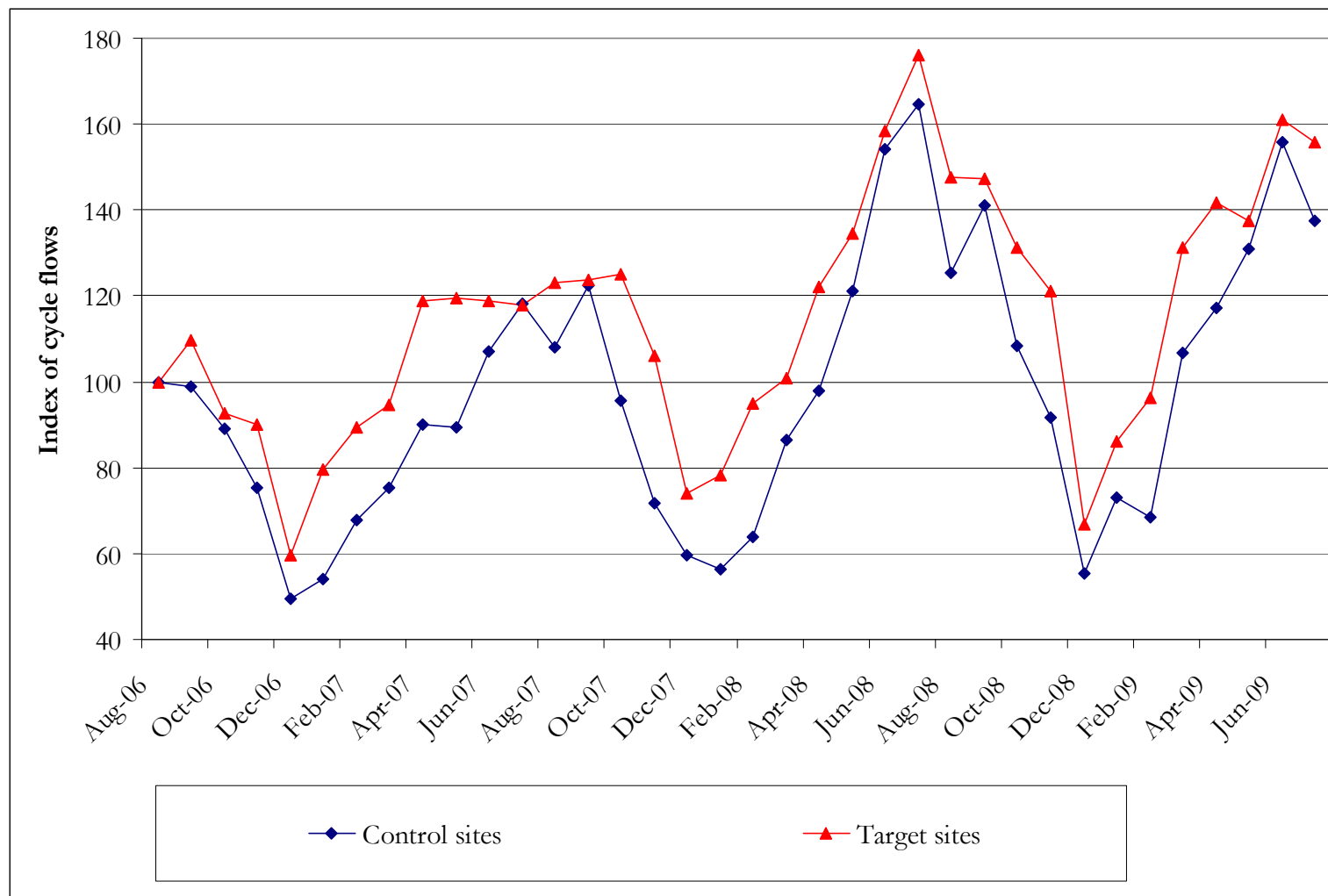
	Change in quarter compared to the preceding quarter		Change in quarter compared to quarter in the previous year		Change in following quarter		Change in the same quarter in following year	
	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>
Phase 1 (Q2 2005)	n/a	n/a	n/a	n/a	+23.0%	+14.1%	+32.1%	-0.9%
Phase 2 (Q2 2006)	+34.1%	+62.0%	-4.2%	+23.7%	+13.3%	+46.7%	-8.9%	-12.1%
Phase 3 (Q2 2007)	+45.3%	+35.5%	n/a	n/a	+21.7%	+2.1%	+30.3%	+16.2%

Notes: Green shading indicates that the target area experienced more cycle growth, or less cycle decline, than the control area. For Phase 1, the West Auckland Road and Whessoe Road counters fall within the target area, whilst Yarm Road (a) and Haughton Road (a) have been used for the control. For Phase 2, the Haughton Road (a) counter falls within the target area, whilst the counters on Yarm Road (a) and West Auckland Road have been used as the controls. The relevant counters used for Phase 3 are explained in the text.

Table 15.9: Darlington manual count totals for different personal travel planning periods, and change over time

Personal travel planning Phase 1: comparing Sites 12,1,2,3 with 4-10		
	Potentially affected sites	Non-affected sites
Jun-04	185	290
Jun-05	239	223
Jun-06	406	432
% change 2004-2005	+29.2	-23.1
% change 2005-2006	+69.7	+93.9
% change 2004-2006	+119.3	+49.1
Personal travel planning Phase 2: comparing Sites 1-5, 12 with 6-10		
Jun-05	315	147
Jun-06	558	280
Jun-07	580	274
% change 2005-2006	+77.2	+90.2
% change 2006-2007	+3.9	-2.1
% change 2005-2007	+84.2	+86.1
Personal travel planning Phase 3: comparing Sites 6-10 with 1-3		
Oct 06: Apr 07	641	580
Oct 07: Apr 08	793	378
% change	+23.7	-34.8

Figure 15.11: Analysis of Darlington automatic cycle count data in relation to Phase 3 personal travel planning

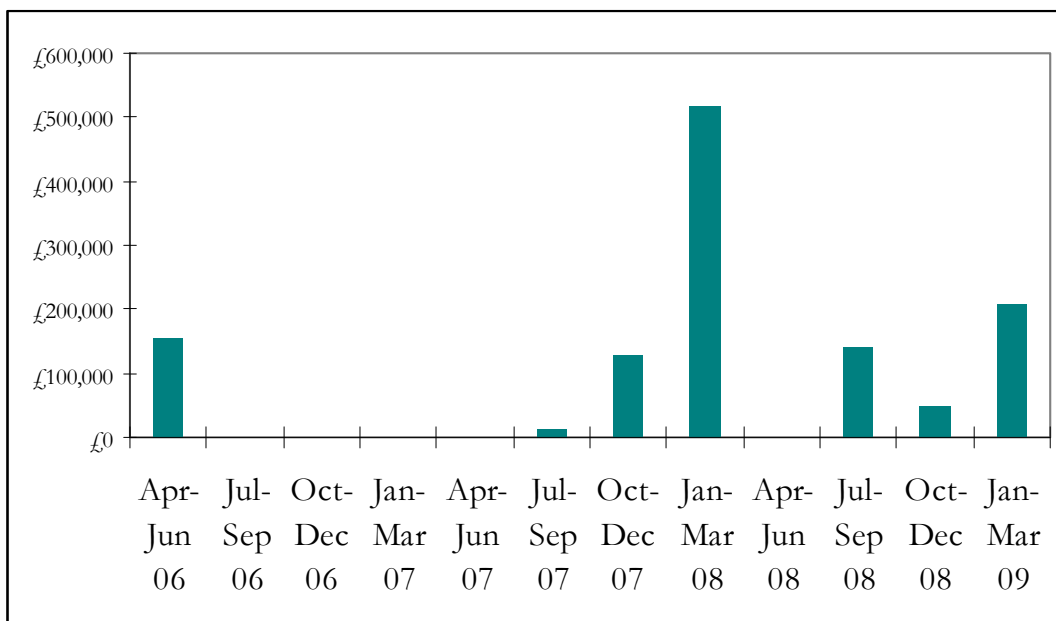


Note: Phase 3 personal travel planning took place May-Sept 2007.

Table 15.10: Household travel survey results for cycling in Darlington

	Phase 1 area	Phase 2 area	Phase 3 area	Phase 2 & 3 area averages	Overall change estimate
<i>Households</i>	11,802	11,675	14,400		37,877
Trips per person per year (unweighted data)					
Autumn 04	11	14	15	14	14
Autumn 05	8			14	12
Autumn 06		25	22		21
Autumn 07	20		19		23
Autumn 08					26
Index compared with 2004					
Autumn 05	72.7			100.0	88.8
Autumn 06		178.6	146.7		154.5
Autumn 07	181.8		126.7		168.4
Autumn 08					189.4
Overall change in trips per person (unweighted data, 2004-2008)					89%*
Overall change in trips per person (weighted data, 2004-2008)					113%*
Overall change in distance per person (unweighted data, 2004-2008)					76%*
Overall change in distance per person (weighted data, 2004-2008)					112%*

Notes: Pale blue shading indicates control area results (as specified by Socialdata & Sustrans). Pale green shading indicates results from area immediately subsequent to personal travel planning. Overall change estimates for Autumn 2006 and Autumn 2007 are based on interpolation. Red line indicates timing of personal travel planning intervention. * These data are for trips of up to 100km, in order to be consistent with the data in the top half of the table. Figures for trips of up to 50km are identical.

Figure 15.12: Capital claims for cycle infrastructure investment in Darlington

Note: Capital claims for Cycling Demonstration Town infrastructure investment were made quarterly in arrears. Figures have been extracted from claim forms ('Annex C' forms). Totals include both Cycling England/Department for Transport funding and matched funding. No claims were made between July-September 2006 and April-June 2007.

15.3 Evidence from Peterborough cycle count data

15.3.1 Introduction

The primary data about cycle use in Peterborough comes from eight automatic cycle counters. Manual counts have taken place across the town since June 2000 at two screenlines (the 'urban screenline' and 'New City screenline'). There were also 15 NRTE minor road sites in Peterborough, where manual counts were carried out annually.

15.3.2 Nature of the data

Nine automatic cycle counters were operating in Peterborough during the Sustainable Travel Towns project, most of which became operational in January 2005. However, of the nine sites, one, at Church Lane, was vandalised, and was not operational from January 2006. The site at Hampton Vale only became operational in May 2006, whilst the counter on the A47/A15 cycle/pedestrian overbridge was also vandalised, leading to four months of missing data and relocation of the counter, which may have affected results. The data provided is monthly 24-hour seven-day averages. Missing values have been interpolated for data gaps of three months or less. (The April 2006 value for the A47/A15 site was generated from the percentage change recorded at all other sites with available data for April and May 2006). The data set used is reproduced in the annex to this chapter.

Peterborough City Council also carried out 12-hour one-day manual counts in May each year. Data was collected at an urban screenline, which has been in place for more than ten years, and at the New City screenline, which was created in 2005, and involves an arc of five sites to the north-east of the city centre. Rail World Way, which forms part of the urban screenline, was closed as a viable route for cyclists in 2008. Prior to 2004, it has only proved possible to extract individual site data for 1999.

As well as the council data, there were 15 NRTE minor road sites in Peterborough, where manual counts were carried out annually, at some point between March and October.

Figure 15.13 gives a map showing the location of the automatic cycle counters. Figure 15.15 gives a map showing the location of the Council's manual count sites, and the NRTE sites.

In terms of contextual factors, the population of Peterborough rose by 6% between 2004 and 2007 (according to council data). Later data are not available. The greatest population growth took place in the south of the town. There were roadworks affecting the main route into the town from the south for most of the period from January 2005 to April 2008, though it is unclear how far this would have affected cyclists.

15.3.3 Data presentation

On subsequent pages, the following data are presented:

- Table 15.12 – a table of the annual levels of cycling recorded at each of the counters, together with a calculation of the % change compared with the preceding year, and an index of the data compared with the data for 2005/6;
- Figure 15.16 – a graph showing data for each of the individual cycle counters since January 2005;
- Figure 15.17 – a graph showing data for the individual cycle counters indexed to the earliest month of available data;
- Figure 15.18 – a graph showing 12-month rolling averages for the individual cycle counters, indexed to the first 12-month period for which data are available;
- Figure 15.19 – a graph showing changes in the annual pattern of cycle use;
- Table 15.13 – a table of the levels of cycling recorded at the urban screenline, together with a calculation of the % change compared with the preceding year, and an index of the data compared with the data for 2004;
- Table 15.14 – a table of the levels of cycling recorded at the New City screenline, together with a calculation of the % change compared with the preceding year, and an index of the data compared with the data for 2005;
- Figure 15.20 – a graph showing trends in levels of cycling recorded at different groups of the manual count sites;
- Figure 15.21 – a graph giving an index of the cycle flows recorded at the different manual count sites;
- Table 15.15 – a table of the cycle counts recorded at the NRTE minor road sites;
- Figure 15.22 – a graph showing an index of the NRTE minor road cycle counts;
- Table 15.16 – a table of data giving the average daily cycling levels per quarter, based on the average daily figure for each three-month period. The table also gives the percentage change in value compared with the relevant quarterly period in the preceding year, and an index of how the value for that quarter compares with the relevant quarter in 2005;
- Figure 15.23 – a graph plotting the quarterly data indices, compared to the first quarter of available data, with periods of personal travel planning that may have affected individual counters marked;
- Figure 15.24 – a graph plotting the quarterly data indices, compared to the relevant quarters in 2005, with periods of personal travel planning that may have affected individual counters marked;
- Table 15.17 – a table analysing the automatic cycle counter data in relation to personal travel planning activities;
- Table 15.18 – a table analysing the manual count data in relation to personal travel planning activities;
- Table 15.19 – a table analysing the NRTE minor road data in relation to personal travel planning activities;
- Table 15.20 – a table giving the household survey results.

15.3.4 Data analysis

Overall effects on cycling

Data from the automatic counters are given in Tables 15.12 and 15.16, and Figures 15.16-15.19. The five counters with data in 2005/6 and 2008/9 suggest that cycle use has slightly declined over this period (by 7.1%). Because the counters only became active in January 2005, it should be noted that this comparison does not include any change in cycle flows that may have occurred during the first year of Sustainable Travel Towns work. Closer inspection of the data highlights that there may have been higher than usual cycling levels in June-August 2005. This is particularly evident in Figure 15.19. There was also growth in autumn/winter flows, as shown in the quarters data in Table 15.16. There was a slight decline in cycling between Summer 2005 and Summer 2006, followed by fairly stable cycling levels for two years, and then a further slight, more general decline, which began in Q4 2008. However, trends varied between locations, and it is notable that none of the counters were located close to the central area of Peterborough.

Data from the urban screenline, which is close to Peterborough city centre, suggests a somewhat different picture (Table 15.13, Figures 15.20 and 15.21). Cycling levels grew by 10.6% between 2004 and 2009, with particular growth between 2004 and 2005, and then again between 2007 and 2008, though with a decline between 2008 and 2009⁵. The urban screenline data highlights that this is in a context where cycling levels had been falling from 1998, with the decline appearing to stabilise by about 2002 and starting to reverse around 2004. Overall, the recorded decline prior to the start of the Sustainable Travel Town programme was in the order of 20-25%. Since 2004, as shown in Figure 15.20, the river crossings into the town centre from the south show relatively continuous growth. In contrast, data from the New City screenline, to the north-east of the city centre (Table 15.14), show a decline in cycle levels between 2005 and 2009, though with growth between 2006 and 2008 – and the fairest interpretation of this data may be that flows in this part of the town have been broadly stable. In interpreting the urban screenline data, it should be remembered that the increase in cycle flows into the town centre from the south could be partly caused by housing growth in the southern part of the town, though this is unlikely to account for all of the increase recorded at the river crossings (+42.5% between 2004 and 2009).

Data from the NRTE minor road sites (Table 15.15, Figure 15.22) is mixed, but generally also shows that cycling levels were declining between 2000 and 2002 (with a recorded decline of 32% between 2000 and 2004). It suggests that, since that time, cycle flows have broadly stabilised, though with growth in certain areas in all years, particularly in 2005 and 2006. The NRTE minor road sites do not include any centrally located monitoring sites. The site that is nearest to the centre, Star Road, does show an ongoing increase in recorded cycle flows throughout the Sustainable Travel Towns period.

The overall picture which emerges from the data sources, then, is not entirely consistent, but is probably as follows. Prior to the Sustainable Travel Towns work, cycle levels were falling, and the scale of that decline was quite substantial (in the order of 20-30% over about four years, according to the urban screenline and NRTE minor road counts). Between 2004 and 2005, cycle levels increased, particularly in the summer of 2005. This high level of activity was not sustained, but there was more minor growth at other times of the year, leading to relatively stable levels of annual cycling, together with an increase

⁵ Statistical testing of this result was problematic given the changing number of sites over the period.

in cycle flows in the central part of the town (in the order of 10%), and particular increases into the town centre from the south.

It is worth noting that Peterborough City Council officers felt that there was a mismatch between the locations at which cycle data were collected and the locations at which it might have been most likely that cycling would increase, given the focus of the Travelchoice work.

Assessment of personal travel planning effects

In relation to the personal travel planning work, Table 15.11 indicates the relevant automatic cycle counter sites for each phase of activity. Figures 15.23 and 15.24, and Tables 15.17-15.19 provide analysis of the different data sets in relation to the personal travel planning work.

Table 15.11: Relating cycle counter sites to Peterborough personal travel planning work

Personal travel planning phase	Timing	Automatic counter sites
1	Autumn 2005	Oxney Road and Eastern Industries Subway
2	Spring 2006	n/a
3	Autumn 2006	Ravensthorpe and Thorpe Park boathouse
4	Spring 2007	Shrewsbury Avenue and Hampton Vale
5	Autumn 2007	Shrewsbury Avenue

In relation to Phase 1, the automatic counter data appear to show a short term effect, in that cycle levels declined less at the two sites in the area in Q4 2005 and Q1 2006, than elsewhere. However, this seems to have been a relatively short-lived effect as there are no longer-term effects showing in any of data sets.

In relation to Phase 2, both the Lincoln Road council manual count site and the Fulbridge Road NRTE site show an increase which is not matched elsewhere between 2005 and 2006 – though with manual counts, the data available for assessment is relatively limited. (Lincoln Road shows sustained growth in 2007, but so do other sites at the New City screenline, potentially suggesting that another factor or initiative affecting the north-east of the city may have generated growth between 2006 and 2007).

In relation to Phase 3, autumn cycling levels at the Ravensthorpe and Thorpe Park sites were higher than in the previous year, though this was also the case elsewhere. The two relevant manual count sites show higher levels of cycling recorded between 2006 and 2007, than, on average, those recorded elsewhere. However, as previously suggested, there may have been a general increase in central cycling levels between 2006 and 2007. The NRTE sites do not provide any evidence of effects.

In relation to Phase 4, both of the automatic cycle counters (Shrewsbury Avenue and Hampton Vale) appear to show a substantial increase in flows, which is greater than the increases recorded elsewhere (though cycle use was already increasing at Shrewsbury Avenue prior to that time). Of the manual count data (council and NRTE sites), only the Oundle Road site appears to show a potential effect.

In relation to Phase 5, neither the automatic cycle counters nor the NRTE counts suggest that there has been an effect. However, in contrast, the relevant urban screenline

sites (i.e. those south of the city centre) suggest a major increase in flows between May 2007 and 2008, whilst, overall, flows were relatively stable elsewhere. However, this could partly be due to the discontinuation of the long term roadworks in that area.

In short, then, the evidence for an effect from the personal travel planning work is patchy, with a possible effect showing in the automatic counter data from sites relevant to Phase 4. In addition, there seems to be some evidence of a general increase in central cycling levels between 2006 and 2007, and an increase in cycle flows into the centre from the south of the town between 2007 and 2008.

Comparison with the household travel survey data

The results from the household travel surveys are given in Table 15.20. These suggest the following:

- Cycle trips per person increased by between 10% and 17% between 2004 and 2008 (depending on whether weighted or unweighted data are used, using the data for trips of up to 50km)⁶.
- The change in distance cycled per person was an increase of either 38% (unweighted data) or 23% (weighted data), again, using data for trips of up to 50km.
- The survey data suggest a growth in cycling from the first three phases of personal travel planning, whilst cycling levels declined elsewhere.

The increase in cycling trips recorded by the household surveys (10-17%) is consistent with that recorded at the urban screenline (+10.6%). However, the increase in cycle distance recorded by the household surveys has not been detected at the automatic cycle counters. There are various possibilities – first, that a growth in cycle trips was particularly focused on central Peterborough, which does not have an automatic counter site; and second, that counters were generally poorly located to detect an increase in trips.

In relation to personal travel planning, the available count data is inconclusive. The relatively modest increases in cycling recorded in the household surveys, and the implication that growth across the town was somewhat patchy, would match with the general impression given by the count data.

15.3.5 Summary

In summary, the analysis suggests the following points:

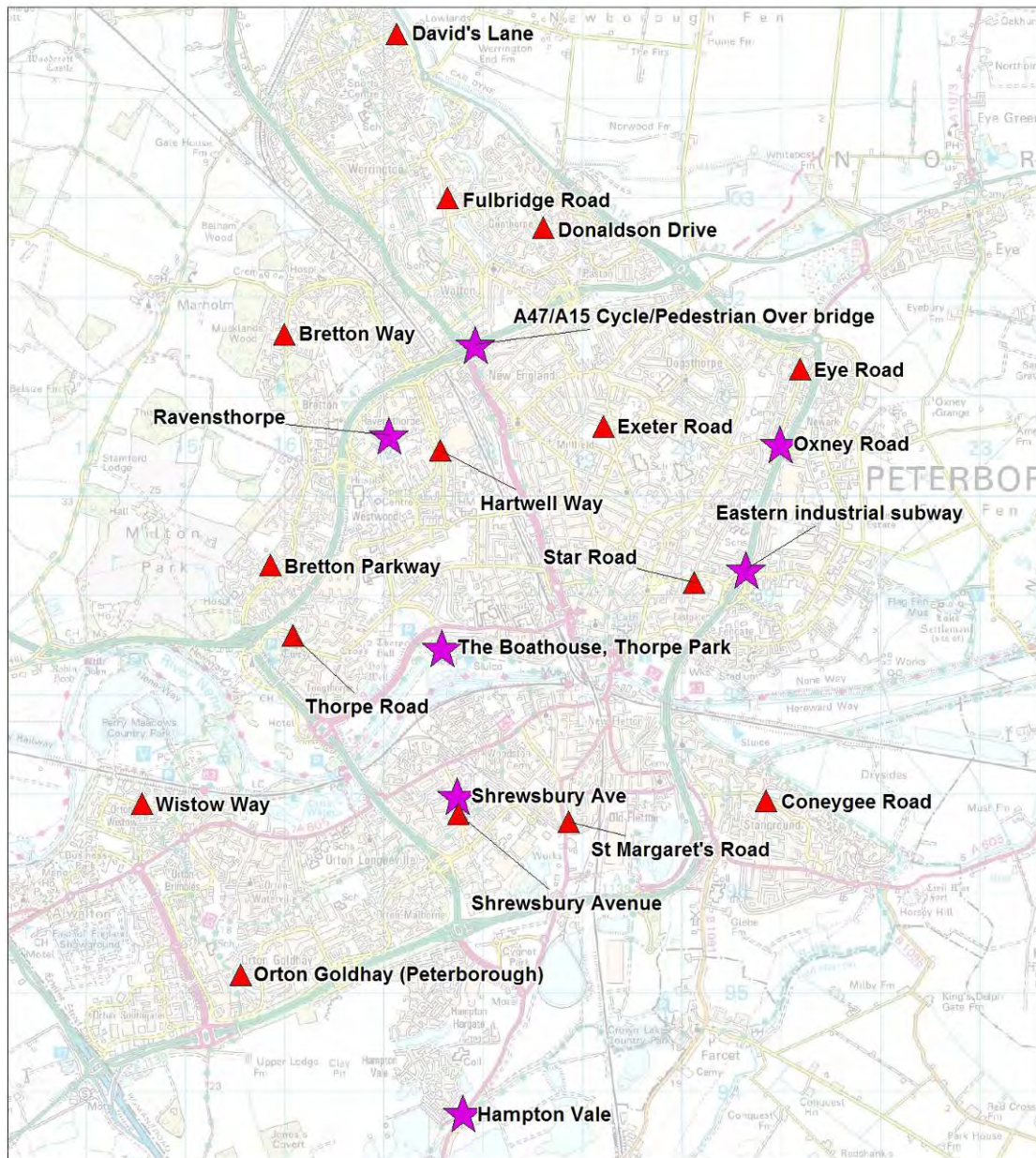
- Prior to 2004, manual counts conducted at an urban screenline and at the NRTE minor road sites suggest that cycling levels in Peterborough were declining, with reductions in the order of 20-30% being recorded over the period of available data.
- Since 2004, the urban screenline data suggests that cycling levels near the city centre have increased by 10.6%, which matches reasonably well with the 10-17% increase in cycle trips recorded in the household survey.
- The automatic counter data is only available from January 2005. It appears to suggest that cycling levels in Summer 2005 were relatively high. There was then a slight decline in cycling between Summer 2005 and Summer 2006, followed by a period of

⁶ This is equivalent to an increase from 14.0 to 16.3 cycle trips per 100 persons per day (unweighted), or from 15.1 to 16.7 cycle trips per 100 persons per day (weighted).

stability, and then a further small decline, beginning in Q4 2008. Autumn/winter cycling levels were higher in 2006, 2007 and early 2008 than they were in 2005. Between 2004 and 2008, data from NRTE minor road count sites suggests stable cycling levels. Neither of these data sets includes sites close to central Peterborough. (Star Road – the most central of the minor road NRTE sites – does show a substantial increase in flows over the period). Taken together, these data indicate that cycling levels *away* from the city centre were either stable or slightly declining from 2005 onwards.

- The most probable conclusion is that the Sustainable Travel Towns work halted the decline in cycling levels across the town, whilst generating modest increases in cycle flows in the order of 10% in the central area.
- The evidence for effects from the personal travel planning work is inconclusive. The most convincing data is a surge in cycle flows at the two counters relevant to the Phase 4 work. However, the household surveys also indicate increases in cycling trips in the Phase 1 and Phase 2/3 personal travel planning areas, relative to control areas.

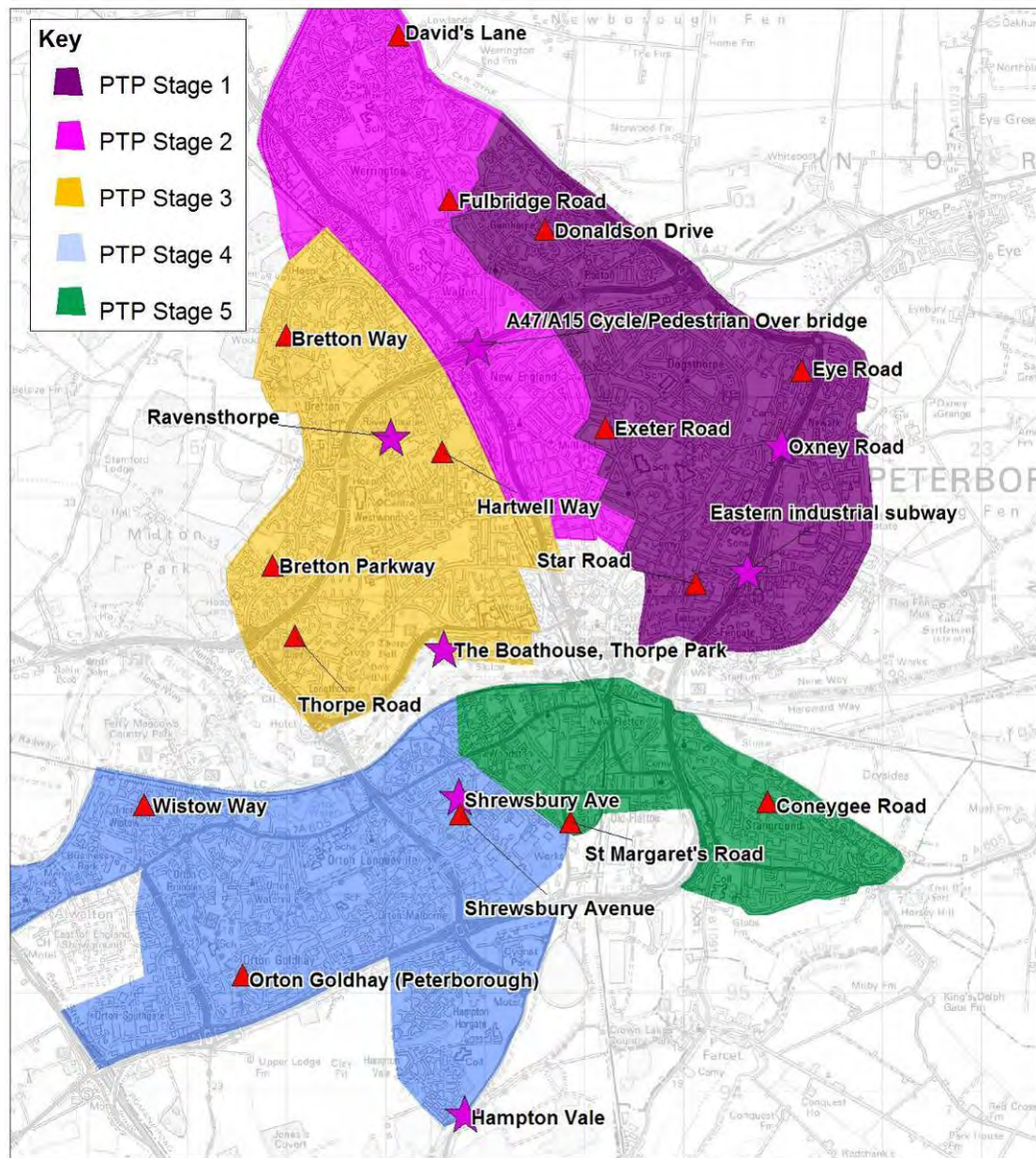
Figure 15.13: Automatic cycle counters and minor road NRTE sites in Peterborough



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Notes: Purple stars indicate automatic cycle counters; red triangles indicate minor road NRTE sites.

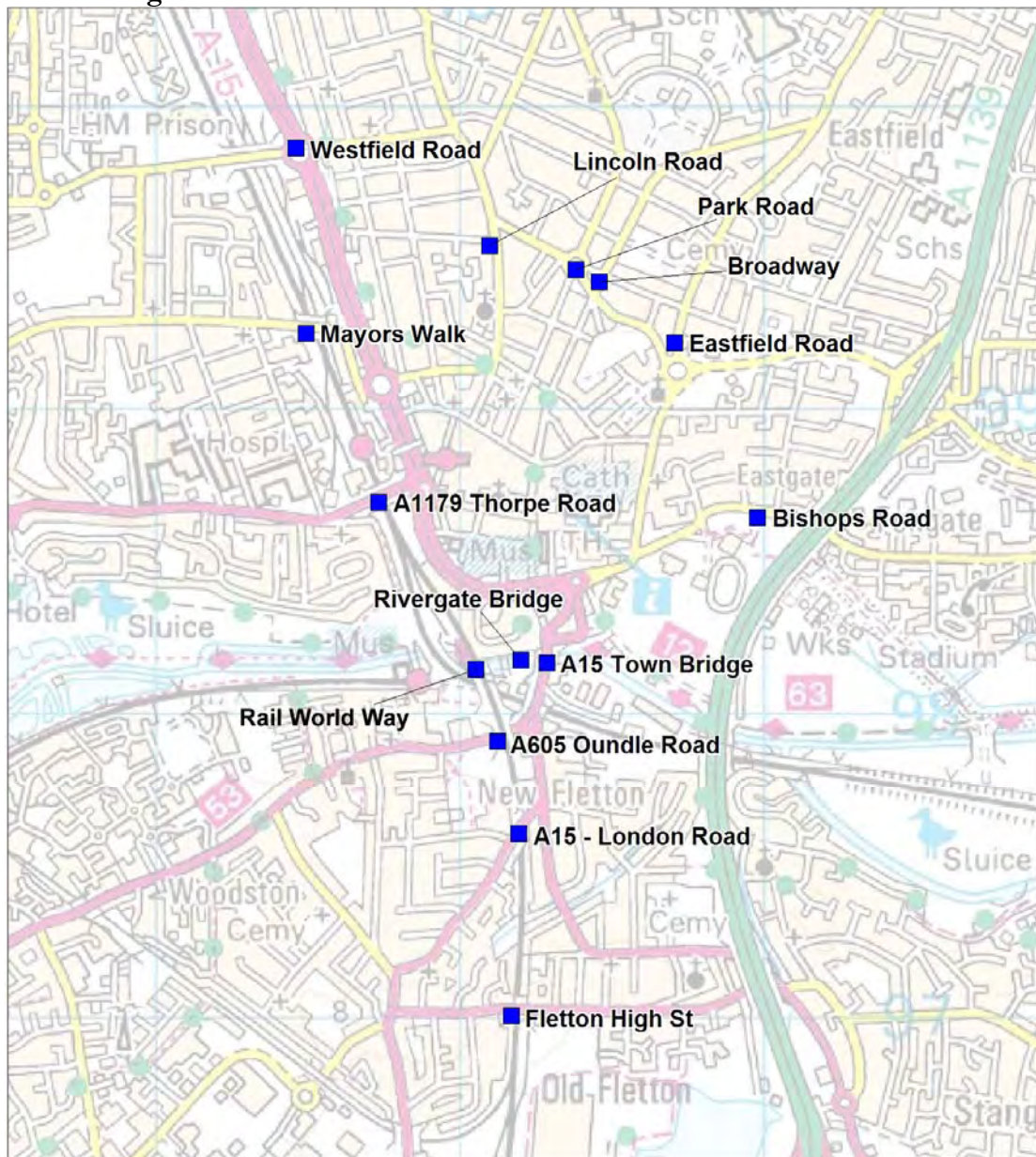
Figure 15.14: Automatic cycle counters and minor road NRTE sites in Peterborough, with personal travel planning areas marked



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Note: Purple stars indicate automatic cycle counters; red triangles indicate minor road NRTE sites.

Figure 15.15: Location of urban screenline and New City screenline in Peterborough



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Note: Blue squares represent urban screenline and New City screenline manual count sites. Urban screenline runs north-south parallel to railway, from Westfield Road to Fletton High Street. New City screenline is to north-east of city centre and comprises Lincoln Road, Park Road, Broadway, Eastfield Road and Bishops Road.

Table 15.12: Annual cycle flows at Peterborough automatic cycle counters, percentage changes and comparison with 2005/6

	Oxney Road	Eastern Industries Subway	Shrewsbury Avenue	The Boathouse, Thorpe Park	Ravensthorpe	A47/A15 Cycle/Ped Overbridge	North Etton Green Wheel	Hampton Vale	Total at five counters
2005/6	116970	173054	39840	41182	97089		4516		432811
2006/7	118098	171943	50335	31560	88120	133576	5333		415054
2007/8	121016	178325	49867	31403	87076	119815	5238	18064	423058
2008/9	112816	159479		29478	94330	110591	5883		401986
% change compared with the previous year									
2006/7	1.0	-0.6	26.3	-23.4	-9.2		18.1		-4.1
2007/8	2.5	3.7	-0.9	-0.5	-1.2	-10.3	-1.8		1.9
2008/9	-6.8	-10.6		-6.1	8.3	-7.7	12.3		-5.0
Index compared with 2005/6									
2005/6	100.0	100.0	100.0	100.0	100.0		100.0		100.0
2006/7	101.0	99.4	126.3	76.6	90.8		118.1		95.9
2007/8	103.5	103.0	125.2	76.3	89.7		116.0		97.7
2008/9	96.4	92.2		71.6	97.2		130.3		92.9

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that cycle levels were higher than in 2005/6; red indicates that cycle levels were greater by 10% or more than in 2005/6. These annual figures have been calculated on the basis of financial years. Based on calendar years, in 2005, there were 420,708 cyclists recorded at the five counters, in 2006, the number was 410,484, in 2007, the number rose to 426,358, whilst in 2008, the number was 415,618.

Figure 15.16: Raw data for automatic cycle counters in Peterborough

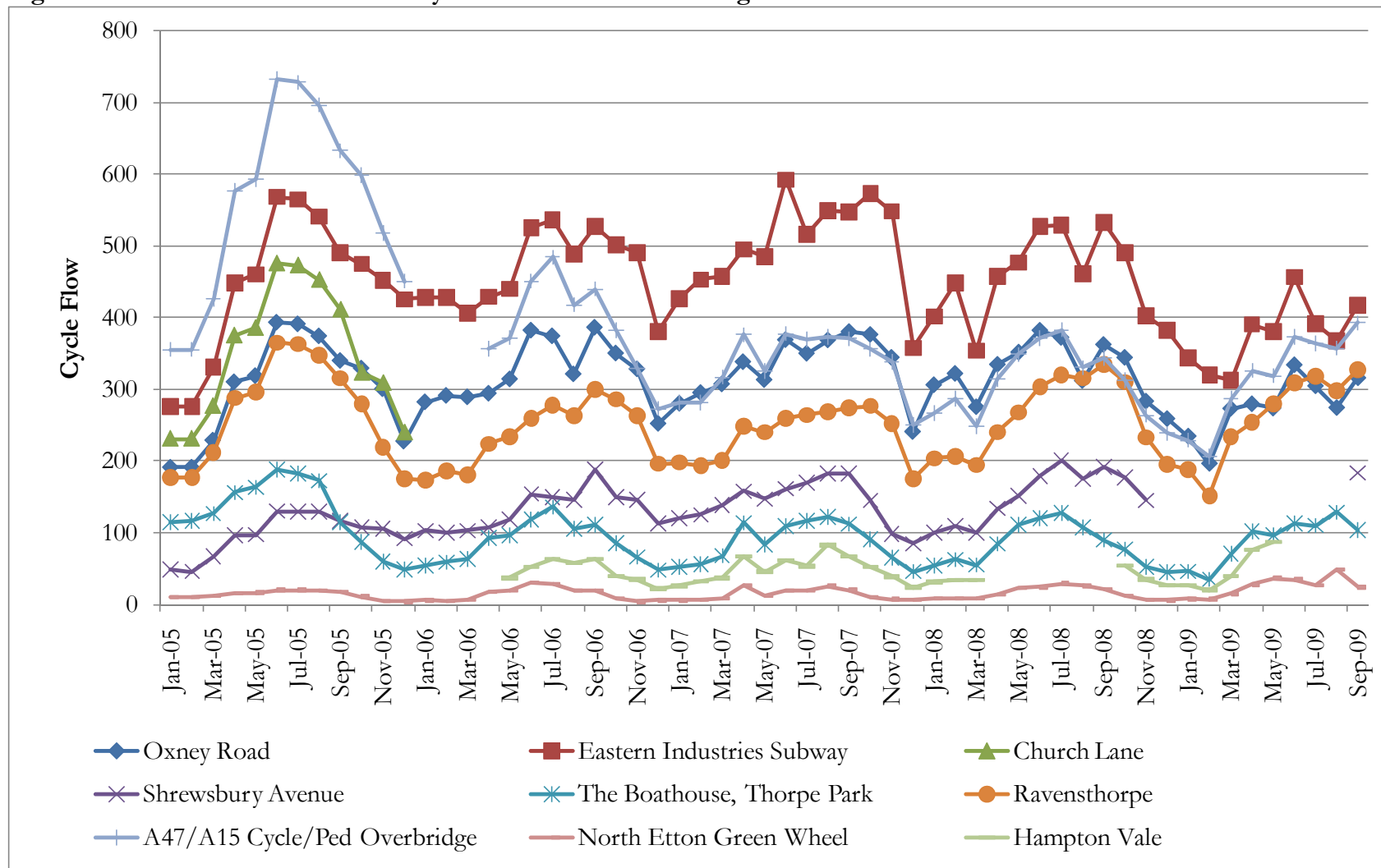


Figure 15.17: Data for Peterborough automatic cycle counters indexed to the earliest month of available data

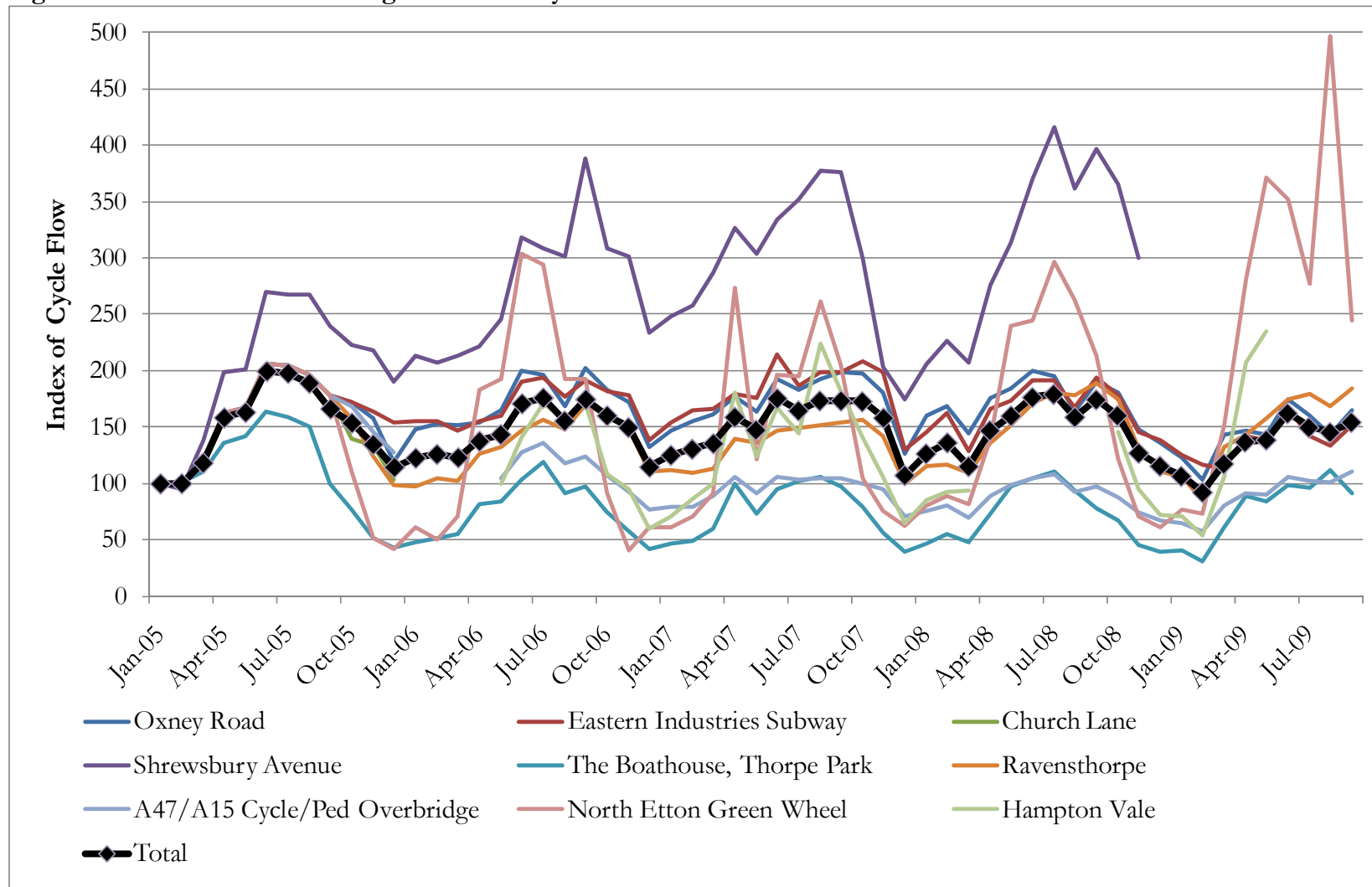
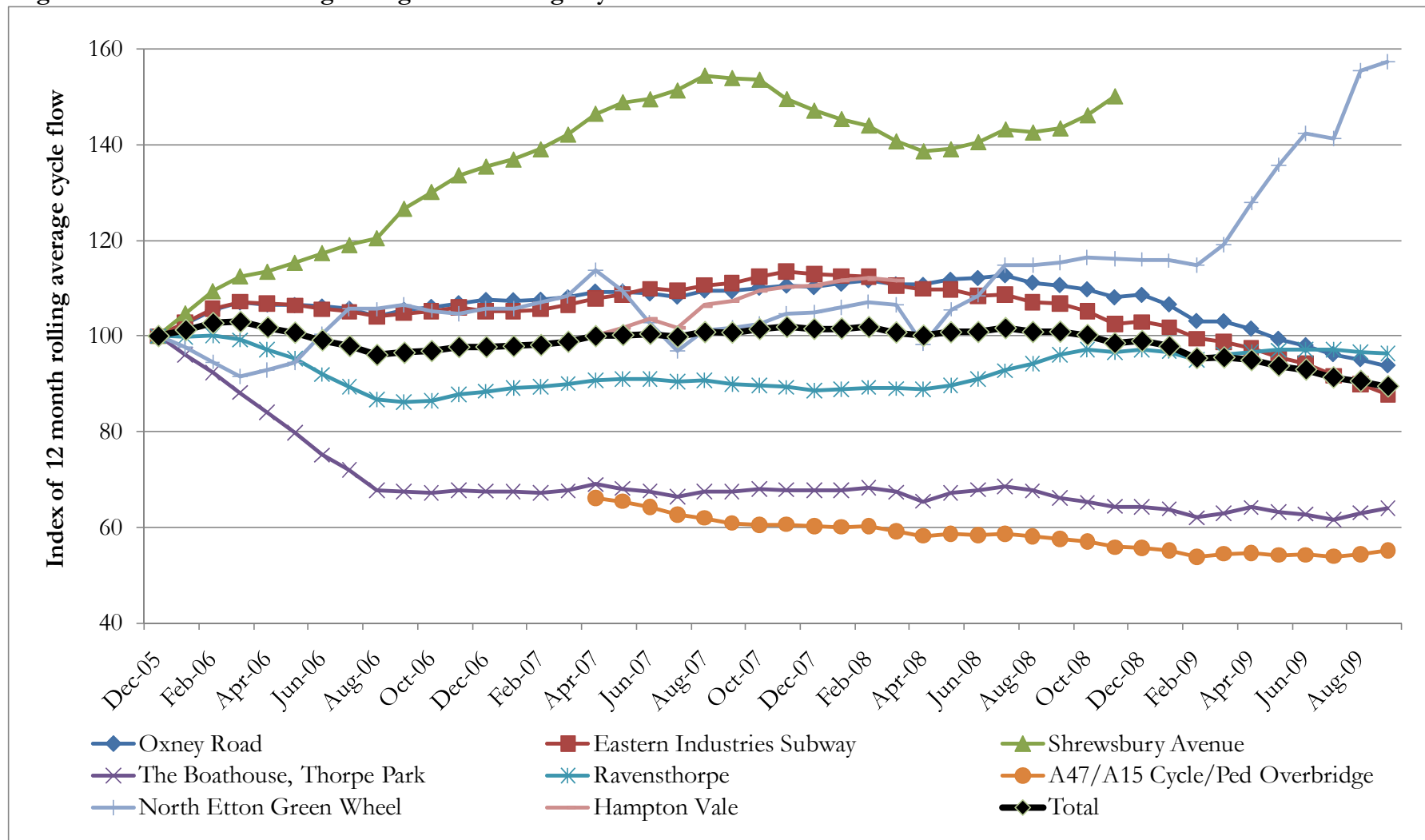


Figure 15.18: 12-month rolling average Peterborough cycle counter data



Note: Data are indexed to first available 12-month period, January 2005-December 2005.

Figure 15.19: Index showing annual change in Peterborough cycle flows

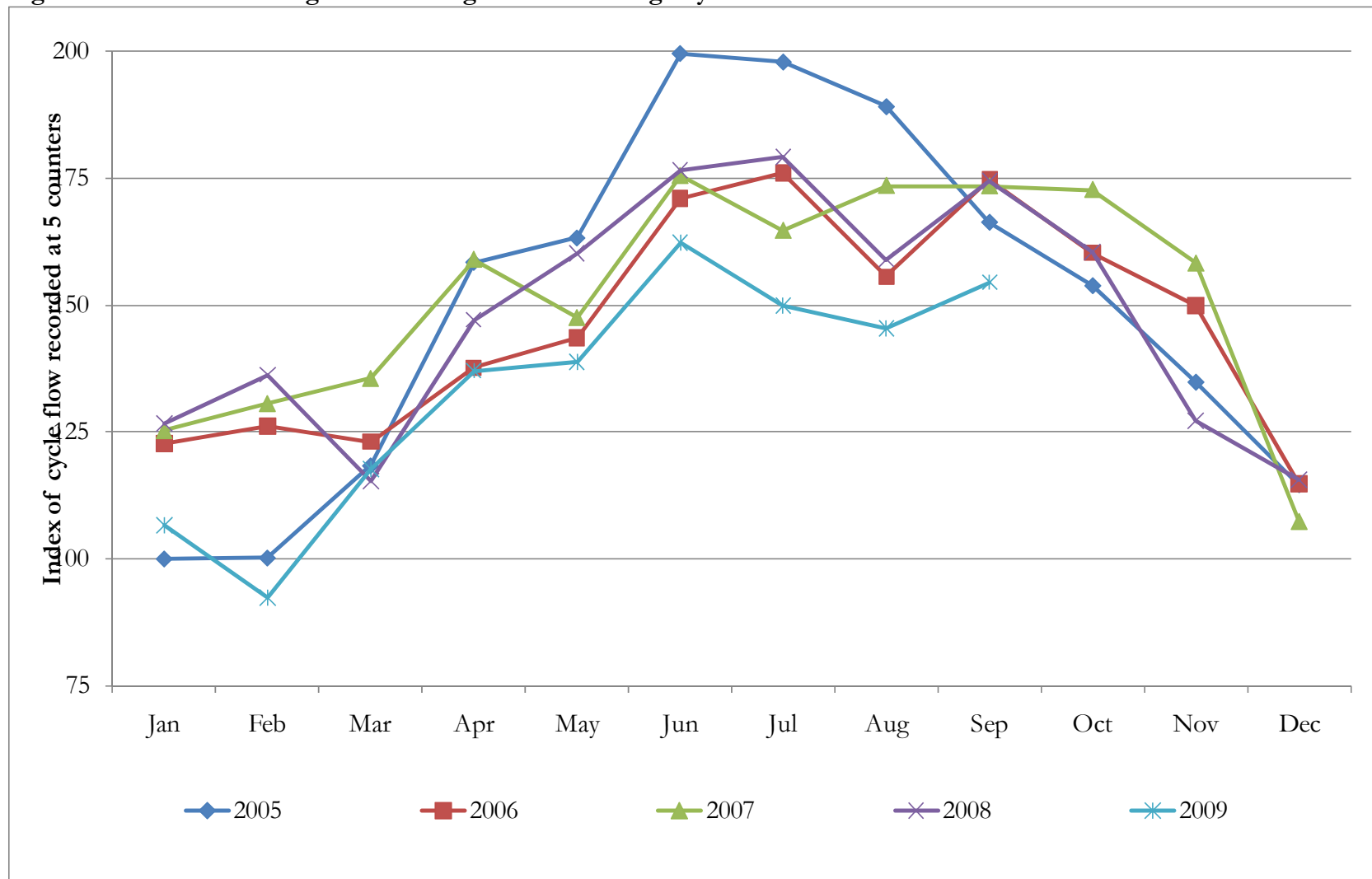


Table 15.13: Manual cycle counts at the Peterborough urban screenline

	Westfield Road	Mayors Walk	A1179 Thorpe Road	A605 Oundle Road	A15 London Road	Fletton High St	A15 Town Bridge	Rivergate Bridge	Rail World Way	Total
1998										4182
1999	448	497	391	398	319	404	995	533	259	4244
2000										3762
2001										3252
2002										3733
2003										3283
2004	456	398	350	375	366	270	556	474	119	3364
2005	482	341	396	339	320	251	870	418	84	3501
2006	345	354	298	257	385	254	883	486	115	3377
2007	479	426	341	324	331	209	925	452	140	3627
2008	519	419	389	414	439	222	861	878	0	4141
2009	528	367	302	356	354	177	885	753	0	3722
% change compared to preceding year										
1999										1.5
2000										-11.4
2001										-13.6
2002										14.8
2003										-12.1
2004										2.5
2005	5.7	-14.3	13.1	-9.6	-12.6	-7.0	56.5	-11.8	-29.4	4.1
2006	-28.4	3.8	-24.7	-24.2	20.3	1.2	1.5	16.3	36.9	-3.5
2007	38.8	20.3	14.4	26.1	-14.0	-17.7	4.8	-7.0	21.7	7.4
2008	8.4	-1.6	14.1	27.8	32.6	6.2	-6.9	94.2		14.2
2009	1.7	-12.4	-22.4	-14.0	-19.4	-20.3	2.8	-14.2		-10.1

Table 15.13: Manual cycle counts at the Peterborough urban screenline (continued)

Index compared to 2004										
	Westfield Road	Mayors Walk	A1179 Thorpe Road	A605 Oundle Road	A15 London Road	Fletton High St	A15 Town Bridge	Rivergate Bridge	Rail World Way	Total
1998										124.3
1999	98.2	124.9	111.7	106.1	87.2	149.6	179.0	112.4	217.6	126.2
2000										111.8
2001										96.7
2002										111.0
2003										97.6
2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2005	105.7	85.7	113.1	90.4	87.4	93.0	156.5	88.2	70.6	104.1
2006	75.7	88.9	85.1	68.5	105.2	94.1	158.8	102.5	96.6	100.4
2007	105.0	107.0	97.4	86.4	90.4	77.4	166.4	95.4	117.6	107.8
2008	113.8	105.3	111.1	110.4	119.9	82.2	154.9	185.2	0.0	123.1
2009	115.8	92.2	86.3	94.9	96.7	65.6	159.2	158.9	0.0	110.6

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that walking levels were greater than in 2005; red indicates that walking levels were greater by 10% or more than in 2005.

Table 15.14: Manual cycle counts at the Peterborough New City screenline

	Lincoln Road	Park Road	Broadway	Eastfield Road	Bishops Road	Total
2005	540	576	519	280	158	2073
2006	576	565	421	278	163	2003
2007	641	598	471	338	176	2224
2008	547	674	507	292	140	2160
2009	453	336	459	334	137	1719
% change compared to preceding year						
2006	6.7	-1.9	-18.9	-0.7	3.2	-3.4
2007	11.3	5.8	11.9	21.6	8.0	11.0
2008	-14.7	12.7	7.6	-13.6	-20.5	-2.9
2009	-17.2	-50.1	-9.5	14.4	-2.1	-20.4
Index compared with first year of data (2005)						
2005	100.0	100.0	100.0	100.0	100.0	100.0
2006	106.7	98.1	81.1	99.3	103.2	96.6
2007	118.7	103.8	90.8	120.7	111.4	107.3
2008	101.3	117.0	97.7	104.3	88.6	104.2
2009	83.9	58.3	88.4	119.3	86.7	82.9

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that cycling levels were greater than in 2005; red indicates that cycling levels were greater by 10% or more than in 2005.

Figure 15.20: Changes in cycle flows recorded in Peterborough's manual cycle counts

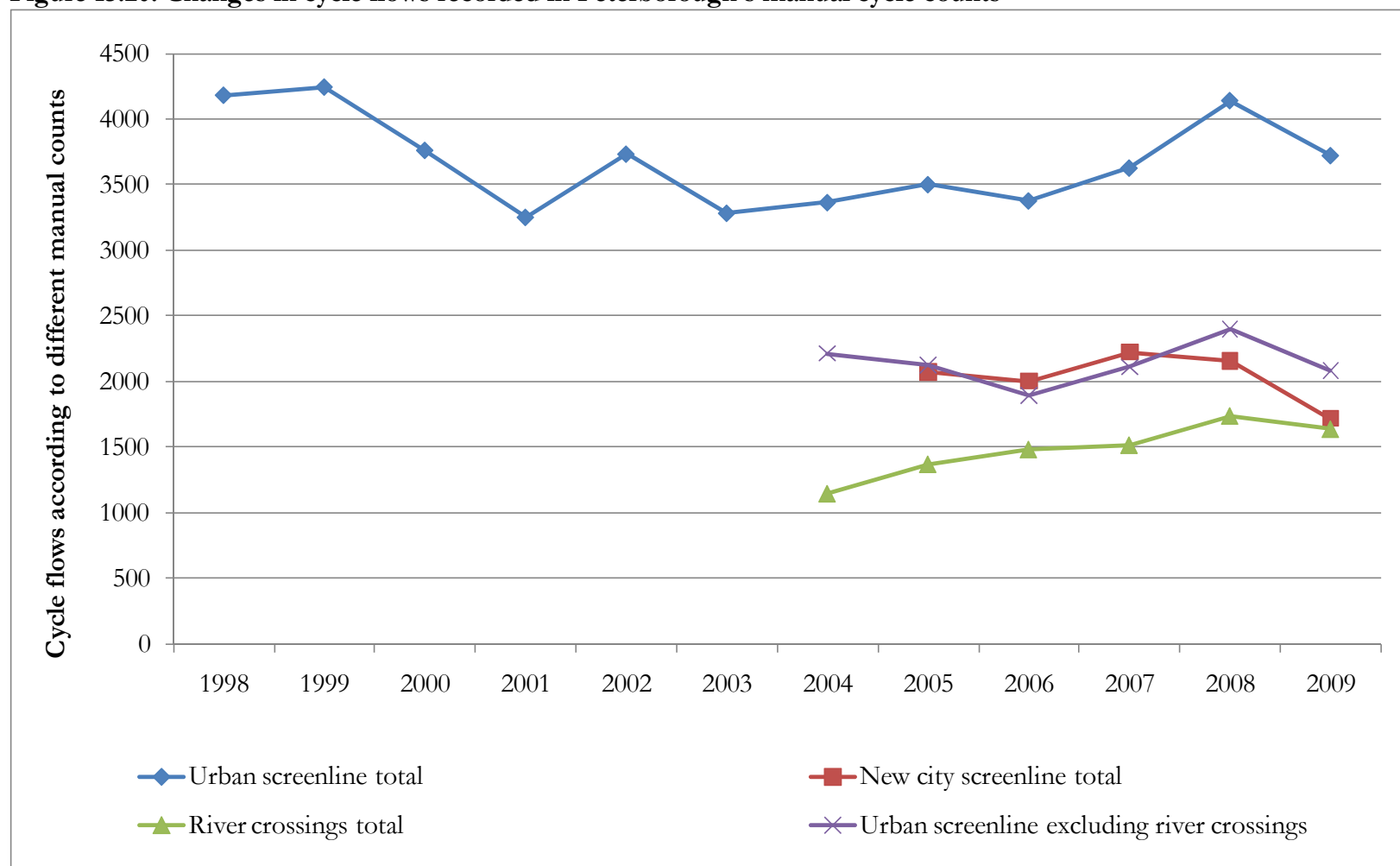
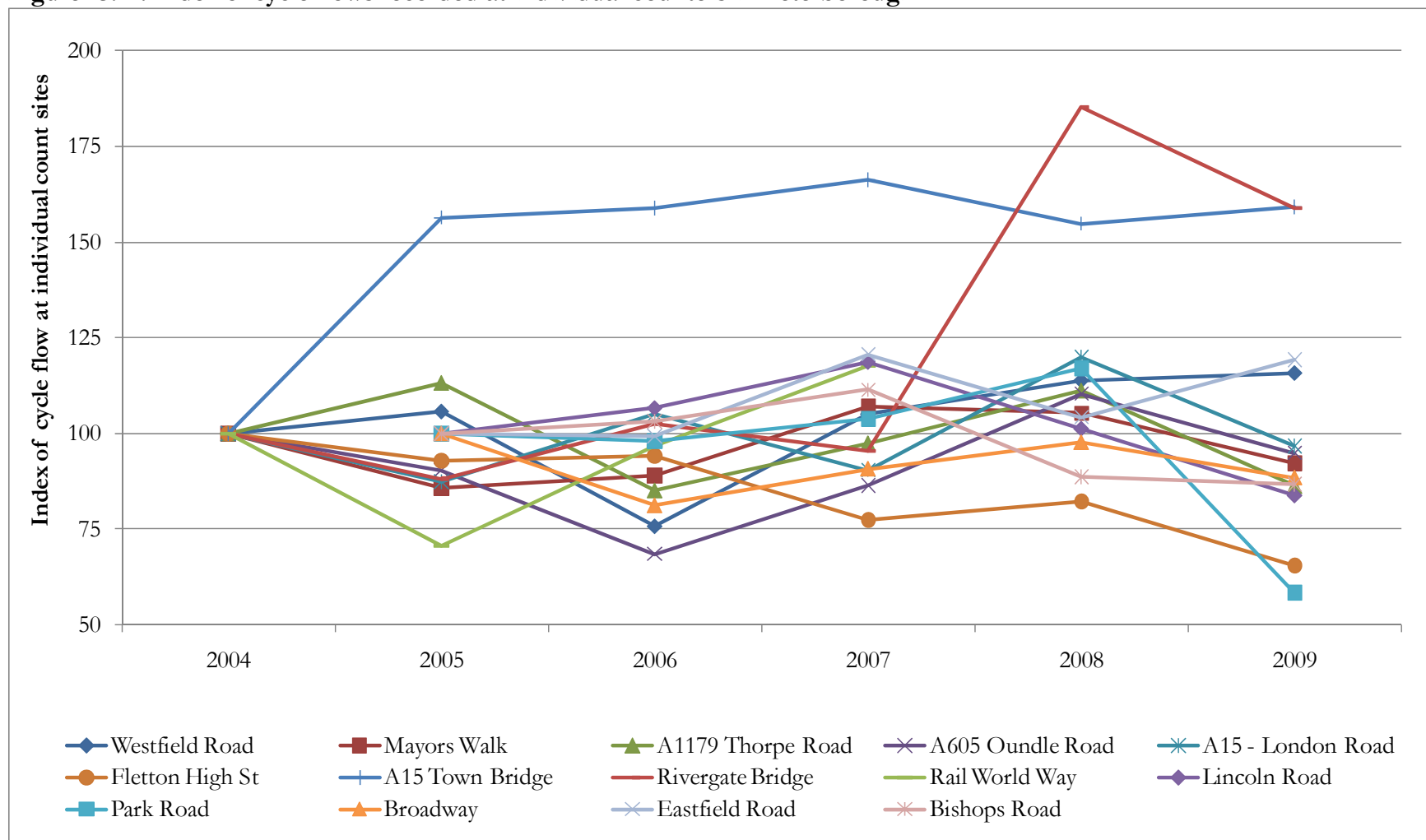


Figure 15.21: Index of cycle flows recorded at individual counters in Peterborough



Note: Growth at the Rivergate site in 2008 was partly due to the closure of Rail World Way as an alternative river crossing.

Table 15.15: NRTE minor road cycle counts in Peterborough

	Fulbridge Road	Orton Goldhay	Shrewsbury Avenue	Bretton Way	Star Road	Coneygee Road	Donaldson Drive	Wistow Way	Hartwell Way	Bretton Parkway	Thorpe Road	Eye Road	David's Lane	St Margaret's Road	Exeter Road	Sum of 7 counters	Sum of 15 counters
Count date	Jun	Sep/Oct	Jul	Jun/Jul	Apr	May	Apr/May	Jun	Jul	Apr	Mar/Apr	Sep	Jul/Sep	Aug/Sep	May/June		
2000									201	63	127	128	7	50	177	753	
2001									157	54	122	94	10	29	156	622	
2002									20	74	43	101	6	13	169	426	
2003	255	195	120	41	149	168	84	37	168	46	47	94	2	26	133	516	2081
2004	346	171	97	50	151	156	99	31	143	86	40	82	6	24	130	511	2123
2005	234	160	69	35	163	134	71	50	138	69	31	166	1	29	108	542	2000
2006	289	185	154	51	177	199	80	45	213	82	39	75	0	23	66	498	2176
2007	240	169	101	41	282	179	75	39	178	58	31	61	7	33	111	479	2084
2008	258	161	102	37	202	158	119	30	145	78	44	72	2	45	124	510	2087
% change compared with previous year																	
2001									-21.9	-14.3	-3.9	-26.6	42.9	-42.0	-11.9	-17.4	
2002									-87.3	37.0	-64.8	7.4	-40.0	-55.2	8.3	-31.5	
2003									740.0	-37.8	9.3	-6.9	-66.7	100.0	-21.3	21.1	
2004	35.7	-12.3	-19.2	22.0	1.3	-7.1	17.9	-16.2	-14.9	87.0	-14.9	-12.8	200.0	-7.7	-2.3	-1.0	2.0
2005	-32.4	-6.4	-28.9	-30.0	7.9	-14.1	-28.3	61.3	-3.5	-19.8	-22.5	102.4	-83.3	20.8	-16.9	6.1	-5.8
2006	23.5	15.6	123.2	45.7	8.6	48.5	12.7	-10.0	54.3	18.8	25.8	-54.8	-100.0	-20.7	-38.9	-8.1	8.8
2007	-17.0	-8.6	-34.4	-19.6	59.3	-10.1	-6.3	-13.3	-16.4	-29.3	-20.5	-18.7		43.5	68.2	-3.8	-4.2
2008	7.5	-4.7	1.0	-9.8	-28.4	-11.7	58.7	-23.1	-18.5	34.5	41.9	18.0	-71.4	36.4	11.7	6.5	0.1
Index compared with 2004																	
2000									140.6	73.3	317.5	156.1	116.7	208.3	136.2	147.4	
2001									109.8	62.8	305.0	114.6	166.7	120.8	120.0	121.7	
2002									14.0	86.0	107.5	123.2	100.0	54.2	130.0	83.4	
2003	73.7	114.0	123.7	82.0	98.7	107.7	84.8	119.4	117.5	53.5	117.5	114.6	33.3	108.3	102.3	101.0	98.0
2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2005	67.6	93.6	71.1	70.0	107.9	85.9	71.7	161.3	96.5	80.2	77.5	202.4	16.7	120.8	83.1	106.1	94.2
2006	83.5	108.2	158.8	102.0	117.2	127.6	80.8	145.2	149.0	95.3	97.5	91.5	0.0	95.8	50.8	97.5	102.5
2007	69.4	98.8	104.1	82.0	186.8	114.7	75.8	125.8	124.5	67.4	77.5	74.4	116.7	137.5	85.4	93.7	98.2
2008	74.6	94.2	105.2	74.0	133.8	101.3	120.2	96.8	101.4	90.7	110.0	87.8	33.3	187.5	95.4	99.8	98.3

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that cycling levels were greater than in 2005; red indicates that cycling levels were greater by 10% or more than in 2005.

Figure 15.22: NRTE minor road cycle counts in Peterborough

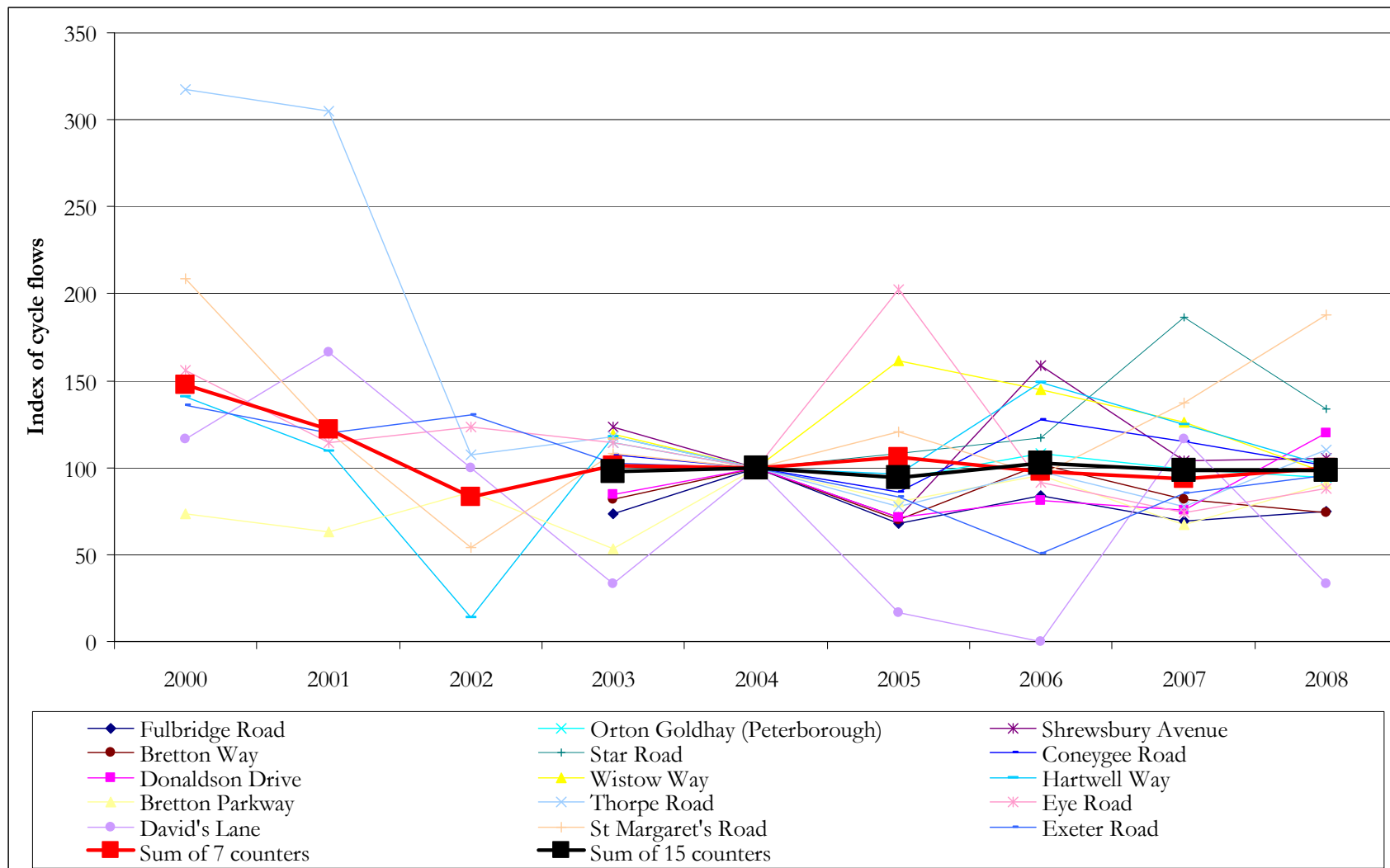


Table 15.16: Changes in quarterly cycle data in Peterborough

	Oxney Road	Eastern Industries Subway	Shrewsbury Avenue	The Boathouse, Thorpe Park	Ravensthorpe	A47/A15 cycle/ped overbridge	North Etton Green Wheel	Hampton Vale	Total
Q1 2005	203	294	54	119	189	379	11		816
Q2 2005	341	492	108	169	316	634	18		1336
Q3 2005	368	532	125	157	342	686	19		1418
Q4 2005	286	451	102	66	225	522	7		1033
Q1 2006	287	421	102	59	180		6		953
Q2 2006	330	465	127	103	239		22		1159
Q3 2006	360	517	161	117	280	447	22	61	1297
Q4 2006	310	458	136	66	248	328	6	32	1089
Q1 2007	294	445	128	59	197	293	7	32	1003
Q2 2007	340	524	155	102	249	360	19	58	1235
Q3 2007	366	537	178	117	269	371	22	68	1311
Q4 2007	320	493	109	67	235	315	8	38	1123
Q1 2008	301	401	103	57	201	268	8	33	969
Q2 2008	356	487	155	105	270	345	21		1239
Q3 2008	349	508	189	108	324	352	25		1314
Q4 2008	295	425		58	246	272	8	38	1033
Q1 2009	234	326		50	191	241	10	28	811
Q2 2009	295	409		104	281	340	33		1123
Q3 2009	298	392		114	314	371	34		1152

Table 15.16: Changes in quarterly cycle data in Peterborough (continued)

% change compared to same quarter previous year									
	Oxney Road	Eastern Industries Subway	Shrewsbury Avenue	The Boathouse, Thorpe Park	Ravensthorpe	A47/A15 cycle/ped overbridge	North Etton Green Wheel	Hampton Vale	Total
Q1 2006	41.2	43.1	90.0	-50.7	-4.7		-43.0		16.7
Q2 2006	-3.1	-5.6	17.5	-39.3	-24.4		26.8		-13.3
Q3 2006	-2.1	-2.8	28.9	-25.2	-18.0	-34.8	17.3		-8.5
Q4 2006	8.6	1.5	33.7	1.2	10.5	-37.1	-5.4		5.3
Q1 2007	2.3	5.9	25.5	0.5	9.6		22.2		5.3
Q2 2007	3.0	12.8	22.7	-0.2	4.2		-12.9		6.6
Q3 2007	1.6	3.9	10.7	-0.3	-4.1	-17.1	-2.7	10.6	1.0
Q4 2007	3.3	7.7	-19.5	1.5	-5.5	-4.1	26.1	18.3	3.2
Q1 2008	2.3	-9.9	-19.5	-3.0	2.1	-8.7	12.5	5.6	-3.4
Q2 2008	4.7	-7.0	-0.4	2.6	8.6	-4.2	5.4		0.3
Q3 2008	-4.8	-5.5	6.3	-7.4	20.4	-5.0	17.0		0.2
Q4 2008	-7.8	-13.8		-13.8	4.9	-13.6	4.4	0.6	-8.0
Q1 2009	-22.1	-18.8		-11.9	-5.3	-10.1	20.6	-14.9	-16.3
Q2 2009	-17.0	-16.0		-1.1	4.0	-1.5	61.1		-9.4
Q3 2009	-14.5	-22.8		5.5	-2.8	5.3	31.9		-12.3

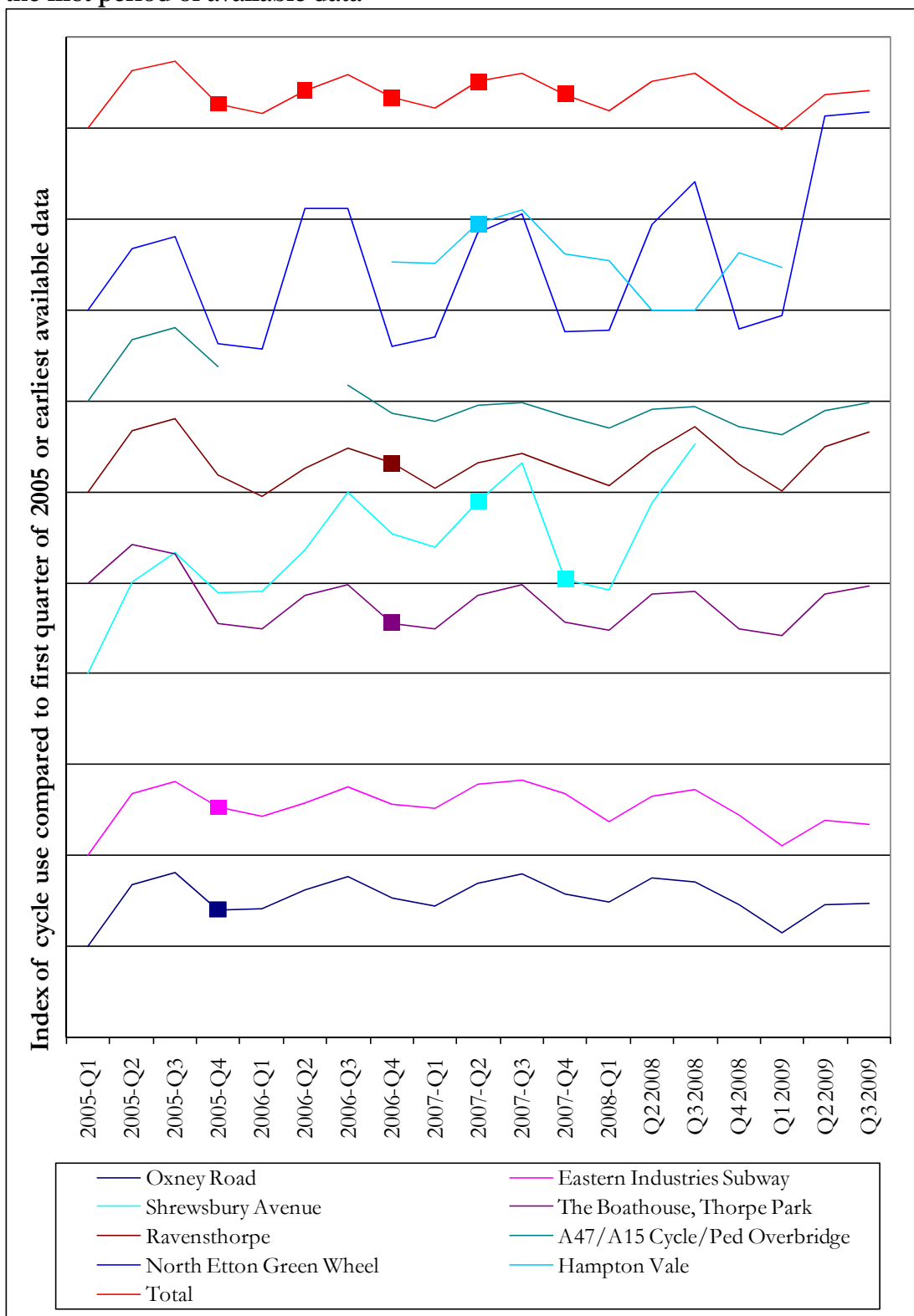
Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year.

Table 15.16: Changes in quarterly data in Peterborough (continued)

Index compared with the relevant quarter in 2005									
	Oxney Road	Eastern Industries Subway	Shrewsbury Avenue	The Boathouse, Thorpe Park	Ravensthorpe	A47/A15 cycle/ped overbridge	North Etton Green Wheel	Hampton Vale	Total
Q1 2005	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0
Q2 2005	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0
Q3 2005	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0
Q4 2005	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0
Q1 2006	141.2	143.1	190.0	49.3	95.3		57.0		116.7
Q2 2006	96.9	94.4	117.5	60.7	75.6		126.8		86.7
Q3 2006	97.9	97.2	128.9	74.8	82.0	65.2	117.3		91.5
Q4 2006	108.6	101.5	133.7	101.2	110.5	62.9	94.6		105.3
Q1 2007	144.5	151.4	238.4	49.5	104.5	77.4	69.7		122.9
Q2 2007	99.8	106.5	144.2	60.5	78.8	56.7	110.4		92.5
Q3 2007	99.4	101.0	142.7	74.6	78.6	54.1	114.1		92.5
Q4 2007	112.1	109.3	107.7	102.7	104.4	60.3	119.2		108.7
Q1 2008	147.9	136.4	191.9	48.0	106.7	70.6	78.4		118.7
Q2 2008	104.5	99.0	143.6	62.1	85.5	54.4	116.4		92.8
Q3 2008	94.7	95.4	151.6	69.1	94.7	51.4	133.4		92.6
Q4 2008	103.4	94.3		88.5	109.6	52.1	124.4		99.9
Q1 2009	115.2	110.8		42.3	101.0	63.5	94.6		99.4
Q2 2009	86.8	83.1		61.4	88.9	53.5	187.5		84.1
Q3 2009	80.9	73.7		72.9	92.0	54.1	176.0		81.3

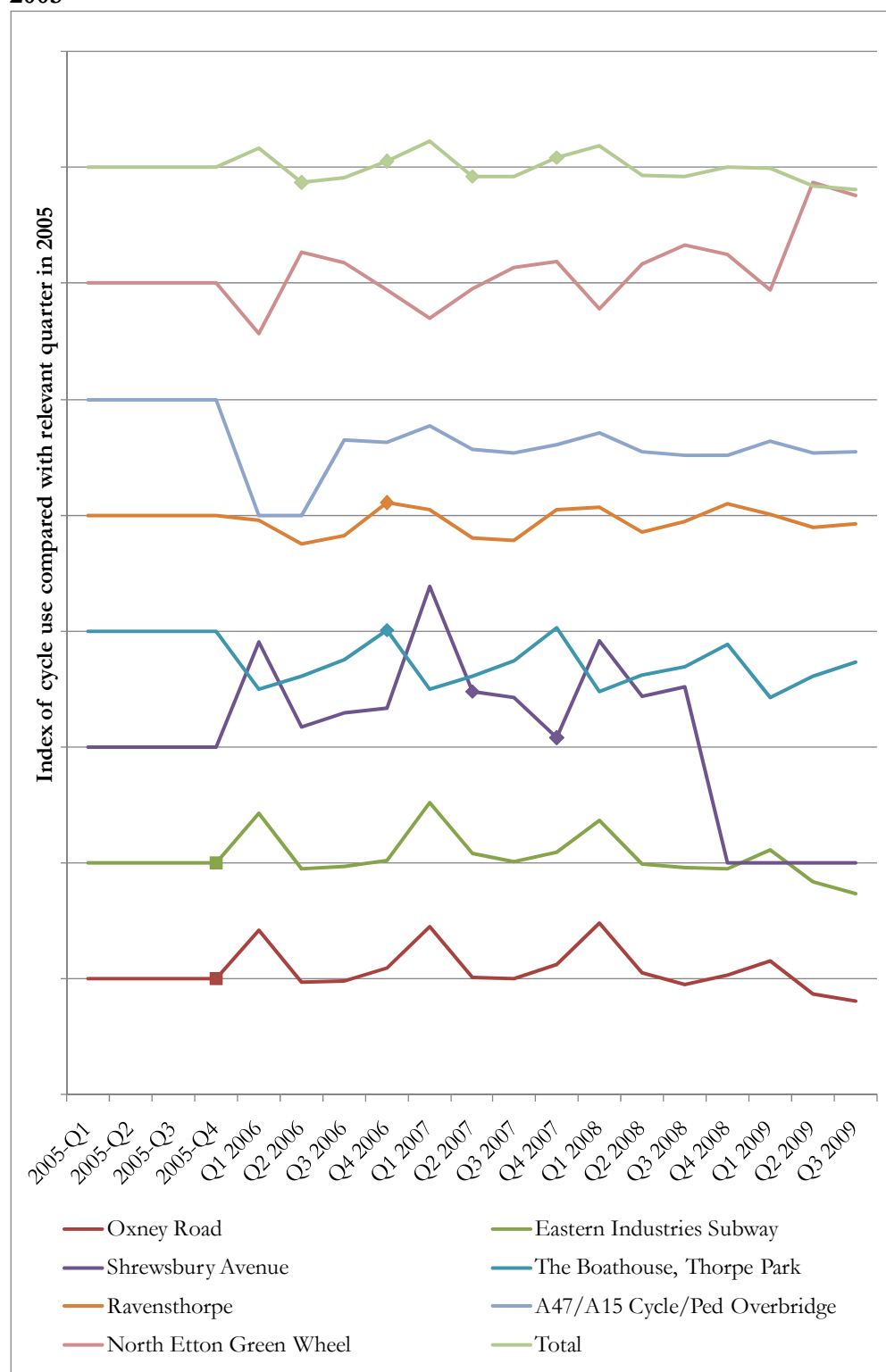
Notes: Pink indicates that cycle levels were higher than in the same quarter in 2005; red indicates that cycle levels were greater by 10% or more than in the same quarter in 2005.

Figure 15.23: Indices of Peterborough cycle counter data by quarter, referenced to the first period of available data



Notes: This graph gives a quarterly index of cycle use, relative to the first quarter of available data. The dots on the lines indicate when personal travel planning took place. This presentation method does not remove seasonal variation.

Figure 15.24: Indices of Peterborough cycle count data by quarter, referenced to 2005



Notes: This graph gives a quarterly index of cycle use, relative to the relevant quarter of 2005. The dots on the lines indicate when personal travel planning took place. This presentation method removes seasonal variation.

Table 15.17: Analysis of Peterborough quarterly automatic cycle count data in relation to personal travel planning effects

	Change in quarter compared to quarter in the previous year		Change in quarter compared to the preceding quarter		Change in following quarter		Change in the same quarter in following year	
	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>
Phase 1 (Q4 2005)	n/a	--	-18.2%	-37.9%	-3.8%	-13.1%	+4.2%	+14.6%
Phase 3 (Q4 2006)	+8.4%	+7.7%	-20.9%	-14.2%	-18.5%	-3.4%	-4.0%	+2.3%
Phase 4 (Q2 2007)	+22.0%*	+6.6%	+33.9%	+23.1%	+15.1%	+6.1%	0%	+0.3%
Phase 5 (Q4 2007)	-19.9%	+3.2%	-19.5%	-14.3%	-19.5%	-13.7%	n/a	--

Notes: Green shading indicates where the target area has experienced more cycle growth – or less cycle decline – than the control area. Counters relating to the target areas are given in Table 15.11. Control data is taken from the sites at Oxney Road, Eastern Industry Subway, Shrewsbury Avenue, Thorpe Park, Ravensthorpe and North Etton, excluding the relevant sites falling within the target areas.

Table 15.18: Peterborough manual cycle count totals for different personal travel planning periods, and change over time

Phase	Timing	Potentially affected count sites	Others
1	2005-2006	New City screenline -3.4%	-3.5%
2	2005-2006	Lincoln Road +6.7%; Westfield Road -28.4%	-2.0%
	2006-2007	Lincoln Road +11.3%; Westfield Road +38.8%	+6.1%
	2005-2007	Lincoln Road +18.7%; Westfield Road -0.6%	+3.9%
3	2006-2007	Mayor's Walk +20.3%; Thorpe Road +14.4%	+7.5%
4/5	2006-2007	Oundle Road +26.1%; London Road -14.0%; Fletton High Street -17.7%; river crossings +2.2%	+15.7%
	2007-2008	Oundle Road +27.8%; London Road +32.6%; Fletton High Street +6.2%; river crossings +14.6%	+0.5%
	2006-2008	Oundle Road +61.1%; London Road +14.0%; Fletton High Street -12.5%; river crossings +17.2%	+16.2%

Table 15.19: Analysis of Peterborough NRTE minor road cycle counts in relation to personal travel planning effects

Personal travel planning phase	Sites in target area	Period of change	% change at target sites	% change at other sites
1 (Sep-Dec 05)	Star Road, Exeter Road, Donaldson Drive, Eye Road	2005 to 2006	-21.7%	+19.2%
2 (Apr-Jul 06)	Fulbridge Road, David's Lane	2005 to 2006	+23.0%	+6.9%
		2006 to 2007	-14.5%	-2.6%
3 (Sep-Dec 06)	Bretton Way, Bretton Parkway, Thorpe Road, Hartwell Way	2006 to 2007	-20.0%	-0.8%
4 (Apr-Aug 07)	Wistow Way, Orton Goldhay, Shrewsbury Avenue	2006 to 2007	-19.5%	-0.9%
		2007 to 2008	-5.2%	+1.1%
5 (Sep-Dec 07)	St Margaret's Road, Coneygee Road	2007 to 2008	-4.2%	+0.6%

Note: Green shading indicates where sites in the target area experienced more cycle growth – or less cycle decline – than those in the control area.

Table 15.20: Household travel survey results for cycling in Peterborough

	Phase 1 area	Phase 2 & 3 areas	Outside phase 1 area	Outside phase 2/3 area	Overall change estimate
<i>Population</i>	30,444	55,062	110,096	85,478	
Trips per person per year (unweighted data)					
Oct 2004	51	53	52	50	48
Apr 2006	61		50		49
Apr 2007		62		48	50-54
Oct 2008					56
Index compared with 2004					
Apr 2006	119.6		96.2		101.2
Apr 2007		117.0		96.0	104.2-112.1
Oct 2008					116.7
Overall change in trips per person per year (unweighted data)					16%*
Overall change in trips per person per year (weighted data)					11%*
Overall change in distance per person per year (unweighted data)					49%*
Overall change in distance per person per year (weighted data)					29%*

Notes: Pale blue shading indicates control area results (as specified by Socialdata & Sustrans). Pale green shading indicates results from area immediately subsequent to personal travel planning. Overall change estimates for 2006 and 2007 are based on inspection of the count data in relevant areas. Overall change data are for trips by main mode, whilst personal travel planning data are probably for trip stages. Control data are taken from non-target households. Red line indicates timing of personal travel planning intervention. * These data are for trips of up to 100km, in order to be consistent with the data in the top half of the table. For trips of up to 50km, cycle trips increased by 10%-17%, and cycle distance increased by 23%-38% (depending on whether weighted or unweighted data are used).

15.4 Evidence from Worcester cycle count data

15.4.1 Introduction

The primary data about cycle use in Worcester comes from 10 automatic cycle counters. There were also six NRTE minor road sites in Worcester, where manual counts were carried out annually.

15.4.2 Nature of the data

Of the 10 automatic cycle counters operating in Worcester during the Sustainable Travel Towns project, five (Croft Road, Bilford Road, Grove Way, Barry Street and Woodgreen Drive) provided a continuous record of data from March 2002 onwards. The others all provided some useful data, albeit with some breaks in the series. The data used is the average monthly daily total, based on seven-day, 24-hour monitoring. Missing values have been interpolated for data gaps of three months or less. The full data set is given in the annex to this chapter.

The manual counts at the six NRTE minor road sites were carried out annually, at some point between June and October.

Figure 15.25 shows the location of both the automatic counters and the NRTE sites.

In terms of contextual factors, estimates from Worcestershire County Council suggest that the population of Worcester grew by 1.1% between 2004 and 2007 (2008 data are not available). Large parts of the town were affected by severe flooding in July 2007.

15.4.3 Data presentation

On subsequent pages, the following data are presented:

- Table 15.22 – a table of the annual flows at each of the automatic cycle counters, together with a calculation of the % change compared with the preceding year, and an index of the data compared with the data for 2004/5;
- Figure 15.27 – a graph showing the raw data for the automatic cycle counters;
- Figure 15.28 – a graph showing the data for the automatic counters indexed to April 2004;
- Figure 15.29 – a graph showing an index of the 12-month rolling average recorded at each of the individual counters, and for the five counters total;
- Figure 15.30 – a graph showing the data recorded at the five counters with continuous data, on an annual basis;
- Table 15.23 – a table giving the NRTE cycle counts on minor roads, together with a calculation of the % changes compared with the preceding year, and an index of the data compared with the data for 2004/5;
- Figure 15.31 – a graph showing the NRTE minor roads cycle counts data indexed to 2004;
- Table 15.24 – a table giving the average quarterly data recorded at the individual counters (i.e. the three-month daily average), together with a calculation of the % change compared to the same quarter in the preceding year, and an index of the data compared with the data for 2004/5;
- Figures 15.32 and 15.33 – graphs showing the quarterly data for the individual counters, with the timing of personal travel planning marked. Figure 15.32 gives the data indexed to Q2 2004.

Figure 15.33 gives the data indexed to the four quarters in 2004/5, as a way of eliminating seasonal variation;

- Table 15.25 – a table giving analysis of the quarterly data in relation to personal travel planning work;
- Tables 15.26 and 15.27 – tables giving the results from Socialdata & Sustrans surveys.

15.4.4 Data analysis

Overall effects on cycling

According to the automatic cycle counter data (Table 15.22, Figures 15.27-15.30), cycling increased substantially, with a growth of approximately 16% between 2004/5 and 2008/9⁷. There appears to have been a fairly rapid growth in summer cycling, leading to a 10% increase in cycling between 2004/5 and 2005/6, coupled with a more gradual ongoing increase in autumn/early winter cycling, resulting in an overall annual growth of 16% by 2008/9. In the two years prior to the Sustainable Travel Towns work (see, for example, Figure 15.30), cycling levels were fairly stable.

Looking at seasonal changes in more detail, as shown in the quarters data (Table 15.24c), cycling levels in Summer 2005 and Summer 2006 (Q2 and Q3) were between 10-18% higher than in the three preceding years. In 2007, cycling levels during the summer were not as high, presumably because 2007 was an unusually wet summer. However, in Q2 and Q3 of 2008, they were, again, 11-18% higher than in the same quarters of 2004. Meanwhile, cycling between October and December grew steadily between 2004 and 2007, including a 7% increase between 2006 and 2007.

A paired sample, one-tailed T-test on the 12 months of average daily cycle data for the five counters in 2004/5 and 2005/6 gives a p-value of 0.0051. In other words, there is only a 0.5% probability that the increase in cycling recorded in 2005/6 has occurred by chance, and this can therefore be taken as a statistically significant increase.

The manual counts undertaken at the six minor road NRTE sites also suggest that cycling in Worcester has increased, recording an overall increase of 37%, with particular growth between 2004 and 2005, and between 2007 and 2008. This overall pattern broadly corroborates the automatic counter data. (Clearly, the magnitude of recorded change is somewhat greater, but is less likely to be reliable, given that the NRTE data is generated from one-day manual counts).

Trends at individual counters

Both data sets suggest that there have been markedly different trends in cycling in different locations. These can be summarised as follows:

- Woodgreen Drive experienced a particularly substantial and steady increase in cycle flows (of +44%) between 2004/5 and 2008/9.
- Barry Street, Bilford Road and A4440 Whittington all experienced increases in cycle flows between 2004/5 and 2008/9 (in the order of 10-30%).
- Croft Road experienced a significant increase in cycling in Summer 2005 and Summer 2006 but this was largely not sustained.
- At Grove Way, cycle levels declined in 2005 and 2006, but have subsequently grown.

⁷ Most calculations of the changes in overall cycle flows are based on the data from the five counters with the longest continuous data series. Unfortunately, one of these – Bilford Road – did not have data for the period Jan-Mar 2009. Hence, the annual increase between 2004/5 and 2008/9 recorded in Table 15.22 has been calculated on the basis of the overall percentage change in total cycle flow recorded at the other four counters. Various alternative calculation methods generated relatively similar numbers.

- At Barbourne Road, cycle levels have been reasonably constant.
- At Weir Lane, cycle use has declined substantially since 2004/5. Cycle use has also declined on the Sidbury towpath, and at St Peter's Drive, though the first year of available data for St Peter's Drive is 2005/6 (so it is possible that levels are still higher than in 2004/5).

Interpreting these results in relation to the geography of Worcester suggests that cycling has been most effectively encouraged from the north-east part of the town, where the Woodgreen Drive, Barry Street and Bilford Road counters are located.

Assessment of personal travel planning effects

Table 15.21 indicates the counters that are most relevant to each personal travel planning target area – though, in general, the counters were not ideally situated to pick up effects from the personal travel planning work. Table 15.24 provides quarterly average data for the individual sites, whilst Table 15.25 analyses this data in relation to personal travel planning work. Figures 15.32 and 15.33 display the quarterly data graphically, with periods of personal travel planning marked.

Table 15.21: Relating cycle counter sites to Worcester personal travel planning work

Personal travel planning phase	Timing	Relevant automatic cycle counters
1	Sep-Dec 2005	Woodgreen Drive, Bilford Road, Barry Street
2.1	Apr-Aug 2006	None
2.2	Autumn 2006	St Peter's Drive, A4440 Whittington Avenue
3.1 and 3.2	Apr-Jul 2007 and Sep-Dec 2007	Croft Road, Weir Lane, Grove Way

It is clear that cycle levels at the three sites relevant to Phase 1 were considerably higher at the time that personal travel planning took place (+20.5%) compared with the same quarter in the preceding year, whereas this was not the case at the other sites (where, overall, cycle volumes were 2.9% lower). However, in all three cases, cycling had been increasing prior to personal travel planning taking place, making it difficult to assign any specific effect to the personal travel planning work.

In the Phase 2.2 area, both of the relevant counters experienced growth in Autumn 2006 when personal travel planning took place (compared to the relevant quarter in the preceding year). This was in the order of 10%, compared to 5.1% at other sites. This continued into Spring 2007. However, at the A4440 Whittington Avenue site, growth had been occurring prior to personal travel planning work. At St Peter's Drive, any growth that did occur was not sustained.

In the Phase 3 area, there was no obvious effect at the Croft Road counter. At Weir Lane, it is plausible that the personal travel planning work did result in short-term increases of cycle use, though this was not sufficient to reverse the general decline. Meanwhile, cycle use at the Grove Way site did increase over this period, although this increase appears to have begun prior to the personal travel planning work taking place.

In brief, then, it seems plausible that personal travel planning may have helped to fuel growth that was already occurring for other reasons, and may have also directly led to some short-term increases in cycle use. The autumnal timing of the work may also have helped to encouraged summer cyclists to continue cycling into the autumn. However, it does not seem sufficient to account for most of the growth in cycle use that took place during the Sustainable Travel Towns work, particularly the substantial growth between Summer 2004 and Summer 2005.

It is notable that specific cycle initiatives between 2004 and 2005 were relatively limited. There was an increase on spending on cycle infrastructure, though this would only have affected a few routes. It is possible that the general blaze of publicity and marketing associated with the Sustainable Travel Towns work encouraged people to cycle more.

Comparison with the household travel survey data

The results from the household travel surveys are given in Tables 15.26 and 15.27. These suggest that:

- Cycle trips per person increased by 11%- 23% between 2004 and 2008 (depending on whether weighted or unweighted data are used)⁸.
- The change in distance cycled per person was either -14% (unweighted data) or +2% (weighted data).
- Phases 1, 2.1 and 2.2 of personal travel planning – which were evaluated by Socialdata & Sustrans – were all estimated to have increased cycle trips by approximately 30% per person per year, compared to changes in the control areas. The biggest relative increase in people cycling at least several times per week, compared to the control area, took place in the Phase 1 area. In all cases, cycling increased in the control area as well as the target area.

The order of increase in overall cycle trips corresponds reasonably well with the 16% increase recorded at the five automatic counters with continuous data. The lack of a corresponding increase in distance cycled indicates that the greatest increase has been in short cycle trips⁹. In relation to the personal travel planning activities, the survey data tallies with the counter data in that it suggests a particularly large increase in regular cycling in the Phase 1 area, to the north-east of the town, and in that it shows increases in cycling that were occurring town-wide, not just in the locations that personal travel planning took place.

15.4.5 Summary

In summary, the analysis suggests the following points:

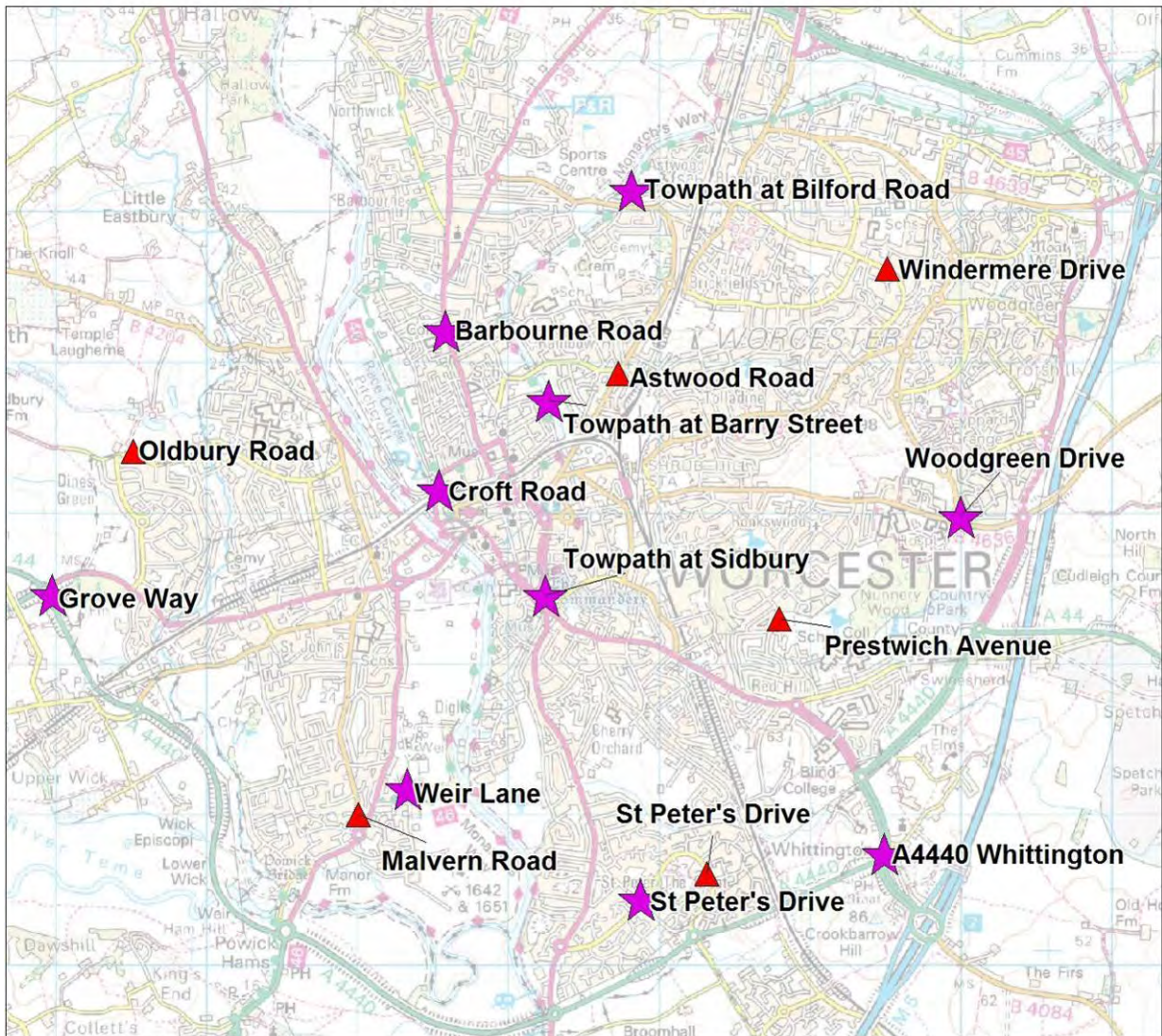
- Cycling levels in Worcester for the two years prior to the start of the Sustainable Travel Towns work were fairly stable.
- Between 2004/5 and 2008/9, cycling increased by approximately 16%.
- A major part of this increase was a substantial growth in summer cycling, which took place between 2004 and 2005, and was subsequently sustained (except in the summer of 2007, when there was heavy rain and flooding). The overall growth in cycling was also fuelled by a smaller, but more continuous increase in autumn/winter cycling.
- Cycling has been most successfully promoted from the north-east part of the town.

⁸ This is equivalent to an increase from 7.7 to 8.6 cycle trips per 100 persons per day (unweighted), or from 7.6 to 9.4 cycle trips per 100 persons per day (weighted).

⁹ The difference between the weighted and unweighted results for change in distance cycled is one of the few examples where there is an obvious discrepancy. These results are very sensitive to the effect of the very small number of cycle trips recorded in the 2004 and 2008 surveys that were over 10km (approximately 10 trips in each survey). If only those cycle trips of up to 10km are examined, the change in distance cycled is -4% (unweighted) or +2% (weighted) – i.e. the best interpretation is that overall distance cycled did not change. Both weighted and unweighted datasets indicate that there was an increase in cycle trips in the 1-3km distance band, which was partially offset by a decrease in cycle trips in the 3-5km and 5-10km bands (see Chapter 13, Tables 13.16 and 13.24). We speculate that some longer cycle trips may have switched to closer destinations, following improved knowledge about the local area as a result of interventions such as personal travel planning.

- There are a number of locations where personal travel planning may have helped to boost cycle levels, or to generate short-term increases in flows, and it may also help to explain why there was an ongoing growth in cycling in the autumn. However, none of the effects are clear-cut and it cannot account for the early increase in summer cycling flows, which took place between Summer 2004 and Summer 2005. It is possible that this was partly due to some increased investment in cycle infrastructure, and partly to the initial blaze of publicity and marketing associated with becoming a Sustainable Travel Town.

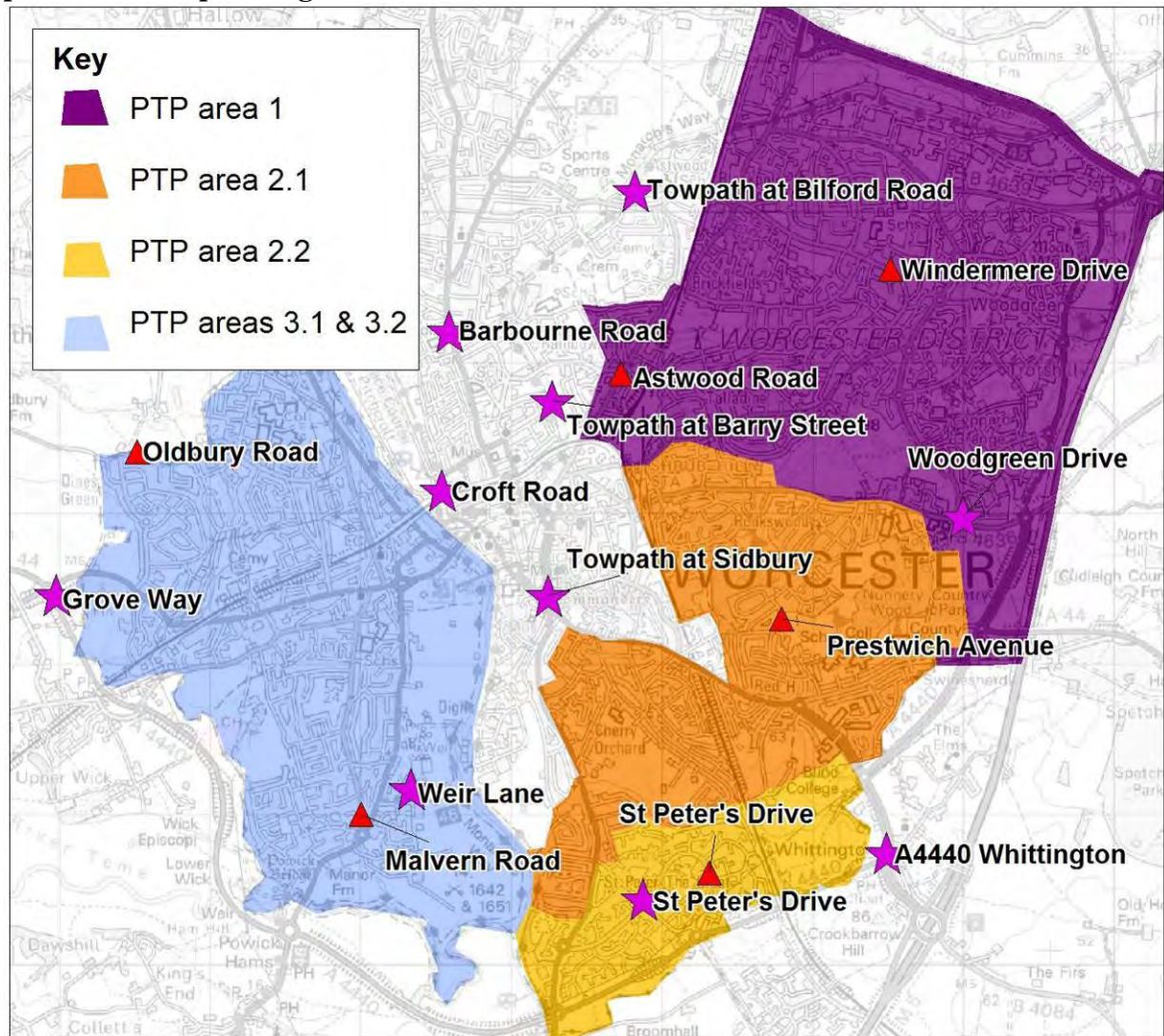
Figure 15.25: Automatic cycle counters and minor road NRTE sites in Worcester



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Note: Purple stars indicate automatic cycle counter sites; red triangles represent minor road NRTE count sites.

Figure 15.26: Automatic cycle counter sites and minor road NRTE sites in Worcester, with personal travel planning areas marked



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Note: Purple stars indicate automatic cycle counter sites; red triangles represent minor road NRTE count sites.

Table 15.22: Annual cycle flows at Worcester automatic cycle counters, percentage changes and comparison with 2004/5

	Croft Road	Towpath Bilford Rd	Towpath Barry Street	Towpath Sidbury	Grove Way	Weir Lane	Woodgreen Drive	Barbourne Road	St Peter's Drive	A4440 Whittington	Sum for five counters
2002/3	85407	44885	46471	22746	4137	13383	24612				205512
2003/4	83577	43472	49879	24327	4119	12959	25818	59417			206865
2004/5	86777	42782	49810	26556	4911	16624	26394	58643			210674
2005/6	94164	49755	56316		3780	14267	28035	59792	37184	12245	232050
2006/7	94662	52167	52098		4051		30308	61139	34286	16006	233286
2007/8	80929	55283	50820		4622	6370.5	35291	32319	34184	15635	226945
2008/9	85548		56608	22929	4971		38102		31840	16276	244881
% change compared with previous year											
2003/4	-2.1	-3.1	7.3	7.0	-0.4	-3.2	4.9				0.7
2004/5	3.8	-1.6	-0.1	9.2	19.2	28.3	2.2	-1.3			1.8
2005/6	8.5	16.3	13.1		-23.0	-14.2	6.2	2.0			10.1
2006/7	0.5	4.8	-7.5		7.2		8.1	2.3	-7.8	30.7	0.5
2007/8	-14.5	6.0	-2.5		14.1		16.4		-0.3	-2.3	-2.7
2008/9	5.7		11.4		7.6		8.0		-6.9	4.1	7.9
Index compared with 2004/5											
2002/3	98.4	104.9	93.3	85.7	84.2	80.5	93.2				97.5
2003/4	96.3	101.6	100.1	91.6	83.9	78.0	97.8	101.3			98.2
2004/5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			100.0
2005/6	108.5	116.3	113.1		77.0	85.8	106.2	102.0			110.1
2006/7	109.1	121.9	104.6		82.5		114.8	104.3			110.7
2007/8	93.3	129.2	102.0		94.1	38.3	133.7				107.7
2008/9	98.6		113.6	86.3	101.2		144.4				116.2

Notes: Five counters used are Croft Road, Bilford Road, Barry Street, Grove Way and Woodgreen Drive. The 2008/9 figure is based on the percentage change recorded at the four counters where it was possible to generate an annual figure. Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that cycling levels were higher than in 2004/5; red indicates that cycling levels were greater by 10% or more than in 2004/5.

Figure 15.27: Raw data for automatic cycle counters in Worcester

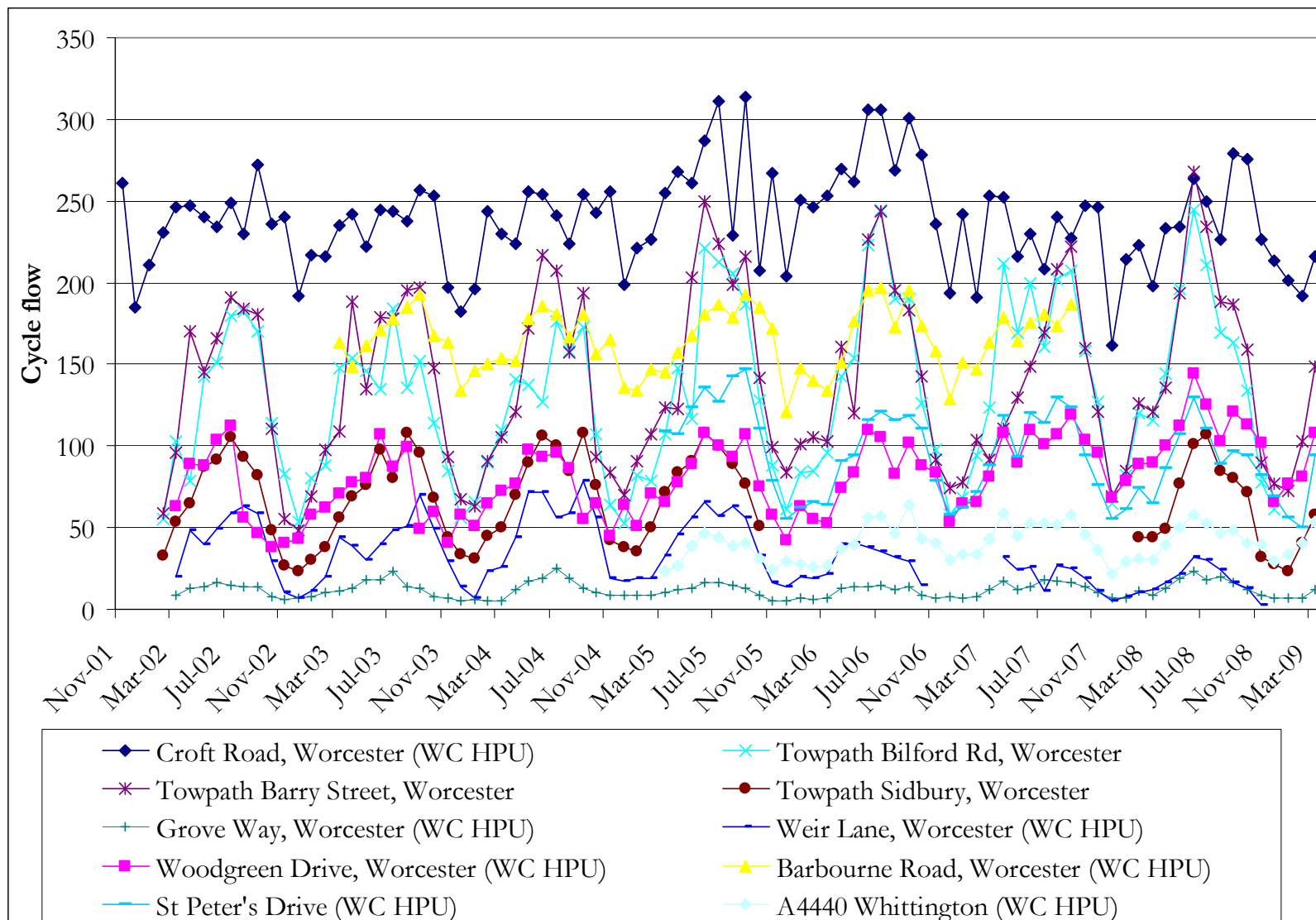


Figure 15.28: Data for Worcester automatic cycle counters indexed to April 2004

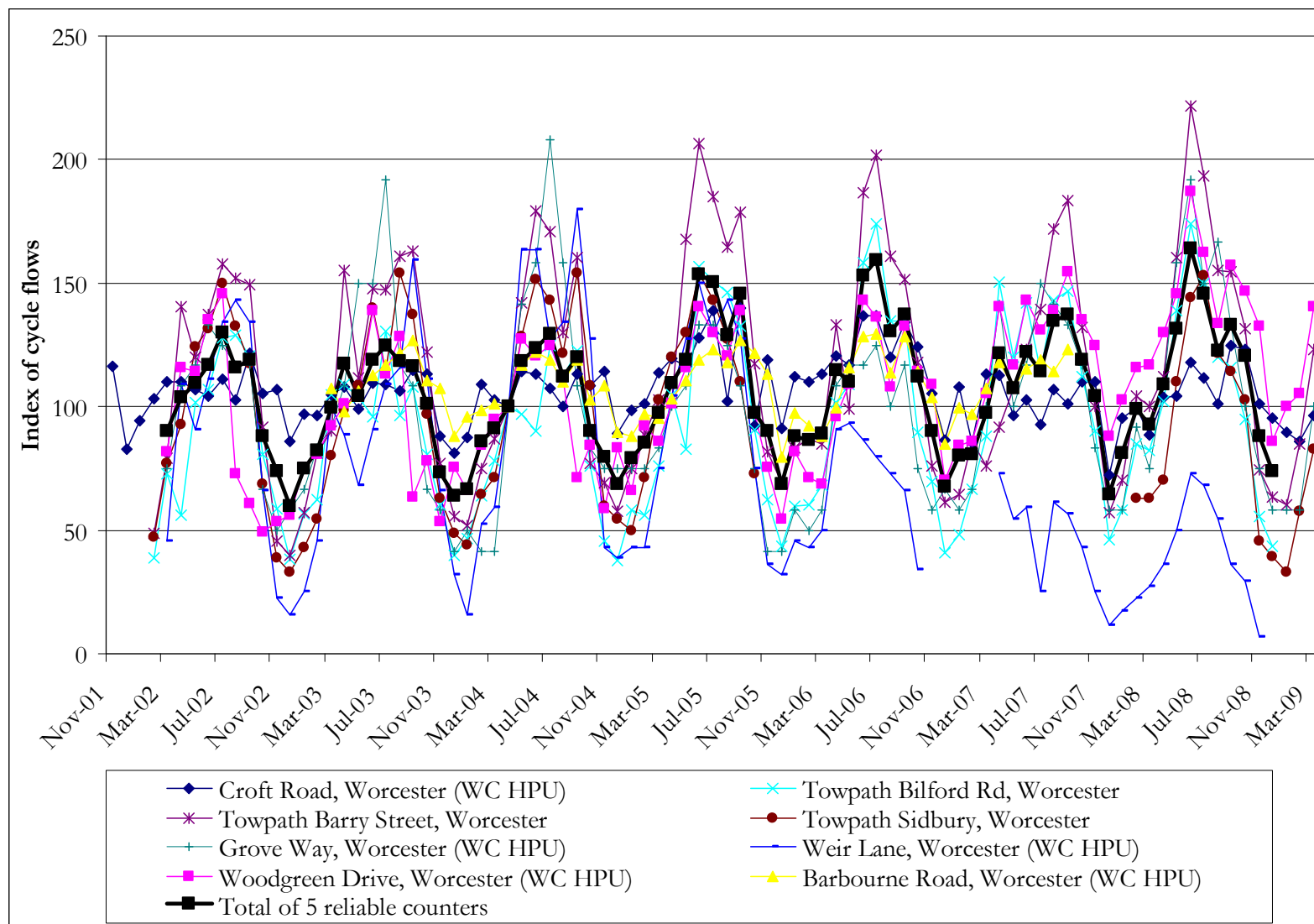


Figure 15.29: 12-month rolling average Worcester cycle counter data

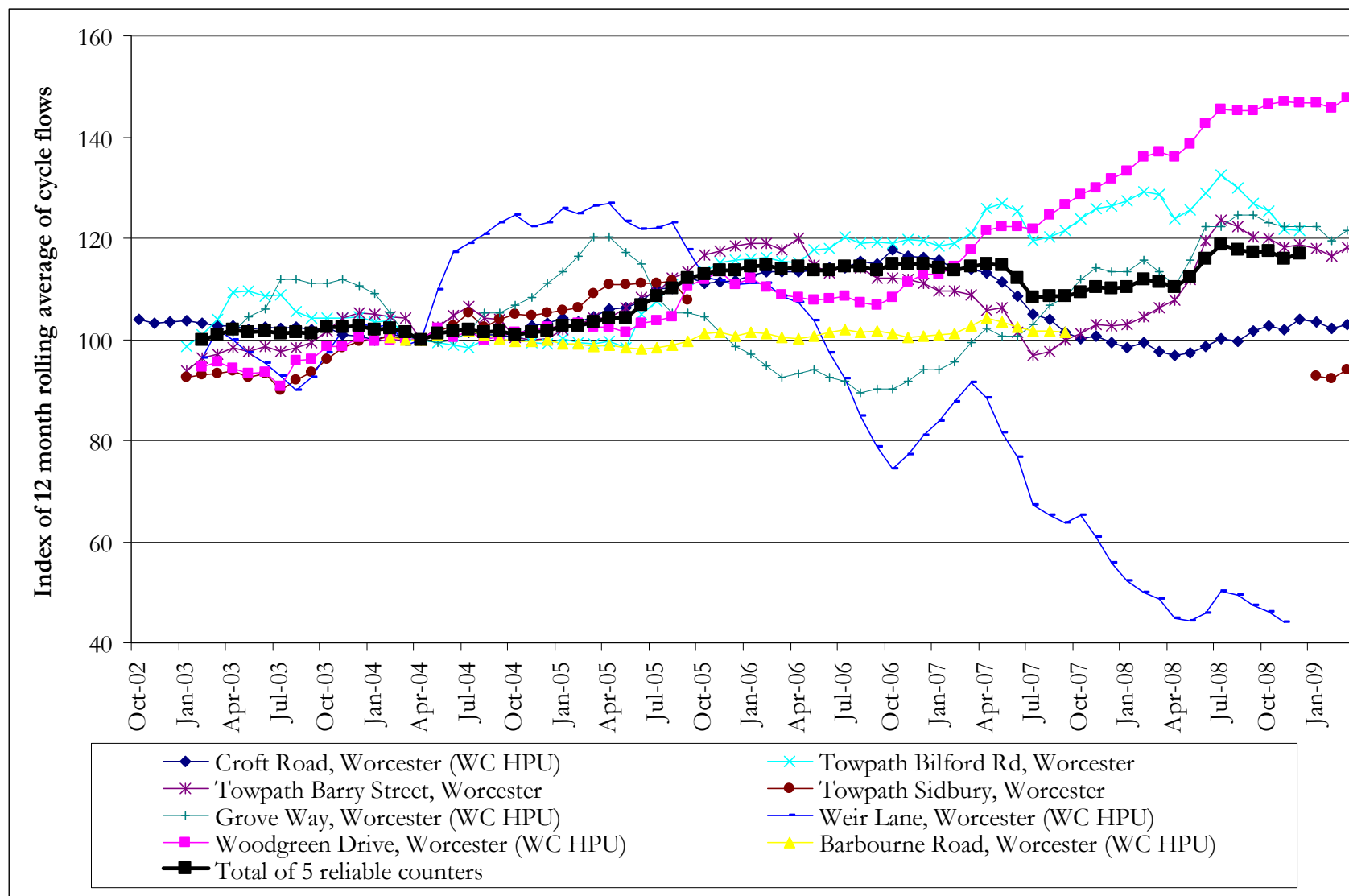


Figure 15.30: Index showing annual change in Worcester cycle flows

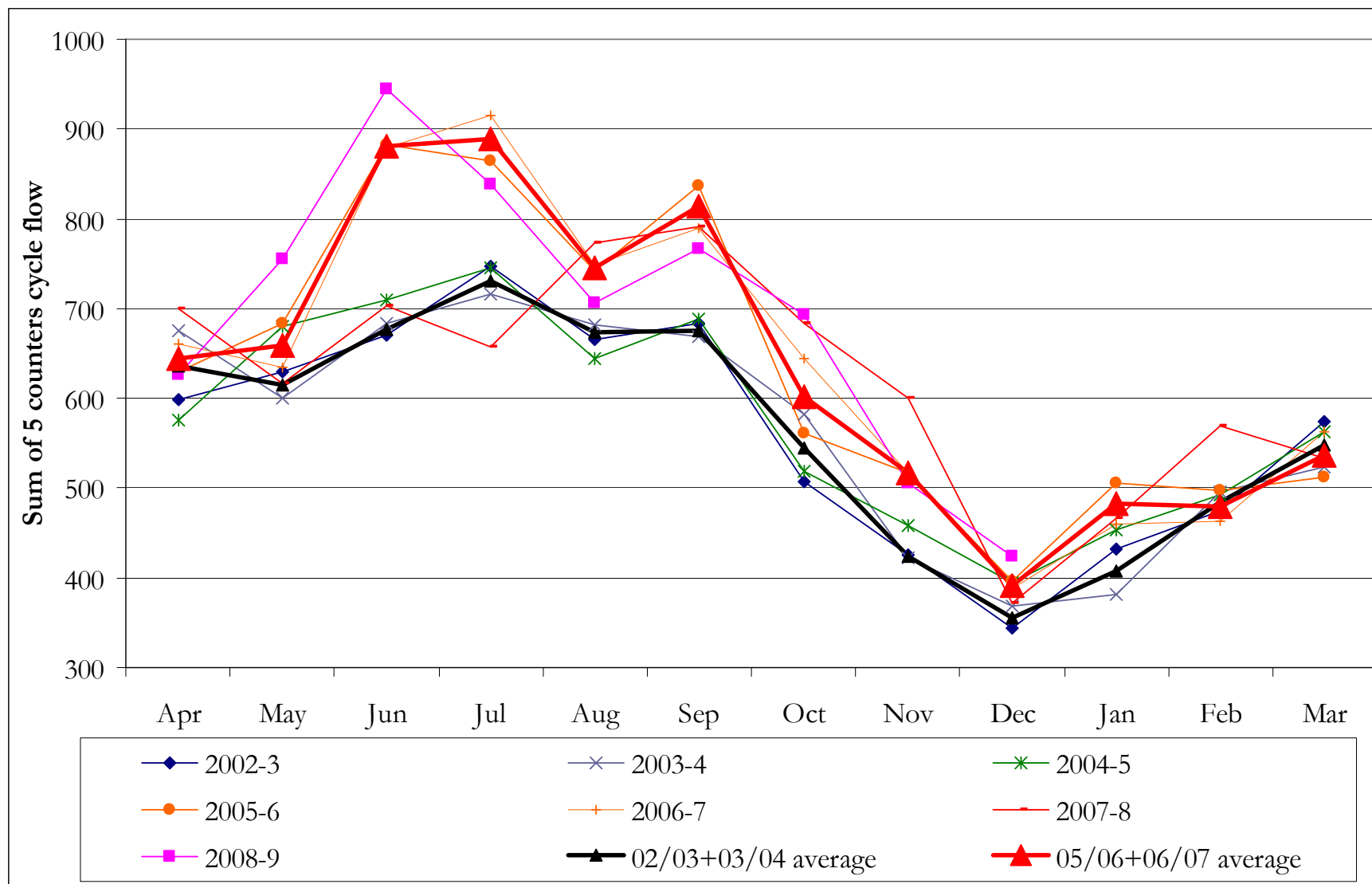
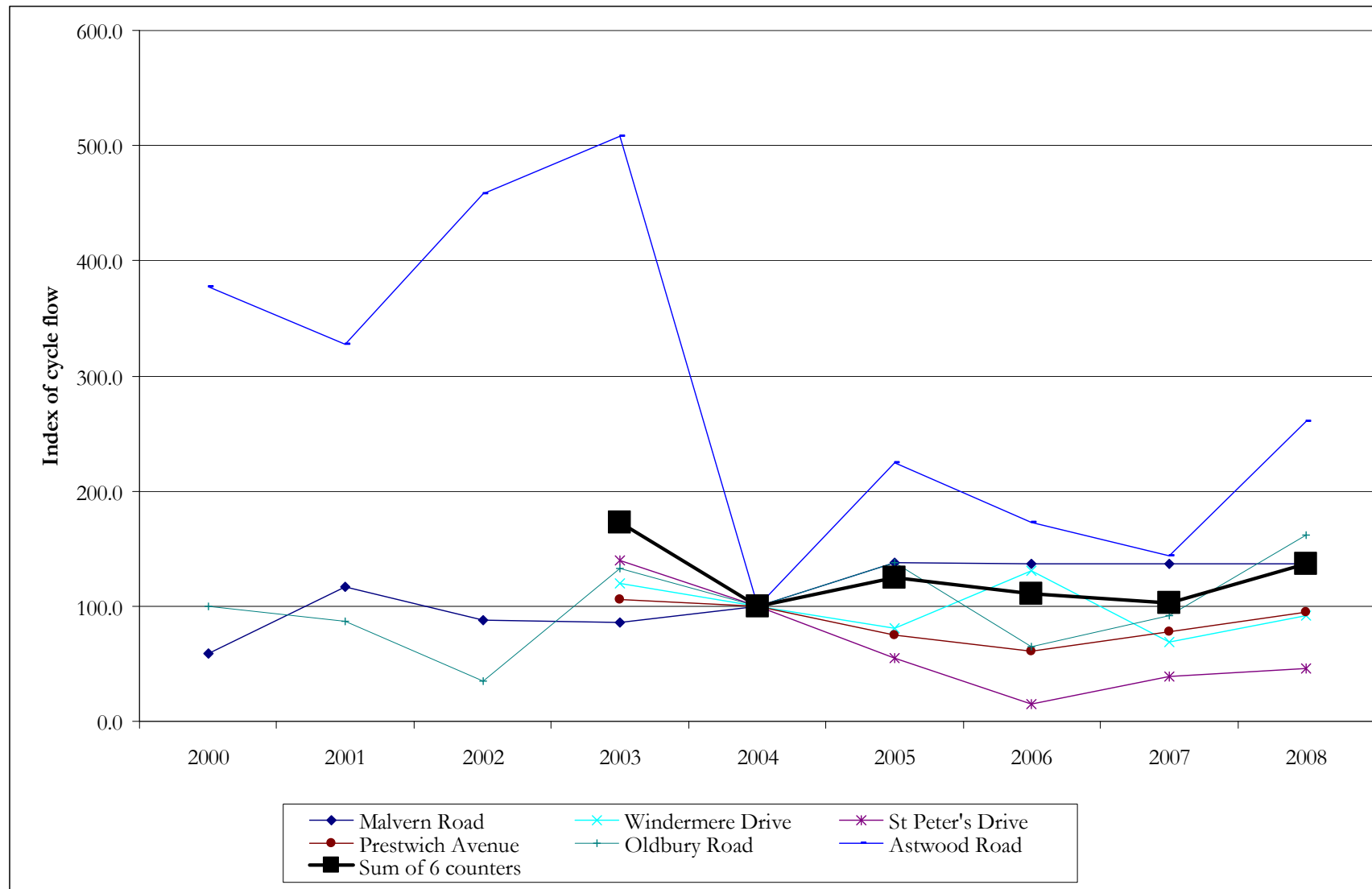


Table 15.23: Worcester NRTE minor road cycle counts

	Malvern Road	Windermere Drive	St Peter's Drive	Prestwich Avenue	Oldbury Road	Astwood Road	Sum of six counters
Date of count	Sep/Oct	Sep/Oct	Jun/Jul	Sep	Jun	Aug/Sep	
2000	56				37	181	
2001	111				32	157	
2002	83				13	220	
2003	82	64	46	38	49	244	523
2004	95	53.5	33	36	37	48	302.5
2005	131	43	18	27	51	108	378
2006	130	70	5	22	24	83	334
2007	130	37	13	28	34	69	311
2008	130	49	15	34	60	125	413
% change compared to preceding year							
2001	98.2				-13.5	-13.3	
2002	-25.2				-59.4	40.1	
2003	-1.2				276.9	10.9	
2004	15.9	-16.4	-28.3	-5.3	-24.5	-80.3	-42.2
2005	37.9	-19.6	-45.5	-25.0	37.8	125.0	25.0
2006	-0.8	62.8	-72.2	-18.5	-52.9	-23.1	-11.6
2007	0.0	-47.1	160.0	27.3	41.7	-16.9	-6.9
2008	0.0	32.4	15.4	21.4	76.5	81.2	32.8
Index compared to 2004							
2000	58.9				100.0	377.1	
2001	116.8				86.5	327.1	
2002	87.4				35.1	458.3	
2003	86.3	119.6	139.4	105.6	132.4	508.3	172.9
2004	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2005	137.9	80.4	54.5	75.0	137.8	225.0	125.0
2006	136.8	130.8	15.2	61.1	64.9	172.9	110.4
2007	136.8	69.2	39.4	77.8	91.9	143.8	102.8
2008	136.8	91.6	45.5	94.4	162.2	260.4	136.5

Notes: Yellow indicates growth compared to the preceding year; orange indicates growth of 10% or more compared to the preceding year; pink indicates that cycling levels were higher than in 2004; red indicates that cycling levels were greater by 10% or more than in 2004.

Figure 15.31: Worcester NRTE minor road cycle counts



Tables 15.24a-c: Changes in quarterly cycle data in Worcester, with times of personal travel planning indicated

Note for all three tables: The first table provides the baseline data; the second indicates the timing of any increases; and the third shows levels of cycling compared to the relevant time period in the 2004/5 financial year. The quarters when relevant personal travel planning work took place are indicated.

15.24a: 24-hour 7-day average daily data											
	Croft Road	Towpath Bilford Rd	Towpath Barry Street	Towpath Sidbury	Grove Way	Weir Lane	Woodgreen Drive	Barbourne Road	St Peter's Drive	A4440 Whittington	Sum for 5 counters
2002-Q1	229										
2002-Q2	240	124	160	81	14	46	94				633
2002-Q3	250	177	185	93	14	60	72				699
2002-Q4	223	84	71	33	7	15	41				425
2003-Q1	223	105	92	41	10	25	64				493
2003-Q2	236	145	167	81	16	36	88	161			653
2003-Q3	246	157	190	95	17	56	78	185			689
2003-Q4	211	85	103	49	7	31	53	155			458
2004-Q1	223	89	86	42	5	19	63	150			467
2004-Q2	245	135	170	89	16	63	89	172			655
2004-Q3	240	169	186	98	19	65	79	176			693
2004-Q4	233	75	82	52	9	31	58	152			457
2005-Q1	234	89	107	52	9	24	63	142			503
2005-Q2	272	162	192	94	14	56	92	169	122	38	731
2005-Q3	285	202	213	89	15	59	100	186	139	41	814
2005-Q4	226	92	108		6	21	58	159	82	28	491
2006-Q1	250	88	103		7	20	57	141	64	27	505
2006-Q2	279	173	169		14	40	89	174	100	44	725
2006-Q3	292	208	207		14	32	97	188	118	56	818
2006-Q4	236	94	103		8		75	154	83	38	516
2007-Q1	229	95	91		9		71	154	74	37	495
2007-Q2	233	194	130		14	27	103	173	110	52	673
2007-Q3	225	190	200		17	21	109	181	123	54	741
2007-Q4	218	117	117		10	12	89		75	35	551
2008-Q1	212	106	111		9	10	86		67	30	523
2008-Q2	244	195	199	76	18	23	119		101	49	775
2008-Q3	252	181	203	91	18	23	116		99	49	770
2008-Q4	239	91	109	44	9	5	94		82	37	541
2009-Q1	203		108	41	9		89		67	43	

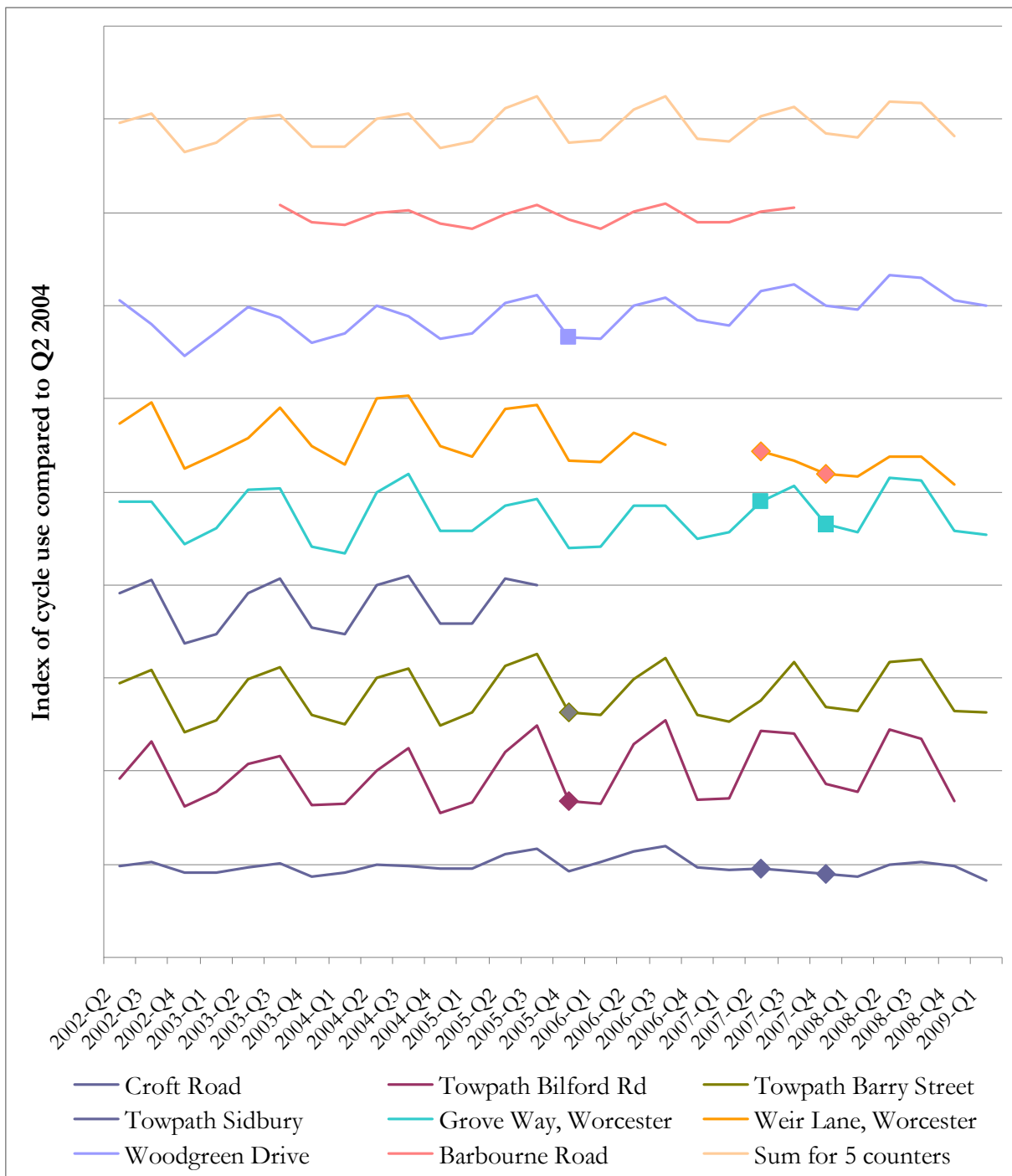
15.24b: % change compared to relevant quarter in the previous year											
	Croft Road	Towpath Bilford Rd	Towpath Barry Street	Towpath Sidbury	Grove Way	Weir Lane	Woodgreen Drive	Barbourne Road	St Peter's Drive	A4440 Whittington	Sum for 5 counters
2003-Q1	-3										
2003-Q2	-2	17	4	0	14	-20	-6				3
2003-Q3	-2	-11	3	1	16	-7	9				-1
2003-Q4	-5	2	44	49	-5	100	30				8
2004-Q1	0	-16	-6	2	-45	-25	-1				-5
2004-Q2	4	-7	2	9	-2	72	1	7			0
2004-Q3	-3	7	-2	3	14	15	1	-5			1
2004-Q4	10	-12	-20	7	40	0	9	-2			0
2005-Q1	5	1	24	25	75	27	-1	-5			8
2005-Q2	11	20	13	6	-15	-11	3	-2			12
2005-Q3	19	20	15	-9	-23	-9	27	6			18
2005-Q4	-3	24	32		-32	-32	1	5			8
2006-Q1	7	-1	-4		-29	-14	-9	-1			0
2006-Q2	3	7	-12		0	-29	-3	3	-18	18	-1
2006-Q3	3	3	-3		-7	-45	-3	1	-15	35	0
2006-Q4	4	2	-5		26		29	-4	1	36	5
2007-Q1	-9	8	-11		35		24	9	16	37	-2
2007-Q2	-17	12	-23		5	-31	15	-1	10	18	-7
2007-Q3	-23	-9	-4		24	-34	13	-4	4	-3	-9
2007-Q4	-7	24	13		29		19		-9	-9	7
2008-Q1	-7	11	21		0		22		-10	-19	6
2008-Q2	5	1	53		28	-15	16		-9	-6	15
2008-Q3	12	-5	2		6	11	7		-19	-9	4
2008-Q4	9	-22	-7		-10	-54	5		9	6	-2
2009-Q1	-4		-2		-4		3		0	43	

Notes: Yellow indicates growth compared to the relevant quarter in the preceding year; orange indicates growth of 10% or more compared to the relevant quarter in the preceding year. Number given in bold with a border around the cell indicates that personal travel planning took place at this time.

15.24c: Index compared to 2004/5 financial year (i.e. Q2 2004 to Q1 2005)											
	Croft Road	Towpath Bilford Rd	Towpath Barry Street	Towpath Sidbury	Grove Way	Weir Lane	Woodgreen Drive	Barbourne Road	St Peter's Drive	A4440 Whittington	Sum for 5 counters
2002-Q2	98.2	92.1	94.3	91.7	89.6	72.9	104.9				96.6
2002-Q3	104.5	104.9	99.6	95.6	75.4	93.3	90.7				100.9
2002-Q4	95.7	112.1	86.6	62.8	75.0	50.0	70.1				93.1
2003-Q1	95.2	117.9	85.7	79.0	103.6	105.6	101.6				98.1
2003-Q2	96.6	107.4	98.4	91.4	102.1	58.0	98.9	93.4			99.7
2003-Q3	102.8	93.1	102.2	96.9	87.7	87.1	99.2	105.1			99.4
2003-Q4	90.5	113.8	124.7	93.6	71.4	100.0	91.4	101.8			100.2
2004-Q1	95.4	99.3	80.4	80.3	57.1	78.9	100.5	105.6			92.8
2004-Q2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			100.0
2004-Q3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			100.0
2004-Q4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			100.0
2005-Q1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			100.0
2005-Q2	111.2	120.0	112.9	106.4	85.4	89.4	102.6	98.1			111.7
2005-Q3	118.8	119.5	114.5	90.8	77.2	90.7	126.6	105.7			117.6
2005-Q4	97.1	123.7	131.6		67.9	68.5	100.6	104.6			107.5
2006-Q1	106.8	98.9	96.0		71.4	85.9	91.0	99.1			100.5
2006-Q2	114.2	128.4	99.4		85.4	63.3	100.0	101.2			110.6
2006-Q3	121.8	123.3	111.5		71.9	49.5	122.4	106.8			118.1
2006-Q4	101.4	125.9	125.1		85.7		129.9	100.9			113.0
2007-Q1	97.7	106.7	85.1		96.4		112.8	108.2			98.5
2007-Q2	95.1	143.5	76.5		89.6	43.6	114.9	100.4			102.8
2007-Q3	93.9	112.4	107.3		89.5	32.5	138.0	102.5			106.9
2007-Q4	93.8	156.3	141.7		110.7	38.0	154.0				120.6
2008-Q1	90.5	118.7	103.1		96.4	41.5	137.2				104.1
2008-Q2	99.6	144.4	117.3	85.3	114.6	37.2	132.8				118.3
2008-Q3	105.0	107.1	109.1	92.8	94.7	36.1	147.3				111.2
2008-Q4	102.5	121.9	132.0	84.3	100.0	17.4	161.5				118.4
2009-Q1	86.8		100.9	77.4	92.9		141.5				

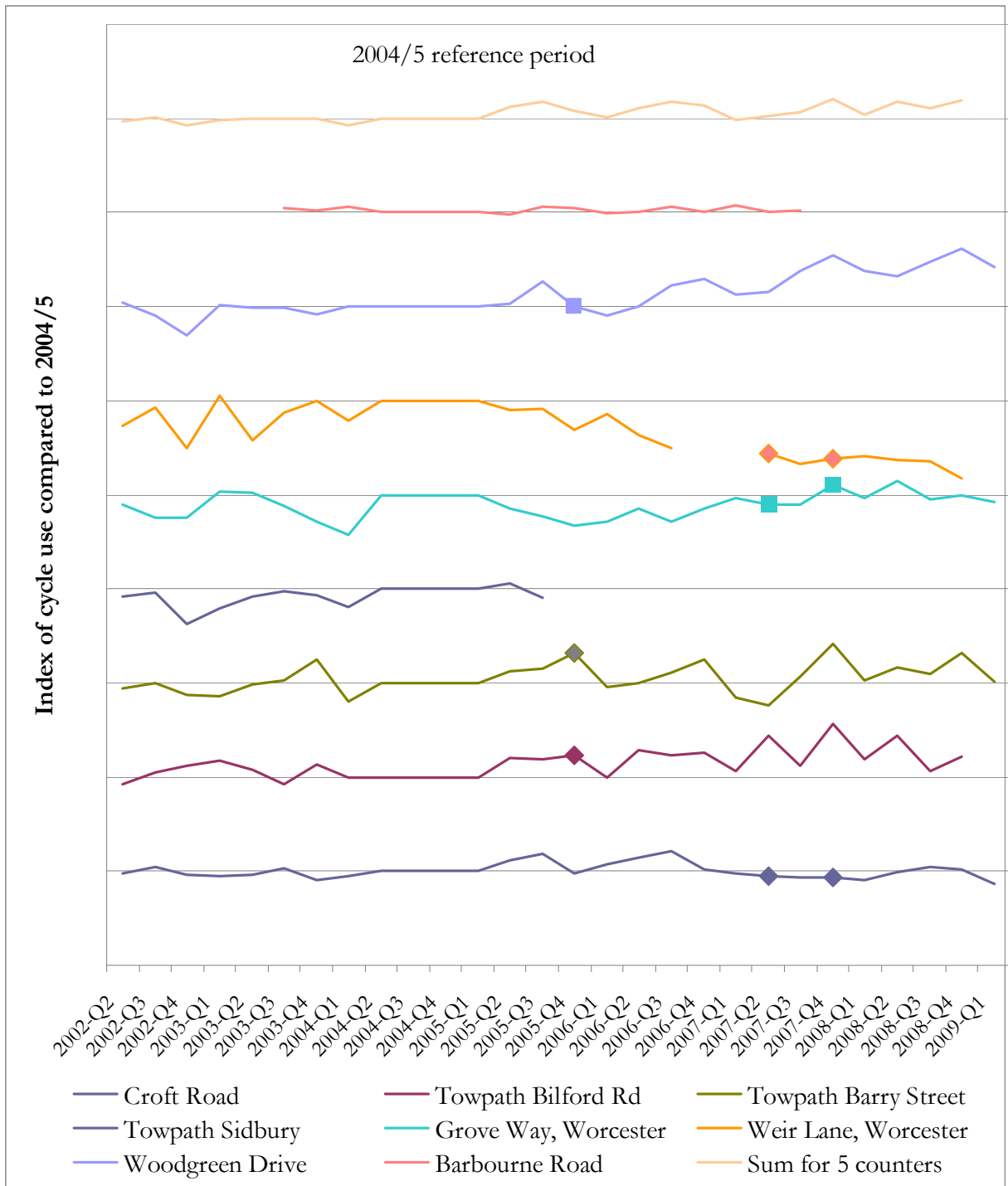
Notes: Pink indicates that cycling levels were higher than in the relevant quarter in 2004/5; red indicates that cycling levels were greater by 10% or more than in the relevant quarter in 2004/5. Number given in bold with a border around the cell indicates that personal travel planning took place at this time.

Figure 15.32: Indices of Worcester cycle count data by quarter, referenced to Q2 2004



Note: This graph plots the data in Table 15.24a, indexed to April 2004. The dots on the lines indicate when personal travel planning took place.

Figure 15.33: Indices of Worcester cycle count data by quarter, referenced to 2004/5



Note: This graph plots the data given in Table 15.24c. It provides an index showing how cycle levels varied compared with the relevant quarters in 2004/5. The dots on the lines indicate when personal travel planning took place. Underlying seasonal variation in cycling levels is removed by this presentation method.

Table 15.25: Analysis of Worcester quarterly automatic cycle count data in relation to personal travel planning effects

	Change in quarter compared to the preceding quarter		Change in quarter compared to quarter in the previous year		Change in following quarter		Change in the same quarter in following year	
	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>	<i>Target</i>	<i>Control</i>
Phase 1: Q4 2005	-49.7	-24.2	+20.5	-2.9	-4.1	+1.2	+5.1	-3.6
Phase 2.2: Q4 2006	-30.8	-36.9	10.0	5.1	-8.0	-4.1	-9.1	+6.8
Phase 3.1: Q2 2007	+3.9*	59.9	-17.5	+2.2	-4.1	+14.7	+4.0	+12.6
Phase 3.2: Q4 2007	-8.6	-36.0	-6.3*	10.0	-4.0	-7.6	+5.3	-4.8

Notes: Green shading indicates that the target area experienced more cycle growth, or less cycle decline, than the control area. The sites used to correspond to the target areas for each phase are given in Table 15.21. For values with *, it has only been possible to use data for Croft Road and Grove Way, as data for Weir Lane were not available. Control sites for Phase 1 have been taken as Croft Road, Grove Way, Weir Lane and Barbourne Road. Control sites for Phase 2.2 have been taken as Croft Road, Bilford Road, Grove Way, Barry Street and Woodgreen Drive. Control sites for Phases 3.1 and 3.2 have been taken as Bilford Road, Barry Street, Woodgreen Drive, St Peter's Drive and A4440 Whittington.

Table 15.26: Household travel survey results for cycling in Worcester

Trips per person per year 2004 (unweighted data)	26.3
Trips per person per year 2008 (unweighted data)	29.2
Overall change in trips per person per year (unweighted data)	11%
Overall change in trips per person per year (weighted data)	23%
Overall change in distance per person per year (unweighted data)	-14%
Overall change in distance per person per year (weighted data)	2%

Note: These data are for trips of up to 100km, in order to be consistent with the data in equivalent tables for Darlington and Peterborough. Figures for trips of up to 50km are identical.

Table 15.27: Socialdata & Sustrans assessment of the first three phases of personal travel planning work on cycling

		% people cycling daily or several times a week*		Socialdata & Sustrans estimate of difference in trips per person per year between target and control
		Target	Control	
Phase 1	Autumn 2004	4	6	
	March/April 2006	8	8	
	% change	100%	33%	+36%
Phase 2.1	Autumn 2004	5	6	
	April/May 2007	9	9	
	% change	80%	50%	+32%
Phase 2.2	Autumn 2004	6	6	
	April/May 2007	10	9	
	% change	60%	50%	+29%

Notes: * The surveys actually recorded a number of categories: 'daily, several times a week; several times a month; (almost) never'. The first categories have been used for the purposes of this table. The full range of categories was used by Socialdata & Sustrans to generate their estimates in the last column.

15.5 Comparing the cycling results for the three towns

Table 15.28 provides a summary of the evidence about cycling in the three towns. There were some important similarities, and some important differences in what the three towns achieved. Key points are outlined below:

- All three towns were successful in promoting cycling, in that they either increased town-wide levels of cycling (Darlington and Worcester), or slowed or halted a previous decline (Peterborough), with the household surveys showing an increase in cycle trips per person in all three. However, Darlington – partly due to the extra boost to cycling provided by becoming a Cycling Demonstration Town – achieved substantially greater growth (in the order of 50-100%) compared with the other two (where outcomes were more in the range of 0-20%).
- All three towns showed substantial growth in summer periods, together with smaller but (sometimes) more sustained growth in the autumn/winter. This perhaps implies that the towns were successful in both encouraging new people to try cycling, and, also, in increasing the number of regular cyclists.
- Peterborough and Darlington both appear to have been particularly successful at promoting cycling in and around the central parts of the town. This did not appear to be the case in Worcester. Worcester experienced particularly strong growth in the north-east of the town. Peterborough experienced particular growth in cycle flows into the centre from the south. In contrast, growth in Darlington does not appear to have been geographically specific, but to have occurred in most locations.
- All three towns appear to show some increases in cycling that relate to personal travel planning work – with particularly marked short-term effects showing in the counter data in Darlington. However, in all three towns, this seems unlikely to account for all (or even most) of the growth that has occurred. Both Peterborough and Worcester appear to show particular growth in Summer 2005, which may be partly due to some of the early publicity and marketing from the Sustainable Travel Towns work. In Darlington, the first major growth period seems to be Spring/Summer 2006, which may relate to an intensification of publicity, marketing and other ‘smart’ initiatives associated with cycling following Cycling Demonstration Town designation. Darlington also shows a particular surge in Spring/Summer 2008, which follows a major period of cycle infrastructure investment.
- Darlington appears to have generated a trend of ongoing growth. In contrast, Worcester appears to have sustained its initial gains, whilst Peterborough has possibly even experienced a slight decline. This indicates the importance of ongoing initiatives and/or locking in with new infrastructure, in order to generate a new trajectory of cycle use.
- The household surveys suggest significantly different effects on cycle trip distance in the three towns. In Darlington, the growth in cycle trip numbers appears to broadly match the increase in cycle distance travelled. In Worcester, the growth in trip numbers is greater than the growth in trip distance implying that trips have got shorter, or, more plausibly, that growth was primarily

comprised of a large increase in shorter than average cycle trips. In Peterborough, the implication is that the average cycle trip has got longer.

15.6 References

Cope A, Muller L, Kennedy A, Parkin J and Page M (2009) *Cycling Demonstration Towns: Monitoring project report 2006 to 2009* Report for Cycling England

Table 15.28: Changes in cycling during the period of Sustainable Travel Town designation

	Darlington	Peterborough	Worcester
Household surveys*			
Trips per person	+89% to +113%	+10% to +17%	+11% to +23%
Distance per person	+76% to +112%	+23% to +38%	-14% to +2%
Manual / automatic counts	Approx +50% town-wide; +84-116% at the town centre cordon	Broadly stable cycle levels town-wide (following previous decline of 20-30%). +11% recorded in the central part of the town.	+16% town-wide
Timing of change	Particular growth surges in the spring of 2006 and 2008, and with smaller, ongoing increases in autumn/winter cycling throughout the period.	Particular growth in the summer of 2005; some ongoing annual growth in autumn/winter cycling levels; some decline in 2009; particular growth in the central area 2006-2008	Major increase in summer cycling between 2004 and 2005, which was subsequently sustained, coupled with smaller, more continuous increases in autumn/winter cycling.
Location of change	Particularly substantial growth in the central part of the town, but with increases recorded in most locations.	Particular growth in the central part of the town, and into the town centre from the south.	Greatest increases from the north-east part of the town.
Possible explanations for growth	All phases of PTP probably boosted growth. Other factors contributing to growth would have included cycling events, information resources, cycle initiatives at schools, and increased cycle parking, with activity becoming more intensive after Cycling Demonstration Town designation in October 2005; and with further increases generated by improvements to cycling infrastructure from mid-2007.	Population increases in the south, and PTP activities both likely to have fuelled growth, but neither is likely to provide the full explanation. Instead, the range of other activities provided by the council will also have contributed.	There are a number of locations where PTP may have helped to boost cycle levels, or generate short term increases in flows, or explain why there was ongoing growth in autumn/winter. However, it cannot account for the early increase in summer cycling (between 2004 and 2005) which may partly be due to initial marketing, publicity and some infrastructure improvements.

Notes: *Household survey figures are for ex post survey in Autumn 2008, compared to baseline survey in Autumn 2004; base = all trips under 50km; range shows variation between weighted and unweighted data.

Annex

A15.1 Darlington cycle data

Interpolated values are shown in red italics

	West Auckland Rd	Whessoe Rd	Yarm Road (a)	Haughton Road (a)	Grasmere Rd	Hurworth Neasham	McMullen Road (a)	McMullen Road (b)	Yarm Rd (b)	Haughton Road (b)	Haughton Road (c)	St Cuthbert Way	Skerne River Route	Whinfield School	Nunnery Lane	Cemetery Lane	Honey Pot Lane
May-04		<i>41</i>	66	204	85												
Jun-04		40	46	209	61												
Jul-04		42	66	251	71												
Aug-04		<i>39</i>	56	254	80												
Sep-04		<i>36</i>	64	178	49												
Oct-04		33	54	151	41												
Nov-04		21	54	140	42												
Dec-04		27	37	120	28												
Jan-05		<i>31</i>	39	122	30												
Feb-05		<i>34</i>	36	120	57												
Mar-05		<i>38</i>	40	112	69												
Apr-05	31	42	42	146	64												
May-05	40	45	53	168	74												
Jun-05	58	58	55	204	105												
Jul-05	57	61	51	220	104												
Aug-05	63	44	50	205													
Sep-05	69	43	52	<i>184</i>													
Oct-05	47	35	49	163													
Nov-05	28	23	50	133													
Dec-05	17	17	45	112													
Jan-06	27	18	48	130													

	West Auckland Rd	Whesoe Rd	Yarm Road (a)	Houghton Road (a)	Grasmere Rd	Hurworth Neasham	McMullen Road (a)	McMullen Road (b)	Yarm Rd (b)	Houghton Road (b)	Houghton Road (c)	St Cuthbert Way	Skerne River Route	Whinfield School	Nunnery Lane	Cemetery Lane	Honey Pot Lane
Feb-06	25	24	44	141													
Mar-06	25	27	44	99	48	3											
Apr-06	43	51	50	134	60	10											
May-06	52	61	52	156	64	12											
Jun-06	84	71	64	206	87	28											
Jul-06	108	73	71	239	84	40											
Aug-06	70	71	82	185	88	31	152	145	26	75	63	92	48	169	25	15	124
Sep-06	78		97	138	96	19	175	175	29	95	103	90	68	177	26	1	128
Oct-06	58		92	136	60	11	154	154	22	84	79	78	43	179	25	4	115
Nov-06	53		89	135	61	9	157	165	21	75	74	75	45	114	3	3	102
Dec-06	38		60	90	28	5	114	116	6	30	33	60	29	66	5	2	71
Jan-07	37		80	146	47	8	143	148	18	65	183	56	21	43	3	2	76
Feb-07	37		91	175	53	8	160	160	19	80	61	63	35	81	1	13	76
Mar-07	39		93	171	47	9	165	168	20	78	72	71	47	107	8	23	84
Apr-07	47	51	106	159	64.5	24	191	201	30	83	82	96	63	153	21	32	114
May-07	57	46	100	127	82	20	184	192	30	80	90	102	62	175	23	43	111
Jun-07	33	48	102	166	83	19	180	190	34	89	90	99	62	268	27	36	110
Jul-07	46	55	113	217	50	23	189	201	34	98	65	105	65	260	25	29	116
Aug-07	70	66	108	178	83	31	180	190	38	99	64	130	71	190	32	32	135
Sep-07	75	58	111	251	90	22	187	198	31	100	89	106	77	204	25	34	123
Oct-07	61	51	116	176	72	18	204	207	36	84	90	105	62	157	19	33	113
Nov-07	39	35	99	192	63.5	10	179	184	28	72	83	92	51	104	12	23	41
Dec-07	23	21	67	137	55	7	125	124	20	53	55	65	26	109	9	10	60
Jan-08	28	22	73	152	57	7	142	148	12	45	53	51	19	92	1	1	44
Feb-08	33	27	85	137	50	9	168	179	30	77	60	86	49	77	3	12	85

	West Auckland Rd	Whessoe Rd	Yarm Road (a)	Houghton Road (a)	Grasmere Rd	Hurworth Neasham	McMullen Road (a)	McMullen Road (b)	Yarm Rd (b)	Houghton Road (b)	Houghton Road (c)	St Cuthbert Way	Skerne River Route	Whinfield School	Nunnery Lane	Cemetery Lane	Honey Pot Lane
Mar-08	40	31	81	197	72	11	165	175	29	106	59	74	57	127	13	22	94
Apr-08	54	35	103	222	95	16	194	205	30	127	57	92	76	137	22	24	95
May-08	74	48	119	176	94	23	189	209	34	134	75	114	86	239	38	52	147
Jun-08	75	39	138	281	114	24	220	244	40	159	92	126	99	290	64	50	174
Jul-08	92	32	145	322	122	29	273	285	43	133	75	137	110	271	48	48	186
Aug-08	68		128	263	104	23	236	252	43	112	67	126	83	158	25	21	175
Sep-08	75		135	296	107	20	231	246	33	158	91	131	90	193	8	51	187
Oct-08	58		129	248	103	13	203	222	29	154	80	125	69	152	1	41	118
Nov-08	36		114	210	89	11	202	213	22	149	65	104	59	138	0	33	103
Dec-08	20	16	63	122	50	6	112	115	16	98	57.5	77	28	90	4	10	71
Jan-09	27	18	85	164	48	7	164	166	11	125	50	105	22	108	0	4	115
Feb-09	33	18	92	171	57	7	175	175	16	128	54	89	42	68	5	15	94
Mar-09	50	28	116	218	85	14	216	233	23	157	75	118	60	199	23	31	109
Apr-09	68	46	124	243	89	21	230	247	27	167	73	124	68	193	33	29	127
May-09	78	66	114	268	84	19	225	231	28	163	67	128	76	205	35	40	154
Jun-09	91	68.3	139	313	94	24	262	274	28	192	83	148	84	266	40	48	174
Jul-09	103	70.6	134	269	91	24	246	265	28	181	74	158	79	199	52	39	169
Aug-09	61	73	124	253	87	34	241	238	29	168	73	129		142	45	25	
Sep-09	76		131	272	91		250	253	31	179	93	134		160	36	43	

A15.2 Peterborough cycle data

Interpolated figures are shown in red italics.

	Oxney Road	Eastern Industries Subway	Church Lane	Shrewsbury Avenue	The Boathouse, Thorpe Park	Ravensthorpe	A47/A15 cycle/ped overbridge	North Etton Green Wheel	Hampton Vale
Jan-05	191	276	231	48	115	177	356	10	
Feb-05	191	276	231	46	116	177	356	10	
Mar-05	229	330	276	67	127	212	426	12	
Apr-05	310	448	375	96	156	288	577	16	
May-05	319	460	385	97	164	296	593	16	
Jun-05	393	568	475	130	188	365	732	20	
Jul-05	391	565	473	129	183	363	728	20	
Aug-05	374	541	452	129	173	347	697	19	
Sep-05	340	491	411	116	115	315	633	18	
Oct-05	329	475	323	108	88	280	598	11	
Nov-05	300	452	309	105	60	219	518	5	
Dec-05	227	425	239	92	49	175	451	4	
Jan-06	282	428		103	<i>55</i>	173		6	
Feb-06	291	428		100	59	186		5	
Mar-06	289	406		103	63	181		7	
Apr-06	294	429		107	93	224	<i>357</i>	18	
May-06	314	440		119	97	234	372	19	37
Jun-06	382	525		154	118	259	451	30	52
Jul-06	374	536		149	136	278	484	29	63
Aug-06	321	488		146	105	263	418	19	58
Sep-06	386	527		188	111	300	440	19	63
Oct-06	350	502		149	85	286	382	9	40
Nov-06	328	491		146	66	263	330	4	35
Dec-06	252	380		113	48	196	273	6	22
Jan-07	280	426		120	53	198	282	6	26

	Oxney Road	Eastern Industries Subway	Church Lane	Shrewsbury Avenue	The Boathouse, Thorpe Park	Ravensthorpe	A47/A15 cycle/ped overbridge	North Etton Green Wheel	Hampton Vale
Feb-07	295	453		125	56	193	281	7	32
Mar-07	307	457		139	68	201	317	9	37
Apr-07	338	495		158	114	248	376	27	67
May-07	313	485		147	84	240	326	12	46
Jun-07	369	592		161	109	259	378	19	62
Jul-07	350	516		170	117	264	369	19	53
Aug-07	368	549		182	122	268	373	26	83
Sep-07	380	547		182	112	274	371	20	68
Oct-07	376	573		145	91	277	356	10	52
Nov-07	344	548		99	65	252	339	7	39
Dec-07	241	358		85	46	176	250	6	24
Jan-08	306	402		100	54	204	267	8	32
Feb-08	322	448		109	63	206	287	9	34
Mar-08	275	354		100	55	194	249	8	35
Apr-08	334	458		134	84	240	314	14	
May-08	351	477		152	111	268	348	24	
Jun-08	382	528		179	120	303	371	24	
Jul-08	372	529		201	127	320	383	29	
Aug-08	312	461		175	108	315	330	26	
Sep-08	362	533		192	90	335	344	21	
Oct-08	344	490		177	77	310	313	12	54
Nov-08	283	402		145	52	233	264	7	35
Dec-08	259	383			45	196	239	6	26
Jan-09	234	344			46	188	229	8	26
Feb-09	196	320			35	151	206	7	20
Mar-09	273	313			70	233	287	15	39

A15.3 Worcester cycle data

Interpolated values are shown in red italics

	Croft Road	Towpath Bilford Rd	Towpath Barry Street	Towpath Sidbury	Grove Way	Weir Lane	Woodgreen Drive	Barbourne Road	St Peter's Drive	A4440 Whittington
Nov-01	261									
Dec-01	185									
Jan-02	211									
Feb-02	231	55	59	33						
Mar-02	246	103	96	54	9	20	63			
Apr-02	247	79	170	65	13	48	89			
May-02	240	143	145	87	14	40	88			
Jun-02	234	151	166	92	16	49	104			
Jul-02	249	180	191	105	15	59	112			
Aug-02	230	182	184	93	14	63	56			
Sep-02	272	170	181	82	14	59	47			
Oct-02	236	114	111	48	8	29	38			
Nov-02	240	83	55	27	6	10	41			
Dec-02	192	54	48	23	7	7	43			
Jan-03	217	80	69	30	8	11	58			
Feb-03	216	88	98	38	10	20	62			
Mar-03	235	148	109	56	11	44	71	163		
Apr-04	242	154	188	69	13	39	78	149		
May-03	222	146	135	76	18	30	80	162		
Jun-03	245	135	179	98	18	40	107	171		
Jul-03	244	184	178	80	23	48	87	<i>178</i>		
Aug-03	238	136	195	108	14	51	99	185		
Sep-03	257	152	197	96	13	70	49	193		
Oct-03	253	114	148	68	8	49	60	168		
Nov-03	197	85	93	44	7	29	41	163		
Dec-03	182	56	67	34	5	14	58	134		
Jan-04	196	66	63	31	6	7	51	146		
Feb-04	244	90	91	45	5	23	65	150		

	Croft Road	Towpath Bilford Rd	Towpath Barry Street	Towpath Sidbury	Grove Way	Weir Lane	Woodgreen Drive	Barbourne Road	St Peter's Drive	A4440 Whittington
Mar-04	230	110	105	50	5	26	73	154		
Apr-04	224	141	121	70	12	44	77	152		
May-04	256	137	172	90	17	72	98	178		
Jun-04	254	127	217	106	19	72	93	186		
Jul-04	241	176	207	100	25	56	96	181		
Aug-04	224	158	157	85	19	59	86	167		
Sep-04	254	173	194	108	13	79	55	181		
Oct-04	243	107	93	76	10	56	65	156		
Nov-04	256	64	84	42	9	19	45	165		
Dec-04	199	53	70	38	9	17	64	136		
Jan-05	221	82	91	35	9	19	51	134		
Feb-05	226	79	107	50	9	19	71	147		
Mar-05	255	107	124	72	10	33	66	145	109	23
Apr-05	268	148	123	84	12	46	78	157	107	27
May-05	261	117	203	91	13	56	89	168	124	39
Jun-05	287	221	250	108	16	66	108	181	136	47
Jul-05	311	213	224	100	16	57	100	187	127	44
Aug-05	229	206	199	89	15	63	93	179	143	39
Sep-05	314	187	216	77	13	56	107	193	147	41
Oct-05	207	128	142	51	9	33	75	185	111	31
Nov-05	267	88	99		5	16	58	172	79	24
Dec-05	204	61	84		5	14	42	121	55	29
Jan-06	251	84	101		7	20	63	148	62	28
Feb-06	246	85	105		6	19	55	140	66	26
Mar-06	253	96	103		7	22	53	134	64	27
Apr-06	270	143	161		13	40	74	151	91	37
May-06	262	154	120		14	41	84	176	94	40
Jun-06	306	223	226		14	38	110	195	116	56
Jul-06	306	245	244		15	35	105	197	121	57
Aug-06	269	190	195		12	32	83	173	116	47
Sep-06	301	190	183		14	29	102	195	118	64

	Croft Road	Towpath Bilford Rd	Towpath Barry Street	Towpath Sidbury	Grove Way	Weir Lane	Woodgreen Drive	Barbourne Road	St Peter's Drive	A4440 Whittington
Oct-06	278	126	143		9	15	88	174	111	43
Nov-06	236	98	92		7		84	158	79	41
Dec-06	194	58	74		8		54	129	58	30
Jan-07	242	68	78		7		65	151	62	34
Feb-07	191	94	104		8		66	147	72	34
Mar-07	253	124	92		12		81	163	88	43
Apr-07	252	212	111		17	32	108	179	118	59
May-07	216	169	130		12	24	90	164	93	45
Jun-07	230	200	149		14	26	110	175	120	53
Jul-07	208	161	169		18	11	101	181	114	53
Aug-07	240	202	208		17	27	107	174	130	52
Sep-07	227	207	222		16	25	119	187	124	58
Oct-07	247	158	160		14	19	104		94	46
Nov-07	246	127	121		10	11	96		76	36
Dec-07	162	65	69		7	5	68		55	22
Jan-08	214	82	85		7	7.5	79		61	29
Feb-08	223	120	126	44	11	10	89		74	31
Mar-08	198	116	121	44	9	12	90		65	30
Apr-08	233	144	136	49	13	16	100		65	40
May-08	234	196	194	77	19	22	112		107	50
Jun-08	264	245	268	101	23	32	144		130	58
Jul-08	250	211	234	107	18	30	125		111	53
Aug-08	226	169	188	85	20	24	103		89	47
Sep-08	279	163	187	80	16	16	121		97	48
Oct-08	276	134	159	72	12	13	113		94	41
Nov-08	226	78	90	32	9	3	102		82	40
Dec-08	213.5	61	77	27.5	7		66		69	29
Jan-09	201		73	23	7		77		56	34
Feb-09	192		103	40.5	7		81		50	41
Mar-09	216		149	58	12		108		94	54