Outcomes of the Cycling City and Towns programme: monitoring project report

Individual town results: Chester

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1 Introduction

1.1 Description of the Cycling City and Towns programme in Chester

Cycle Chester delivered infrastructure schemes, soft measure interventions and improved the permeability into the city centre as part of their Cycling City and Towns programme.

Infrastructure developments focused on the Mickle Trafford Greenway extension which provided 3km of traffic-free paths, enabling users to travel from North Wales into the city entirely on traffic-free routes. Other initiatives included 61km of new cycle routes for beginners, six advanced stop lines, and the installation/upgrading of crossings[1]. In addition to route development, investment was made in signage with 680 new signs to indicate suggested routes for leisure and commuting in the city. Cycle parking has also been improved: 48 secure lockers have been added, and over 1,430 spaces have been provided in community areas, in the city centre, at local rail stations and across schools in the area.

The Mickle Trafford Greenway extension and the connection between the Greenway and the Deva Link Road were made possible through match funding obtained through the Connect2 programme. These two developments were the first two of four proposed elements of the Connect2 project in Chester which aims to connect communities in the four corners of Chester.

Smarter measures delivered include Bikeability training for 2,220 children and a Bike It programme across 19 schools. Other workplace and neighbourhood engagement programmes included the loan of 120 bikes to people newly employed and workplace challenges.

1.2 Expenditure

While this report is primarily concerned with the monitoring evidence around outcomes of the Cycling City and Towns programme, it is useful to place these in context through summarising the programme inputs in terms of capital and revenue expenditure. Details of expenditure in Chester during the Cycling City and Towns programme are summarised in Table 1-1.

[1] Cycle Chester (2011) End of Programme Report, Chester the Cycling Town. Available at https://www.gov.uk/government/publications/cycling-england-cycling-city-and-towns-end-of-programme-reports [Accessed 31 May 2012]

Table 1-1 Funds invested in cycling in Chester

	2008 – 2011 revenue	2008 – 2011 capital	Total
Cycling England investment	£1,174,612	£881,022	£2,055,634
Matched funding	£106,000	£1,791,000	£1,897,000
Total	£1,280,612	£2,672,022	£3,952,634

1.3 Summary of available monitoring data

The following data sources are available:

- Data from 10 automatic cycle counters
- 12 hour manual counts performed quarterly at 19 locations
- Pupil Level Annual School Census (PLASC) travel data and monitoring data from Bike It
- counts of parked bicycles performed quarterly on six counting beats across Chester
- route user intercept surveys performed at two locations in Chester
- STATS19 cycling casualty data
- Active People Survey (APS) data.

1.4 Summary of headline findings

Mixed evidence of growth in levels of cycling over time from a moderate initial baseline

The most complete data sets, time series data from automatic cycle counters located predominantly on traffic-free cycle routes, indicate a growth in levels of cycling over time, with growth particularly concentrated in the later years of the programme. There is contradictory evidence from manual count data which, on the basis of the short time series of available, suggest a decline in volumes of cyclists counted. Notwithstanding the limitations of the data source, cycling to school has increased over the course of the programme. However the year-to-year direction of change has not been consistent, with the percentage cycling to school peaking in 2008/09 before declining, although levels of cycling to school in 2010/11 still exceeded those recorded in 2006/07. In schools initially engaged with Bike It in the 2009/10 academic year the proportion of pupils cycling to school every day increased significantly.

- Automatic cycle counter data indicate an increase in volumes of cycles counted of +18% against a 2009 baseline. Based on data from the 10 automatic cycle counters, this estimated growth corresponds to an increase

from between 1,499 and 1,662 trips per day counted in 2009 to between 1,786 and 1,969 trips in 2011[2]

- An increase was observed at six of the automatic cycle count sites, a decrease was observed at three locations, and no change was observed at one location
- Overall a significant decrease was observed in the manual counts performed in quarter 4 2009 and quarter 4 2010 for the 19 manual count sites with comparable data; a significant increase was observed in the manual counts performed in quarter 1 2010 and quarter 1 2011 for the 21 manual count sites with comparable data
- When comparing data from quarter 4 2009 and quarter 1 2010 with data from quarter 4 2010 and quarter 1 2011, significant changes in counts are observed at seven of the nineteen manual count sites - five show a decrease and two an increase
- There was no notable changed in counts of parked bicycles during the period for which data are available (October 2009 to March 2011)
- Across all schools, the percentage of children cycling to school as measured by PLASC was 3.2% in 2010/11 compared to 2.5% in 2006/07
- Bike It data indicate an increase in children cycling to school on the day of the survey from 4.8% in pre surveys to 11.2% in post survey, and an increase in children cycling to school everyday from 3.6% in the pre survey to 6.2% in the post survey
- Compared to pre-programme data, the number of cycling casualties was lower during than before the Cycling City and Town programme, although it is difficult to draw firm conclusions due to limited data availability
- APS data indicate a significant decrease in the proportion of respondents cycling once or more per month in Chester and a decrease in the proportion cycling 12 or more times per month between 2007/8 and 2010/11

2 Analysis of automatic cycle counter data

Data from a total of 10 automatic cycle counters have been analysed. In the following sections information regarding the location, volumes of cyclists recorded and change in volumes of cyclist recorded over time are presented for each location. The cycle counters are located around the city, with a substantial number located on the Millennium Cycle Route to the north of the city. Three of the 10 count sites were installed in 2002 and the remaining seven were installed in 2009. In order to be consistent across towns, data from 2007 onwards are included in the analysis.

Two distinct sets of analysis have been undertaken using cycle counter data in Chester. In the first, all available data were analysed using a regression model to allow an estimate of change in cycle trips recorded over the programme period against a baseline. In the second, data from individual sites were analysed in order to determine the average volumes of cyclists recorded, distribution of cycle trips

[2] The upper limits have been calculated using all of the data included in the overall model. The lower limits have been calculated by excluding the Northgate Ponds counter (1783) as there is the possibility of some double counting between this counter and the Brook Lane counter (1784) as they are at the same location. Any cyclists approaching along the greenway from the West and turning down the access route (and vice versa) will be counted twice. This route will be taken by a relatively small number of the cyclists passing this location and therefore both counters remain in the overall analysis.

over the course of the day and (where sufficient data were available) the annual percentage change in the count of cyclists.

2.1 Town-wide analysis

Table 2-1 presents the percentage change in cycle counts relative to a 2007 baseline including data to the end of September 2011.

Table 2-1 Change in cycle count in Chester at the end of the Cycling City and Towns period relative to a 2007 baseline (baseline = 100%)

	2007	2008	2009	2010	2011
Change against 2007 baseline	100%	100%	102%	97%	121%*

* indicates a significant difference ($p<0.05$) compared to the 2007 baseline

There is, however, just one counter which has data in 2007 and all of 2008. Having so little data means that the changes estimated are heavily dependent on this one site and the model will make assumptions on growth at other sites based on this site. In order to ensure that there is sufficient data to have a robust baseline for growth, 2009 has been used as the baseline year. Table 2-2 presents the percentage change in cycle counts relative to a 2009 baseline.

Table 2-2 Change in cycle count in Chester at the end of the Cycling City and Towns period relative to a 2009 baseline (baseline = 100%)

	2009	2010	2011
Change against 2009 baseline	100%	96%*	118%*

* indicates a significant difference ($p<0.05$) compared to the 2009 baseline

There may have been a small growth in cycling levels in 2009, although data to support or refute this is limited. The counter data indicate a decline in the volume of cyclists recorded in 2010 compared to previous years, potentially a result of closures on the Millennium Cycle Route and adverse weather conditions during the winter months in this year. A substantial uplift in counts is observed between 2010 and 2011.

In order to explore whether the periods of severe weather nationally in late 2009 and early and late 2010 had an impact on these estimates of change in cycle counts, an additional element was added into the regression model. Table 2-3 presents the findings of this analysis.

Table 2-3 Change in cycle count in Chester at the end of the Cycling City and Towns period relative to a 2009 baseline including an adjustment for snow (baseline = 100%)

	2009	2010	2011
Change against 2009 baseline	100%	98%*	115%*

* indicates a significant difference ($p<0.05$) compared to the 2009 baseline

When adjusting for the periods of severe weather in 2009 and 2010, there is an increased growth in cycling levels between 2009 and 2010, but a smaller increase between 2010 and 2011 than without the adjustment for poor weather.

2.2 Analysis of data from individual counter sites

Data from individual cycle counters were analysed in order to determine the rate of change in volumes of counts recorded at each location over time. The results of this analysis are summarised in Table 2-4 and alongside more detailed information for each counter in Table 2-5. Sufficient data are available to robustly estimate the annual percentage change in the number of cyclists counted for three of the 10 automatic cycle counters. Of the remaining seven count sites, based on the more limited data available, change over time is positive for three and negative for three sites. No change over time was evident in data from the seventh count site.

Table 2-4 Summary of findings of detailed analysis of data from individual count sites

Number of counters for which data are available	10
Number of counters for which sufficient data are available to quantify change over time[3]	3
Number of counters with quantifiable increase	3
Number of counters with no change	0
Number of counters with quantifiable decrease	0

In the following table counters are ordered by their location relative to the centre of Chester, starting with those located closest to the city centre. Map references refer to the accompanying map (section 8).

[3] None of the changes at individual counters are statistically significant.

Table 2-5 Description of automatic cycle counters in Chester

Map reference	Location	Time period	Annual change [b]	Average daily count in 2009 [c]	Comments
1.	Canal towpath, Northgate Locks	2009-2011	negative	Overall: 161 Weekdays: 164 Weekend days: 141	Located on a traffic-free shared use canal towpath a quarter of a mile west of the centre of Chester, an important commuter route and access between the Riverside and the main campus of the University of Chester. The counter also records cyclists travelling towards the racecourse and the council headquarters. Weekday counts show 'commuting' peaks.
2.	Riverpath next to Roodee Racecourse	2009-2011	No change	Overall: 44 Weekdays: 40 Weekend days: 62	Located on a traffic-free shared use riverside path approximately half a mile south of the centre of Chester. Chester Castle and a racecourse are nearby.
3.	Canal towpath, Boughton	2007-2011 [a]	Weekday: 0% Sat/Sun: +3%	Overall: 373 Weekdays: 417 Weekend days: 288	Located on a shared use traffic-free canal side path in the Boughton area approximately half a mile east of the centre of Chester. A school is nearby. Weekday counts show 'commuting' peaks.
4.	Riverpath at Cop Sewage Works	2009-2011	positive	Overall: 121 Weekdays: 114 Weekend days: 153	Located on Regional Route 89 of the National Cycle Network a riverside path adjacent to the River Dee and sewage works. Well used by both leisure cyclists and commuters, the site is approximately half a mile west of the centre of Chester.
5.	Liverpool Road at Total Fitness	2009-2011	Positive	Overall: 198 Weekdays: 179 Weekend days: 326	Located on National Route 5 of the National Cycle Network, a traffic-free shared use railway path approximately three quarters of a mile north of the centre of Chester in the Bache area. Weekday counts show 'commuting' peaks.

6.	Northgate Ponds	2008-2011 [a]	Weekday: +6% Sat/Sun: +9%	Overall: 144 Weekdays: 157 Weekend days: 110	Located at an access point to the Millennium Cycle Route from Northgate Ponds, this counter records cyclists on the access route onto the Millennium Cycle Route, a traffic-free shared use railway path that provides access to the Northgate Arena (leisure centre). It is approximately three quarters of a mile north of the centre of Chester. Weekday counts show 'commuting' peaks at both sites.
7.	Brook Lane, Millennium Cycle route	2008-2011 [a]	Weekday: +10% Sat/Sun: +10%	Overall: 278 Weekdays: 289 Weekend days: 265	Located adjacent to the access point from Northgate Ponds, this counter records cyclists on the Millennium Cycle Route. The counter monitors the route between the two northerly University sites and is approximately three quarters of a mile north of the centre of Chester. Weekday counts show 'commuting' peaks at both sites.
8.	Abbots Mead Millennium route	2009-2011	negative	Overall: 296 Weekdays: 285 Weekend days: 329	Located on a traffic-free section of National Route 5 of the National Cycle Network, approximately one mile north-west of the centre of Chester, close to a university site. Whilst the data collected at this site are thought to be reliable, the counter does not capture all possible movements of cyclists. Weekday counts show 'commuting' peaks.
9.	Newton Lane Bridge	2009-2011	positive	Overall: 190 Weekdays: 190 Weekend days: 188	Located on the Millennium Cycle Route (National Route 5 of the National Cycle Network), a traffic-free shared use railway path approximately one mile north-east of the centre of Chester in the Newton area. Since 2008/09 there has been access directly to Newton Primary school from the route close the counter. Weekday counts show 'commuting' and 'schools' peaks.
10.	Mickle Trafford Greenway	2009-2011	negative	Overall: 69 Weekdays: 60 Weekend days: 111	Located on the Mickle Trafford Greenway, a traffic-free shared use railway path surrounded by fields approximately two and a half miles north-east of the centre of Chester.

[a] data are also available for earlier periods, but to ensure consistency these have not been included in the analysis. Although the Northgate Ponds and Brook Lane counters were installed in 2002, no data are available for these sites between July 2005 and July 2008.
[b] for counters with less than 36 months of data only a tentative indication as to the direction of the change can be reported: positive, negative or no change
[c] due to significant disruption on sections of the Millennium Cycle Route in 2010, average daily counts in 2009 have been presented for Chester

2.3 Relationship between programme activity and automatic count data

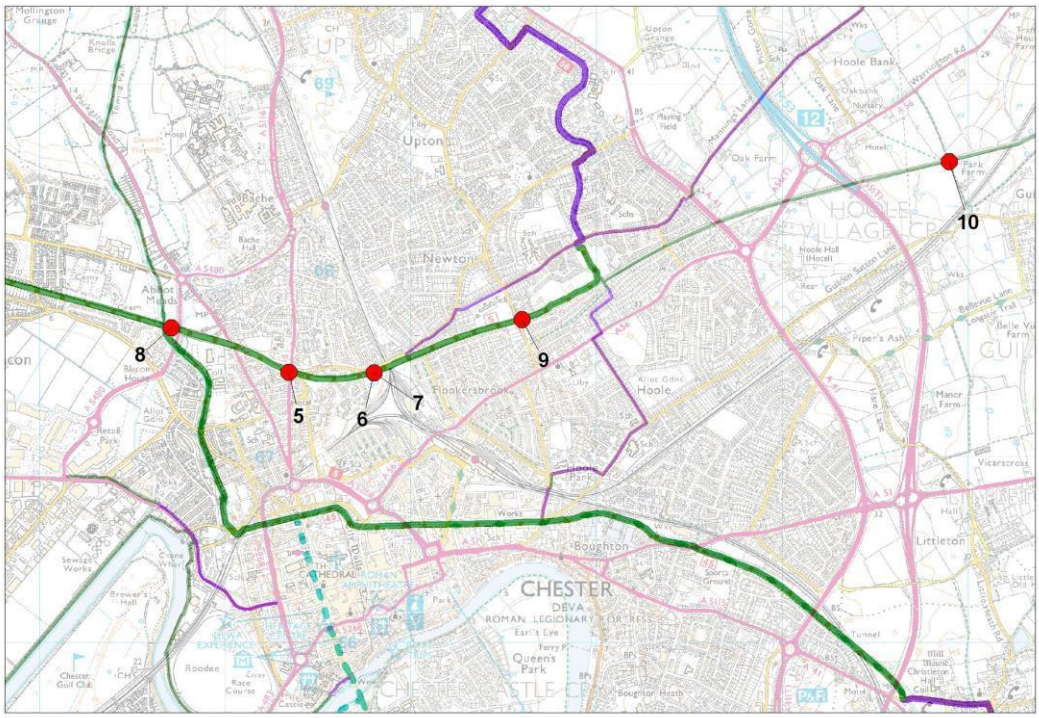
2.3.1 Movement on the Millennium Cycle Route

The Millennium Cycle Route follows the route of a disused railway line, running east-west to the north of Chester town centre. A 3km extension to the route was opened in October 2009. This extension runs from Kingsway to Mickle Trafford, enabling travel completely through Chester using this traffic-free route. The route was also enhanced during the programme through the addition of the Deva Link in mid 2010. This new access facility comprises a forked pathway linking the Greenway to the Deva Link Road (which accesses the centre of Chester and Sealand Road Retail Park) and the Shropshire Union Canal. Chester University is located close to the Greenway. The new link to the Shropshire Union Canal now provides a traffic-free route for students travelling from the University campus to student accommodation in the surrounding area. A number of schools are located close to the route.

A number of automatic cycle counters are located on the Greenway (Map 2-1), monitoring both access to and movement on the greenway route. From west to east:

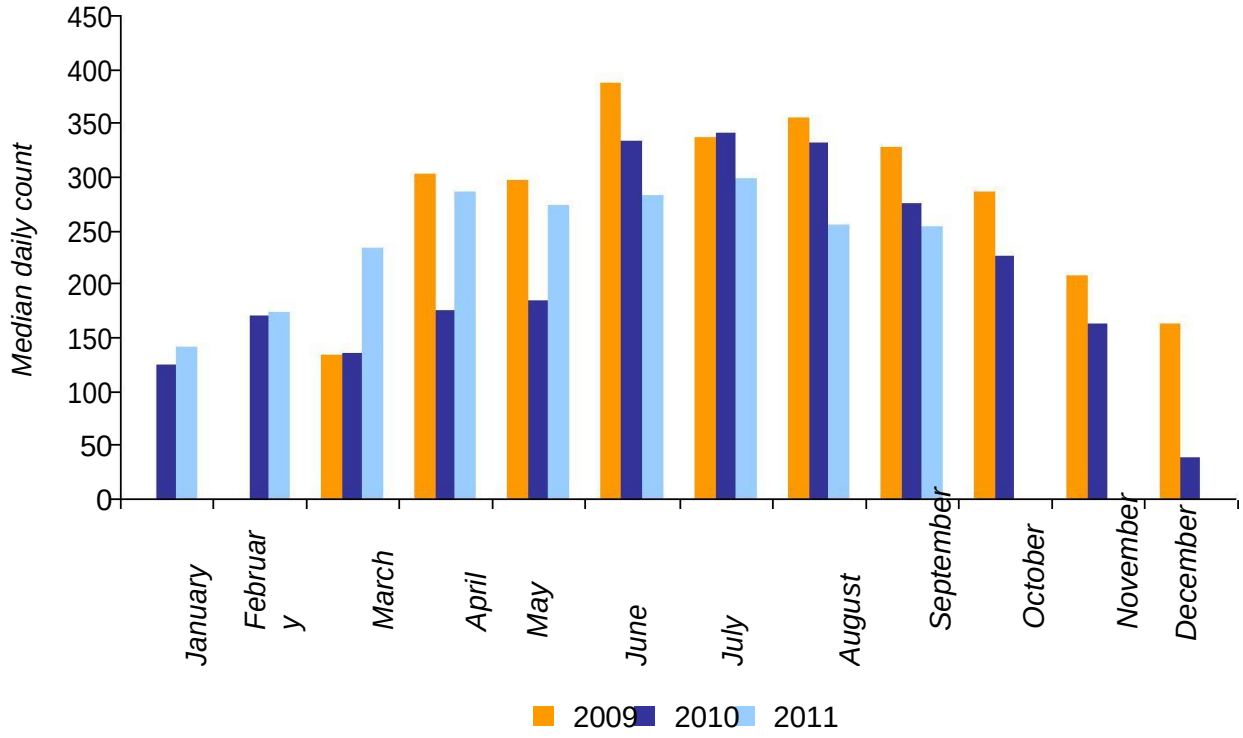
- At Abbots Mead, close to the new Deva Link access (map reference 8) – this counter records cyclists on an access route and the Millennium Cycle Route
- At Liverpool Road (map reference 5) – this counter records cyclists on an access route and the Millennium Cycle Route
- At Brook Lane (map reference 7) – this counter records cyclists on the Millennium Cycle Route
- At Brook Lane Northgate Ponds (map reference 6) – this counter records cyclists on an access route to the Millennium Cycle Route
- At Newton Lane Bridge (map reference 9) - this counter records cyclists on the Millennium Cycle Route on either side of two access routes
- On the Mickle Trafford section of the Millennium Cycle Route (map reference 10) – this counter records cyclists on an access route and on the Millennium Cycle Route

Map 2-1 Automatic cycle counters on the Millennium Cycle Route (site numbers refer to Table 2-5)



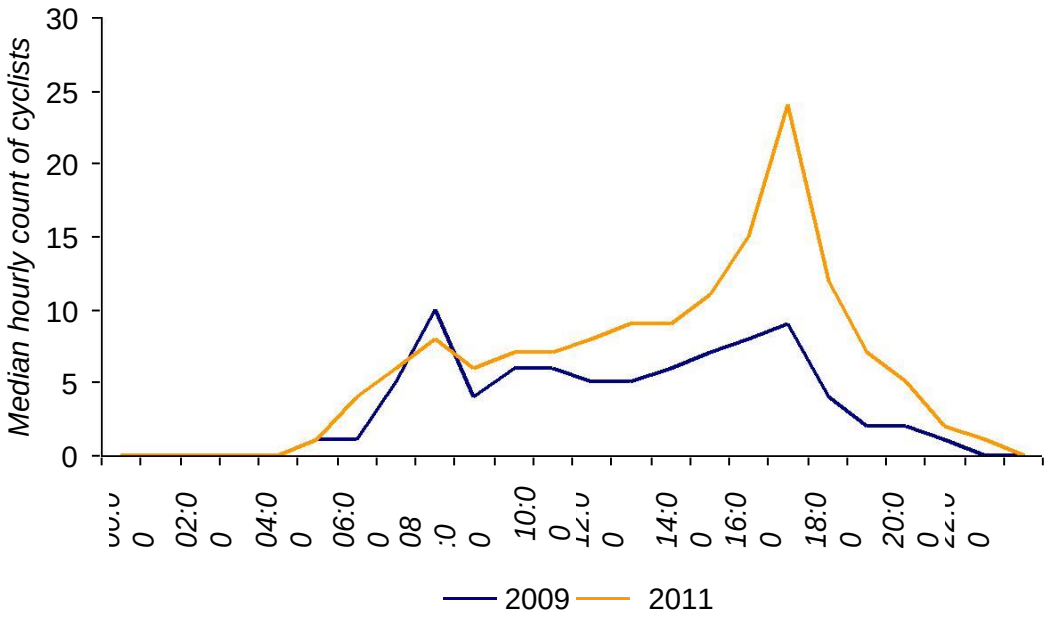
There was a significant amount of disruption in the area around the Abbot's Mead count site between 1/3/2010 and 03/05/2010 as the building of the Deva Link access resulted in closures of part of the Greenway. The volume of counts recovered to around the levels seen in 2009 in the early part of 2011, but the counts during the summer of 2011 have been lower than those seen in previous years (Chart 2-1). This may be due to a time lag between the connection of the three routes in this area and the establishment of regular use. The route remains a popular commuting and leisure route, however, with, on average, over 250 trips being counted at this location on weekdays and weekend days.

Chart 2-1 Median daily counts per month at the Abbots Mead count site between 2009 and 2011



The Liverpool Road site records the second highest counts on the Greenway, although the access route at this location (from the north) has the lowest counts amongst the four access routes onto the Greenway monitored by automatic cycle counters. More cyclists are counted travelling eastwards than westward and the peak in these counts occurs at 5pm. Chart 2-2 compares the hourly distribution in 2009 and 2011 as the bridge closure between this site and the Brook Lane site affected counts between 06/09/2010 and 17/12/2010. There had been a substantial increase in counts recorded during evening commuting times.

Chart 2-2 Median hourly counts on weekdays on channel 3 of the Liverpool Road counter in 2009 and 2011



The Brook Lane counters (Northgate Ponds and Brook Lane, Millennium Cycle Route) monitor the access route onto the Greenway at this point as well as journeys along the Greenway. The access route has a higher volume of cyclists than any of the other Greenway access routes. The median daily count of cyclists accessing the Greenway at this location is higher on weekdays (73) than on weekend days (49). The counter monitoring trips along the Greenway to the west of this access route has the highest counts of any location on the Greenway.

As with the nearby Liverpool Road counter, there has been an increase in the eastbound counts between 2009 and 2011 during late morning through to the evening and particularly at the evening commuting time. The westbound count has also increased in the evenings during the week, although neither direction has seen an increase in counts at during morning commuting times.

Comparison of median hourly counts between 2008 and 2011 indicates similar volumes of use in 2008 and 2009 followed by a drop in counts recorded in 2010, possibly linked to work on and closures of the Greenway (Charts 2-3 and 2-4). There is growth in both weekday and weekend counts in 2011 compared to previous years.

Chart 2-3 Median hourly counts on weekdays on the Brook Lane counter between 2008 and 2011

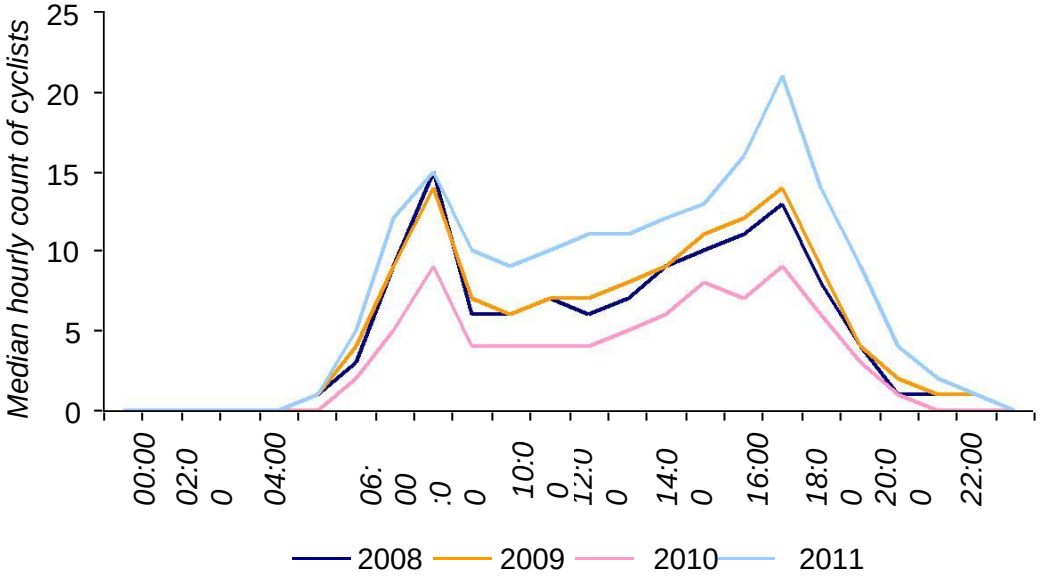
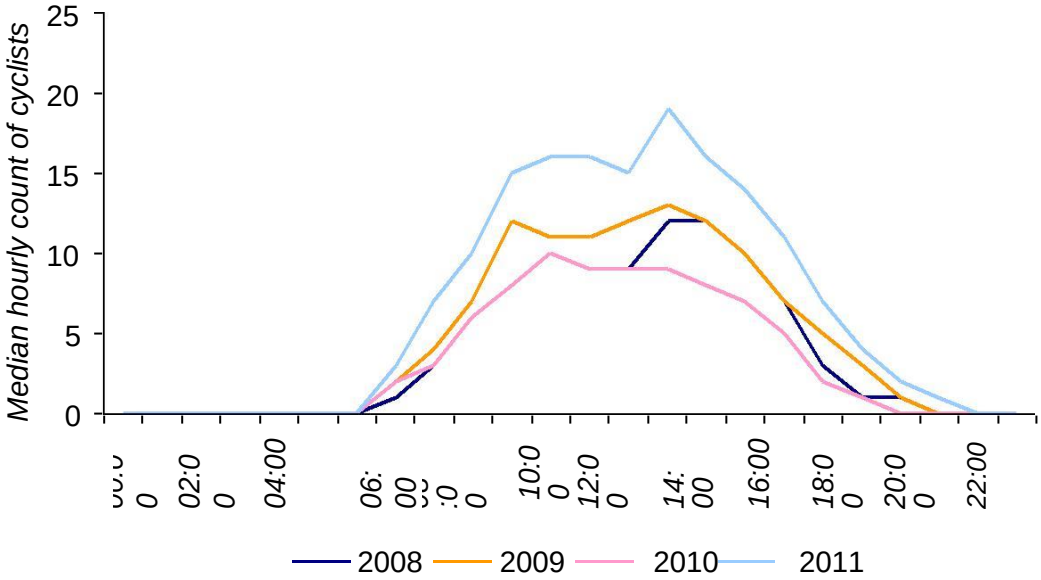


Chart 2-4 Median hourly counts on weekend days on the Brook Lane counter between 2008 and 2011



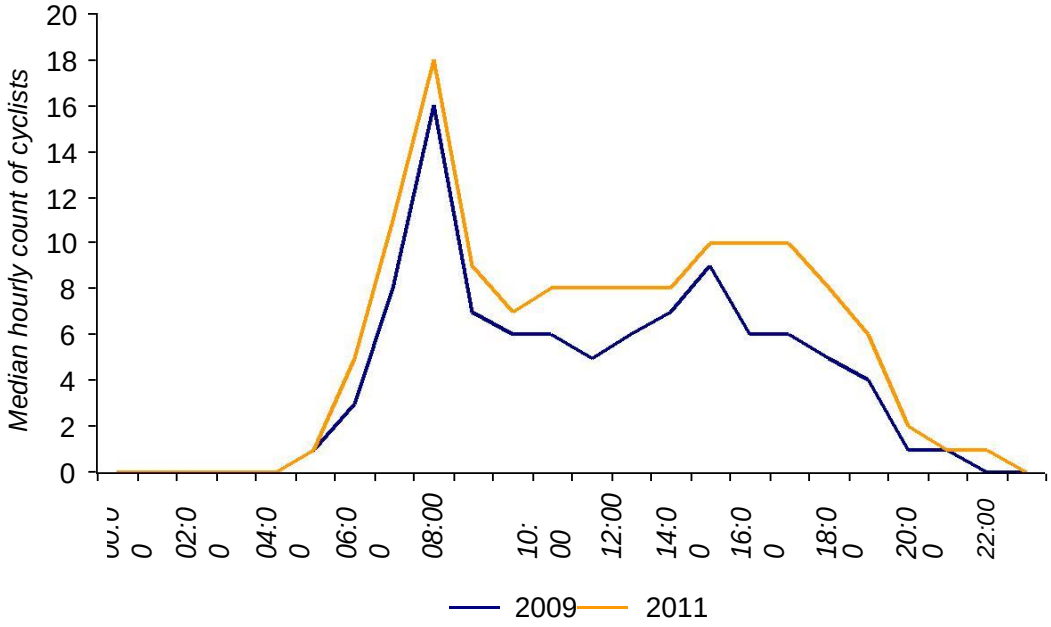
The Newton Lane Bridge is located close to both the Kingsway University campus and Newton Primary School. Newton Primary School became a Bike It school in the 2009/10 academic year and there was an increase in pupils cycling regularly to the school from 29% to 48% within the first year of the programme, based on a hands-up survey of pupils carried out before and after the Bike It programme.

This location had a lower median daily count in 2011 than the two counters to the West, namely Liverpool Road and Brook Lane, with 258 cyclists passing the location per day on average. As with other count locations on the Greenway described

above, the hourly distribution for this location includes substantial commuter time peaks but also relatively high counts maintained during the day.

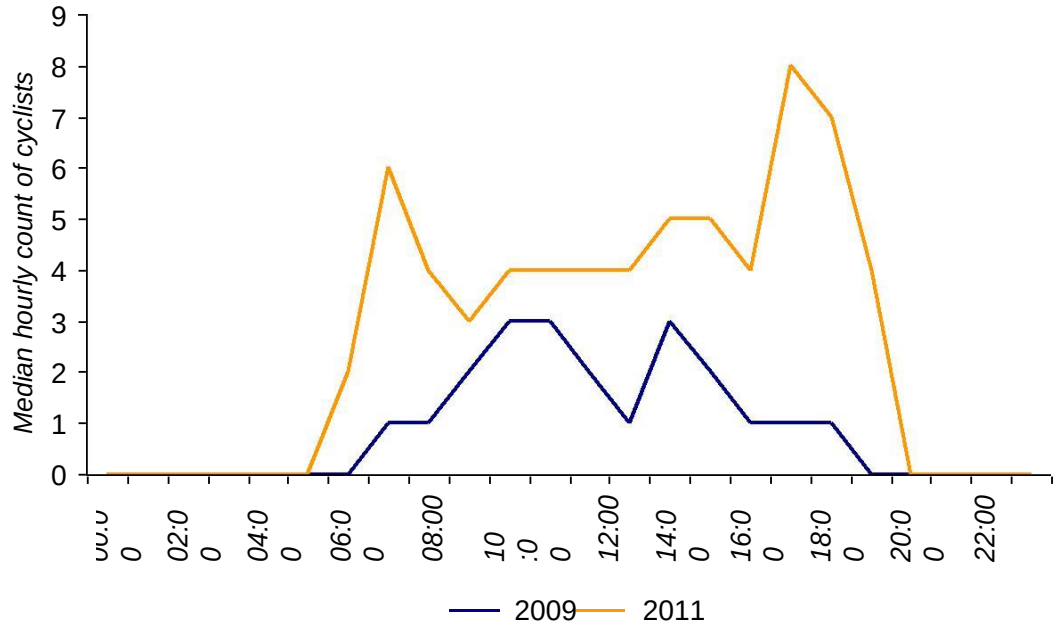
Although children cycling to school cannot be isolated within the morning commuting data, a mid afternoon increase in counts is visible within the data for one channel. Chart 2-5 shows the hourly distribution on weekdays in 2009 and 2011 for the westbound channel to the west of the access routes at Newton Lane Bridge. Increased counts between 3pm and 5pm go against the usual commuting flows along the Greenway and could relate to children travelling home from school.

Chart 2-5 Median hourly counts on weekdays travelling westward from the Newton Lane Bridge counter in 2009 and 2011



The channel of the Mickle Trafford counter recording movement on the Greenway to the west of the access route has a median count of just 8 cycles on weekdays in both the easterly and westerly directions. Data collected from the other channels suggest that many people join the Greenway at this access route and travel eastwards – a daily median count of cyclists of 45 on weekdays and 82 on weekend days is recorded. This route has seen an increase in use at all times of day between 2009 and 2011, particularly during commuting times (Chart 2-6).

Chart 2-6 Median hourly counts on weekdays on channel 2 of the Mickle Trafford counter in 2009 and 2011



Combining all of these counters, there is an increase of +18% relative to a 2009 baseline (Table 2-6). The growth relative to a 2009 baseline for counters located elsewhere in Chester is +17%. Growth recorded at sites away from the Millennium Cycle Route is more evenly distributed across the years, potentially because these other locations were not impacted by infrastructure works to the same extent as count sites on the Millennium Cycle Route.

Table 2-6 Change in cycle count along the Millennium Cycle Route in Chester at the end of the Cycling City and Towns period relative to a 2009 baseline (baseline = 100%)

		2009	2010	2011
Change against 2009 baseline	Counters on the Millennium Cycle Route	100%	88%*	118%*
	Counters not on the Millennium Cycle Route	100%	107%*	117%*

* indicates a significant difference ($p<0.05$) compared to the 2009 baseline

3 Analysis of manual count data

Although biennial manual counts have been undertaken on a cordon around Chester city centre since 2001, quarterly 12 hour manual counts of cyclists have only been performed since quarter 4 of 2009. The 19 sites for which data are available form a partial cordon around the city centre and include key access points to the city centre including bridges over the river Dee. The locations of the 19 sites, indicated on the accompanying map (section 8) are as follows:

- Grosvenor Bridge (map reference A)
- Old Dee Bridge (map reference B)
- Queens Park Suspension Bridge (map reference C)
- North of River Dee at Racecourse (map reference D)
- Boughton (map reference E)
- Canal Towpath at Boughton Retail Centre (map reference F)
- Bridge over Canal Bank of Scotland Carpark to Boughton Retail Centre and canal towpath (map reference G)
- Hoole Road at Railway Bridge (map reference H)
- Victoria Road (map reference I)
- Upper Northgate Street a (map reference J)
- Upper Northgate Street b (map reference K)
- Lorne Street (map reference L)
- Garden Lane (map reference M)
- Canal Street (map reference N)
- Canal Towpath at bottom of Northgate Locks (map reference O)
- Steps from City Walls (map reference P)
- New Crane Street (map reference Q)
- Riverside Path at Racecourse and Footbridge to Curzon Park (map reference R)
- Millennium Way at Brook Lane (map reference S)

Manual counts were also undertaken at two additional sites in quarter 4 2009 and quarter 4 2010 only. A further nine sites have data for just one point in time.

Chart 3-1 presents the total counts in each quarter across the 19 count sites for which data are available since quarter 4 2009. The seasonality within the data is evident from the higher counts in quarters 2 and 3. The counts in quarter 4 2010 are much lower than the corresponding counts in 2009, although this may be a result of differences in the weather. Most counts in quarter 4 2009 took place on dry days, whereas around half of the quarter 4 2010 counts were reported to have taken place on days when the weather included “heavy showers”. The quarter 1 counts increase between 2010 and 2011.

Chart 3-1 Total counts for 19 manual count sites in Chester

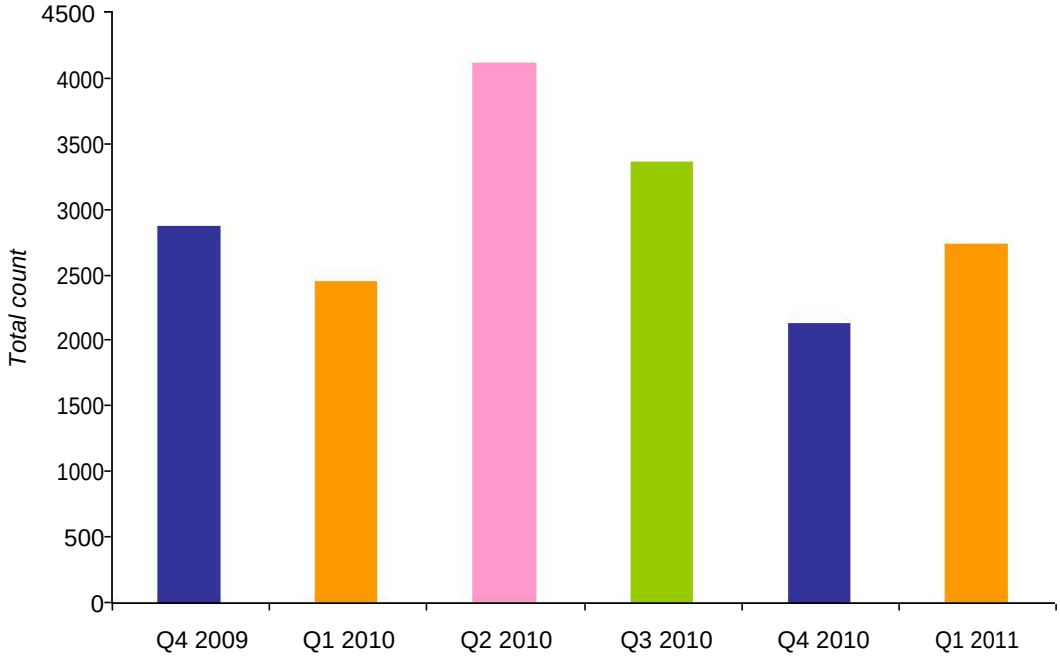
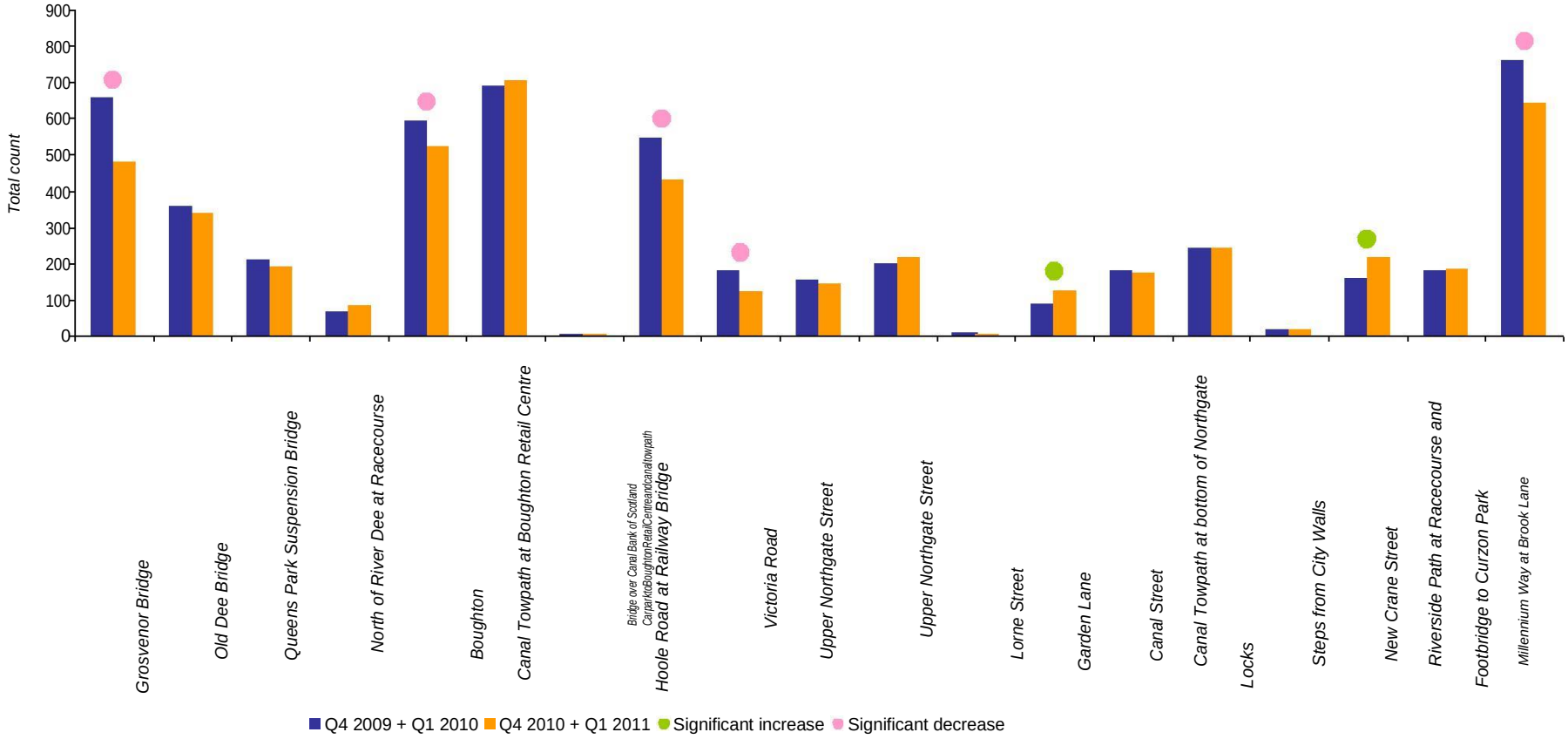


Chart 3-2 compares data collected in quarter 4 2009 and quarter 1 2010 with data collected in quarter 4 2010 and quarter 1 2011.

Chart 3-2 Comparison of manual count data collected in Chester in quarter 4 2009 and quarter 1 2010 with data collected in quarter 4 2010 and quarter 1 2011[4]



[4] Marked as significant where p<0.05.

A significant change in counts was observed at seven of the 19 sites between the two periods analysed. Five of these were significant decreases and two were significant increases.

As noted above, it is likely that the quarter 4 counts in 2010 were affected by poor weather. In order to determine whether the decreases observed in Chart 3-2 are driven solely by the difference in quarter 4 counts, further analysis was performed to compare quarter 4 in 2009 and 2010, and quarter 1 in 2010 and 2011 individually. In Table 3-1 the first two columns detail for each count site whether the count increased or decreased between the two periods being compared, and whether the difference was significant (indicated by *). The third column provides the corresponding figures for the comparison of data from quarter 4 2009 and quarter 1 2010 combined with data from quarter 4 2010 and quarter 1 2011 combined (as in Chart 3-2 above).

Table 3-1 : Direction of change at 19 manual count sites in Chester for three comparison periods

Period compared	quarter 4 2009 and quarter 4 2010	quarter 1 2010 and quarter 1 2011	quarter 4 2009 + quarter 1 2010 and quarter 4 2010 + quarter 1 2011
Grosvenor Bridge	negative*	positive	negative*
Old Dee Bridge	negative	positive	negative
Queens Park Suspension Bridge	negative	positive	negative
North of River Dee at Racecourse	negative*	positive*	positive
Boughton	negative*	positive	negative*
Canal Towpath at Boughton Retail Centre	negative*	positive*	positive
Bridge over Canal Bank of Scotland Carpark to Boughton Retail Centre and canal towpath	positive	negative	negative
Hoole Road at Railway Bridge	negative*	positive	negative*
Victoria Road	negative*	negative	negative*
Upper Northgate Street a	negative	negative	negative
Upper Northgate Street b	negative	positive	positive
Lorne Street	negative	positive	negative
Garden Lane	positive	positive*	positive*
Canal Street	negative	negative	negative
Canal Towpath at bottom of Northgate Locks	negative	positive	positive
Steps from City Walls	positive	negative	negative
New Crane Street	positive*	positive	positive*
Riverside Path at Racecourse and Footbridge to Curzon Park	negative	positive	positive
Millennium Way at Brook Lane	negative*	positive	negative *
Number of count sites showing growth [a]	4 (1)	14 (3)	7 (2)
Number of count sites showing decrease [a]	15 (7)	5 (0)	12 (5)

*indicates significant change between count periods ($p<0.05$)

[a] Figure in brackets gives the number of sites where the change is statistically significant ($p<0.05$)

Combining data from all of the manual count sites shows a significant decrease when quarter 4 is compared in 2009 and 2010 and also when quarter 4 2009/quarter 1 2010 are compared with quarter 4 2010/quarter 1 2011. A significant increase is observed when data from all of the manual count sites in quarter 1 2010 is compared with the data from the same sites in quarter 1 2011.

Table 3-1 indicates a mixed picture of change depending on the quarters of data compared. Only five on the 19 sites show the same direction of change when comparing the first or fourth quarters.

Due to the short period of time for which data are available, and the variability in manual count data that can arise from fluctuations in weather on count days, it is not possible to draw definite conclusions regarding changes in volumes of cyclists crossing the cordon into the centre of Chester during the Cycling City and Towns programme.

4 Analysis of school related data

During the Cycling City and Towns programme, Cycle Chester delivered Bikeabilty Level One training to 1,122 children and Bikeability Level Two training to 1,098 children. Bike It has been delivered in 19 schools in Chester. Improved information about the suitability of streets for children to cycle on has been provided through a full audit of streets in the Borough.

4.1 PLASC

The percentages of pupils in Chester stating cycling to be their usual mode of travel to school are summarised in Table 4-1. The proportion of pupils usually cycling to primary schools has seen a small increase between 2006/07 and 2010/11 (from 1.6% to 1.9%), whilst levels of cycling to secondary schools have seen a significant increase over the same time period (from 3.4% to 4.4%). Considering data across all schools, the proportion of children cycling to school has increased significantly, from 2.5% in the 2006/07 academic year to 3.2% in 2010/11.

Table 4-1 Percentage of pupils surveyed stating cycling to be their usual mode of travel to school

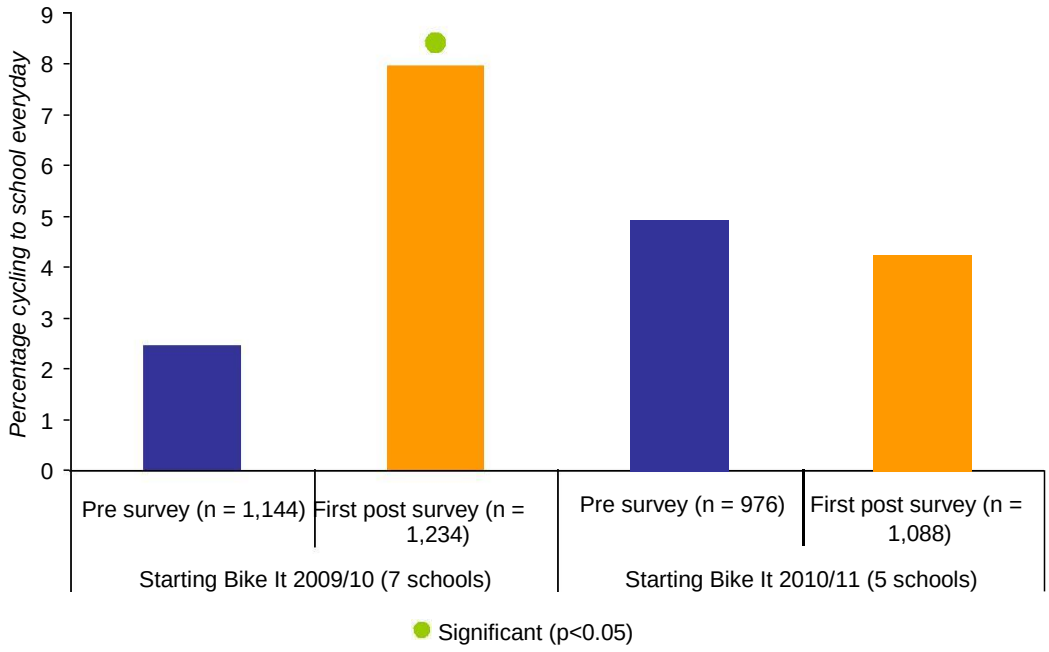
	Academic year				
	2006/07	2007/08	2008/09	2009/10	2010/11
Primary	1.6%	1.6%	2.0%	1.6%	1.9%
Secondary	3.4%	4.3%	5.0%	4.6%	4.4%*
All schools	2.5%	3.0%	3.5%	3.1%	3.2%*

[a] These figures are based on data from 27 primary schools and six secondary schools
* indicates a significant change in cycling in the 2010/2011 academic year compared to the 2006/07 academic year ($p<0.05$)

4.2 Bike It

Bike It has been delivered in 19 schools in Chester during the Cycling City and Towns programme. Data are available in the standard format (i.e. pre survey followed by a post intervention survey at the end of the first academic year of engagement) for 12 schools. Aggregated percentages of children cycling everyday for schools starting Bike It in each academic year during the programme are presented in Chart 4-1. The change in the proportion of children reporting to cycle to school everyday between the pre and post survey is significant for schools starting Bike It in the 2009/10 academic year.

Chart 4-1 Proportion of children cycling to school everyday in the pre engagement Bike It survey and the first post-engagement survey



Aggregating together data from all pre intervention and first post intervention surveys performed during the project, the percentage of children surveyed cycling to school everyday increased from 3.6% to 6.2%[5], whilst the proportion cycling to school regularly increased from 18.6% to 31.9%[6]. The proportion 'never' cycling decreased from 63.5% to 42.0%[7]. The proportion of children cycling to school on the day of the survey increased from 4.8% to 11.2%[8].

For two schools in Chester, data are available from hands up surveys performed at the end of the second academic year after initial engagement. The proportion cycling to school everyday, regularly and never are presented in Table 4-2. These data suggest that levels of cycling in schools engaged with Bike It are sustained into the years following initial engagement. However, it should be noted that schools may continue to have the support of Bike It officers beyond the first year of Bike It delivery, with some engagement 'at distance'.

[5] Significant increase (p<0.05)
[6] Significant increase (p<0.05)
[7] Significant decrease (p<0.05)
[8] Significant increase (p<0.05)

Table 4-2 Proportion of children cycling to school everyday, regularly and never before Bike It and at the end of the first and second academic years of engagement

% Cycling to school	Pre survey [a]	First post survey[b]	Second post survey[c]
Everyday	3.5%	6.5%	4.4%
Regularly	22.1%	38.9%*	34.0%*
Never	56.5%	38.4%*	39.1%*

[a] pre-Bike It survey (in September of the first academic year of engagement)
[b] first Bike It survey performed at the end of the first academic year of engagement
[c] second Bike It survey performed at the end of the second academic year of engagement
* results are significantly different to the pre-intervention survey results ($p<0.05$)

Table 4-3 presents levels of cycling to school as recorded by PLASC in schools where Bike It was delivered between 2006 and 2011. In the table below non-Bike It schools are those not engaged in Bike It at any point between 2006 and 2011.

Table 4-3 : Comparison of PLASC data from non-Bike It schools and Bike It schools grouped by year of first engagement in Chester

	2007	2008	2009	2010	2011
Non-Bike It schools [a]	2.8%	3.9%	4.6%	4.3%	4.5%
Bike It in 2009 [b,d]	1.0%	1.3%	1.3%	0.8%	1.0%
Bike It in 2010 [c,d]	2.8%	2.8%	3.2%	2.7%	2.6%

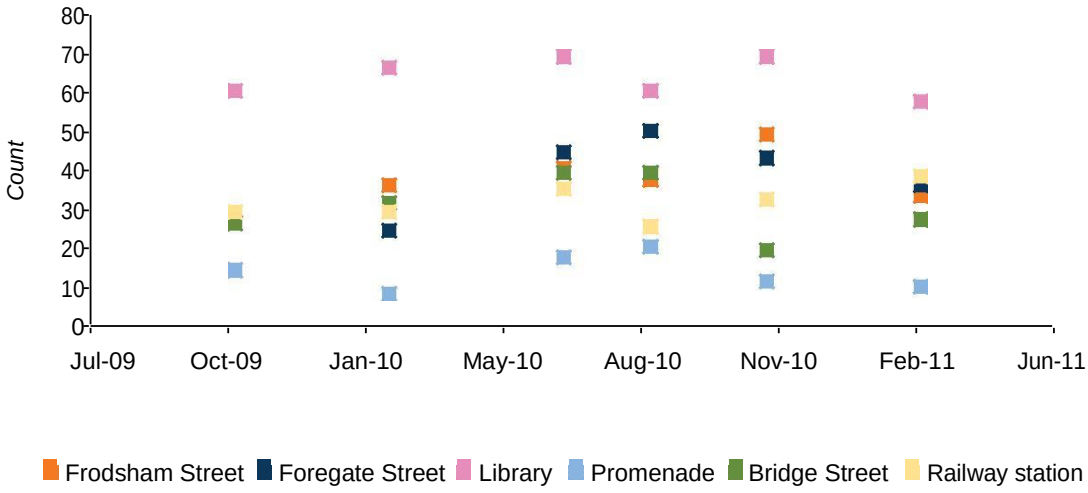
[a] Data for 11 primary schools and four secondary schools that were not engaged in Bike It
[b] Data for nine primary schools initially engaged in Bike It in 2009
[c] Data for seven primary schools and two secondary schools initially engaged in Bike It in 2010
[d] PLASC data are collected in January. Bike It engages with schools from the beginning of the academic year. For schools starting Bike It in, for example, 2008, the relevant PLASC year is 2009

5 Analysis of counts of parked bicycles

Counts of parked bicycles were undertaken in Chester between 2009 and 2011Counts were undertaken in six beats.

Most locations display relatively short stay parking. For five of the beats, excluding the railway station where short stay counts were not undertaken, between 51% and 85% of parking is for two hours or less. The beats covering the library, the promenade and Bridge Street display some level of ‘all day’ parking. The beat around the railway station displays predominantly all day parking with more than 77% of parking being for eleven hours or more. Overall, the majority of parking identified in the surveys is likely to be linked with non-commuting trips. The numbers of bicycles counted on each beat are presented in Chart 5-1.

Chart 5-1 Number of bicycles parked by beat and year



The counts of parked bicycles data recorded in Chester show no seasonal pattern and no discernable trend over the period of the study.

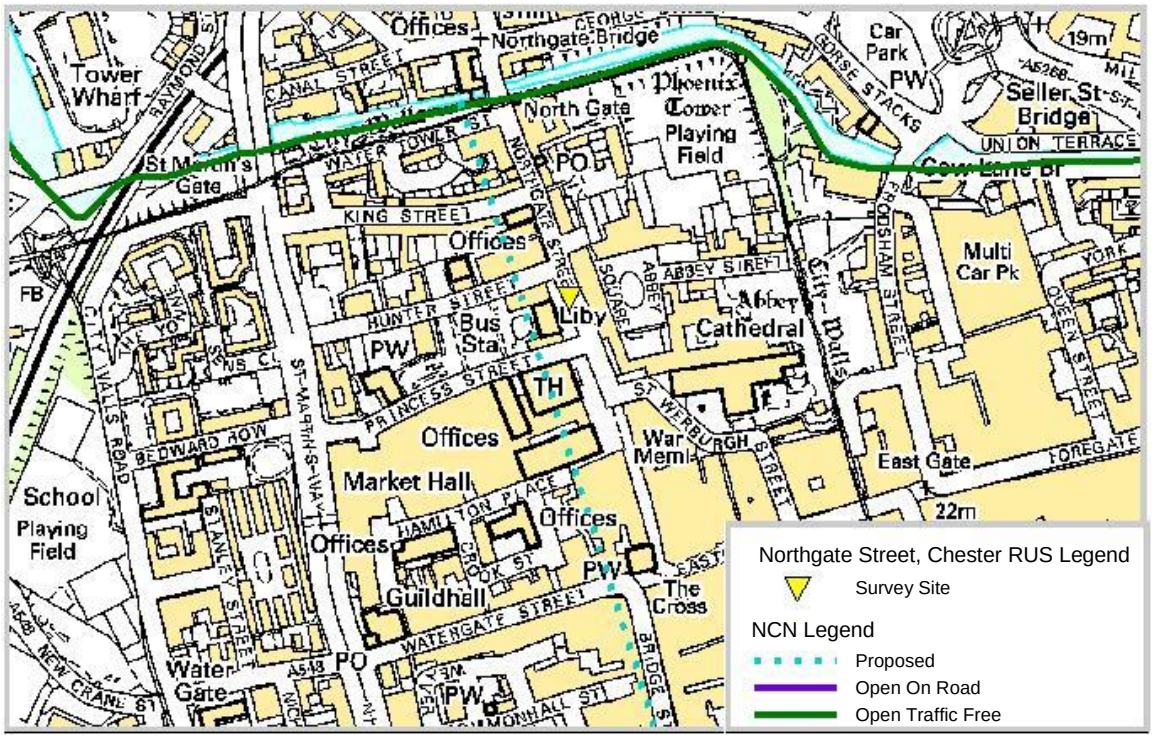
6 Route user intercept surveys

Route user intercept surveys have been performed at two sites in Chester – Northgate Street and Canal Side. In both instances, route users were counted and interviews performed over 12 hours on each of four days – a school-holiday weekday, a school-holiday weekend day, a term-time weekday and a term-time weekend day.

6.1 Northgate Street

The survey was conducted on Northgate Street during October 2009 and February 2010. The site is located in the centre of Chester, between the junctions where Hunter Street and Princess Street meet Northgate Street, near to the library (Map 6-1).

Map 6-1 Route user intercept survey on Northgate Street in Chester

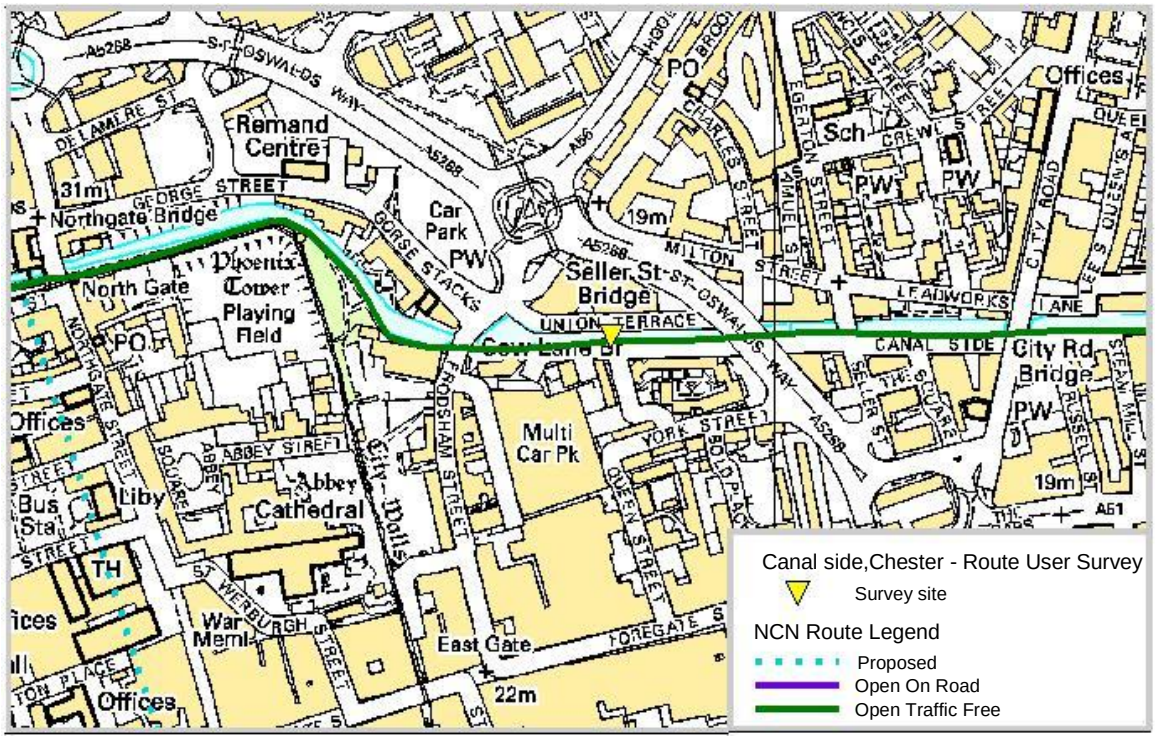


Over the four day survey period, 1,597 cyclists were counted. Of the cyclists interviewed, there were broadly similar proportions of people recording the following journey purposes: personal business, shopping, commuting and leisure (28.7%, 25.2%, 26.4% and 19.7% respectively). Most cyclists classified themselves as experienced regular cyclists (83.5%); 8.8% were experienced occasional cyclists and 7.6% were occasional cyclists. When asked about factors influencing their decision to use the route, 92.7% agreed or strongly agreed it was the best transport option, 91.0% that this was the most convenient route, 71.9% liked the surroundings on the route and 60.9% that the route felt safe.

6.2 Canal Side

The survey was undertaken on Canal Side during October 2009 and February 2010. The Canal Side site is located on the south side of the canal to the north of Chester. The survey was conducted to the west of St Oswalds Way, close to the junction of Canal Side and Back Queen Street (Map 6-2).

Map 5-2 Route user intercept survey on Canal Side in Chester



Over the four day survey period, 1,069 cyclists were counted. At the time of the survey most cyclists were commuting (43.0%), followed by shopping (32.5%), journeys for leisure (13.7%), personal business (6.7%), education (2.4%) and other reasons (1.8%). Most cyclists classified themselves as experienced regular cyclists (74.2%), whilst 14.5% self classified as experienced, occasional cyclists, 6.5% as occasional cyclists, 4.4% as starting to cycle again and 0.5% as new to cycling. When asked about factors influencing their decision to use the route, 95.8% agreed or strongly agreed that it was the best transport option, 95.1% that this was the most convenient route, 89.0% that they liked the surroundings on the route and 79.8% that the route felt safe

7 Analysis of casualty data

Cycle user casualty data were derived for Chester from STATS19 collision data. The average number of killed, seriously injured and slightly injured in each year prior to the Cycling City and Towns programme (2003-2008) are compared to those occurring during the programme in Table 7-1. Data were made available for 2009 only, therefore the in-programme accident values relate to a single year. The difference between the time periods compared for both casualties who are killed and seriously injured is not significant. There is a significant decrease in the number of cyclists slightly injured and the total number of cycling casualties, although this may be influenced by limited data available during the programme period.

Table 7-1 Annual average number of cyclists killed or injured in Chester before (2003-2008) and during (2009) the Cycling City and Towns programme

	Annual average number of casualties			
	Killed	Seriously injured	Slightly injured	Total
Pre-programme	1.2	7.0	30.2	38.3
During programme	0.0	2.0	8.0*	10.0*

* indicates a significant change between cycling casualties recorded before and during the Cycling City and Town programme

8 Analysis of physical activity data

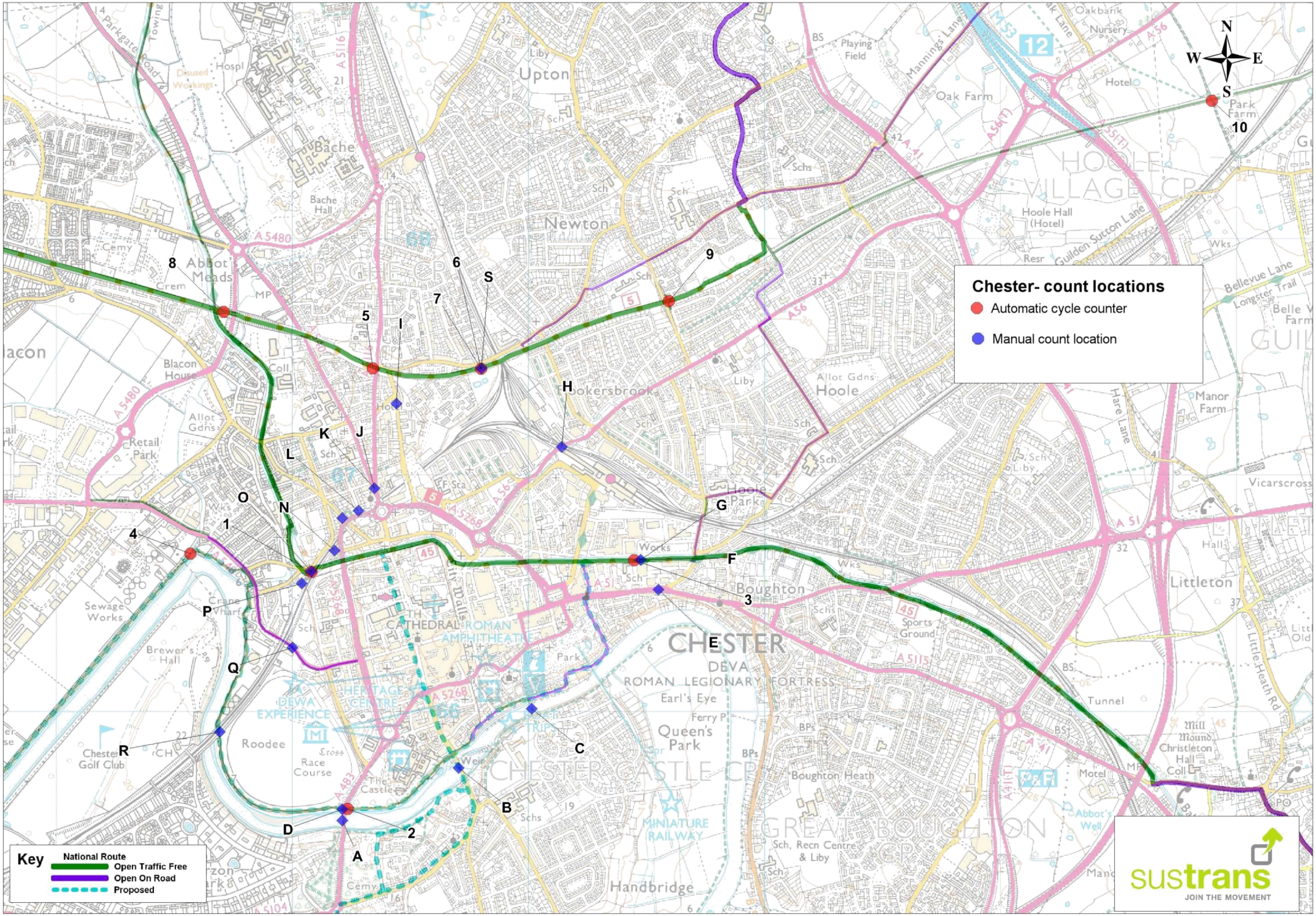
Data are available from Sport England's Active People Survey (APS) for two years prior to the Cycling City and Towns programme and all three years of the project. The APS data provides information on the proportion of people cycling for at least 30 minutes once or more per month and the proportion cycling for at least 30 minutes, 12 or more times per month. It should be noted that the data refers only to cycling in bouts of 30 minutes or more and therefore this measure may under represent overall cycling in the towns as shorter journeys are not included.

The proportion cycling once or more per month fell by 5.6%-points (from 18.6% to 12.9%) in Chester between 2007/8 and 2010/11. This was a significant decrease ($p<0.05$). The proportion cycling 12 or more times per month fell by 0.6%-points (from 2.5% to 1.8%) over the same period[9].

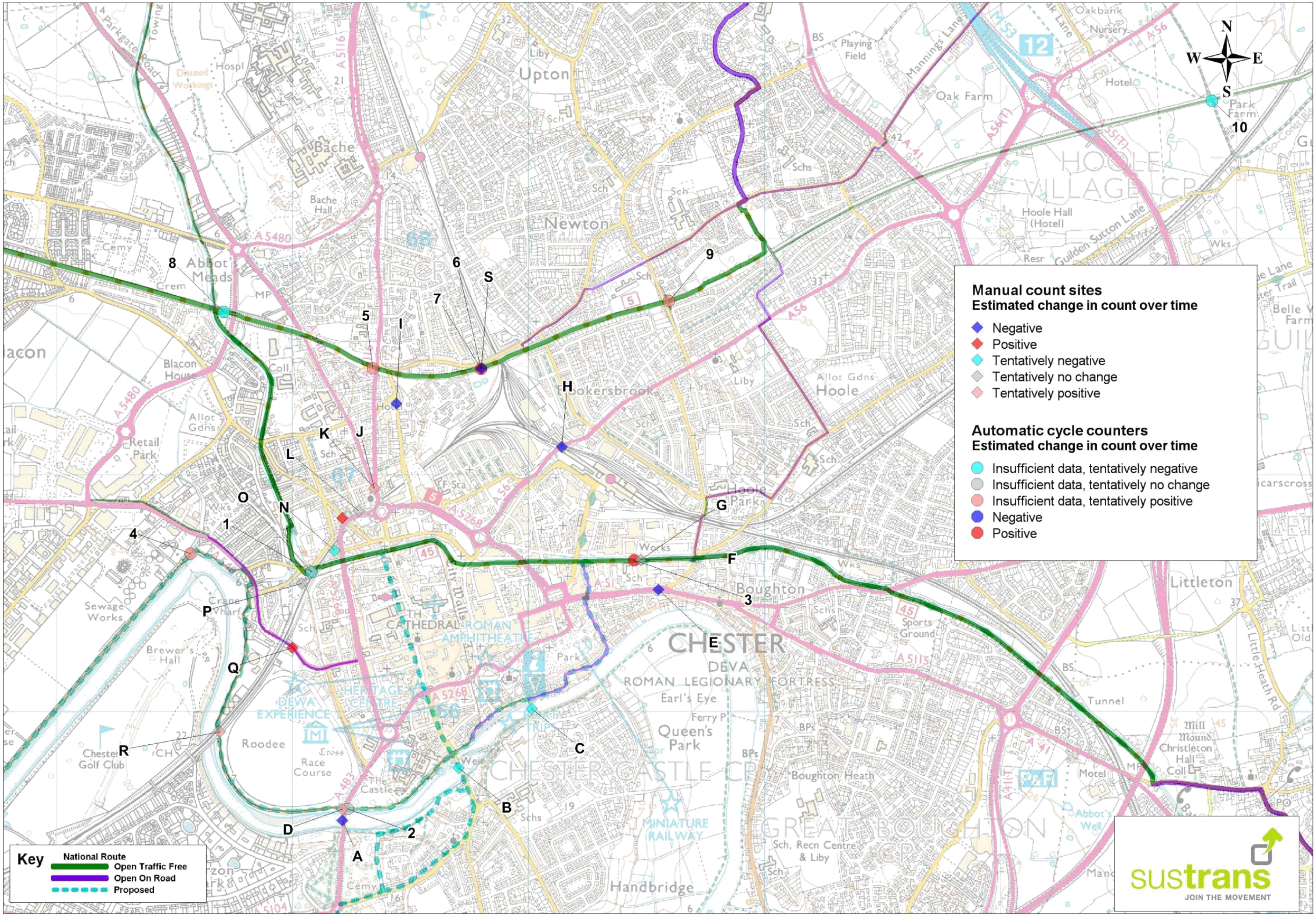
9 Maps

The following pages contain maps indicating the location of manual count and automatic cycle counter locations, and the estimated change in volumes of cycles recorded at these sites.

[9] The decrease was not significant ($p=0.48$)



Chester- count locations
Automatic cycle counter
Manual count location
Key
National Route
Open Traffic Free
Open On Road
Proposed
N
S
E
W
CHESTER
DEVA
ROMAN LEGIONARY FORTRESS
Upton
Newton
Hoole
Boughton
Littleton
Handbridge
Queen's Park
Roodee
Race Course
Blacon
sustrans
JOIN THE MOVEMENT


Manual count sites
Estimated change in count over time
Negative
Positive
Tentatively negative
Tentatively no change
Tentatively positive
Automatic cycle counters
Estimated change in count over time
Insufficient data, tentatively negative
Insufficient data, tentatively no change
Insufficient data, tentatively positive
Negative
Positive
Key
National Route
Open Traffic Free
Open On Road
Proposed
CHESTER
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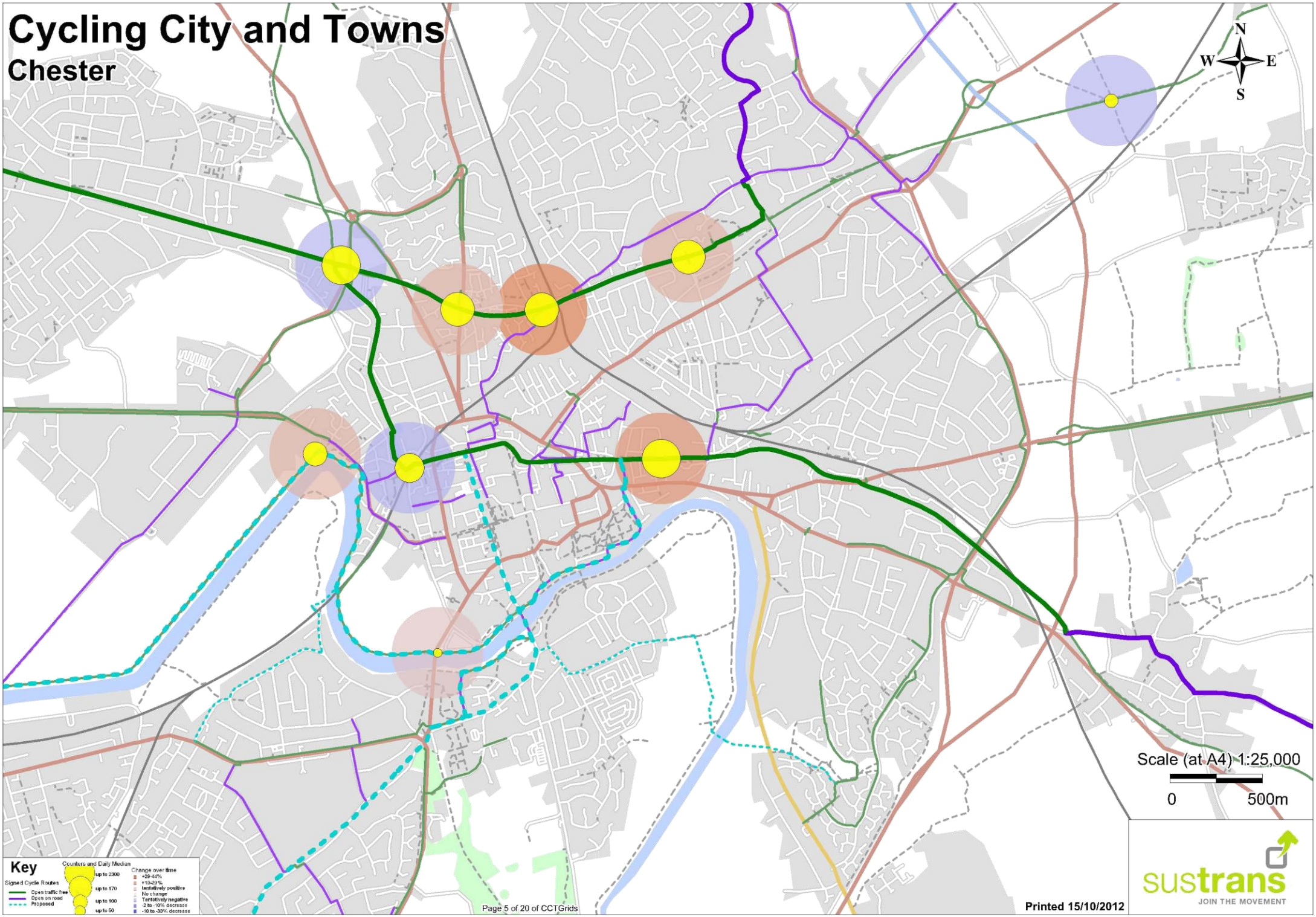
JOIN THE MOVEMENT

Cycling City and Towns

Chester



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