ANNEX G

Draft Final evaluation report (ITS)

Final feedback survey report (ITS)

UNIVERSITY OF LEEDS

Lendal Bridge Closure –
Draft Final Report

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1 Background to Study

The Institute for Transport Studies (ITS), University of Leeds (UoL), was commissioned by the City of York Council (CYC) to provide inputs into an evaluation of the Lendal Bridge trial closure. The closure commenced on 27th August 2013 and is applicable to private motorised vehicles between 10.30am and 5pm, 7 days a week. As part of the evaluation, a number of different strands of analysis were undertaken. Initial work focused around a street survey which was developed to capture the responses of tourists, residents and non-resident workers/visitors both before the closure was put in place and during the closure. Both surveys replicated each other and were designed to capture respondents' experiences (via a series of rating questions) with regards to accessing the city, moving around in the city and their views on the bridge closure. The survey findings are reported in Section 2 of this report.

During the same period, CYC conducted its own feedback survey. This took the form of an initial short feedback survey and then a much longer, more detailed feedback survey. The target audience for the feedback surveys was largely York residents/workers, although the survey was online and open to all. ITS has provided an independent analysis of this data and the findings from the detailed feedback exercises can be found in Section 3.

A further strand of evaluation focuses upon the analysis of traffic data collected by or on behalf of CYC. There is a large body of evidence to be analysed and it has not been possible to look at all the strands for this draft final report. Instead the focus brought to bear in Section 4 is upon bridge count data for vehicles & active modes, Automatic Traffic Count data and Park and Ride journey time data. Data on air quality and traffic speeds (as provided via Traffic Master) is still be analysed and will be included in the final report.

The last piece of evaluation is provided in the form of analysis conducted using the York SATURN model. This has attempted to compare predicted changes in traffic flow and route choice with actual changes to establish the suitability of using the SATURN model for assessing further changes to the York road network.

The key findings are then drawn together in Section 6 to provide an overall assessment of the Lendal Bridge trial closure to date.

2 ITS Pedestrian Survey

2.1 Survey Details

Two street surveys have been conducted in an effort to assess the experience of people in York city centre both before the Lendal Bridge trial closure and during the closure. The surveys have focussed on visitors, residents of York and workers in the area surrounding Lendal Bridge. Both surveys used self-complete, mail back paper questionnaires, which were distributed within the vicinity of Lendal Bridge. People were approached on street and asked if they wanted to take part in a survey about the city centre environment. If they agreed they were given a survey form to complete. No quotas were imposed for either survey. It should be noted that when people agreed to participate, these surveys were not obviously or directly related to the Lendal bridge trial. Therefore they are considered a better representation of balanced cross-sectional views than CYC's own feedback survey.

The first survey took place between 15 August and 20 August, the week before the Lendal Bridge trial closure began and towards the end of the summer school holidays. This was used to establish baseline data (*baseline survey)*. A total of 2,700 questionnaires were distributed with 671 returns, a

response rate of around 25%. The second survey took place between 28 October and 1 November, during the bridge closure (*during survey)*. This week was chosen as it was the half term school holiday and so would best reflect the sample gathered in the first survey. A total of 2,200 questionnaires were distributed and a total of 466 returned, a response rate of around 21%. Weather for both surveys was largely fine with some rain on 1 November. The questions in both surveys were identical (see appendix 1 & 2) with the exception of Q10 which reflected that the Lendal Bridge trial closure was actually in operation during the 2nd survey.

2.2 Key Descriptive Results

It became clear from the early analysis of both sets of survey data that the *baseline survey* was dominated by respondents who had non-commuting travel purposes, e.g. tourists and leisure trips. In total only 4% of the sample were making commuting trips. This is not altogether surprising given that the survey took place at the height of summer with extremely high tourists levels combined with a higher than average tendency for York based commuters to be on holiday. In contrast, the *during survey* has around 22% of the sample who are making commuting trips. Given the discrepancy between the two samples a decision was made not to include commuting journeys in this section to give a more balanced and accurate comparison of the two samples.

2.2.1 Overall Statistics

Tables 2.1, 2.2 and 2.3 outline the key socio-economic characteristics of both sets of respondents, along with their journey purpose, their access mode into the city centre and how often they visit the city centre. The distribution of respondents across age categories appears to be largely similar, as does access modes and frequency of access into the city centre. There are however, a couple of differences between the two sets of survey respondents, which may reflect the different time periods that the data was collected in and the random distribution of the questionnaires to respondents.

(1) Gender – Females have a much stronger representation than males, particularly in the *baseline survey*. This probably reflects a tendency for females to participate in surveys and to be taking on child care duties during the school holidays.
(2) Journey purpose – Tourism trips have a higher representation in the *during survey* than in the *baseline survey*, whilst shopping trips in general (both food and non-food) are considerably stronger in the baseline survey.

The differences between the two samples make the use of comparative assessments over the two time periods based on journey purpose the most meaningful comparison. .

The journey purpose segmentation has been split into two: (1) Tourism & business trips – as these suggest one off or less frequent trips (henceforth referred to as tourism trips & (3) Leisure[1] & other trips (henceforth referred to as leisure trips).

Table 2.1 Age and Gender of Respondents % (n)

	Age Categories %						*Gender %*	
	17-19	*20-29*	*30-39*	*40-49*	*50-59*	*60+*	*Male*	*Female*
Baseline Survey	4 (26)	4 (27)	9 (57)	21 (131)	18 (111)	45 (284)	34 (213)	66 (420)
During Survey	1 (5)	3 (9)	10 (33)	24 (85)	18 (63)	44 (154)	44 (154)	56 (194)

[1] Leisure & other trips encapsulates a wide range of trips: food shopping, non-food shopping, education, health related, accessing services, leisure/socialising, child escort, other escort & other.

Before moving onto the next section it is worth commenting on a similarity between both the surveys in that around 90% of respondents were accessing York for the purposes of non-food shopping, tourism and leisure/socializing. The mix of respondents will vary somewhat randomly between surveys due to differences in the underlying population in the area at the time. It appears that surveying in half term week has led to a comparative under-representation of resident shoppers. It should be remembered that tourists are not just visiting sites of interests but are also shoppers and the survey only captures their primary journey purpose.

Table 2.2 Journey Purpose & Access Mode % (n)

Purpose	*Baseline Survey*	*During Survey*	Access	*Baseline Survey*	*During Survey*
Business trip	0.9 (6)	0.6 (2)	Car driver + P&R	16.0 (102)	17.9 (60)
Food shopping	1.7 (11)	0.0 (0)	Car pass. + P&R	11.6 (74)	9.8 (33)
Non-food shopping	12.9 (83)	5.7 (20)	Car driver +park nearby	14.1 (90)	17.3 (58)
Education	2.2 (14)	0.9 (3)	Car pass + park nearby	10.3 (66)	6.8 (23)
Tourism	58.3 (375)	70.9 (249)	Walked/cycle + P&R	3.1 (20)	2.7 (9)
Health Related	0.6 (4)	0.3 (1)	Bus	14.4 (92)	14.0 (47)
Accessing services	1.9 (12)	1.7 (6)	Cycle	0.9 (6)	0.6 (2)
Leisure/Socialising	16.8 (108)	15.7 (55)	Walk	15.6 (100)	14.0 (47)
Child escort	0.5 (3)	1.4 (5)	Rail	13.9 (89)	17.0 (57)
Other escort	0.3 (2)	0.6 (2)	Motorbike/scooter	0.0 (0)	0.0 (0)
Other	3.9 (25)	2.3 (8)			

Table 2.3 How Often Do You Visit York City Centre % (n)

Frequency	*Baseline Survey*	*During Survey*
My first visit	27.3 (175)	25.6 (89)
5+ days per week	1.4 (9)	2.3 (8)
2 to 4 days per week	3.8 (24)	3.4 (12)
Once a week	5.5 (35)	2.9 (10)
2 to 3 days per month	5.9 (38)	3.2 (11)
Once a month	5.2 (33)	5.2 (18)
Less than once a month	50.9 (326)	57.5 (200)

Comparison of Access Mode by Purpose

Figures 2.1 to 2.2a below show that there is a broad range of access modes to the city centre for tourists and those engaged in leisure or socialising. **For visitors to York, access by non-car modes is the dominant form of access.** Only 27% of tourists[2] accessed the city centre by car (as either a driver or passenger) before the trial closure and this was even lower, 20%, for leisure purposes. The closure of the bridge saw a small reduction in direct car access for tourists (25%) and a small increase (22%) for those whose journey purpose was leisure and socialising. Bus access to the city centre (including park and ride) for tourism stood at 38% before the closure and has risen to 42% since the closure. For those engaged in leisure and socialising there has been a decrease from 54% to 49% following the bridge closure

Figure 2.1 Access Mode for Tourism – Baseline

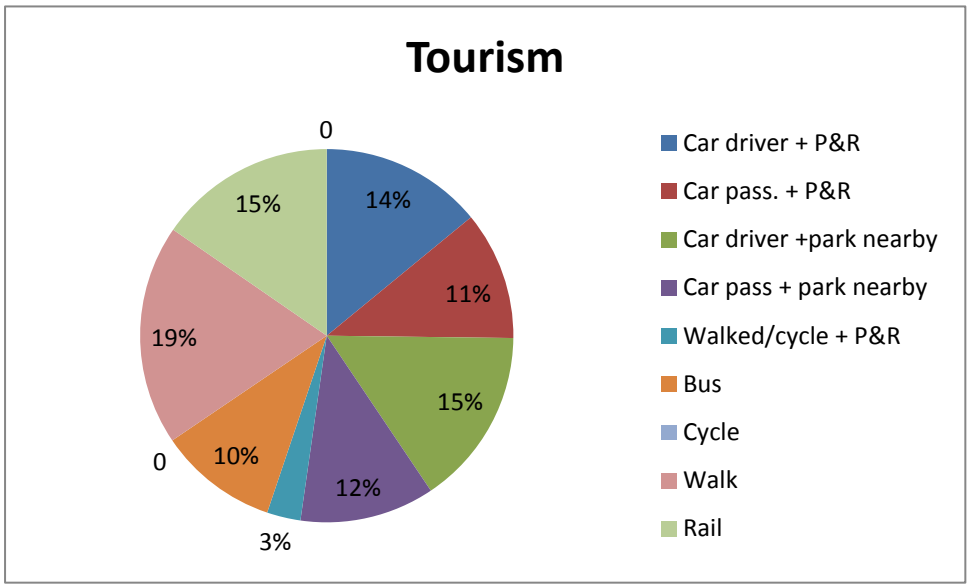
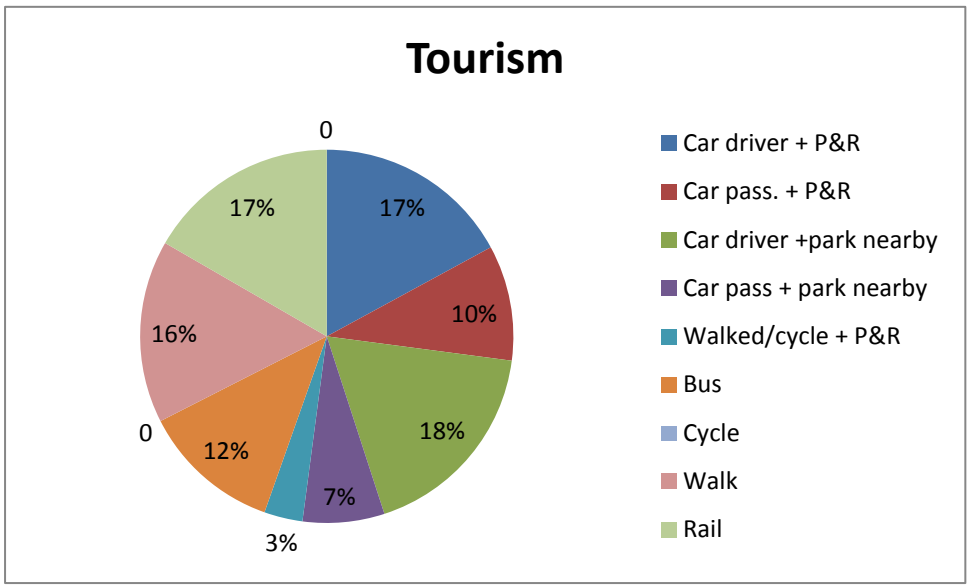


Figure 2.1a Access Mode for Tourism – During Survey



[2] Note this Tourism includes business trips but constitutes a very small amount (Table 3.2).

Figure 2.2 Access Mode for Leisure – Baseline Survey

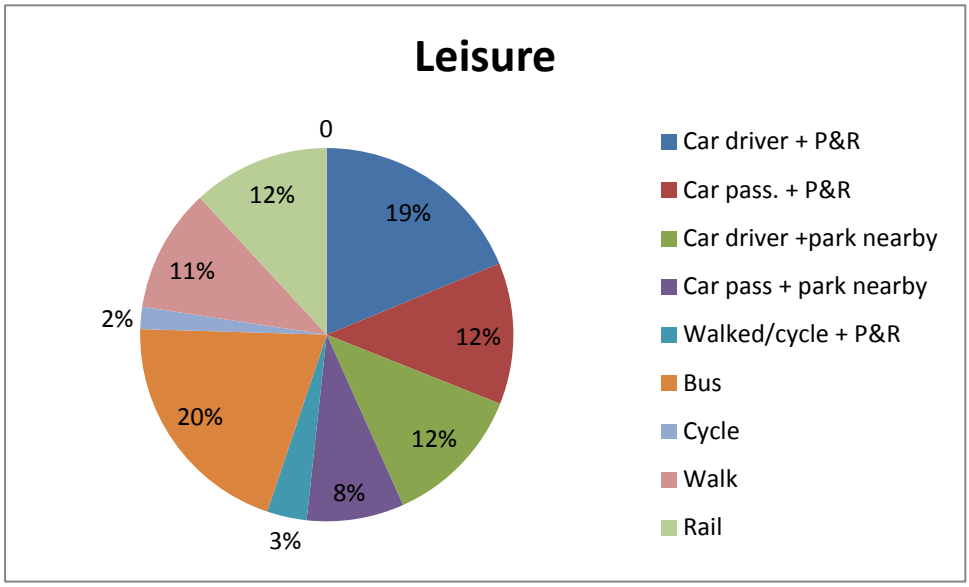
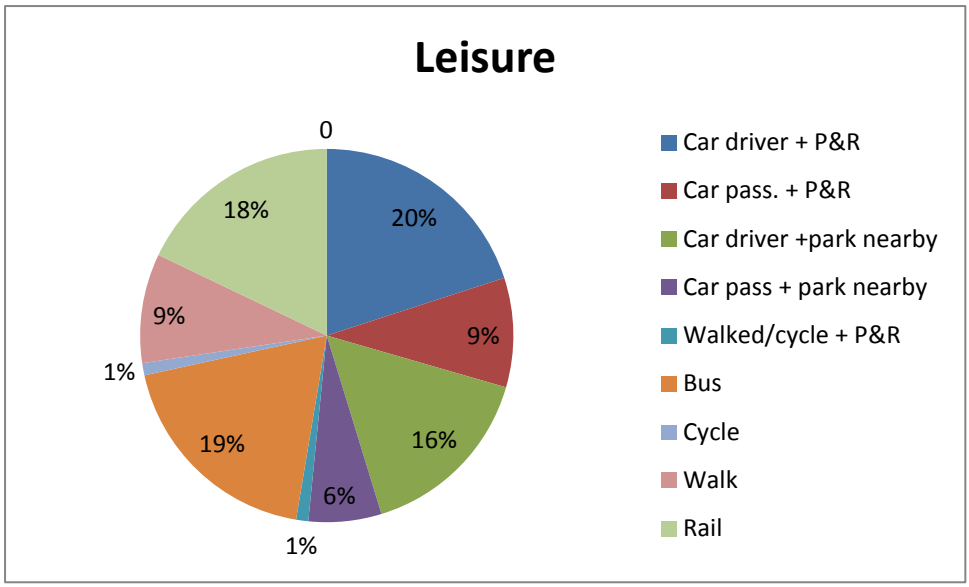


Figure 2.2a Access Mode for Leisure – During Survey



Comparison of Journey Frequency by Purpose

An analysis has been undertaken of the frequency of trips to York by different journey purpose (Figures 2.3 to 2.4a). This shows that in August, 60% of visitors are making a return visit, although the majority of these visit less often than once a month. In October 68% of tourists are making a return visit, which is likely to reflect the different make up of tourists in the UK in summer compared with an Autumn period. There has been an increase in the frequency of visits for leisure with 41% of all visitors reporting a frequency of visit of at least once a month in August, increasing to 47% after the bridge closure. Direct attribution of the impacts of the bridge closure is not possible as seasonal effects may explain some of this difference.

Figure 2.3 Frequency of Trips - Tourism – Baseline Survey

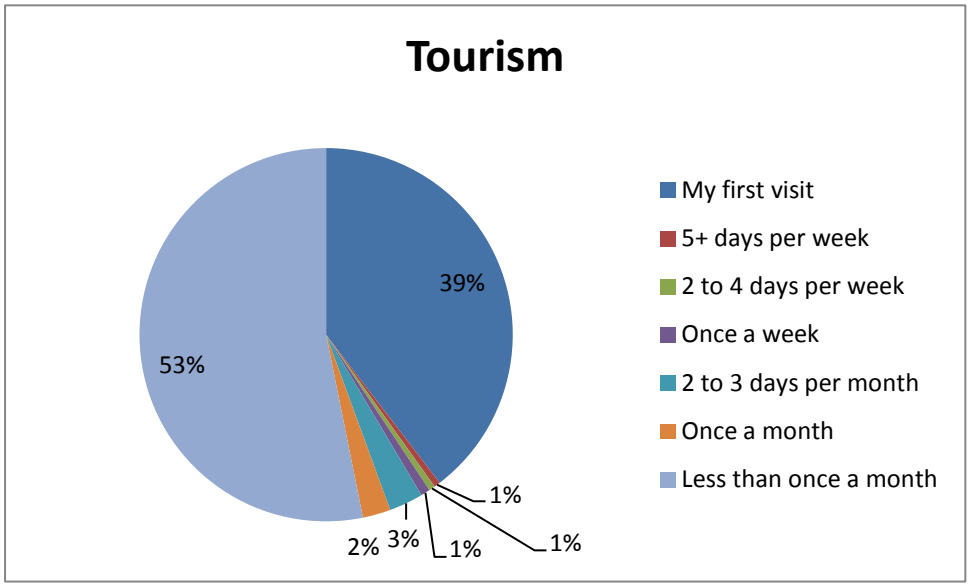


Figure 2.3a Frequency of Trips - Tourism – During Survey

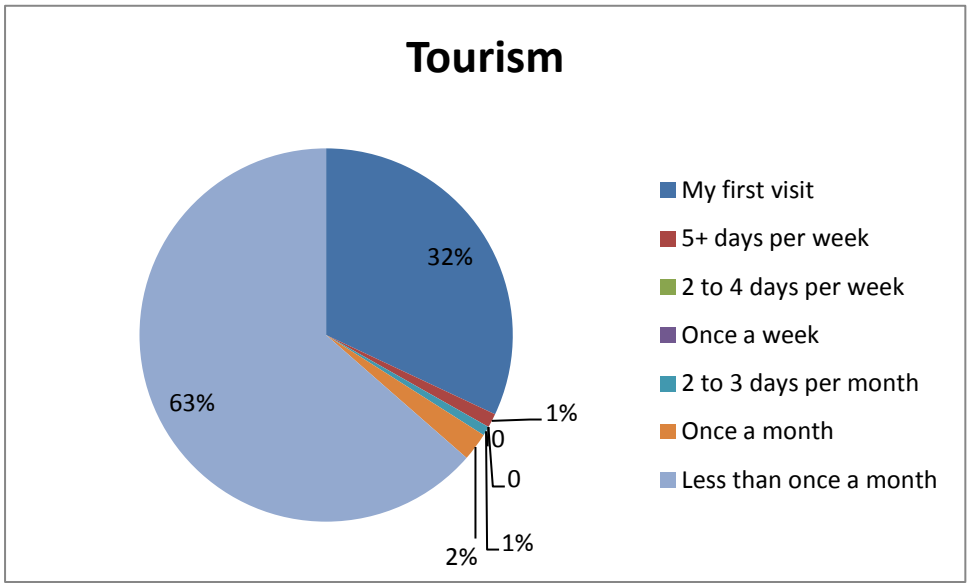


Figure 2.4 Frequency of Trips - Leisure – Baseline Survey

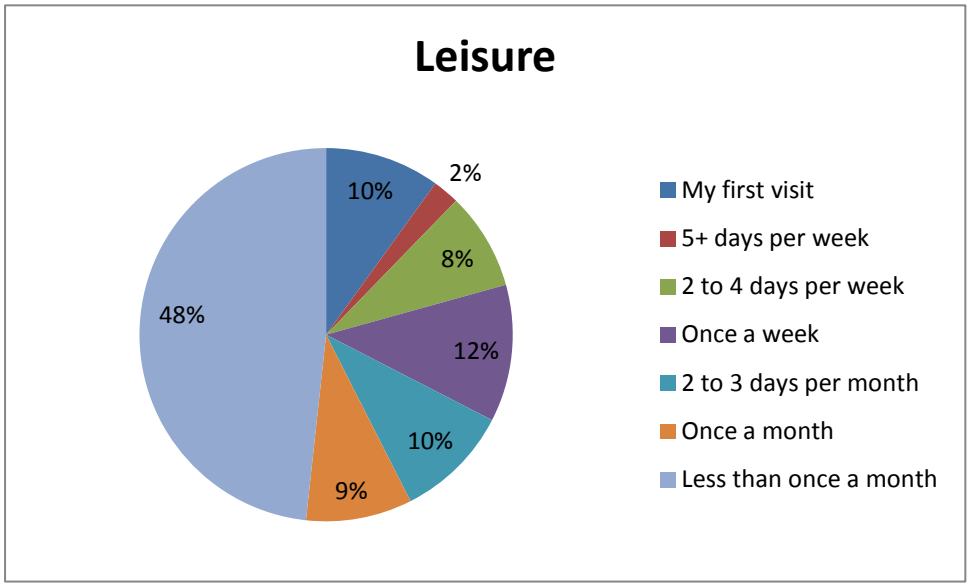
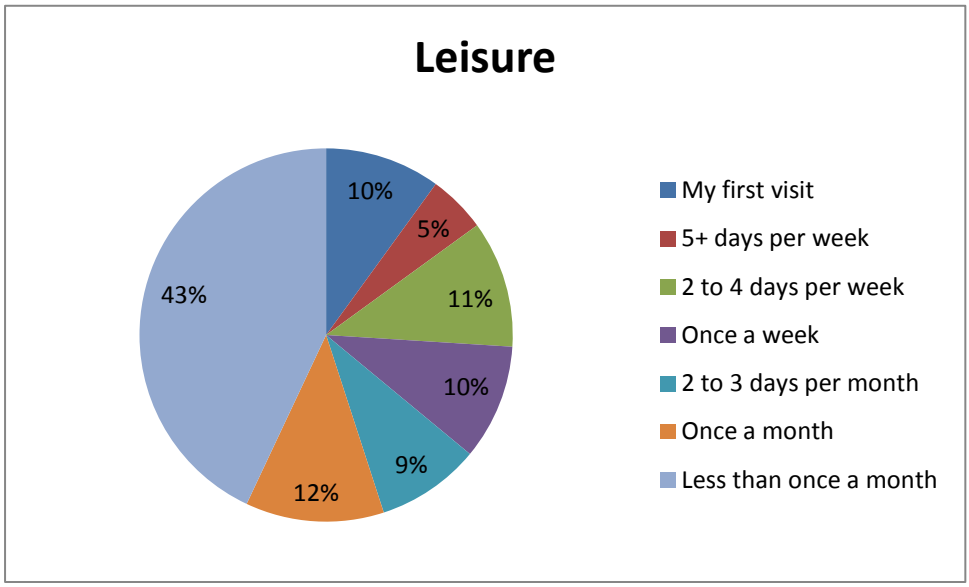


Figure 2.4a Frequency of Trips - Leisure – During Survey



The key conclusion to be drawn from the set of figures is that, for visitors to York, access by non-car modes is the dominant form of access. It is difficult to hypothesise whether the Lendal Bridge closure has led to any discernable changes in behaviour given the seasonality of the data collection, e.g. summer vs autumn. For tourists, there has been a very small shift away from car as a direct access mode into the city centre in favour of bus, whilst for leisure/social trips bus use has fallen (with car and rail the main beneficiaries).

2.3 Reasons for Visiting York & What Would Make You Visit More Often

The baseline survey asked respondents (making non-work trips) what were the main reasons for visiting York? The results are outlined in Table 2.4 which lists a series of reasons for visiting. Whilst all but three of the reasons were rated by respondents as statistically more likely to be '*very important/important*' vs '*unimportant/very unimportant*', the following categories were identified as key ones:

- Pleasant environment
- Attractive city
- Convenient to travel to
- Historical city; and
- An opportunity for a day out.

The single most important reason for visiting York is the pleasant nature of its environment, with nearly 97% of people stating this was important to them and which going forward reflects the importance of being able to maintain and improve that within the city centre. From a transport perspective, respondents feel strongly that travel to York should be convenient and should be affordable (88% and 79%).

Table 2.4 Main Reasons for Visit if Non-Work % (n)

Reasons	*Very Important/[3] Important*	*Neither Important or Unimportant*	*Unimportant/ Very Unimportant*	*Statistically Significantly Difference*
Range of shops	58% (335)	25% (142)	17% (98)	**Yes**
Range of services, e.g. banks	35% (190)	32% (178)	33% (180)	No
Range of leisure facilities	44% (239)	28% (152)	27% (148)	**Yes**
Opportunity for a day out	88% (504)	8% (47)	4% (20)	**Yes**
Meeting friends &/or family	38% (199)	26% (136)	36% (188)	No
Attractive city	93% (538)	6% (33)	1% (8)	**Yes**
Historical city	92% (550)	7% (40)	2% (11)	**Yes**
Pleasant environment	97% (555)	2% (13)	1% (2)	**Yes**
Convenient to travel to	88% (501)	10% (57)	2% (9)	**Yes**
Affordable to travel to	79% (446)	18% (100)	3% (16)	**Yes**
Other	65% (26)	10% (4)	25% (10)	No

Table 2.5 and 2.5a 2a report on a range of statements about the importance of the quality of different transport options in attracting people to York and developing its economy. The results suggest that pedestrianisation is viewed as a significantly more effective policy to improve York's attractiveness for shopping and visitors than cycling schemes. A small, but statistically significantly larger proportion of

[3] Note that the rating categories have been merged to simplify the analysis, reducing the original Likert Scale from 5 categories down to 3 (so for example, very important and important were merged)

people believe that improving bus journeys is more likely to improve the York economy than would improving car journeys. This may reflect the greater likelihood of these users to access York by public transport and their perception of the difficulty of getting more cars into York. In general the findings are aligned with the idea of schemes which seek to improve bus reliability.

Table 2.5 To What Extent Do You Agree with the Following Statements Related to Pedestrianisation, Cycling Facilities, Bus & Car Speeds (n)

	Strongly Agree/ Agree	*Neither Agree nor Disagree*	*Disagree/ Strongly Disagree*
Pedestrianisation strengthens the retail sector in York	87% (544)	11% (70)	2% (13)
Pedestrianisation helps to make York an attractive place to work	61% (367)	37% (220)	2% (14)
Pedestrianisation attracts visitors to York	81% (506)	16% (103)	3% (18)
Cycling facilities strengthen the retail sector in York	36% (214)	56% (328)	8% (46)
Cycling facilities help to make York an attractive place to work	42% (249)	51% (303)	6% (37)
Cycling facilities attract visitors to York	35% (205)	54% (316)	11% (65)
Faster bus journeys will improve the York economy	48% (288)	46% (277)	7% (41)
Faster car journeys will improve the York economy	40% (240)	50% (298)	10% (62)

Table 2.5a Significance Testing – Pedestrianisation, Cycling Facilities, Bus & Car Speeds

Statement 1	*Statement 2*	*Statistically Significantly Different*
Pedestrianisation strengthens the retail sector in York	*Cycling facilities strengthen the retail sector in York*	**Yes**
Pedestrianisation attracts visitors to York	*Cycling facilities attract visitors to York*	**Yes**
Faster bus journeys will improve the York economy	*Faster car journeys will improve the York economy*	**Yes**

Table 2.6 reports the changes that would make respondents (excluding commuters) visit York city centre more often than they currently do. Table 2.6 presents the *baseline* and the *during survey* data for all users. A number of key results stand out with reference to the Lendal Bridge trial closure in terms of the relative differences between the two samples.

1. The stand out issue that people say would make them access York more often is to reduce the price of car parking both for all changes and for the most important change. This is true both before and during the trial.

2. Less traffic congestion is also seen to be important and the importance increases during the trial suggesting that congestion has become worse and is more of an issue. This is supported partly by the analysis of the traffic data and Saturn modelling data, which suggested an increase in congestion in and around the city centre north of the river, around Clifton bridge and the eastern sections of the inner ring road.
3. Ease of access by car to York is not as important as congestion or parking costs but has become slightly more important since the bridge closure has been in place.
4. By contrast, the figures suggest that there have been improvements to a number of areas including: more space for cycling; more cycle lanes, more space for walking; a more pleasant pedestrianised area; better air quality; a quieter environment; & a less car dominated environment. All of these were important targets and indicators for the council when planning the Lendal Bridge closure

Table 2.6 Which of the Following Changes Would Make You Visit York City Centre More Often that You Currently Do? (n) – Baseline & During Survey – Non Commute Users

	ALL Possible Changes		*MOST Important Change*	
Changes	*Base Survey*	*During Survey*	*Base Survey*	*During Survey*
A larger range of shops	24.0% (154)	17.4% (61)	7.5% (35)	3.9% (10)
A larger range of services, e.g. banks	6.5% (42)	4.6% (16)	0.4% (2)	0.0% (0)
A larger range of leisure facilities	16% (103)	14.5% (51)	3.7% (17)	2.7% (7)
Easier access by car	25.5% (164)	28.2% (99)	4.3% (20)	8.2% (21)
More car parking spaces	23.3% (150)	29.1% (102)	3.9% (18)	3.1% (8)
More convenient car parking	26.1% (168)	29.6% (104)	3.2% (15)	3.1% (8)
Cheaper parking	42.5% (273)	41.6% (146)	20.4% (95)	19.9% (51)
Less traffic congestion	30.8% (198)	37.3% (131)	7.3% (34)	9.0% (23)
Faster bus journeys	15.6% (100)	21.7% (76)	1.3% (6)	1.6% (4)
More frequent buses	14.8% (95)	19.9% (70)	1.9% (9)	3.1% (8)
Cheaper bus fares	17.3% (111)	19.4% (68)	3.4% (16)	1.6% (4)
Cheaper bus park and ride	17.0% (109)	24.2% (85)	3.4% (16)	7.8% (20)
More space for cycling	10.0% (64)	6.8% (24)	1.1% (5)	0.4% (1)
More cycle lanes	10.6% (68)	8.3% (29)	1.1% (5)	1.2% (3)
More space for walking	32.0% (206)	27.9% (98)	6.0% (28)	6.6% (17)
A more pleasant pedestrianised area	30.8% (198)	27.9% (98)	7.7% (36)	4.3% (11)
A larger pedestrianised area	30.3% (195)	30.2% (106)	9.5% (44)	7.8% (20)
Better air quality	17.6% (113)	14.2% (50)	1.3% (6)	1.2% (3)
A quieter environment	18.8% (121)	18.2% (64)	2.6% (12)	0.4% (1)

A less car dominated environment	28.0% (180)	26.8% (94)	9.9% (46)	14.1% (36)

For some of these statistics, further validation can be provided from other measured data but it should be noted that there are important seasonal differences in the samples which may explain some of the variation.

2.4 Experience Whilst in York City Centre

One of the key aims of the Lendal Bridge Trial Closure assessment is to understand what, if any, difference the bridge closure has made to people's experience within York city centre. The assessment can only be partial at this stage as, whilst the closure is in place, no other improvements to the physical environment have been put in place. In order to ascertain this, a number of specific questions were asked about the experience whilst in York city centre and also about the overall experience of the visit, including accessing York itself, and are presented in Tables 2.7 and 2.8. The questions asked respondents to rate the experiences using a five point Likert Scale ranging from '*very pleasant/good/high'* through to 'very unpleasant/bad/low'. By assigning values to each category ranging from 1 (very pleasant/good/high) through to 5 (very unpleasant/bad/low) it is possible to calculate average ratings for the two surveys to ascertain how the experience has altered between the two surveys, e.g. a low score will equate to a more pleasant experience and a high score to a more unpleasant experience.

The overall results (Table 2.8) show York to have a very favourable experience. All of the scores show that for tourists and leisure travel there is a positive evaluation of the experience of visiting York City Centre. There has been no change in the evaluation of the journey to York City Centre and equally no change in the overall evaluation of pedestrian, bus or bike access. This probably reflects the fact that, although surveyed near Lendal Bridge, the respondents take a wider view of their experience. Whilst the overall satisfaction with York City Centre declined by 7% (1.66 to 1.78) this is still a very positive rating and declined despite the lack of significant change in transport indicators. This may reflect the better summer environment in the before survey.

Whilst the overall experience shows no significant change for transport, there are some aspects specifically relating to access and travel around the city centre which were identified as declining in quality (Table 2.7). These were (1) Space for walking; (2) Pollution levels; (3) Overall experience getting around the city centre; & (4) Overall ease of getting around. When the data is split by journey purpose only two experiences are statistically different, with 'overall experience getting around the city centre' and 'overall ease of getting around' statistically worse for the tourist segment. Before discussing these it is worth noting that none of the experiences, for either survey, for the full sample, are rated above 3, which was the mid-point of the Likert Scale suggesting that the experience of respondents is always above average. In addition, for the two experiences reported as statistically different for the tourist segment, both were still close to 2 in both the *before* and *during survey periods*, which equates to a good/pleasant experience.

How do these findings relate to the Lendal Bridge trial closure? It is not possible to make direct inferences about the impacts of the bridge closure as it is just one link in a broader network. However, the tourist section reports a decline in perception of the ease of getting around the city centre. This may relate to the lack of understanding of the bridge closure and having difficulties making detours (or using the bridge and receiving a fine) relative to residents who understand the local network and have alternative routing strategies. However, there may be a seasonal effect in general perceptions of getting around the city for tourists.

Leisure travellers have noted non-significant improvements in the quality of public transport serving the city centre and in provision for cyclists. The former could reflect an improved reliability of bus services as the frequency of services has not been modified during the trial.

Whilst it has not been possible to compare commuters between the two surveys the reported experience of commuters in the second survey appears in Table 2.7 to set them in context alongside the other two segments. In all but one category of experiences (risk of being involved in a road traffic accident) commuters' ratings are worse than the other two segments. Again however, it is worth noting that, for 9 of the 11 categories, the ratings are still better than average. The most notable differences in ratings compared to the other segments relate to 'overall experience of getting around the city centre', 'accessibility of the city centre' and 'overall ease of getting around'. These differences probably reflect that commuter respondents are travelling during the peak periods as opposed to the quieter off-peak periods, given than the closure of Lendal Bridge is timed to avoid impacting upon the key commuting time periods.

Table 2.7 Experience Whilst in York City Centre – Average Ratings & (n)

Experiences	*Full Sample – Excluding Commuters*			*Tourist Segment*			*Leisure Segment*			*Commute Segment*
	Base	*During*	***Impact***	*Base*	*During*	***Impact***	*Base*	*During*	*Impact*	*During*
Amount of traffic	2.95 (588)	2.89 (330)	**N/C**	2.92 (350)	2.91 (235)	**N/C**	3.00 (238)	2.83 (95)	**N/C**	3.24 (94)
Traffic speed	2.77 (548)	2.78 (314)	**N/C**	2.76 (331)	2.78 (228)	**N/C**	2.78 (217)	2.79 (86)	**N/C**	2.95 (91)
Space for cycling	2.65 (271)	2.75 (138)	**N/C**	2.63 (144)	2.70 (87)	**N/C**	2.69 (127)	2.82 (51)	**N/C**	2.76 (72)
Space for walking	2.13 (603)	2.22 (331)	**-**	2.06 (361)	2.21 (238)	**N/C**	2.22 (242)	2.27 (93)	**N/C**	2.54 (85)
Noise levels	2.61 (591)	2.62 (332)	**N/C**	2.61 (353)	2.65 (238)	**N/C**	2.61 (238)	2.55 (94)	**N/C**	2.81 (89)
Pollution levels	2.66 (529)	2.78 (288)	**-**	2.64 (322)	2.77 (203)	**N/C**	2.68 (207)	2.81 (85)	**N/C**	2.89 (84)
Overall experience getting around city centre	1.91 (611)	2.08 (335)	**-**	1.85 (369)	2.03 (241)	**-**	2.00 (242)	2.19 (94)	**N/C**	2.75 (89)
Ease of crossing roads	2.19 (621)	2.18 (341)	**N/C**	2.18 (370)	2.19 (245)	**N/C**	2.20 (251)	2.17 (96)	**N/C**	2.62 (92)
Accessibility of the city centre	1.83 (623)	1.94 (331)	**N/C**	1.79 (370)	1.92 (236)	**N/C**	1.90 (253)	1.97 (95)	**N/C**	2.82 (92)
Overall ease of getting around	1.89 (618)	2.02 (339)	**-**	1.83 (368)	1.99 (243)	**-**	1.97 (250)	2.08 (96)	**N/C**	2.80 (94)
Risk of being involved in a road traffic accident	3.40 (555)	3.39 (294)	**N/C**	3.43 (327)	3.45 (208)	**N/C**	3.36 (228)	3.23 (86)	**N/C**	3.17 (86)

+ improved statistically significant experience since bridge closure; - worse statistically significant experience since bridge closure; N/C not statistically different between periods

Table 2.8 Overall Experience of Visit to York City Centre – Average Ratings & (n)

Reasons	*Full Sample*			*Tourist & Biz Travel Segment*			*Leisure Segment*			*Commute*
	Base	*During*	***Impact***	*Base*	*During*	***Impact***	*Base*	*During*	***Impact***	*During*
Your journey to York City Centre	1.79 (620)	1.94 (342)	**N/C**	1.77 (365)	1.93 (243)	**N/C**	1.83 (255)	1.95 (99)	**N/C**	2.91 (92)
The quality of the public transport serving York City Centre	1.83 (391)	1.85 (218)	**N/C**	1.73 (201)	1.82 (142)	**N/C**	1.95 (190)	1.89 (76)	**N/C**	3.21 (62)
Provision for Pedestrians	1.97 (612)	2.00 (327)	**N/C**	1.91 (363)	1.97 (234)	**N/C**	2.05 (249)	2.06 (93)	**N/C**	2.49 (85)
Provision for Cyclists	2.31 (240)	2.31 (124)	**N/C**	2.18 (117)	2.34 (70)	**N/C**	2.44 (123)	2.26 (54)	**N/C**	2.46 (71)
Your Overall Satisfaction with York City Centre	1.66 (633)	1.78 (347)	**-**	1.57 (376)	1.73 (249)	**-**	1.79 (257)	1.91 (98)	**N/C**	2.77 (94)

+ improved statistically significant experience since bridge closure; - worse statistically significant experience since bridge closure; N/C not statistically different between periods

2.5 Findings

In interpreting the findings from this evaluation there are aspects that can be interpreted as being supportive of the scheme and those which are against it. The evidence must be kept in context as experimental evaluations in transport are fraught with difficulties such as seasonal effects and lack of good year on year comparative data. It is also difficult to evaluate the impacts of changes to one link in a network. A list of key findings is outlined below.

- The majority of people accessing York do not use the car with only around one quarter of tourist and one fifth of leisure trips captured by the survey being car based.
- For tourism, the bridge closure has coincided with a small shift away from car as a direct access mode into the city centre in favour of bus but this may be seasonal.
- The reverse is true for those making leisure/socialising trips.
- The single most important reason for people visiting/accessing York is the pleasant nature of its environment, with nearly 97% of people stating this was important to them
- Non-car based visitors to York see the improvement of the pedestrian environment and increase in bus speeds as more important to the strength of the city centre than improving car speeds.
- Pedestrianisation measures are favoured over cycling measures

The impacts of the trial Lendal Bridge closure need to be interpreted against this backdrop. The trial nature of the scheme means that a road access link has been removed whilst no further improvements have been implemented. One of the concerns from the scheme was that it would create a lot of additional diversion and traffic problems. This survey has found no discernable changes in the perceptions of the overall journey experience to York for tourist and leisure travellers. The experiences that have changed relate to the experience in getting around the city centre itself and the overall ease of getting around. In both cases, the experiences have seen a statistical significant reduction in performance but that the overall ratings are still above average. This survey cannot definitively attribute these changes to the bridge closure. However, a lack of familiarity with the network and alternative routes, use of the bridge by mistake (and the associated fines) may have impacted on this. Nonetheless, whatever the perceptions of the detail of city centre access issues were, the overall impact on the journey experience to York was not significant. As a trial scheme, very little network adaptation has yet been possible to make the routing and closure more obvious (as with other city centre restrictions). Sat Nav systems have not yet been recalibrated and, whilst the closure appears to allow for the types of local environmental improvement that visitors look for in choosing York, these are not yet in place. Any negative impacts for tourists and leisure visitors are at best very small and opportunities to remedy identified issues, if they do pertain to the closure, exist.

The closure should have had a beneficial effect on off-peak bus reliability for those routes using the bridge. However, there is no statistically significant difference in reported satisfaction with bus journey times, which may reflect the fact that bus timetables have not yet been adapted to allow the companies to run different service patterns to take advantage of this apparent improvement. Further technical aspects of the evaluation are to be completed initially in section four.

3 CYC Feedback Surveys

3.1 Survey Details

An online survey for residents has been available on CYC's website since the start of the trial closure - www.york.gov.uk/citycentreimprovements. This has been promoted during publicity of the trial and on the Lendal Bridge trial leaflet distributed to residents and businesses throughout the city. While not directly targeting visitors to York, those that view the CYC website can also access the survey. A specific survey for businesses has been available since November 2013 but is not included in this analysis. Hard copies of the survey forms have been available at CYC West Offices and city libraries.

Two separate questionnaires were available for people to provide feedback. During September a short version of the survey was used, largely because of the expectation that changes in traffic flows would take a number of weeks to settle down; secondly it would be difficult for residents to determine whether they experience changes in key aspects immediately upon introduction of the restriction. As the trial bedded in, a much more in-depth survey was developed for use during October[4] and it is this which is reported here.

Both surveys were implemented via the Survey Monkey website. The short survey asked respondents why they travel into York city centre, their main mode of travel to the city and enabled them to provide comment on their travel experiences since the start of the trial.

The in-depth survey asked respondents about why and how they travel, before moving onto and asking more detailed questions about the impacts since the introduction of the trial with some routing of questions linked to access mode of travel. Additional questions were asked of all respondents regarding their views on how the trial works towards the Reinvigorate York objectives and the impacts of the restrictions on individuals personally and on the city generally. In total 636 respondents took part in the in-depth survey, although not everyone fully completed the questionnaire. There were no restrictions on who could take part in the survey, nor any quotas imposed to obtain pre-specified levels of representativeness.

Unlike the ITS pedestrian survey, respondents completed the survey in the knowledge that the questionnaire they were undertaking was designed to give feedback on the Lendal Bridge trial closure. There is therefore a danger that some level of response bias is present, namely that respondents who strongly support, or who don't support, the trial closure will have been strongly incentivised to have taken part in the survey.

3.2 Key Descriptive Results

Overall Statistics

Tables 3.1 & 3.2 outline the key socio-economic characteristics of the respondents' who have taken part in CYC's feedback survey. The respondents are different to the ITS pedestrian survey:

- Stronger representation amongst younger age groups (20-39) and males.
- Stronger presence of work and business related travel
- Much weaker representation of tourists
- Much stronger presence of trips for access to key services
- Similar levels of trips for shopping and leisure
- Much stronger representation of car/van users
- Weaker representation of bus users
- Similar levels of active users – although with more emphasis on bicycle users compared to pedestrians

[4] Note a further tranche of data covering the period has recently being analysed increasing the number of respondents to 2,741. This has been reported in a separate report.

This suggests the council feedback survey is much more weighted towards residents or people who work within York compared to the ITS pedestrian survey which is more weighted towards tourists and non-car/van users.

Table 3.1 Age and Gender of Respondents

Age Categories%							*Gender %*	
<16	*17-19*	*20-29*	*30-39*	*40-49*	*50-59*	*60+*	*Male*	*Female*
0.6	1.2	14.3	26.5	27.7	15.3	14.3	60	40

Table 3.2 Journey Purpose & Access Mode %

Purpose	*%*	*Access Mode Before Trial*	*%*
Commuting	28.7	Car/van	64
Biz Deliveries/Travel	6.8	Motorcycle	0.3
Shopping	16.2	Bus	7.6
Tourism	6.0	Taxi	0.2
Health Related	2.4	Bicycle	10.4
Access to key services inc. railway station	16.4	On foot	13.4
Leisure	14.3	Other	4.1
Other	9.1		

Change in Car Use

One of the main focuses of the feedback survey was the attempt to measure changes in trip making across the Lendal Bridge, before the bridge closure and during it. Table 3.3 outlines the changes in usage of the bridge by car. Clearly, and as expected, the effect of the closure has been to reduce the frequency of car trips across the bridge, with a switch away from regular trip making (weekly or more) towards rarely/never. The switch has been quite dramatic, with a fall in those making regular trips from around 75% to around 25%.

Table 3.3 Change in Car Use across the Lendal Bridge

	5 days or more	*2-4 days a week*	*Weekly*	*Monthly*	*Occasionally*	*Rarely/never*
Before	21.5%	28%	23.4%	6.9%	10.3%	10%
During	7.7%	9.1%	10.4%	5.4%	18.2%	49.2%

It is not clear what happens to the reduced car trips as the questionnaire does not directly ask for this information. Tables 3.4 to Tables 3.6 would suggest that the same set of users now travel further (87%) and that their journeys take longer (90%) and that a wide range of alternative routes are now taken. From Table 3.5 it is clear that nearly a quarter of respondents are retiming when journeys take place.

Table 3.4 Alternative Bridge Crossing Mainly Used – Private Vehicle Users

A1237	6.1%
Clifton	37.4%
Ouse	13.5%
Skeldergate	18.4%
A64	7.1%
None	17.5%

Table 3.5 Have You Travelled at Alternative Times of the Day as A Result of the Trial?

Yes	23%
No	77%

Table 3.6 Has Your Journey Length & Time Changed – Private Vehicle Users

Journey Length	*%*	*Journey Time*	*%*
		Quicker	2.1
Unchanged	13.5	Unchanged	7.6
0-1 mile longer	9.5	0-5 mins longer	3.7
1-2 miles longer	32.4	5-15 mins longer	30.6
2-5 miles longer	28.4	15-30 mins longer	31.5
>5miles longer	16.2	>30 mins longer	24.5

Direct evidence on whether car use has been reduced since the bridge closure could have been gleaned from Qs 2 & 3 which asked respondents what their primary mode of transport was for accessing the city centre before the Lendal Bridge closure and since the closure. On examination of the data it would appear that a mistake in the response options has allowed respondents to record only their primary mode of transport before the closure but to record more than one primary mode after the closure. Despite this, analysis of the response showed that only 22 respondents had recorded more than one primary mode of transport after the closure. It was therefore felt valid to include these additional responses in the analysis giving a sample size of 634 before the closure and 663 after the closure.

The analysis of the data from Qs 2 & 3 shows that there has been a modal shift away from car/van (a reduction of 9%) in favour of active modes (bicycle and walking) and taxi. Bus usage has remained stable and so too has motorcycle use. An analysis of the other responses shows that 2.5% of the total sample reported no longer came into the city centre and instead accessed shops and services in different locations (e.g. Monks Cross, Wetherby and Leeds). It is important to note that the sample is heavily biased to users of the bridge in the before case so this cannot be equated to a 2.5% reduction in shopping trips.

Table 3.7 Primary Access to York City Centre before and After the Lendal Bridge Closure

Before Closures	*%*	*After Closure*	*%*
Car/van	64.0	Car/van	55.0
Motorcycle	0.3	Motorcycle	0.4
Bus	7.6	Bus	7.8
Taxi	0.2	Taxi	1.1
Bicycle	10.4	Bicycle	12.8
On foot	13.4	On foot	16.7
Other	4.1	Other	6.1

Changes in Non-Car Use & Behaviour

This section considers the changes in non-car use and behaviour. As indicated in Table 3.7 above, bus use has remained constant whilst the main beneficiaries from a reduction in car use would appear to be active modes and taxis (presumably as a direct result of their ability to cross Lendal Bridge). Table 3.8 outlines changes in bus performance since the start of the bridge closure, with regards to journey times and reliability. The table is based on a relative small sample of bus users (46) and shows that for around 70% of respondents, journey times have either not changed or improved, whereas for nearly 30% of respondents the journey times have become longer. It is a similar picture for reliability, with around 67% of respondents recording either no change or an improvement in reliability, compared to 33% of respondents recording more unreliability. From a net perspective, journey times have increased and reliability fallen.

Table 3.8 Change in Bus Journey Times & Reliability since the Closure

Change in Journey Time	*%*	*Change in Reliability*	*%*
Decreased	17.4	Improved	15.2
Not changed	54.3	Not changed	52.2
Increased	28.3	Reduced	32.6

The main bus route used by the respondents was distributed across a number of routes (Table 3.9), but with a concentration on those routes serving the South West quadrant of the city (number 1, 4, 5 and 3). A cross-tabulation between bus routes and journey times does not show any obvious correlations between changes to journey time and route. It was a similar story for the cross-tabulation between bus routes and reliability. This may suggest that increases in journey time and levels of unreliability are not route specific.

Table 3.9 Distribution of Bus Routes

Bus Routes	*%*
No. 1	26
No. 4	15
No. 5	13
No. 3	9
No. 6	7
Others	30

The feedback questionnaire had a number of questions around active modes which focused on how the journey had changed, the quality of the environment and how safe people felt. Tables 3.10 and 3.11 report the responses to a number of questions posed in the survey to both cyclists (n=73) and pedestrians (n=99).

Taking the results together there are a number of agreements between cyclists and pedestrians and a number of differences which may reflect the different characteristics of travelling by either mode.

There is a strong opinion that since the closure there has been an improvement for cyclists around Lendal Bridge (78%), with, on balance, the non-Lendal routes remaining the same. For pedestrians the picture is more mixed with a net improvement in the walking environment (25%) around Lendal Bridge, but a net worsening (29%) for other areas.

There would appear to be more agreement when considering changes to traffic volumes. Here, both cyclists and pedestrians agree that there has been a substantial net reduction in traffic volumes of around 65% around Lendal Bridge. Surprisingly, around 10% of respondents think that traffic volumes on the bridge have got worse. This appears to contradict the evidence of actual traffic flows over the bridge (see section 4) but may reflect people's preconceptions about how much traffic would actually flow over the bridge following the closure, e.g. a number of media stories have focused on the number of traffic violations since the closure began. There is also a level of agreement in relation to changes in traffic volumes on non-Lendal Bridge, with around 40% of cyclists feeling traffic volumes have increased and around 60% of pedestrians holding similar views. This is to be expected given traffic must reroute away from the bridge.

Table 3.10 Changes Experienced By Cyclists since the Lendal Bridge Closure %

Cycling Environment:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route has….	78.1	1.7	0.8
On non-Lendal Bridge routes has…	17.8	60.3	21.9
Traffic Volumes:	*Decreased*	*Not Changed*	*Increased*
Around the Lendal Bridge route have..	67.1	21.9	11.0
On non-Lendal Bridge routes have..	9.6	47.9	42.5
My Feelings of Safety:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route have..	69.9	26.0	4.1
On non-Lendal Bridge routes have..	9.6	64.4	26.0
Air Quality:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route has….	57.5	42.5	0.0
On non-Lendal Bridge routes has…..	8.2	75.3	16.5
	Improved	*Not Changed*	*Worsened*
My Ability to Get Around the City has	47.1	34.3	18.6

There is less agreement in relation to the impact on safety since the closure. Cyclists' are strongly in agreement that the bridge closure has had a positive impact upon safety around the Lendal Bridge route (70%), whilst only 30% of pedestrians hold a similar view. In fact 20% of pedestrians hold the view that since the closure safety has got worse. Can such differing views be reconciled? For cyclists, a reduction in traffic levels is always likely to lead to positive reinforcements around feelings of safety, more so than for pedestrians who do not have to share pavement space with vehicles. It is not clear however why 20% of pedestrians feel less safe. Possibly because vehicle speeds have increased on the bridge? There is more agreement on the impact on safety on non-Lendal Bridge routes, with both sets of respondents agreeing that safety has got worse (26% to 35%), whilst around 9% feel it has improved.

Table 3.11 Changes Experienced By Pedestrians since the Lendal Bridge Closure %

The Walking Environment:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route has….	39.0	47.0	14.0
On non-Lendal Bridge routes has…	9.0	53.0	38.0
Traffic Volumes:	*Decreased*	*Not Changed*	*Increased*
Around the Lendal Bridge route have..	68.0	19.0	13.0
On non-Lendal Bridge routes have..	9.0	30.0	61.0
My Feelings of Safety:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route have..	30.3	49.5	20.2
On non-Lendal Bridge routes have..	8.1	56.6	35.4
Air Quality:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route has….	35.4	61.6	3.0
On non-Lendal Bridge routes has…..	7.1	46.5	46.5

Air quality is judged to have improved around Lendal Bridge by both groups of respondents, with cyclists apparently feeling the benefit more. There is a divergence of opinion however for non-Lendal Bridge routes, with pedestrians expressing a much stronger negative response (47%) compared to 16.5% for cyclists.

Finally, for cyclists there has been a net improvement in their ability to get around the city in general with 47% agreeing this to be the case compared with 19% who think the opposite.

Views on Strategic Objectives

The last set of questions ask respondents about their opinions on the overall objectives of the Lendal Bridge closure and what respondents feel are the impacts of the closure on them personally and on the city. Table 3.12 outlines how, respondents' view the effectiveness of the closure on three key objectives, with a breakdown by current access mode.

The overall picture is heavily influenced by the views of car/van users and demonstrates that, for those taking part in the survey, there is a tendency to disagree that the overall objectives of CYC are being met by the bridge closure. This is particularly the case with regards the third objective – creating a more attractive and thriving city centre – which 70% of the respondents' feel is not being aided. The second objective – improving the daytime environment for pedestrians and cyclists – is less clear cut, with 45% of respondents either unsure or positive that the this environment has benefited from the closure.

Viewpoints differ by access mode, with cyclists in particular agreeing strongly that the bridge closure is helping the attainment of all three objectives. Bus users and pedestrians are less bullish but also less sceptical than car users with regards the impact of the bridge closure, particular with the second objective – improving the daytime environment for pedestrians and cyclists – with no clear yes or no decision either way.

Table 3.12 Have the Overall Objectives of the Bridge Closure been achieved?

Key Objectives: All Respondents	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	22.7%	60.1%	17.1%
Improve the daytime environment for pedestrians and cyclists	32.5%	55.0%	12.5%
Create a more attractive and thriving city centre	19.7%	70.0%	10.3%
Key Objectives: Car/Van Users	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	11.8%	71.7%	16.4%
Improve the daytime environment for pedestrians and cyclists	19.8%	66.0%	14.2%
Create a more attractive and thriving city centre	5.9%	86.1%	7.9%
Key Objectives: Bus Users	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	31.8%	56.8%	11.4%
Improve the daytime environment for pedestrians and cyclists	47.7%	45.5%	6.8%
Create a more attractive and thriving city centre	31.8%	59.1%	9.1%
Key Objectives: Cyclists	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	58.8%	26.3%	15.0%
Improve the daytime environment for pedestrians and cyclists	75.0%	20.0%	5.0%
Create a more attractive and thriving city centre	63.8%	22.5%	13.8%
Key Objectives: Pedestrians	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	33.3%	47.1%	19.6%
Improve the daytime environment for pedestrians and cyclists	42.2%	48.0%	9.8%
Create a more attractive and thriving city centre	33.3%	56.9%	9.8%

A very similar picture emerges from Table 3.13 which reports what the impact of the closure has been on the individual respondents and on the City of York. Car/Van users responding to the survey have strong negative feelings about the impact of the closure, with 92% and 86% saying it has had a negative/very negative impact upon them and upon the city. These views are tempered by non-car/van users, particularly cyclists.

It is interesting to contrast the perceived impacts of the closure on the city from York residents responding to the survey, which is quite negative, with that from tourists and leisure visitors (many of whom are residents also) in Section 2 which does not suggest this to be true.

Table 3.13 Impact of the Lendal Bridge Closure on Individuals & the City

All Respondents	*Very Positive*	*Positive*	*Neither Positive or Negative*	*Negative*	*Very Negative*	*Will not be affected*
Impact of closure on me personally…	10.3%	8.2%	6.0%	26.0%	47.7%	1.9%
Impact of closure on the city in general	7.7%	10.3%	9.5%	25.4%	46.2%	0.9%
Car/Van Users						
Impact of closure on me personally…	1.4%	1.7%	3.4%	31.4%	60.1%	2.0%
Impact of closure on the city in general…	2.4%	1.4%	10.1%	29.4%	56.1%	0.7%
Bus Users						
Impact of closure on me personally…	12.2%	26.8%	12.2%	17.1%	31.7%	Na
Impact of closure on the city in general…	12.2%	22.0%	7.3%	19.5%	39.0%	Na
Cyclists						
Impact of closure on me personally…	41.0%	23.1%	11.5%	14.1%	10.3%	Na
Impact of closure on the city in general…	23.1%	37.2%	11.5%	19.2%	9.0%	Na
Pedestrians						
Impact of closure on me personally…	15.2%	15.2%	11.1%	27.3%	29.3%	2.0%
Impact of closure on the city in general…	11.1%	18.2%	9.1%	23.2%	37.4%	1.0%

3.3 Findings

The in-depth CYC feedback survey collected responses from 636 people. The survey was different in make up to the ITS pedestrian survey with a stronger focus on residents/workers, younger respondents and car/van users. The feedback survey, by its very nature, is likely to have been populated by respondents with strong views on the bridge closure (both positive and negative) or who have been affected by it directly. This was not the case with the ITS survey which framed the survey as one which was evaluating *access to and the quality of, York city centre.*

A list of key findings from this survey are outlined below.

1. There has been a dramatic reduction in car/van use across Lendal bridge, with a fall in those making regular trips (weekly or more) from 75% to 25%
2. There is evidence to suggest that car/van are travelling on a wide range of longer routes (87%) and their journeys are taking longer (90%)
3. Clifton and Skeldergate are the most popular alternative crossings
4. Car/van users strongly disagree that the bridge closure is assisting CYC's three key objectives for the city, particularly – creating a more attractive and thriving city centre – 86% thinking it is not helping.
5. There has been a modal shift away from car/van (a reduction of 9%) in favour of active modes (bicycle and walking) and taxi.
6. Bus usage has remained stable and so too has motorcycle use.
7. A suggestion that 2.5% of the total sample no longer came into the city centre and instead accessed shops and services in different locations (e.g. Monks Cross, Wetherby and Leeds)
8. Bus journey times have either not changed or improved, for around 70% of respondents

9. 67% of respondents record either no change or an improvement in bus reliability
10. Overall the net position is that perceptions of bus journey times have increased and reliability fallen.
11. There has been an improvement in cyclists' environment around Lendal Bridge (78%), with, on balance, non-Lendal routes remaining the same.
12. For pedestrians & their environment the picture is more mixed with a net improvement in the walking environment (25%) around Lendal Bridge, but a net worsening (29%) for other areas.
13. Cyclists and pedestrians agree that there has been a substantial net reduction in traffic volumes of around 65% around Lendal Bridge
14. Around 40% of cyclists feel traffic volumes have increased on non-Lendal bridge routes with 60% of pedestrians holding similar views.
15. Cyclists' feel strongly that the bridge closure has had a positive impact upon safety around the Lendal Bridge route (70%), whilst only 30% of pedestrians hold a similar view with 20% holding the view that since the closure safety has got worse, which may reflect buses travelling faster.
16. Both cyclists and pedestrians feel that safety on non-Lendal Bridge routes has got worse (26% to 35%), whilst around 9% feel it has improved.
17. Air quality is judged to have improved around Lendal Bridge for both cyclists and pedestrians, but there is a divergence of opinion for non-Lendal Bridge routes, with pedestrians expressing a much stronger negative response (47%) compared to 16.5% for cyclists.

Clearly, the car users taking part in this feedback survey have been strongly affected by the bridge closures, with large numbers re-routing, resulting in longer journey times and travel distances. They are strongly against the closure and do not agree that it is helping to attain CYC's objectives, particularly, the creation of a more attractive and thriving city centre.

Non car/van users are much supportive of the Lendal Bridge closure, particularly cyclists, but still feel that improvements in the Lendal Bridge area have created problems (more traffic, a less safe environment and higher levels of pollution) elsewhere in York. Bus users' report an adverse net effect in terms of the impact upon bus journeys and bus reliability, which will need collaborating with traffic data evidence in the final report.

4 Lendal Bridge Data Digest & Analysis

The third area of analysis in this report is concerned with data collection as undertaken or commissioned by CYC. There are a number of streams to be considered and a large amount of data to be analysed. It has not been possible to analyse all of the data sources properly for this draft final report and so the focus is upon: (1) Vehicle bridge crossing data; (2) Active travel across the central bridges; (3) Automatic Traffic Count data; and (4) Bus Park and Ride travel time data. The final report will extend this analysis to cover traffic speeds and an environmental assessment of the change in traffic flows.

4.1 Vehicle Bridge Crossing Data

CYC commission a survey company annually, in October, to collect manual classified count data of motorised vehicles, bicycles & pedestrians for one weekday on all six bridges across the Ouse within their jurisdiction, including the two bridges on the outer orbital routes that carry strategic traffic around the perimeter of the city. This creates a useful screen line for gauging travel activity across the city. Data is collected for 12 hours (07:00-19:00), split into 15 minute intervals. ITS requested and was given access to data from 2012 & 2013.

Overall, the trends in the data seem to fit very well with what may have been expected. The headline findings appear to be as follows:

- There is an approximate 0.75% increase in total 12 hour PCU (per car unit) flows between 2012 and 2013, which would seem consistent with background growth that may be expected during the current slow economic recovery.
- In the 2012 (baseline) case, Lendal Bridge carried approximately 7.5% of the total 12 hour traffic flow across the River Ouse, slightly more in the northbound direction, with roughly 52.5% of that traffic crossing during the 10:30-17:00 period.
- In the 2013 (during closure) case, the 12 hour traffic flow across Lendal Bridge has reduced by around 32%. Traffic flows during the closure period are down by approximately 56%, but there is also an approximate 5.5% drop in traffic across the bridge during the peak periods, when it is open. This suggests that the partial closure is putting some motorists off driving across the bridge altogether. Unlike the 2012 data, the 2013 survey did not initially categorise taxis and private hire vehicles separately to other private cars, so it has not yet been possible to estimate the extent to which the flows across Lendal Bridge in the 2013 data relate to eligible users.
- Flows on nearby Ouse Bridge are also reduced after the closure, by a little over 15% throughout the day in the westbound direction and by a little under 5% over 12 hours, but rather less during the closure period.
- Flows across the other four bridges have all increased by a higher proportion than the 0.75% background growth, suggesting that rerouting behaviour is occurring across the network. The greatest relative increase in 12 hour flows is seen on Skeldergate Bridge (6% eastbound; 9% westbound).The greatest absolute impact in 12 hour flows occurs on the A64, with approximately 1350 extra trips in both directions, however, the A64 carries significant volumes of strategic traffic that is not related to York, so traffic flow data alone is not sufficient to argue that this increase is related in any way to the Lendal Bridge closure. Use of the SATURN network modelling application for York may help to shed more light on this.

4.2 Active Travel Across The Central Bridges

The manual bridge crossing data also includes counts of pedestrians and cyclists. Differences in data between 2012 & 2013 mean it is only possible to compare totals for each bridge. For pedestrians, a look at Lendal & Ouse Bridges, both of which were found to have experienced a reduction in motorised traffic during the trial, produces an interesting picture, which may be summarised as follows:

- Between 2012 & 2013 there is an increase in pedestrian traffic across Lendal Bridge of approximately 38% during the closure period and 22% during the peaks, meaning that Lendal Bridge carries almost one third extra pedestrian traffic over the full 12 hour surveyed day. It is worth noting that these results may have affected by the opening of the new council offices at West Offices but difficult to quantify exactly.
- Ouse Bridge also experiences a modest increase in pedestrian volumes, in the range of 3.5% to 7%, with the greatest increase occurring during the peaks.

This suggests that the closure has attracted more pedestrians to use Lendal Bridge , but that reduced traffic volumes when the bridges are open also achieve that to some extent.

For cycling the main trends were found to be as follows:

- There are significant cycle movements across five of the six river bridges in York (the exception being the A64), but approximately two thirds of cycle crossings are made over either Lendal or Ouse Bridges in the city centre.
- The manual bridge counts for 2013 record approximately 15% more river crossings by bike than those for 2012, with all five relevant river crossings showing an increase over the full 12 hour survey period.
- The largest increases in cycle crossings, of approximately 23%, occur across Lendal and Ouse Bridges during the 10:30-17:00 closure period. Ouse Bridge also experiences an increase of approximately 20% during the peak periods, but for Lendal Bridge this is only 9%, suggesting a big difference in the attractiveness of the bridge to cyclists dependent on whether it is open to all traffic.
- The smallest amount of change in cycle movements occurs at Skeldergate Bridge, which experiences a 3.5% increase in crossing over the full 12 hour survey period, most of which occurs during the Lendal Bridge closure period.
- Clifton Bridge experiences an 11.5% increase in cycle crossings over 12 hours, but this is made up of an approximate 21% increase during the peak hours that is compensated for by an approximate decrease of 3% during the closure period.

The scale and spatial spread of the overall increase in bicycle river crossings suggests that factors other than the Lendal Bridge closure are affecting the comparison between 2012 and 2013. As there is only one day of data available for each year it is difficult to judge whether the increase represents a consistent trend or a transient effect (e.g. related to seasonal weather effects on behaviour which are more sophisticated than what can be explained by the weather conditions recorded during the survey). However, there is certainly a possibility that part of the increase can be explained by the bridge closure making cycling during that period of the day more attractive, leading to individuals engaging in cycling activity that involves multiple crossings of different bridges.

Considering the distributional changes in cycle crossings, it is particularly interesting that Ouse Bridge sees as great an increase during the closure period and that it is more sustained throughout the day. With reference to the motorised vehicle count data, this suggests that reduced vehicle flows are at least as important for attracting cyclists as closure to general traffic. But the significantly reduced effect seen at Lendal Bridge outside the closure period may also suggest that there are particular features of the site which

make mixing with traffic less desirable. In particular, the data for Clifton Bridge suggests that a significant number of cyclists are choosing to reroute to Lendal Bridge during the closure period but that they are not attracted to do so by the reduced traffic volumes at other times.

4.3 Central Off-Street Car Parking

We have not yet been in a position to conclude on the impacts of the Lendal Bridge closure on car parking in the central areas. This is partly a result of the limited data (not all car parks at owned and operated by CYC) and partly because the year on year variations are complicated by flooding in 2012 which significantly impacted on car park usage and the distribution of usage amongst car parks that were open.

4.4 Automatic Traffic Count Data

Data for 9 Automatic Traffic Count (ATC) sites across the city has been analysed to look for evidence of wider traffic impacts. The data investigated consists of hourly directional traffic totals for the 6 major radial routes around the city, plus 3 relevant orbital routes (Clifton Bridge & relevant sections of the Inner and Outer Ring Roads). Clifton Bridge was also included in the manual bridge crossing data discussed above and the ATC site on the Outer Ring Road is very close to the manual count at Rawcliffe Bridge. The primary comparison was made between October 2012 and October 2013, the logic being that this month was least likely to be affected by seasonal fluctuations related to summer holidays and Christmas. It also ties in well with the beginning of the Lendal Bridge closure trial, allowing one month for behavioural choices to stabilise. In addition, data from the adjoining months of September and November was also viewed to provide an insight into variability. One ATC site, at Leeman Road, has been excluded from the analysis because data only started to become available in July 2013. The variability observed over the small period for which information was available was considered too great for any analysis to be robust. However, it would still be possible to use this data as part of a comparison with the SATURN modelling application. As all values from the ATC counters are provided for full hour periods, it has not been possible to distinguish the 10:30-17:00 closure precisely. Therefore, the 11-5 window has been used as the most representative proxy. 12 hour flows have been calculated on the basis of 07:00-19:00, to be consistent with the manual data, and the period defined as including the peaks has been taken to be 07:00-11:00 and 17:00-19:00, when the bridge is open to general traffic (apart from 10:30-11:00).

Table 4.1 summarises the comparison of 2012 and 2013 traffic levels. Comparing the data for October to the adjoining months, there appears to be reasonable consistency between the September and October trends but quite significant variability between those and November for some sites. In most cases the directions of the trends are the same, but the scale of the change is different. It is probably safe to assume that variations in November relate to seasonal effects on activities and associated traffic in the York area rather than directly to the Lendal Bridge trial.

Focussing on the October data, the overall picture of trends in traffic levels is broadly as might be expected with the greatest changes seen at orbital locations relatively close to Lendal Bridge which provide alternative routes for general traffic. Clifton Bridge appears to be, in relative terms, the most popular diversion route during the closure period and it also carries a little extra traffic during the peaks. This is generally consistent with the trends observed in the manual bridge count data, but the scale of change suggested in the ATC data is rather larger. Foss Island Road (part of the eastern Inner Ring Road) also carries significantly more traffic, especially northbound, and the effect appears consistent throughout the day. This appears to support the evidence in the manual bridge counts that drivers are discouraged from choosing routes including Lendal Bridge at all times, not just during the closure period.

One surprise in the orbital ATC data is the reduction in traffic on the A1237 Outer Ring Road, throughout the day, especially in the southbound direction. This differs from the manual counts on Rawcliffe Bridge, which tended to suggest modest increases, although there was some hint of it with a manually observed approximate 2% reduction in southbound traffic during the peaks. There is no evidence in any of the data analysed to suggest that this trend is related to the Lendal Bridge trial. It might be possible to speculate,

however, that it could be related to the increase in traffic observed in the manual bridge count for the A64, for which no ATC data has been provided.

Table 4.1: Summary of traffic changes (%) between October 2012 and October 2013

Location	Orientation	Direction	12hr	11-5	Peaks
Foss Island Road (Inner Ring)	Orbital	North	+13.5	+13	+13.5
		South	+6.5	+7	+6
Clifton Bridge	Orbital	Northeast	+10.5	+18.5	+3.5
		Southwest	+10	+13	+6.5
A1237 (Outer Ring)	Orbital	North	-0.5	-0.5	-0.5
		South	-4.5	-6	-3
A19 Shipton Road	Radial	Southeast	+4.5	+7	+2.5
		Northwest	0	+0.5	-0.5
A1036 Malton Road	Radial	South	-2	-1.5	-2
		North	-1	-1	-0.5
A1079 Hull Road	Radial	West	-2.5	-4	-1.5
		East	-1.5	-2.5	0
A19 Fulford Road	Radial	North	+2.5	+2.5	+2
		South	+2	0	+3.5
A1036 Tadcaster Road	Radial	North	-0.5	-2	+1.5
		South	+2.5	+0.5	+4.5
A59 Boroughbridge Road	Radial	East	-5	-6	-4
		West	-0.5	+2	-2.5

Data for the 6 radial routes suggests that wider impacts of the Lendal Bridge trial on traffic levels across the city are generally very limited. Most comparisons suggest changes in flow between 2012 and 2013 of 2.5% or less, which are sufficiently small to be difficult to attribute with any certainty to the scheme given the many other possible explanations. Those sites where larger changes have been experienced tend to be to the west side of the city, which would fit logically with expected rerouting of journeys that previously used the bridge. In particular, there is evidence of increased city-bound traffic using the A19 Shipton Road and decreased city-bound traffic using the A59 Boroughbridge Road. These are parallel radial routes to the northwest of the city centre, both with access to Clifton Bridge, so they have the potential to represent feasible alternative routes for a significant number of journeys. The other potentially interesting radial trend is the evidence that Tadcaster Road (to the southwest of the centre) and to a lesser extent Boroughbridge Road and Shipton Road experience opposite trends by direction. This could suggest that some traffic which was previously travelling on routes through the city centre, including Lendal Bridge, is now diverting to an outer orbital route using the A1237 and/or the A64. As Tadcaster Road has particularly good access to the high capacity A64 bypass it is not surprising that this is where the trend is most visible.

4.5 Park and Ride Travel Times

In the absence of monitored traffic travel times, Park and Ride journey times (as recorded via timing checks at key bus stops) may provide a reasonably good proxy for travel times on the radial routes – although bus priority measures will be helping some routes. Table 4.2 (as provided by CYC) shows the year on year

change in Park and Ride journey times for the months during the closure time period, September (2012-13) through to February (2013-14), for 5 routes.

The overall headline figure to take from the timings is that the trial closure does not appear to have resulted in any significant increase in travel times on radial routes into and out of the city, with Grimston Bar and Monks Cross the only routes to have been affected (with small increases) Clearly, there are some variations by individual route which may be explained by seasonal and other factors, each is outlined below.

Table 4.2: Park and Ride travel times in minutes - includes boarding time at stops

During Lendal Closure times of 10:30am - 5pm

Into City

	Sep-12	Sep-13	Oct-12	Oct-13	Nov-12	Nov-13	Dec-12	Dec-13	Jan-13	Jan-14	Feb-13	Feb-14
Service 2 Rawcliffe Bar	19.0	18.2	18.4	19.1	19.9	19.6	19.3	17.8	17.8	18.1	19.0	20.7
Service 3 Askham Bar	13.3	13.2	13.7	12.6	13.7	13.0	15.0	13.0	13.4	12.9	14.0	13.1
Service 7 Designer Line	16.1	15.9	16.9	16.5	16.0	16.6	17.4	16.8	15.6	16.0	16.1	16.6
Service 8 Grimston Bar	17.5	17.4	17.5	18.1	17.8	18.5	18.2	18.0	16.7	17.8	17.2	17.5
Service 9 Monks Cross	9.9	10.0	9.7	10.4	9.8	10.1	10.1	10.4	9.5	9.6	9.3	9.9

Into City

Differences:	Sept	Oct	Nov	Dec	Jan	Feb
Service 2 Rawcliffe Bar	-0.8	0.7	-0.3	-1.5	0.3	1.7
Service 3 Askham Bar	0.0	-1.0	-0.6	-2.0	-0.5	-0.9
Service 7 Designer Line	-0.2	-0.3	0.5	-0.7	0.3	0.6
Service 8 Grimston Bar	-0.1	0.6	0.7	-0.2	1.1	0.4
Service 9 Monks Cross	0.2	0.7	0.2	0.3	0.2	0.5

From City

	Sep-12	Sep-13	Oct-12	Oct-13	Nov-12	Nov-13	Dec-12	Dec-13	Jan-13	Jan-14	Feb-13	Feb-14
Service 2 Rawcliffe Bar	9.2	8.6	9.1	7.8	9.5	8.1	9.2	7.6	9.1	7.7	8.9	8.1
Service 3 Askham Bar	20.6	20.1	20.0	19.7	20.2	20.6	20.8	19.6	20.4	19.1	20.0	19.3
Service 7 Designer Line	22.6	22.5	23.5	24.7	22.7	23.8	22.3	25.4	21.9	22.5	22.5	22.8
Service 8 Grimston Bar	11.4	11.5	11.1	12.0	11.7	12.3	11.3	12.0	10.6	11.3	11.3	11.3
Service 9 Monks Cross	10.5	10.7	10.3	11.1	11.0	11.0	11.4	11.8	10.8	11.6	10.8	11.5

From City

Differences:	Sept	Oct	Nov	Dec	Jan	Feb
Service 2 Rawcliffe Bar	-0.5	-1.3	-1.4	-1.6	-1.5	-0.8
Service 3 Askham Bar	-0.6	-0.3	0.3	-1.2	-1.3	-0.7
Service 7 Designer Line	-0.1	1.2	1.1	3.2	0.7	0.2
Service 8 Grimston Bar	0.1	0.8	0.6	0.7	0.8	0.0
Service 9 Monks Cross	0.2	0.8	0.1	0.4	0.8	0.7

Rawcliffe Bar which uses Water End, Leeman Road, Lendal Bridge and Bootham exhibits variability in its' performance with improvements in journey times into the city leading up to Christmas and increases afterwards, particularly in February. The latter is likely to stem from increases in flow on the A19 due to the ongoing improvement works at the A1237/A59 roundabout seem to be the likely cause of this. The outbound leg is showing an overall improvement with less delays being experienced over Lendal Bridge and at the Bootham/Gillygate junction.

Askam Bar is showing a consistent reduction in travel times, both inbound and outbound, due in principal to fewer delays at Micklegate Bar as a result of the trial.

Designer Line is, like Rawcliffe Bar, showing variability into the city with, in the main, small reductions in journey time up to and including Christmas, followed by small increases after Christmas. It is not clear what is causing this. For journeys from the city there were moderate increases in journey times in the lead up to Christmas, peaking in December with a 3.2 minute increase, followed by smaller increases post-Christmas. This may reflect an impact from the economic recovery with more people boarding the bus from York to the designer outlet and more residents travelling in cars to the designer outlet along the route.

Grimston Bar shows a small, but sustained, increase in travel times both into and away from the city. This may be result of more traffic around Foss Islands Road which is related to the trial closure. Similarly, Monks Cross exhibits small, but more variable, increases for both inbound and outbound services. This is related to increases in traffic at Layerthorpe Bridge junction as a result of the closure.

4.6 Summary of Traffic Data Findings

This initial stage of the work allows us to identify significant changes in traffic flows on Lendal Bridge during the closure period but also some smaller reductions outside the closure in the peak periods. There has been some evidence of diversion to other crossing points.

Data for the 6 radial routes suggests that wider impacts of the Lendal Bridge trial on traffic levels across the city are generally very limited. Most comparisons suggest changes in flow between 2012 and 2013 of 2.5% or less, which are sufficiently small to be difficult to attribute with any certainty to the scheme given the many other possible explanations.

The overall findings from Park and Ride travel time data would suggest that trial closure does not appear to have resulted in any significant increase in travel times on radial routes into and out of the city, with Grimston Bar and Monks Cross the only routes to have been affected (with small increases).

There has been a significant increase in the volumes of pedestrians using the bridge. Similarly, bicycle use has also seen a significant increase. Whilst, we are reasonably confident that the Lendal Bridge closure can be linked to the increase in pedestrians[5], we are less sure that is the case with the uplift in bicycle use, were other factors might be at play.

[5] Note we are uncertain what impact the relocation of CYC offices to the West offices site may have played in the increase in pedestrian numbers.

5 Lendal Bridge Saturn Analysis

Having carried out an analysis of observed data from the Lendal Bridge trial, the York SATURN modelling application has been used to help add understanding to the trends identified. In particular, the model contains data about the distribution of spatial movements made across the city and its main purpose is to represent the routes chosen by drivers under different network conditions. These are both areas of information that are not covered by the observed data.

The model-based analysis has been conducted in three stages:

(i) A "select link analysis" of the traffic that might be expected to use Lendal Bridge during the off-peak period without any closure, to aid understanding of the spatial movements affected;

(ii) A network-wide comparison of predicted "demand flows" for the off-peak period between the with and without closure cases, to aid understanding of the spatial reallocation of traffic across the city; and

(iii) A selective analysis of predicted route choice for a selection of journeys that might be expected to be directly affected by the Lendal Bridge closure, to aid understanding of the potential route choices experienced by individual drivers.

(i) Select Link Analysis

Figure 5.1: Select link of off-peak northbound traffic across Lendal Bridge in open case

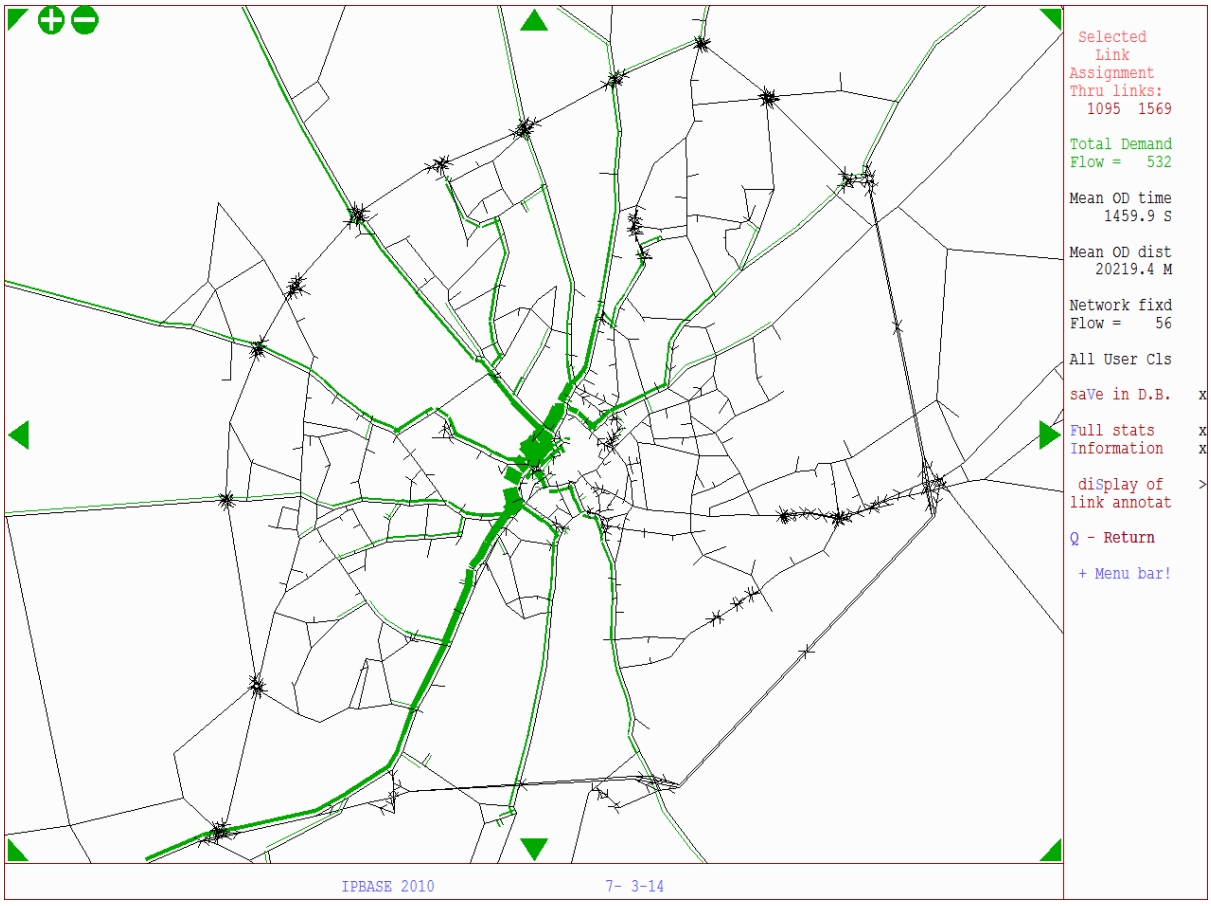
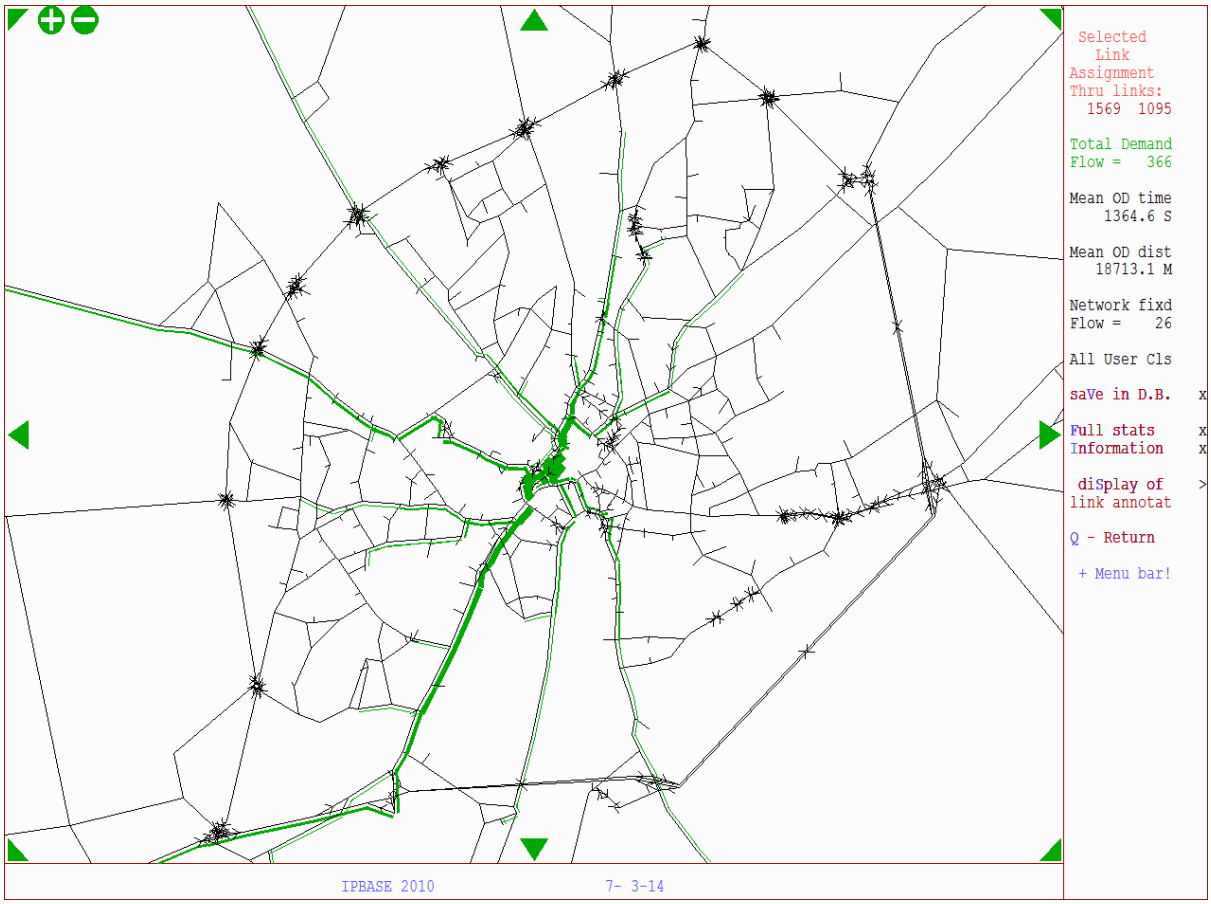


Figure 5.1 demonstrates that the majority of traffic crossing the bridge in the northbound direction might be expected to come from and south and west, with the most significant flow along Tadcaster Road. The widening bandwidth closer to the bridge demonstrates that a significant proportion of the traffic is coming from local origins in the Dringhouses and Woodthorpe areas of the city, but it is also the case that a significant proportion of the traffic originates from outside York, approaching via the A64 and the A59 from the west. Most of the traffic then appears to have a destination in the main city centre north of the river or

nearby in Clifton or the area where the hospitals are located. Only a small proportion of bridge crossing traffic is suggested to continue on to destinations outside York, most of that along the A19 towards Shipton.

Figure 5.2 provides a similar analysis for southbound traffic. It demonstrates that very little of the traffic crossing Lendal Bridge in a southbound direction might be expected to originate in locations beyond the city centre to the north of the river or immediately surrounding areas. It also suggests that a majority of journeys may have destinations within the boundary of the city, especially in areas accessed from Tadcaster Road. However, as for the northbound traffic there are also significant interactions with areas beyond York, accessed via the A64 and A59 routes.

Figure 5.2: Select link of off-peak southbound traffic across Lendal Bridge in open case



In both cases, it is clear that very little of the traffic crossing Lendal Bridge would be expected to be travelling to or through areas to the east of the city.

The significance of this analysis for our understanding of the observed date is that it illustrates the relatively limited range of movements served by Lendal Bridge. In particular, it demonstrates that quite a lot of the journeys might be expected to be relatively short, between locations along Tadcaster Road and the city centre to the north of the river and immediately surrounding areas, suggesting potential for significant switching to public transport and active modes. However, the fact that such a high proportion of the trips crossing Lendal Bridge might be expected to have an origin or a destination in an around the city centre north of the river may also help to explain why the scheme is so contentious with businesses in that area, given that it is the main central retail and entertainment area of the city.

(ii) Demand Flow Comparison

Figure 5.3: Comparison of off-peak demand flows with and without the Lendal Bridge closure

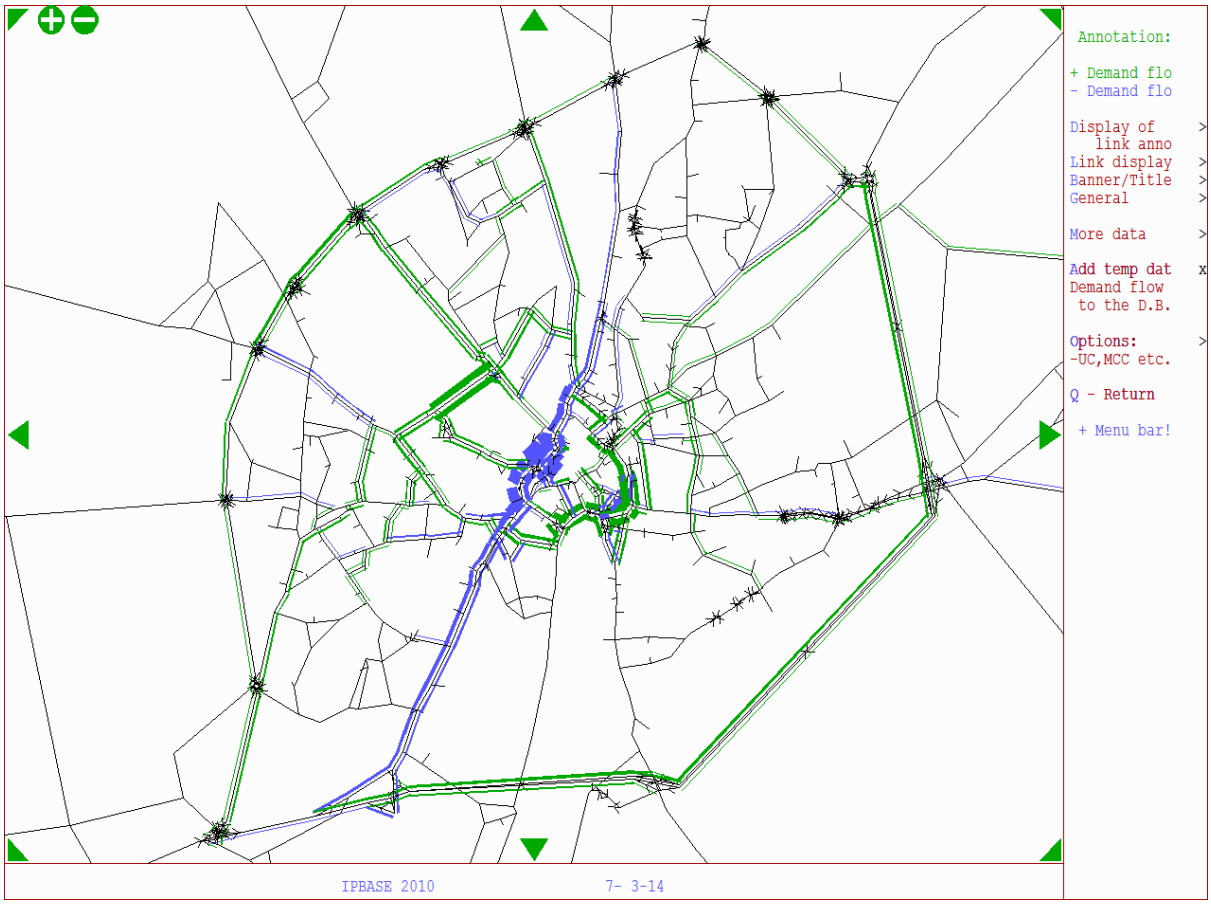


Figure 5.3 illustrates the predicted changes in traffic flows resulting from the closure of Lendal Bridge during off-peak periods, based on the assumption that the total level of demand and the detailed pattern of trip origins and destinations remains unchanged.

It suggests that the most marked impacts we might expect to see involve significant reductions in traffic flow affecting roads that make up the western side of the Inner Ring Road, in both directions, compensated for by significant increases around the eastern side of the Inner Ring Road and across Clifton Bridge, also in both directions. This fits well with the traffic flow observations, especially the ATC data for Foss Island Road and Clifton Bridge.

Other areas where the changes in flow predicted by the model are broadly consistent with observations include evidence of increasing traffic on the A19 Shipton Road (from the ATC data) and across the A64 bridge (from the manual counts) and evidence of decreasing traffic on the A59 Boroughbridge Road, the A1036 Malton Road and the A1079 Hull Road (all from the ATC data). The main discrepancies between the observed data and the model relate to the A1036 Tadcaster Road and the A1237 Outer Ring Road.

In the case of Tadcaster Road, the model suggests traffic reductions in both directions, most significantly affecting city-bound trips, while the observed data suggests a small reduction in city-bound trips and a negligible change tending towards an increase in the opposite direction. In other words, the model appears to be correctly predicting the tendency for traffic reductions on Tadcaster Road in the city-bound direction, but is generally overestimating the likelihood of traffic reductions. One possible reason for this is that the model isn't representing potential changes in parking destinations (the "park and walk" phenomenon) that may be damping the impact on trips with destinations in the city centre north of the river. Separately, for journeys with origins in the southwest quadrant of York, it seems that the model may be under-predicting the attractiveness to routes that involve driving away from the city to access the A64 and A1237. As previously

noted in the observed data analysis, Tadcaster Road has particularly good access to the A64 which may help to explain why this behaviour might occur.

In the case of the A1237 near Rawcliffe Bridge, the model predicts a small but significant increase in traffic flow, especially in the northbound direction, while the observed ATC data suggests a negligible change, tending towards a decrease, northbound and a significant decrease southbound. As has already been stated during the observed data analysis, the ATC observations are difficult to explain as part of a potential response from drivers to the Lendal Bridge trial. The predictions from the model reinforce the conclusion that other factors may be responsible.

Overall, it seems justified to conclude from the demand flow comparison that the SATURN modelling application has actually performed rather well in predicting the general shape and relative scale of the response to the off-peak closure of Lendal Bridge. Therefore, it should prove sufficiently reliable to use for further analysis, such as for providing network-wide inputs to environmental calculations.

The demand flow comparison helps to demonstrate that the main traffic impacts of the scheme, hinted at by the point observations of traffic flow observed during ATC and manual counts, are likely to be local rerouting of journeys with origins or destinations in and around the city centre north of the river to Clifton Bridge and the eastern sections of the Inner Ring Road. The model suggests that rather smaller changes in traffic volumes on radial and orbital routes further away, many of which are broadly consistent with the observed data, may also be attributable to the scheme. While these changes are unlikely to be very significant for overall traffic levels and travel conditions within the city, their impacts on individual journeys and the people making them will be rather greater.

(iii) Route Choice Analysis

Citybound Analysis

Figure 5.4: Lendal Bridge open & closed routes for trip from SW of city to centre

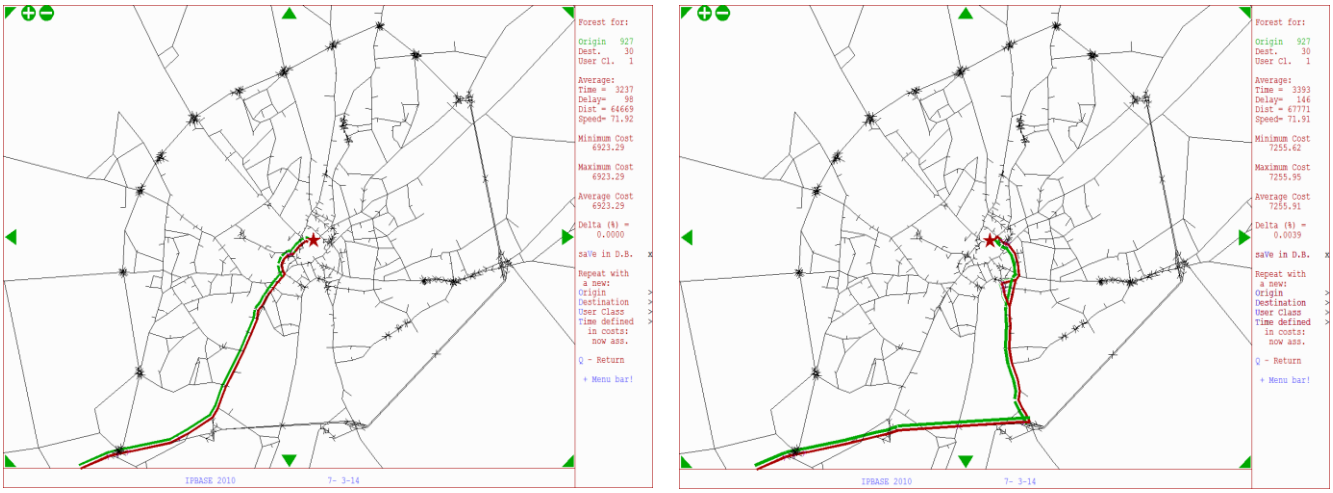


Figure 5.5: Lendal Bridge open & closed routes for trip from Tadcaster Road to N of centre

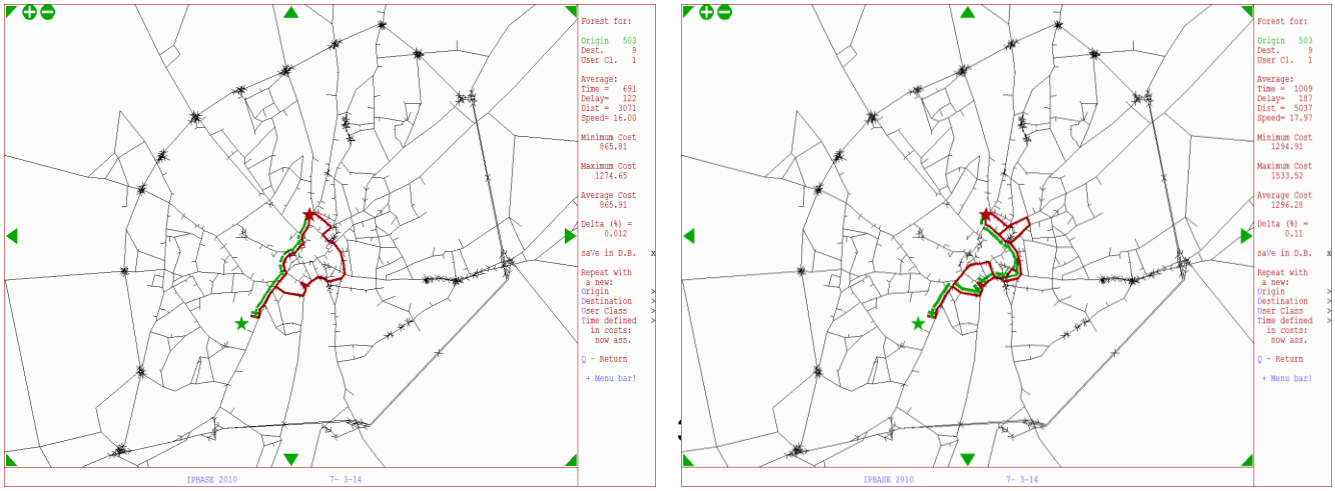


Figure 5.6: Lendal Bridge open & closed routes for trip from W of city to N of centre

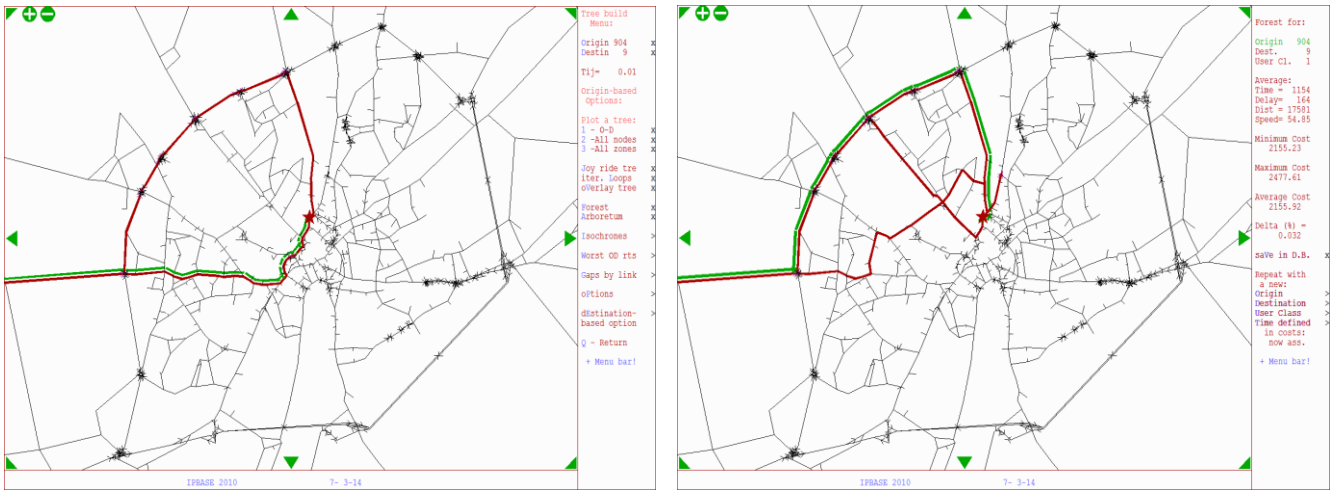
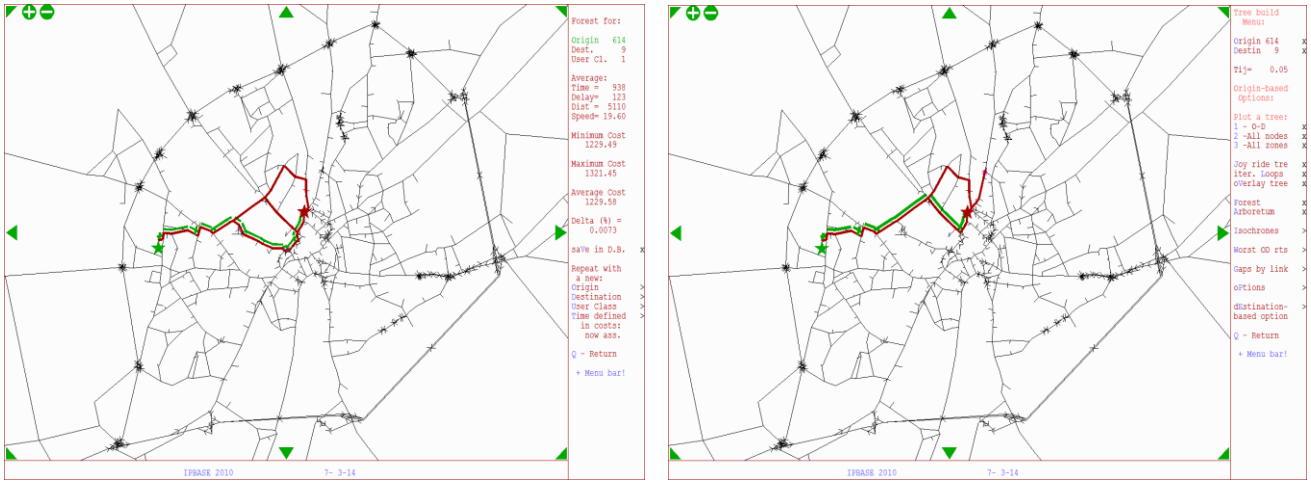


Figure 5.7: Lendal Bridge open & closed routes for trip from Acomb to N of centre



Outbound Analysis

Figure 5.8: Lendal Bridge open & closed routes for trip from centre to SW of city

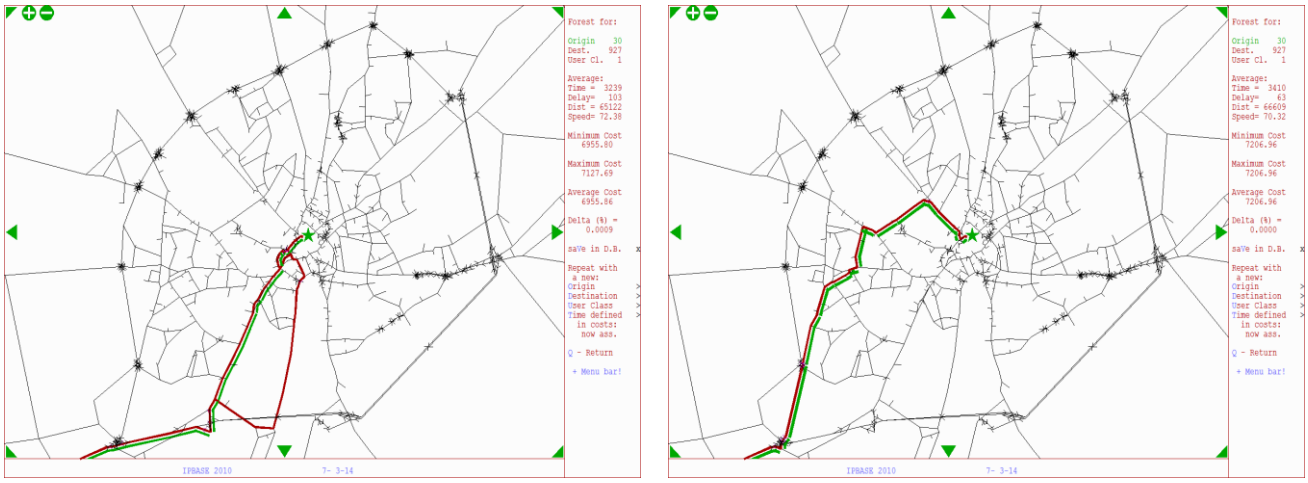


Figure 5.9: Lendal Bridge open & closed routes for trip from N of centre to Tadcaster Road

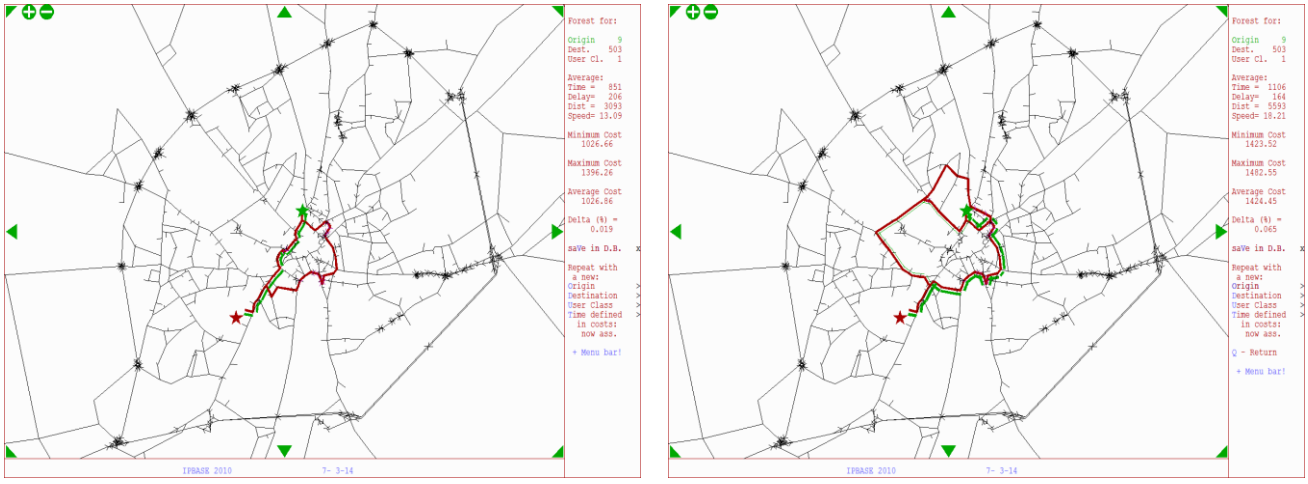


Figure 5.10: Lendal Bridge open & closed routes for trip N of centre to W of city

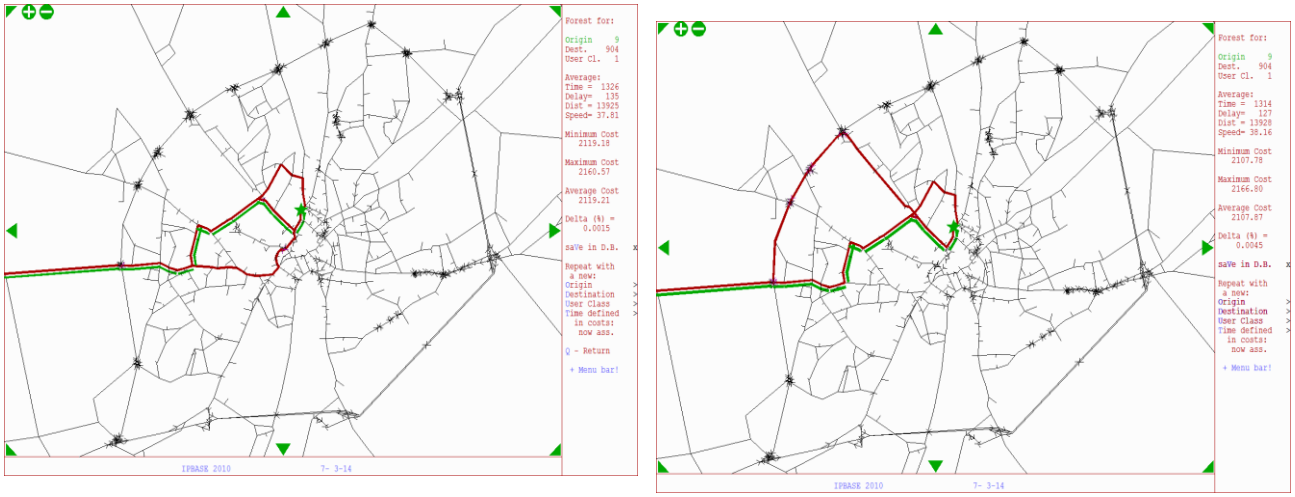
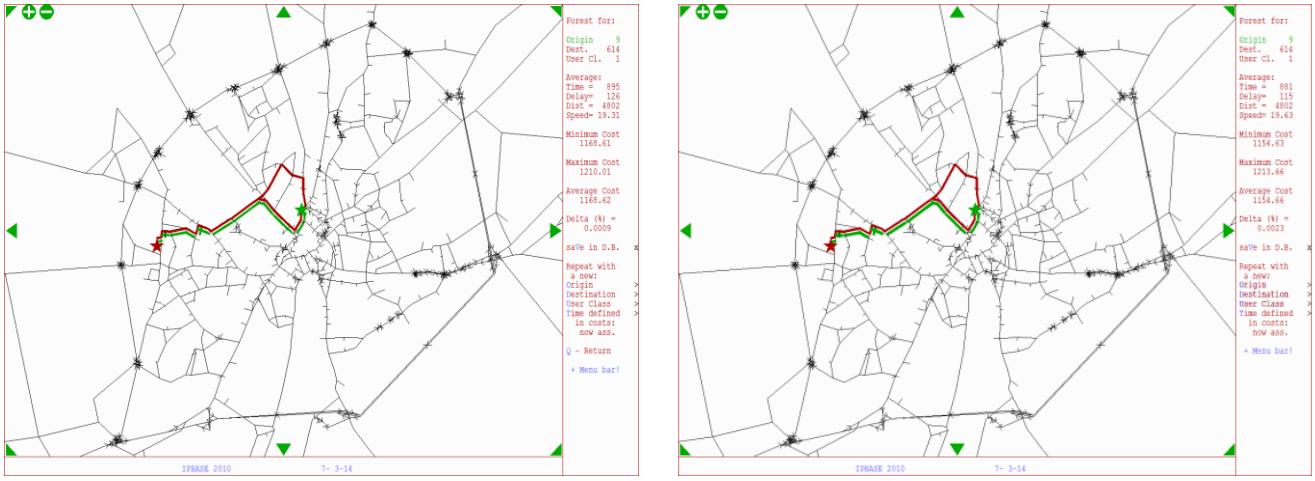


Figure 5.11: Lendal Bridge open & closed routes for trip from N of centre to Acomb



The SATURN route choice plots show routes used and considered by the assignment model between a user selected origin (green star) and a user selected destination (red star). All routes which have formed part of the final assignment solution are highlighted in red, while those which also have a green bandwidth have been estimated to carry the most significant proportions of the traffic flow.

Journeys between four points have been selected as broadly representative of the types of movements affected by the off-peak bridge closure, as suggested during the select link analysis. Plots have then been produced for each of these journeys in the open & closed situations and in both directions. The open and closed cases have been presented side by side to aid visual comparison.

For the city-bound movements, all the open plots include Lendal Bridge as a considered route and have the most significant proportion of the traffic flow across it. However, in three of the four cases alternative routes that include Foss Island Road, Clifton Bridge and the A1237 Outer Ring Road have also been considered, suggesting that the difference in generalised costs between routes over Lendal Bridge and the alternatives is probably quite small. In the closed plots, the significant traffic flow has switched to Foss Island Road, Clifton Bridge and the A1237 in each of the three cases where one of those routes was identified as an alternative. In the other case, a journey from southwest of the city to the centre, the route chosen in the closed scenario involves staying on the A64 and approaching the centre via an alternative radial.

For outbound movements, there is rather less of a tendency to choose Lendal Bridge in the open cases with two of the four movements (those with destinations to the west) already suggested by the model to have their major flows over Clifton Bridge. In the closed cases, Clifton Bridge and Foss Island Road carry all the major flows in the model suggesting that rerouting via the Outer Ring Road (A1237 or A64) is less attractive in that direction. In the final case presented (a trip between an origin north of the city centre and Acomb) the bridge closure appears to make no difference to the routes considered and chosen at all.

This analysis should aid our understanding of the route choices implied by the point observations in the ATC and manual count data by suggesting which routes are most attractive for which types of movement. In particular, it is helpful to understand that the route choice implications of closing Lendal Bridge appear to be significantly different by direction of travel. Not surprisingly, journeys with origins beyond the city seem much more likely to reroute via the Outer Ring Road than those with origins within. But the same does not seem to be so easy to say in reverse. Of course, this analysis is based on only a very small selection of possible spatial movements represented by the model, so what it suggests cannot be considered comprehensive.

5.1 Summary of SATURN Analysis

Overall, it seems justified to conclude from the demand flow comparison that the SATURN modelling application has actually performed rather well in predicting the general shape and relative scale of the response to the off-peak closure of Lendal Bridge. Therefore, it should prove sufficiently reliable to use for further analysis, such as for providing network-wide inputs to environmental calculations. Some of the key findings include:

- The analysis illustrates the relatively limited range of movements served by Lendal Bridge. In particular, it demonstrates that quite a lot of the journeys might be expected to be relatively short, between locations along Tadcaster Road and the city centre to the north of the river and immediately surrounding areas, suggesting potential for significant switching to public transport and active modes.
- The fact that such a high proportion of the trips crossing Lendal Bridge might be expected to have an origin or a destination in an around the city centre north of the river may also help to explain why the scheme is so contentious with businesses in that area, given that it is the main central retail and entertainment area of the city.
- The demand flow comparison helps to demonstrate that the main traffic impacts of the scheme, hinted at by the point observations of traffic flow observed during ATC and manual counts, are likely to be local rerouting of journeys with origins or destinations in and around the city centre north of the river to Clifton Bridge and the eastern sections of the Inner Ring Road.
- The model suggests that rather smaller changes in traffic volumes on radial and orbital routes further away, many of which are broadly consistent with the observed data, may also be attributable to the scheme. While these changes are unlikely to be very significant for overall traffic levels and travel conditions within the city, their impacts on individual journeys and the people making them will be rather greater.

- The route choice implications of closing Lendal Bridge appear to be significantly different by direction of travel with a lower tendency to choose Lendal Bridge for the outbound movements vis-à-vis inbound. With regards the latter the model results suggest that the difference in generalised costs between routes over Lendal Bridge and the alternatives is probably quite small.

6 Overall Findings

This draft final report brings together three pieces of evidence in relation to the impacts of the Lendal Bridge trial closure. Each piece is different in its own right in terms of what data was collected, how it was collected, when it was collected and who provided it. Without over-generalising, the data collected by ITS, during its street survey, strongly represents (although not exclusively) the views of tourists who are an important mainstay of the City of York's economy but who are not always familiar with the city and do not have to experience the impact of the trial closure on a frequent basis and leisure visitors who tend to be a mixture of residents and non-residents. The feedback survey conducted by CYC in contrast is dominated by responses from those living and/or working in York, who are familiar with the city and who are likely to experience the impact of the trial closure on a more frequent basis.

The third piece of evidence revolves around analysis of the traffic and other operational data. This adds considerable context to the first two pieces of research but does not always tell the full story as a result of resource limitations that prevent the collection of data on every single link and every moment of the day/night. This draft final report has not been able to include analysis of data related to air quality and traffic speeds, as provided by Traffic Master. These will be included in the final report.

In interpreting the findings from this evaluation there are aspects, which can be interpreted as being supportive of the scheme and those that are against it. The evidence must be kept in context as experimental evaluations in transport are fraught with difficulties such as seasonal effects and lack of good year on year comparative data. It is also difficult to evaluate the impacts of changes to one link in a network. Experimental closures are controversial measures which can arouse strong emotions amongst those feeling that they are directly affected in a period where few mitigation measures can be put in place.

Detailed findings have already been presented for each section of research undertaken. The key purpose of these overall conclusions is to highlight some of the most important findings and to try where possible to provide collaboration across all three sources of evidence where possible.

1. *The trial closure has led to a large reduction in car/van users crossing Lendal Bridge regularly (weekly or more).* The reductions range from a reported 50% from the CYC feedback survey to a 32% drop from the bridge count data provided by CYC. Interestingly the latter also suggest a fall in traffic during the peak time periods of 5.5% (possibly motorist avoiding the shoulder peak) & a reduction in the all-day traffic on the nearby Ouse Bridge (5%)
2. *This initial stage of the work allows us to identify significant changes in traffic flows on Lendal Bridge during the closure period but also some smaller reductions outside the closure in the peak periods.* There has been some evidence of diversion to other crossing points. Data for the 6 radial routes suggests that wider impacts of the Lendal Bridge trial on traffic levels across the city are generally very limited. Most comparisons suggest changes in flow between 2012 and 2013 of 2.5% or less, which are sufficiently small to be difficult to attribute with any certainty to the scheme given the many other possible explanations.
3. *The SATURN analysis illustrates the relatively limited range of movements served by Lendal Bridge. In particular*, it demonstrates that quite a lot of the journeys might be expected to be relatively short, between locations along Tadcaster Road and the city centre to the north of the river and immediately surrounding areas, suggesting potential for significant switching to public transport and active modes.
4. *The demand flow comparison in SATURN helps to demonstrate that the main traffic impacts of the scheme, hinted at by the point observations of traffic flow observed during ATC and manual counts, are likely to be local rerouting of journeys with origins or destinations in and around the city centre north of the river to Clifton Bridge and the eastern sections of the Inner Ring Road.* The model suggests that rather smaller changes in traffic volumes on radial and orbital routes further away, many of which are broadly consistent with the observed data, may also be attributable to the scheme.
5. *The trial closure has led to longer journeys and long distances being travelled for some car/van users.* The responses to the CYC survey suggest that around 90% of car/van users experience

both. This is supported by the analysis of the traffic data which finds flows across four of the bridges over the Ouse to have increased by greater than the 0.75% background increase; with Skeldergate bridge seeing the largest uplift (15%) and the A64 the largest absolute impact (1,350 extra trips per day), although other non-bridge factors are thought to have an influence here.

6. *The trial closure has led to a large increase in pedestrians crossing Lendal Bridge.* Bridge counts suggest that footfall across the bridge has increased by 38% during the closure period and 22% during the peaks. This is supported by evidence from the CYC feedback survey that found a modal shift away from car of around 9% in favour of active modes and taxi; as well as an improvement in the pedestrian environment. It is worth noting that the opening of the council's new offices at West Offices may have contributed to the increase here.
7. *The closure has improved the pedestrian & cycling environment around Lendal Bridge and how safe people feel.* This came through strongly in the CYC feedback survey, with no discernable affects from the ITS street survey.
8. *The evidence on bus reliability and journey times is mixed.* The ITS survey reported no change with satisfaction levels for the quality of public transport, whereas the net position taken from the CYC survey was that the perceived overall bus journey times and reliability had got slightly worse. Evidence provided by CYC in relation to Park and Ride journey times would suggest that the overall picture is largely one of status quo. It should be noted that judging changes in bus reliability and journey times is difficult given that bus operators have not yet had the opportunity to adjust scheduling to take into account any changes that have been brought to bear by the Lendal Bridge trial closure.
9. *Support for the bridge closure appears to be polarised.* The CYC feedback survey found strong support for the closure from existing cyclists and the opposite from car/van users. Public transport users and pedestrians were situated somewhere in-between. The ITS survey found that the single most important reason for visiting York was the pleasant nature of its environment and that the improvement of the pedestrian environment and increase in bus speeds was perceived as being more important to the strength of the city centre than improving car speeds

For tourists and leisure visitors (ITS survey) there was a positive evaluation of the experience of visiting York City Centre. There has been no change in the evaluation of the journey to York City Centre and equally no change in the overall evaluation of pedestrian, bus or bike access. Although surveyed near Lendal Bridge, it appears that the respondents take a wider view of their experience of York than just what happens on and around the bridge. Clearly, resident car drivers that have been negatively impacted hold a different view as they experience more frequent rerouting. The final report will, timescales permitting, bring together a more complete picture of the traffic journey time data and an evaluation of the impact of the Lendal Bridge trial closures on air quality.

Appendix 1 Baseline/Summer Survey

YORK CITY CENTRE SURVEY – University of Leeds & City of York Council

Thank you for agreeing to answer this questionnaire about your trip to York city centre today. The purpose of this survey is to evaluate the access to and the quality of, York city centre, for different groups of transport users - motorists, public transport users, pedestrians and cyclists. The survey will take less than 5 minutes and is being conducted by the University of Leeds, on behalf of the City of York Council. By completing this questionnaire you are agreeing to your data being stored and used in line with the University of Leeds ethics and data protection policies.

Please return your completed questionnaire in the FREEPOST envelope provided or to one of our survey team.

Thank you for your assistance.

Q1 **What was the main purpose of your visit to York city centre today?** (please tick one option below**)**

Work	
Business trip	
Food shopping	
Non-food shopping	
Education	
Tourism	
Health related	
Accessing services, e.g. banks	
Leisure/socialising	
Child escort	
Other escort/providing a lift	
Other (please specify)	

Q2 **How did you access the city centre today?** (if more than one method of transport please tick the one that you travelled the furthest by)

Car Driver + P&R	
Car Passenger + P&R	
Car Driver – Parked Near City Centre	
Car Passenger – Parked Near City Centre	
Walked/Cycled + P&R	
Bus	
Cycle	
Walk	
Rail	
Motorbike/scooter	

Q3 **How often do you visit York city centre?** (please tick one option from below)

This is my first visit	
5+ days per week	
2-4 days per week	
Once a week	
2-3 days per month	
Once a month	
Less than once a month	

Q4 If your main purpose for visiting York city centre today WAS for leisure, tourism, shopping or accessing services can you please indicate how IMPORTANT each of the following reasons were in reaching your decision to visit York city centre today? (please tick one box for each row) **Otherwise please go to Q5.**

	Very important	Important	Neither important nor unimportant	Unimportant	Very unimportant
Range of shops					
Range of services, e.g. banks					
Range of leisure facilities					
Opportunity for a day out					
Meeting friends and/or family					
Attractive city					
Historical city					
Pleasant environment					
Convenient to travel to					
Affordable to travel to					
Other (please specify)					

Q5 For your journey to York city centre today please indicate how you found the following factors? (please tick one box per row**)**

Factors:	Very high	High	Neither high nor low	Low	Very low	Not applicable
Cost of parking						
Cost of fuel						
Public transport fares						
Journey time						
Level of congestion						
	Very good	Good	Neither good nor poor	Poor	Very poor	Not applicable
Availability of parking						
Location of bus stops						
Location of rail station						
Location of park and ride sites						
Walking environment						
Cycling environment						
Quality of signage for pedestrians						
Quality of signage for drivers						
Other (please specify)						

Q6 Please rate your experience whilst in York city centre today using the scales below. (note - do not include your experience in reaching the city centre and please tick one box per row).

	Very pleasant	Pleasant	Neither pleasant nor unpleasant	Unpleasant	Very unpleasant	Don't know
Amount of traffic						
Traffic speeds						
Space for cycling						
Space for walking						
Noise levels						
Pollution levels						
Overall experience getting around the city centre						
	Very good	Good	Neither good nor poor	Poor	Very poor	Don't know
Ease of crossing roads						
Accessibility of the city centre						
Overall ease of getting around						
	Very high	High	Neither high nor low	Low	Very Low	Don't know
Risk of being involved in a road traffic accident						

Q7 Thinking overall about your visit to York city centre today, please rate the following using the scale below. (please tick one box per row).

	Very good	Good	Neither good nor poor	Poor	Very poor	Don't know
Your journey to York city centre						
The quality of the public transport serving York city centre						
Provision for pedestrians						
Provision for cyclists						
Your overall satisfaction with York city centre						

Q8 To what extent do you agree with the following statements? (please tick one box per row).

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Pedestrianisation strengthens the retail sector in York					
Pedestrianisation helps to make York an attractive place to work					
Pedestrianisation attracts visitors to York					
Cycling facilities strengthen the retail sector in York					
Cycling facilities help to make York an attractive place to work					
Cycling facilities attract visitors to York					
Faster bus journeys will improve the York economy					
Faster car journeys will improve the York economy					

Q9 **Which of the following changes would make you visit York city centre more often than you currently do** (please select all that apply)? **Which is the most important of these reasons** (please select one)?

	Tick ALL changes that apply	Tick the ONE most important change
A larger range of shops		
A larger range of services, e.g. banks		
A larger range of leisure facilities		
Easier access by car		
More car parking spaces		
More convenient car parking		
Cheaper parking		
Less traffic congestion		
Faster bus journeys		
More frequent buses		
Cheaper bus fares		
Cheaper bus park and ride		
More space for cycling		
More cycle lanes		
More space for walking		
A more pleasant pedestrianised area		
A larger pedestrianised area		
Better air quality		
A quieter environment		
A less car dominated environment		

Q10 **There are plans to restrict vehicle access (except for buses, taxis and emergency vehicles) across Lendal Bridge for a trial period. Access to the bridge will be restricted from 10.30am to 5pm, 7 days a week for at least 6 months from 27 August 2013. How do you think this will affect you and is it in general a positive or negative idea?** (please tick one box per row).

	Very positive	Positive	Neither positive nor negative	Negative	Very negative	Not affected
The impact of the Lendal Bridge restriction on me will be ……..						
I think the idea to restrict traffic on the Lendal Bridge is …….						

Q11 What is your gender? (please tick one box)

Male		Female	

Q12 Please indicate which age band you are in below? (please tick one box)

17-19 yrs	20-29 yrs	30-39 yrs	40-49 yrs	50-59 yrs	60+ yrs

Q13 Please can you tell us your postcode?

THANK YOU FOR YOUR TIME

Appendix 2 During/Autumn Survey

Q10 Motorised vehicle access across Lendal Bridge has been restricted (except for buses, taxis and emergency vehicles) since the 27th August 2013 for a trial period lasting 6 months. As a result access to the bridge for private motorised vehicles is restricted from 10.30am to 5pm, 7 days a week. Please indicate what the impact (<u>if any</u>) of this has been on you and whether your think it is in general a positive or negative idea? (please tick one box per row).

	Very positive	Positive	Neither positive nor negative	Negative	Very negative	Not affected
The impact of the Lendal Bridge restriction on me has been ……..						
I think the idea to restrict traffic on the Lendal Bridge is …….						

Appendix 3 Statistical Reporting

Table A3.1 Main Reasons for Visit if Non-Work % (n)

Reasons	*Very Important/ Important*	*Neither Important or Unimportant*	*Unimportant/ Very Unimportant*	*Statistically Significant (z^6)*
Range of shops	58% (335)	25% (142)	17% (98)	**11.39**
Range of services, e.g. banks	35% (190)	32% (178)	33% (180)	0.52
Range of leisure facilities	44% (239)	28% (152)	27% (148)	**4.63**
Opportunity for a day out	88% (504)	8% (47)	4% (20)	**21.14**
Meeting friends &/or family	38% (199)	26% (136)	36% (188)	0.56
Attractive city	93% (538)	6% (33)	1% (8)	**22.68**
Historical city	92% (550)	7% (40)	2% (11)	**22.76**
Pleasant environment	97% (555)	2% (13)	1% (2)	**23.43**
Convenient to travel to	88% (501)	10% (57)	2% (9)	**21.79**
Affordable to travel to	79% (446)	18% (100)	3% (16)	**20.01**
Other	65% (26)	10% (4)	25% (10)	**2.67**

Table A3.2 Significance Testing – Pedestrianisation, Cycling Facilities, Bus & Car Speeds

Statement 1	**Statement 2**	***Significance[7] (z)***
Pedestrianisation strengthens the retail sector in York	*Cycling facilities strengthen the retail sector in York*	**7.90**
Pedestrianisation attracts visitors to York	*Cycling facilities attract visitors to York*	**9.00**
Faster bus journeys will improve the York economy	*Faster car journeys will improve the York economy*	**2.74**

The statistical tests reported in tables A3.3 and A3.4 related to questions asked respondents to rate their experiences using Likert scales based around three sentiments, e.g. very pleasant to very unpleasant, very good to very poor and very high to very low. Comparing the sets of responses is not as straight forward as calculating the percentage of respondents in each rating category. For example, a larger percentage of the sample may have rated their experience of 'traffic speeds' as very pleasant in the after survey vis a vis the base survey but at the same time a larger amount may have rated it as unpleasant vis a vis the base survey, so has the experience improved or worsened? A set of statistical analyses that provides a solution to this issue are called non-parametric tests and one in particular, the Mann-Whitney U test is widely used to compare two sets of data to see if an intervention has made any difference. This is done be testing whether the mean ratings of the two different set of respondents are different from each other.

[6] Significance is based on a 1 sample test of proportion were Ho: $P_I = 0.5$. A z of >1.96 is judged significantly different at the 5% level and is presented in bold.

[7] Significance is based on a 2 tailed test for 2 proportions. A z of >1.96 is judged significantly different at the 5% level and is presented in bold.

To do this, the Mann-Whitney U test specifies a null hypothesis that the mean of the two data sets are the same. When performing the test in a statistical package (in this case SPSS) the test reports a p value. If the p value is less than 0.05 then the null hypothesis is rejected, but if the p value is equal to or greater than 0.05 then the null hypothesis is accepted and no statistical difference is detected between the two samples.

Table A3.3 Experience Whilst in York City Centre

Experiences	***Full Sample***				***Tourist Travel Segment***				***Le***
	Base	*After*	*P*	*Impact*	*Base*	*After*	*P*	*Impact*	
Amount of traffic	2.95 (588)	2.89 (330)	.443	**N/C**	2.92 (350)	2.91 (235)	.945	**N/C**	3.(
Traffic speed	2.77 (548)	2.78 (314)	.537	**N/C**	2.76 (331)	2.78 (228)	.595	**N/C**	2.7
Space for cycling	2.65 (271)	2.75 (138)	.153	**N/C**	2.63 (144)	2.70 (87)	.326	**N/C**	2.(
Space for walking	2.13 (603)	2.22 (331)	.033	**-**	2.06 (361)	2.21 (238)	.009	**N/C**	2.1
Noise levels	2.61 (591)	2.62 (332)	.648	**N/C**	2.61 (353)	2.65 (238)	.540	**N/C**	2.(
Pollution levels	2.66 (529)	2.78 (288)	.035	**-**	2.64 (322)	2.77 (203)	.052	**N/C**	2.(
Overall experience getting around city centre	1.91 (611)	2.08 (335)	.001	**-**	1.85 (369)	2.03 (241)	.001	**-**	2.(
Ease of crossing roads	2.19 (621)	2.18 (341)	.900	**N/C**	2.18 (370)	2.19 (245)	.769	**N/C**	2.1
Accessibility of the city centre	1.83 (623)	1.94 (331)	.185	**N/C**	1.79 (370)	1.92 (236)	.065	**N/C**	1.9
Overall ease of getting around	1.89 (618)	2.02 (339)	.045	**-**	1.83 (368)	1.99 (243)	.019	**-**	1.9
Risk of being involved in a road traffic accident	3.40 (555)	3.39 (294)	.685	**N/C**	3.43 (327)	3.45 (208)	.884	**N/C**	3.3

+ improved experience since bridge closure; - worse experience since bridge closure; N/C no change

Table A3.4 Overall Experience of Visit to York City Centre

Reasons	*Full Sample*				*Tourist & Biz Travel Segment*				*Leisure Segment*			
	Base	*After*	*P*	*Impact*	*Base*	*After*	*P*	*Impact*	*Base*	*After*	*P*	*Imp*
Your journey to York City Centre	1.79 (620)	1.94 (342)	.103	**N/C**	1.77 (365)	1.93 (243)	.067	**N/C**	1.83 (255)	1.95 (99)	**N/C** .784	**N/C**
The quality of the public transport serving York City Centre	1.83 (391)	1.85 (218)	.753	**N/C**	1.73 (201)	1.82 (142)	.233	**N/C**	1.95 (190)	1.89 (76)	N/C .604	**N/C**
Provision for Pedestrians	1.97 (612)	2.00 (327)	.385	**N/C**	1.91 (363)	1.97 (234)	.321	**N/C**	2.05 (249)	2.06 (93)	.622 N/C	**N/C**
Provision for Cyclists	2.31 (240)	2.31 (124)	.694	**N/C**	2.18 (117)	2.34 (70)	.118	**N/C**	2.44 (123)	2.26 (54)	.345 N/C	**N/C**
Your Overall Satisfaction with York	1.66 (633)	1.78 (347)	.011	**-**	1.57 (376)	1.73 (249)	.002	**-**	1.79 (257)	1.91 (98)	.350 N/C	**N/C**

City Centre												

+ improved experience since bridge closure; - worse experience since bridge closure; N/C no change

UNIVERSITY OF LEEDS

Lendal Bridge Closure – CYC Feedback Survey

- Final Report

Jeremy Shires

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1 Survey Details

An online survey for residents has been available on CYC's website since the start of the trial closure - www.york.gov.uk/citycentreimprovements. This has been promoted during publicity of the trial and via a Lendal Bridge trial leaflet distributed to residents and businesses throughout the city. Hard copies of the survey forms have been available at CYC West Offices and city libraries.

Two separate questionnaires were available for people to provide feedback. During September a short version of the survey was used, largely because of the expectation that changes in traffic flows would take a number of weeks to settle down; secondly it would be difficult for residents to determine whether they experience changes in key aspects immediately upon introduction of the restriction. As the trial bedded in, a much more in-depth survey was developed for use from October and it is this which is reported here.

Both surveys were implemented via the Survey Monkey website. The short survey asked respondents why they traveled into York city centre, their main mode of travel to the city and enabled them to provide comment on their travel experiences since the start of the trial.

The in-depth survey asked respondents about why and how they travel, before moving onto and asking more detailed questions about the impacts since the introduction of the trial with some routing of questions linked to access mode of travel. Additional questions were asked of all respondents regarding their views on how the trial works towards the Reinvigorate York objectives and the impacts of the restrictions on individuals personally and on the city generally. In total 2,741 respondents took part in the in-depth survey (which closed in March 2014) although not everyone fully completed the questionnaire. This included 121 respondents who gave their responses via paper based questionnaire forms. There were no restrictions on who could take part in the survey, nor any quotas imposed to obtain pre-specified levels of representativeness.

Respondents completed the survey in the knowledge that the questionnaire they were undertaking was designed to give feedback on the Lendal Bridge trial closure. There is therefore a danger that some level of response bias is present, namely that respondents who strongly support, or who don't support, the trial closure will have been strongly incentivised to have taken part in the survey.

2 Key Descriptive Results

Overall Statistics

Tables 2.1 & 2.2 outline the key socio-economic characteristics of the respondents' who have taken part in CYC's feedback survey.

- Good representation across all age groups.
- Much stronger representation of males.
- Large segments for commuting, shopping, access of key services and leisure – reflecting the strong representation of York residents within the sample.

Table 2.1 Age and Gender of Respondents

Age Categories%[8](n=2,276)							*Gender %[9] (n=2,379)*	
<16	*17-19*	*20-29*	*30-39*	*40-49*	*50-59*	*60+*	*Male*	*Female*
0.4	0.8	14.3	21.7	22.6	19.3	20.9	61.4%	38.6%

Table 2.2 Journey Purpose (n=2,739)

Purpose	*%*
Commuting	25.6
Biz Deliveries/Travel	7.5
Shopping	19.6
Tourism	6.2
Health Related	3.1
Access to key services inc. railway station	14.9
Leisure	14.3
Other	8.7

Change in Car Use

One of the main focuses of the feedback survey was the attempt to measure changes in trip making across the Lendal Bridge, before the bridge closure and during it. Table 2.3 outlines the changes in usage of the bridge by car. Clearly, and as expected, the effect of the closure has been to reduce the frequency of car trips across the bridge, with a switch away from regular trip making (weekly or more) towards rarely/never. The switch has been quite dramatic, with a fall in those making regular trips (>1 per week) across the bridge falling by around 70%, whilst occasional and rare use of the bridge have seen large increases.

[8]&[2] Note that 124 respondents' preferred not to divulge this information.

Table 2.3 Change in Car Use across the Lendal Bridge

	5 days or more	*2-4 days a week*	*Weekly*	*Monthly*	*Occasionally*	*Rarely/never*
Before	250	363	317	128	188	122
During	92	97	138	82	235	632

It is not clear what happens to the reduced car trips as the questionnaire does not directly ask for this information, however Tables 2.4 to 2.6 would suggest that the same set of users now travel further (87%) and that their journeys take longer (91%) and that a wide range of alternative routes are now taken. From Table 2.5 it can be seen that nearly a quarter of respondents are retiming when journeys take place.

Table 2.4 Alternative Bridge Crossing Mainly Used – Private Vehicle Users (n=1464)

A1237	7.5%
Clifton	34.1%
Ouse	13.1%
Skeldergate	22.3%
A64	5.3%
None	17.7%

Table 2.5 Have You Travelled at Alternative Times of the Day as A Result of the Trial? (n=1,474)

Yes	25%
No	75%

Table 2.6 Has Your Journey Length & Time Changed – Private Vehicle Users

Journey Length (n=1,464)	*%*	*Journey Time*	*% (n=1,465)*
		Quicker	1.3
Unchanged	12.8	Unchanged	8.1
0-1 mile longer	10.7	0-5 mins longer	3.3
1-2 miles longer	31.3	5-15 mins longer	27.9
2-6 miles longer	29.9	15-30 mins longer	36.1
>5miles longer	15.4	>30 mins longer	23.3

Direct evidence on whether car use has been reduced since the bridge closure could have been gleaned from Qs 2 & 3 which asked respondents what their primary mode of transport was for accessing the city centre before the Lendal Bridge closure and since the closure. On examination of the data it would appear that a mistake in the response options has allowed respondents to record only their primary mode of transport before the closure but to record more than one primary mode after the closure. Despite this, analysis of the response showed that only 103 respondents had recorded more than one primary mode of transport after the closure. It was therefore felt valid to

include these additional responses in the analysis: (1) Given the small impact they would have overall; and (2) They may genuinely use more than one mode equally to make trips.

The analysis of the data (Table 2.7) shows that there has been a modal shift away from car/van (a reduction of nearly 10%) in favour of active modes (bicycle and walking) and taxi. Bus usage has remained relatively stable (with a slight increase) as has motorcycle use. An analysis of the 'other' responses shows that 3.6% of the total sample reported that they either no longer came into the city centre or would not be returning to the city centre; with nearly 17% of this sub-sample stating that instead they access/will access shops and services in different locations (e.g. Monks Cross, Wetherby and Leeds).

Table 2.7 Primary Access to York City Centre before and After the Lendal Bridge Closure

Before Closures (n=2,734)	*%*	*After Closure (n=2,856)*	*%*
Car/van	64.5	Car/van	55.0
Motorcycle	1.1	Motorcycle	1.0
Bus	9.1	Bus	10.0
Taxi	0.3	Taxi	1.2
Bicycle	9.8	Bicycle	11.0
On foot	12.1	On foot	15.2
Other	3.1	Other	6.7

Changes in Non-Car Use & Behaviour

This section considers the changes in non-car use and behaviour. As indicated in Table 2.7 above, bus use has remained constant whilst the main beneficiaries from a reduction in car use would appear to be active modes and taxis (presumably as a direct result of their ability to cross Lendal Bridge). Table 2.8 outlines changes in bus performance since the start of the bridge closure, with regards to journey times and reliability. The table shows that for around 75% of respondents, journey times have either not changed or improved. It is a similar picture for reliability, with around 75% of respondents recording either no change or an improvement in reliability, compared to 25% of respondents recording more unreliability. Overall, the net perceptions are that bus journey times have slightly increased and that bus reliability has slightly got worse.

Table 2.8 Change in Bus Journey Times & Reliability since the Closure

Change in Journey Time	*%*	*Change in Reliability*	*%*
Decreased	19.7	Improved	20.0
Not changed	53.7	Not changed	53.5
Increased	26.6	Reduced	26.5

The feedback questionnaire had a number of questions around active modes which focused on how the journey had changed, the quality of the environment and how safe people felt. Tables 2.09 and 2.10 report the responses to a number of questions posed in the survey to both cyclists and pedestrians. Taking the results together there are a number of agreements between cyclists and pedestrians and a number of differences which may reflect the different characteristics of travelling by either mode.

There is a strong opinion that since the closure there has been a net improvement in the cycling environment around Lendal Bridge (63.2%), with, the non-Lendal routes, on balance showing a net

deterioration (14.2%). For pedestrians the picture is one of a smaller net improvement in the walking environment (33.6%) around Lendal Bridge, and a similar net deterioration (30%) for other areas.

There would appear to be more agreement when considering changes to traffic volumes. Here, both cyclists and pedestrians agree that there has been a substantial net reduction in traffic volumes of between 68-75% around Lendal Bridge. Surprisingly, around 10% of respondents think that traffic volumes on the bridge have got worse. This but may reflect people's preconceptions about how much traffic would actually flow over the bridge following the closure, e.g. a number of media stories have focused on the number of traffic violations since the closure began. There is also a level of agreement in relation to changes in traffic volumes on non-Lendal Bridge, with around 40% of cyclists feeling traffic volumes have increased and around 60% of pedestrians holding similar views. This is to be expected given traffic must reroute away from Lendal bridge.

Table 2.09 Changes Experienced By Cyclists since the Lendal Bridge Closure %

Cycling Environment:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route has….	71.7	19.8	8.5
On non-Lendal Bridge routes has…	18.4	48.9	32.6
Traffic Volumes:	*Decreased*	*Not Changed*	*Increased*
Around the Lendal Bridge route have..	74.6	17.0	8.5
On non-Lendal Bridge routes have..	12.1	45.6	42.3
My Feelings of Safety:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route have..	64.7	24.4	11.0
On non-Lendal Bridge routes have..	11.4	61.6	27.0
Air Quality:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route has….	58.3	40.6	1.1
On non-Lendal Bridge routes has…..	9.3	69.4	21.4
	Improved	*Not Changed*	*Worsened*
My Ability to Get Around the City has	50.2	25.1	24.7

There is less agreement in relation to the impact on safety since the closure. Cyclists' are strongly in agreement that the bridge closure has had a positive impact upon safety around the Lendal Bridge route (65%), whilst only 35% of pedestrians hold a similar view. In fact 16% of pedestrians hold the view that since the closure, safety has got worse. Can such differing views be reconciled? For cyclists, a reduction in traffic levels is always likely to lead to positive reinforcements around feelings of safety, more so than for pedestrians who do not have to share pavement space with vehicles. It is not clear however why 20% of pedestrians feel less safe. Possibly because bus/taxi vehicle speeds have increased on the bridge? There is more agreement on the impact on safety on non-Lendal Bridge routes, with both sets of respondents agreeing that safety has got worse (27% to 37%), whilst around 9% feel it has improved.

Air quality is judged to have improved around Lendal Bridge by both groups of respondents, significantly so for cyclists. There is a divergence of opinion however for non-Lendal Bridge routes, with pedestrians expressing a much stronger negative response (40%) compared to 21% for cyclists.

Finally, for cyclists there has been a net improvement (25%) in their ability to get around the city in general.

Table 2.10 Changes Experienced By Pedestrians since the Lendal Bridge Closure %

The Walking Environment:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route has….	45.1	43.4	11.5
On non-Lendal Bridge routes has…	9.6	50.8	39.6
Traffic Volumes:	*Decreased*	*Not Changed*	*Increased*
Around the Lendal Bridge route have..	68.8	21.1	10.1
On non-Lendal Bridge routes have..	11.0	28.9	60.1
My Feelings of Safety:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route have..	35.1	49.3	15.6
On non-Lendal Bridge routes have..	8.5	54.1	37.4
Air Quality:	*Improved*	*Not Changed*	*Worsened*
Around the Lendal Bridge route has….	37.9	59.1	3.0
On non-Lendal Bridge routes has…..	7.2	53.0	39.8

Views on Strategic Objectives

The last set of questions ask respondents about their opinions on the overall objectives of the Lendal Bridge closure and what respondents feel are the impacts of the closure on them personally and on the city. Table 2.11 outlines how, respondents' view the effectiveness of the closure on three key objectives, with a breakdown by current access mode.

The overall picture is strongly influenced by the views of car/van users and demonstrates that, for those taking part in the survey, there is a tendency to disagree that the overall objectives of CYC are being met by the bridge closure. This is particularly the case with regards the third objective – creating a more attractive and thriving city centre – which 74% of the respondents' feel is not being aided. The first and second objectives – improving bus performance and the daytime environment for pedestrians and cyclists – are also not positively perceived with 63% and 58% of respondents saying neither has been achieved.

Viewpoints differ by access mode, with cyclists in particular agreeing strongly that the bridge closure is helping the attainment of all three objectives. Bus users and pedestrians are less sceptical than car users with regards the impact of the bridge closure, particular with the second objective – improving the daytime environment for pedestrians and cyclists – with no clear yes or no decision from pedestrians and a tentative yes from bus users.

Table 2.11 Have the Overall Objectives of the Bridge Closure been achieved?

Key Objectives: All Respondents	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	20.7	63.0	16.3
Improve the daytime environment for pedestrians and cyclists	30.4	57.7	11.9
Create a more attractive and thriving city centre	17.9	73.6	8.5
Key Objectives: Car/Van Users	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	9.8	74.0	16.2
Improve the daytime environment for pedestrians and cyclists	17.8	69.3	12.9
Create a more attractive and thriving city centre	4.7	88.2	7.1
Key Objectives: Bus Users	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	33.0	55.7	11.4
Improve the daytime environment for pedestrians and cyclists	51.7	37.5	10.7
Create a more attractive and thriving city centre	33.7	54.2	12.1
Key Objectives: Cyclists	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	55.4	28.2	16.4
Improve the daytime environment for pedestrians and cyclists	69.1	24.5	6.4
Create a more attractive and thriving city centre	59.4	29.9	10.7
Key Objectives: Pedestrians	*Yes*	*No*	*Unsure*
Improve bus reliability & reduce bus journey times through the city centre	34.1	46.3	19.5
Improve the daytime environment for pedestrians and cyclists	43.1	46.7	10.2
Create a more attractive and thriving city centre	33.3	57.1	9.6

A very similar picture emerges from Table 2.12 which reports what the impact of the closure has been on the individual respondents and on the City of York. Car/Van users responding to the survey have strong negative feelings about the impact of the closure, with 91% and 88% saying it has had a negative/very negative impact upon them and upon the city. These views are tempered by non-car/van users, particularly cyclists who are the only user group to have a net positive position on the changes.

Table 2.12 Impact of the Lendal Bridge Closure on Individuals & the City

All Respondents	*Very Positive*	*Positive*	*Neither Positive or Negative*	*Negative*	*Very Negative*	*Will not be affected*
Impact of closure on me personally…	10.6	7.0	6.5	24.9	49.5	1.4
Impact of closure on the city in general	8.7	8.6	7.2	25.4	49.0	1.0
Car/Van Users						
Impact of closure on me personally…	1.8	1.9	3.8	27.2	63.7	1.6
Impact of closure on the city in general…	2.0	1.7	7.1	27.7	60.2	1.2
Bus Users						
Impact of closure on me personally…	19.0	17.4	11.5	28.1	22.5	1.6
Impact of closure on the city in general…	16.6	17.4	7.9	26.5	30.0	1.6
Cyclists						
Impact of closure on me personally…	39.4	21.1	8.7	16.3	13.8	0.7
Impact of closure on the city in general…	29.3	29.3	6.9	17.2	16.6	0.7
Pedestrians						
Impact of closure on me personally…	19.5	12.5	13.2	24.7	28.7	1.5
Impact of closure on the city in general…	15.8	16.3	8.3	23.6	35.4	0.5

3 Findings

The in-depth CYC feedback survey collected responses from 2,741 people with a strong focus on York residents and car/van users. The feedback survey, by its very nature, is likely to have been populated by respondents with strong views on the bridge closure (both positive and negative) or who have been affected by it directly.

A list of key findings from this survey are outlined below.

18. There has been a dramatic reduction in car/van use across Lendal Bridge, with a fall in those making regular trips (weekly or more) of 70%.
19. There is evidence to suggest that car/van are travelling on a wide range of longer routes (87%) and their journeys are taking longer (91%).
20. Clifton (34%) and Skeldergate (22%) are the most popular alternative crossings.
21. Car/van users are reporting increase in both their journey lengths (87%) and journey times (91%).
22. Car/van users strongly disagree that the bridge closure is assisting CYC's three key objectives for the city, particularly – creating a more attractive and thriving city centre – 74% thinking it is not helping.
23. There has been a modal shift away from car/van (a reduction of 10%) in favour of active modes (bicycle and walking) and taxi.
24. Bus usage has remained stable, as has motorcycle use.
25. A suggestion that 3.6% of the total sample no longer came into the city centre and instead accessed shops and services in different locations (e.g. Monks Cross, Wetherby and Leeds)
26. Bus journey times have either not changed or improved, for around 75% of respondents, whilst 75% of respondents record either no change or an improvement in bus reliability. Despite this the overall net position is that perceptions of bus journey times have slightly increased and reliability slightly fallen.
27. There has been an improvement in cyclists' environment around Lendal Bridge (72%), with, on balance, non-Lendal routes deteriorating (-14%).
28. For pedestrians & their environment the picture is more mixed with a net improvement in the walking environment (34%) around Lendal Bridge, but a net deterioration (-30%) for other areas.
29. Cyclists and pedestrians agree that there has been a substantial net reduction in traffic volumes of around 70% around Lendal Bridge.
30. Around 40% of cyclists feel traffic volumes have increased on non-Lendal bridge routes with 60% of pedestrians holding similar views.
31. Cyclists' feel strongly that the bridge closure has had a positive impact upon safety around the Lendal Bridge route (65%), whilst only 35% of pedestrians hold a similar view with 16% holding the view that since the closure safety has got worse.
32. Both cyclists and pedestrians feel that safety on non-Lendal Bridge routes has got worse (27% to 37%), whilst around 10% feel it has improved.
33. Air quality is judged to have improved around Lendal Bridge for both cyclists and pedestrians, but there is a divergence of opinion for non-Lendal Bridge routes, with pedestrians expressing a much stronger negative response (40%) compared to 21% for cyclists.

Clearly, the car users taking part in this feedback survey have been strongly affected by the bridge closures, with large numbers re-routing, resulting in longer journey times and travel distances. They are strongly against the closure and do not agree that it is helping to attain CYC's objectives, particularly, the creation of a more attractive and thriving city centre.

Non car/van users are much supportive of the Lendal Bridge closure, particularly cyclists, but still feel that improvements in the Lendal Bridge area have created problems (more traffic, a less safe environment and higher levels of pollution) elsewhere in York.