Transport for Greater Manchester

Oxford Road Trial Bus Stop Evaluation Report

September 2016

Transport for Greater Manchester

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1 Executive Summary

1.1 In 2015, as part of the Oxford Road Bus Priority Scheme, Transport for Greater Manchester (TfGM) committed to constructing a trial bus stop featuring a cycle bypass lane complete with pedestrian crossing facilities, which included a zebra-style facility. The design is the first of its kind for Greater Manchester and is intended to allow cyclists to safely pass behind Oxford Road's busy bus stops separated from the main carriageway. The design aimed to improve cycle safety by reducing the potential conflict between cyclists and buses and in doing so encourage more people to cycle along this key route.

1.2 The design of the trial stop was developed through a series of workshops with stakeholders and users groups and was based on stated preferences. The trial stop was constructed in August 2015 and is located immediately south of the Hathersage Road junction on Oxford Road.

1.3 The purpose of the trial was to allow stakeholders and user groups to evaluate the final design and to provide feedback that would enable the production of recommendations, intended to optimise the design prior to constructing the remainder of the bus stops and ensure that it was fit for purpose for all users.

1.4 The formal evaluation of the trial stop was carried out during September and October of 2015 and included surveys of the general public, the capture of video footage and stakeholder site visits. The evaluation culminated in a workshop on 16 November 2015 to which representatives of all the groups involved in the process were invited. It was from the workshop that a series of collective recommendations were produced and subsequently presented to the MCC design team for consideration. The recommendations, which were subsequently confirmed by the MCC design team and have now been incorporated into the final design, are as follows:

1.5 **Priority at pedestrian crossings:**

- Additional awareness-raising signage and lane markings for both pedestrians and cyclists, additional red lighting inset into the bypass lane, and rumble strips on approach to crossing points.

1.6 **Segregation between user groups:**

- Due to the associated dis-benefits, no additional guard-rail to physically separate pedestrians and cyclists was introduced to the design.

- Appropriate street furniture to be used to deter pedestrians from inadvertently walking into the carriageway after crossing onto the bus stop platform from the zebra crossing.

1.7 **Cycle Speeds:**

- The introduction of 'slow' markings, rumble strips on approach to crossing points and additional signage are to help reduce cycle speeds and raise awareness that cyclists are entering a pedestrian area.

1.8 The final design also features priority areas for wheelchair users and people with pushchairs. Educational and awareness raising tools and materials will also be developed to aid understanding of the Oxford Road bus stops to assist all users of the facilities.

1.9 In conclusion, the trial stop evaluation has enabled the development of a final design for the Oxford Road bus stop bypass facilities. The template, which has been the subject of extensive design discussion and evaluation, is to be replicated throughout the scheme area, to provide a continuity and consistency of approach to aid understanding and legibility for all users.

2 Background to the trial

2.1 The Oxford Road context

2.1.1 Oxford Road is one of Europe's busiest bus routes and provides access to a wide variety of facilities, including the CMFT hospital site, the University of Manchester, Manchester Metropolitan University and the Royal Northern College of Music. It also links directly with a number of key employment and residential areas.

2.1.2 The Oxford Road scheme is an integral part of TfGM's Bus Priority Package and represents a significant investment in Greater Manchester's bus network. The bus priority package aims to create direct public transport links between the employment, health, retail, leisure and education opportunities in the Regional Centre and along the Oxford Road corridor, to areas of deprivation and need in the north and west of Manchester.

2.1.3 The key component of the Oxford Road scheme is the introduction of a mile-long bus, hackney taxi and cycle only section from Hathersage Road to Grosvenor Street, which will operate daily from 6am to 9pm. During these periods access will be restricted to general traffic. North of Grosvenor Street there are proposed new sections of bus lane; running southbound from Charles Street; and northbound from Whitworth Street West. The access restrictions will be implemented in conjunction with a 20mph speed limit for all permitted vehicles. There will also be a significant investment in enhanced facilities for pedestrians and cyclists, including the introduction of 'Dutch-style' bus stops with cycle bypass lanes running to the rear of bus stops. Along Oxford Road, between the stops, cyclists will be segregated from the main carriageway by means of kerb separation.

2.2 Oxford Road cycle bypass lane design

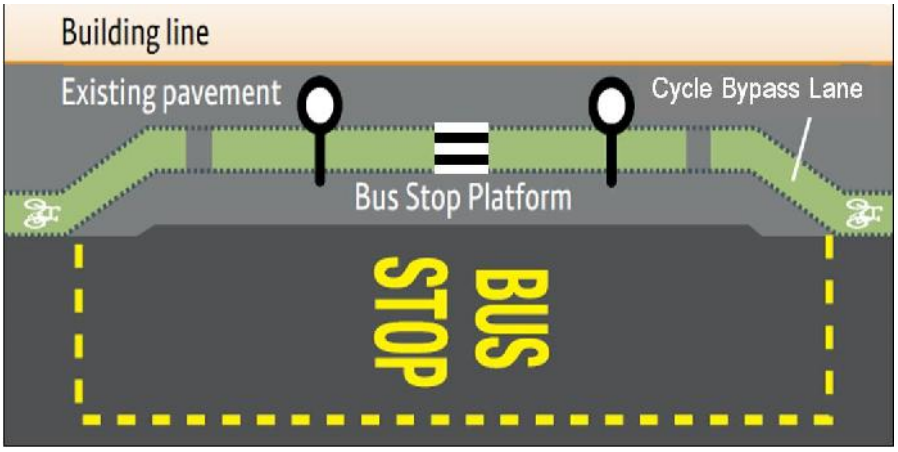
2.2.1 Cycle bypass lanes at bus stops with dedicated crossing points are a first for Greater Manchester and enable cyclists to pass behind the bus platform, where passengers will alight and wait. The bypass lane is intended to allow cyclists to safely pass busy bus stops, separate from the main carriageway, encouraging more cyclists to use this key route. Bus passengers will be able to cross the cycle bypass lane at designated crossing points.

2.2.2 The design of the cycle bypass lane was developed through a series of design workshops held during the early months of 2014. The workshops were held with a variety of representative user groups, including cycle, pedestrian and disability groups. In total 9 workshops were held, at which

attendees were asked to express their preferences regarding a number of design parameters, including widths, levels, materials and crossing points.

2.2.3 A schematic general arrangement of the bus stop bypass as developed through the design workshops is shown in Figure 2.1 below.

Figure 2.1: Layout of the trial bus stop bypass



2.2.4 The design includes; a 3m wide bus stop waiting platform which accommodates 2 bus stops with double shelters; a 2m wide cycle bypass lane which is set at 75mm below the height of the bus stop platform and footway; 2 pedestrian crossing points at which cyclists have priority and a central zebra-style crossing facility at which pedestrians have priority over cyclists. All the pedestrian crossing points are raised to be level with the footway and bus stop platform.

2.2.5 In total, there are 13 bus stops along Oxford Road proposed to have cycle bypass lanes, located between Moss Lane East and Portland Street. All 13 stops are intended to be of a consistent design, so as to facilitate ease of use and familiarity with the layout.

2.2.6 Following the development of this design, TfGM committed to constructing a trial site to enable users to test the preferred design and provide feedback and comments, prior to the full scheme being delivered. This provided the opportunity for any suitable design recommendations to be incorporated into the final scheme.

2.2.7 The trial site is the southbound bus stop on Oxford Road, immediately south of the Hathersage Road junction. This is at the southern end of the scheme and is located on a busy section of highway with high levels of road traffic as well as significant footfall due to the location of three small supermarkets immediately adjacent the stop and it being in close to the hospitals.

2.2.8 A photo of the Oxford Road trial bus stop bypass is shown in Figure 2.2. The photo shows a bus travelling along the main road. The bus stop waiting platform features two bus stop poles with their two accompanying shelters. At either end of the bus waiting areas are raised planting beds. These are intended to encourage bus passengers to enter and exit the waiting area by crossing the cycle path at the designated points. The photo shows the cycle path in orange, a pedestrian crossing point with tactile paving and the zebra crossing, which has black and white stripes and Belisha beacons.

Figure 2.2: Photo of trial bus stop

2.3 Structure of this report

2.3.1 This report will cover:

- the objectives of the trial (Section 3);
- the methods used to collect survey evidence from the general public, stakeholder feedback and video monitoring (Section 4);
- a summary of the key findings from the analysis of a week's video footage (Section 5);
- survey findings and stakeholder observations on key features on how the trial site operated (Section 6);
- a summary of measures suggested in survey feedback and stakeholder responses, which formed the basis for discussions at a stakeholder evaluation workshop on 16 November (Section 7);
- a summary of the collectively agreed recommendations from the evaluation workshop (Section 8); and,

- The final recommendations and design changes to be implemented along the Oxford Road Corridor (Section 9).

2.3.2 In order to draw together common issues and potential responses, the survey findings and main stakeholder observations have been integrated within a single part of this report (Section 6).

2.3.3 Appendix A supports the main body of the report and provides a summary of all the stakeholder responses received during the evaluation.

2.3.4 Appendix B supports the main body of the report and provides a summary of analysis from the video monitoring undertaken at the trial site.

3 Objectives in setting up the trial

3.1 The main objectives in carrying out the 'Dutch-style' bus stop and cycle bypass trial were:

- to evaluate and test on site the design of the Oxford Road cycle bypass lane and bus stop to capture how effectively it meets the needs of its different users;
- to identify areas of satisfaction and/or concern, as a means of developing design recommendations to improve the safety and accessibility of the Oxford Road cycle bypass lanes;
- to foster an inclusive and transparent approach to the design, development and implementation of the Oxford Road cycle bypass lanes at bus stops;
- to compile and provide a clear evidence base from the data collected during the trial, which supports the way forward agreed; and,
- to assist in the development of best practice for the design of bus stop bypass facilities and contribute to the national discussions on the subject.

4 Methodology and Terminology

4.1 Overview

4.1.1 Three strands of work were carried out in order to obtain feedback and monitoring evidence on the trial scheme. These took place over a three week period, from 28 September to 16 October 2015. These three strands of activity were:

- surveys of the general public carried out in the first week – bus passengers, other pedestrians, and cyclists using the bypass lane; (section 4.2)
- site visits with stakeholders from a range of organisations to obtain feedback, carried out in the second and third weeks; (section 4.3) and,
- analysis of video footage, recorded in the second week (section 4.4).

4.1.2 The approach taken to each of these aspects is discussed in the sections 4.2 to 4.4.

4.1.3 The evidence and feedback assembled was gathered soon after the trial stop had been constructed. As a result the findings relate to an early period of operation, before the different users had become fully familiar with the layout of the facility. Also there had been no awareness raising or promotional activity to encourage behavioural change and explain how the facility is to be used at this stage. These will be key activities upon completion of the full Oxford Road bus priority scheme.

4.2 Approach taken for surveys of the general public

4.2.1 Views were sought from three specific user groups: bus passengers; cyclists; and, pedestrians walking alongside.

4.2.2 Traffic counts, bus boarding and alighting counts and pedestrian counts were previously undertaken in March 2015. Statistics on the volume of cyclists, bus users and pedestrians were used to inform the choice of sample sizes for each group.

4.2.3 There was a requirement to collect feedback from pedestrians and bus users, and have ‘face-to-face’ interviews at and around the trial site. The TfGM data collection team were used to collect this data.

4.2.4 An A5 leaflet containing a link to an online self-completion questionnaire was handed out to cyclists passing the facility as they waited at the signalised junction just after the trial site. A unique serial number was used to identify the cyclist as having ridden past the trial stop.

4.2.5 A minimum of 200 completed surveys was sought for cyclist, bus passenger and pedestrian surveys.

4.2.6 The numbers of each group approached was:

- 802 bus passengers, of whom 487 took part (61%);
- 1,258 pedestrians, of whom 383 took part (30%); and,
- 2,211 cyclists, of whom 322 took part (15%).

4.3 Method used to capture stakeholder feedback

4.3.1 In order to obtain the views of stakeholder reference groups, a series of on-site evaluation meetings were held. The stakeholders who participated in the site visits were:

- Arriva;
- Central Manchester University Hospitals NHS Foundation Trust (CMFT);
- Contact Theatre;
- Four Greater Manchester Councillors; Rusholme Ward, Chorlton Park, Moss Side and Bolton
- First Bus;
- Greater Manchester Cycle Campaign (GMCC);
- Guide Dogs;
- Living Streets;
- Love Your Bike;
- Royal National Institute of Blind People (RNIB);
- Stagecoach Bus;
- TfGM's Disability Design Reference Group (DDRG);
- Transport Focus;
- University of Manchester (UoM); and,
- Visually Impaired Steering Group (VISG).

4.3.2 During the site visits, the Oxford Road project team, consisting of TfGM and Manchester City Council representatives, outlined the context and rationale of the bus priority package and the Oxford Road scheme in particular. Attendees were also given a summary of the trial bus stop design development process.

4.3.3 The stakeholders groups were encouraged to provide a written response to TfGM outlining their thoughts and comments on the trial facility, following their visit. They were given a copy of the general public questionnaire as a prompt to highlight some features that they could consider in their response.

4.4 Approach taken to video analysis

4.4.1 The video monitoring involved 24 hour coverage of the entire bus stop area for seven consecutive days. The video cameras were placed in locations where they were not immediately obvious, so that use of the trial site would not be affected by this monitoring activity. The footage was captured and the analysis undertaken by a company specialising in this activity, CTS Traffic and Transportation.

4.4.2 There were two forms of video analysis:

- 24 hour, 7 day counts of the main movements of cyclists, bus passengers and pedestrians in relation to the bypass lane; and,
- Detailed analysis of 19 hours of video footage taken at the trial bus stop.

4.4.3 The data that has been collated from the week's footage provides:

- number and speed of the cyclists along the cycle bypass lane;
- number and speed of cyclists along the road (i.e. those who do not use bypass lane) measured from entry to exit point;
- numbers of cyclists stopping at crossings;
- numbers of pedestrians crossing at first crossing point;
- numbers of pedestrians crossing between 1st crossing point and zebra crossing;
- numbers of pedestrians crossing using the zebra crossing;
- numbers of pedestrians crossing between zebra crossing and 3rd crossing point;
- numbers of pedestrians crossing at 3rd crossing point;
- number of bus passengers in the bus waiting area at 15 minute intervals; and,
- numbers of buses stopping, number of boarders and number of a-lighters.

4.4.4 Detailed analysis of 19 hours of video footage taken at the trial site focussed on the interaction between bus passengers, cyclists and pedestrians on and crossing the cycle path.

4.4.5 Table 4.1 lists the periods of video footage that were analysed in detail. A spread of periods across different days and a mix of busy and quiet periods were selected in order to provide observations for a range of circumstances.

Table 4.1: Survey hours for video footage analysis

Day	Start	End	Hours
Monday	0800	0900	1
Monday	1300	1400	1
Tuesday	1500	1900	4
Wednesday	1300	1400	1
Wednesday	1600	1700	1
Thursday	0800	0900	1
Thursday	1500	1800	3
Friday	1200	1300	1
Friday	1900	2100	2
Saturday	1400	1500	1
Saturday	2000	2100	1
Sunday	1400	1600	2

4.4.6 Observations in the 19 hour analysis period were made on:

- where pedestrians cross e.g. are they using the designated crossings or crossing in other areas;
- are bus passengers spilling into the cycle lane while waiting for buses;
- are people tripping over the level differences in the kerbs demarking the cycle lane;
- are there any conflicts between cyclists and pedestrians;
- are pedestrians looking before crossing the cycle path;
- are pedestrians using the cycle lane as a pavement/walkway;
- are cyclists using the pavement;
- are vehicles or parked cars blocking entry or exit of the cycle lane;
- are cyclist travelling at excess speed; and,
- is there a high level of litter on lane.

4.4.7 In terms of definitions used, the term “conflicts” has been divided into:

- “minor” - cyclist or pedestrian has had to make minor adjustments to their speed or direction to avoid a possible collision;
- “major” - cyclist has had to brake heavily or pedestrian has had to move out of the way rapidly to avoid a possible collision; or,
- “contact” - when there has been a collision of some sort i.e. between cyclist/cyclist, pedestrian/pedestrian, cyclist/pedestrian, pedestrian/other vehicle or cyclist/other vehicle.

4.4.8 Examples of other “incidents” (which formed part of the monitoring) include occasions when: a cyclist or a pedestrian appears to have injured themselves without coming into contact with another person; an argument arising due to an interaction related to the scheme; or anti-social behaviour that disrupts the operation of the scheme. Footage was monitored for these types of incident, but no incidents of this type were observed in the 19 hours of video footage that were studied in detail (see Section 5).

5 Key Statistics from the video observations

5.1 Overview

5.1.1 This section includes an overview of the analysis of the week's video footage and the more detailed recording of observations relating to the 19 hours of video monitoring.

5.2 Observations on cyclists

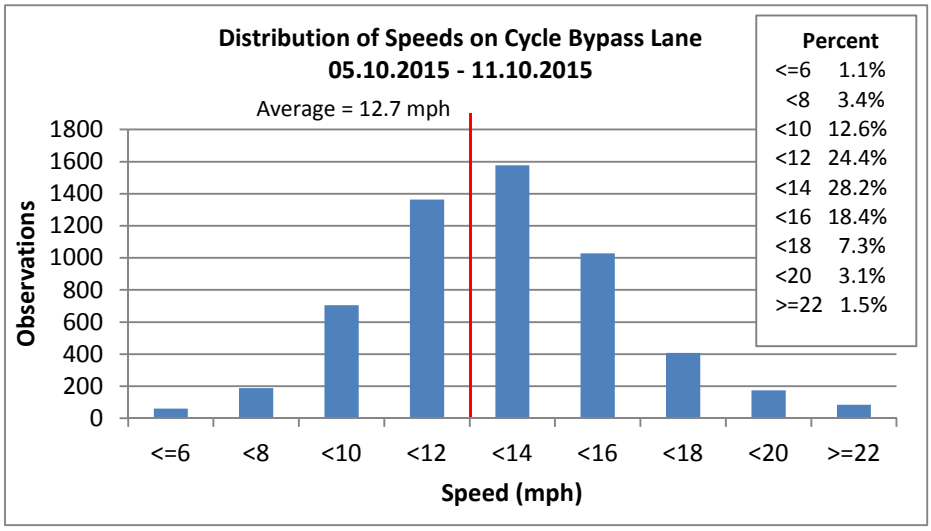
5.2.1 In total, 7,337 cyclists travelled on some part of the bypass lane over the seven days of the video survey. Of these 5,588 (76%) traversed the whole route. This equates to just over 33 per hour over the seven days, or roughly one every two minutes.

5.2.2 The busiest hour for cyclists over the seven days was Tuesday between 1700-1800 when 240 per hour, or 4 per minute or one every 15 seconds, were travelling on some part of the cycle path.

5.2.3 The average speed of travel throughout the survey period was approximately 13 mph. This means cyclists would travel the full length of the cycle path in approximately 15 seconds. Even in the busiest hour for cyclists, the same 13 mph average speed was recorded. Achievement of this speed even in the busiest hour for cyclists could be interpreted as the facility providing the capacity for high volumes of cyclists even in circumstances where there is a high level of interaction with pedestrians.

5.2.4 A minority of cyclists were travelling over 20 mph. For example during the busiest hour on the Tuesday, one cyclist averaged over 20 mph along the full length of the cycle path, travelling through in just over 8 seconds. As many as 24 cyclists (10%) in the busiest hour for cyclists reached speeds of over 20 mph along one of the sections between the crossings (zebra and southern-most crossing). Figure 5.1 shows the distribution of speeds on the cycle bypass lane.

Figure 5.1: Distribution of speeds on cycle bypass lane



5.2.5 While cyclists are only required to stop at the zebra crossing to give priority to pedestrians, a note was made of cyclists stopping at any of the three crossings. This only occurred 63 times throughout the week, 25 times at the first crossing (northern end), 27 times at the zebra crossing and 11 times at the third crossing (southern end).

5.2.6 A cyclist stop is counted when a bicycle has come to a complete stop for a crossing, so it's important to note that these numbers do not include other possible interactions, such as a cyclist slowing down to allow a person to cross. While the numbers indicate few cyclists giving way, the figures do not really account for the more fluid interactions of cyclist and pedestrians that appeared to arise where pedestrians crossed the bypass lane by means of 'gap-selection' between cyclists.

5.3 Pedestrian activity

5.3.1 Over the seven days 51,837 pedestrians crossed the cycle lane, equating to 309 per hour or 5 a minute.

5.3.2 The busiest hours for pedestrians crossing were Monday 1600-1700 and Monday 1700-1800 when 914 pedestrians crossed. This equates to 15 a minute or one every 4 seconds. If pedestrians were crossing evenly, a cyclist might encounter approximately 4 pedestrians crossing as they cycled through the bypass lane.

5.3.3 During the 1700-1800 time period on the Monday, 56% of pedestrians used the crossings, 21% of whom made use of the zebra crossing. This is slightly lower than the overall figure for seven days, which shows 60% of pedestrians using a crossing, 25% of whom were on the zebra crossing.

5.3.4 5,903 buses used the stop throughout the seven days accommodating 11,879 boarders and 24,179 alighters. Note that the combined bus boarding and alighting figures are significantly lower that the numbers of pedestrian movements reported above, indicating that there are a substantial amount of pedestrian movements above and beyond those made by bus passengers, e.g. walking through the bus waiting area or crossing the road at this point.

5.3.5 The busiest hour across the seven days was 1600-1700 on the Tuesday when there were 228 boarders and 521 alighters.

5.3.6 The highest number of bus passengers waiting at the stop at any one time (recorded at 15 minute intervals) was 30 on Wednesday at 1600.

5.3.7 The more detailed analysis found between 1% and 4% of pedestrians (depending on the time period analysed within the 19 hours) were definitely not looking when crossing the cycle path. This is not easy to determine accurately and the true number could be higher. Between 1% and 11%, were using the cycle path as a pavement (i.e. standing or walking along it), within the 19 hours, indicating an intermittent problem. For example, 34 bus passengers or pedestrians were using the cycle path as a pavement (i.e. standing on or walking along) on Wednesday between 1600 and 1700, and 335 bus passengers or pedestrians in total over the 19 hours of more detailed analysis.

5.4 Interactions between cyclists and pedestrians

5.4.1 34 cyclists were recorded travelling on the pavement during the 19 hours of more detailed analysis. From the video analysis, nine cyclists were felt to be cycling at speeds considered to be excessive given the number of pedestrians in the area.

5.4.2 Occasionally cyclists were noted as not observing the zebra crossing or were travelling in the wrong direction through the bypass lane.

5.4.3 The observations in this section indicate a very high level of activity in the area of the trial site and a potential for conflicts between cyclists and pedestrians. But in reality very few were observed in the review of 19 hours of video footage.

5.4.4 There were 35 minor conflicts (defined as cyclist or pedestrian had to make minor adjustments to their speed or direction to avoid a possible collision), 18 major conflicts (defined as cyclist had to brake heavily or pedestrian has had to move out of the way rapidly to avoid a possible collision) and no actual contacts observed over the 19 hour time period

(defined as there has been a collision of some sort between cyclist/pedestrian/vehicle).

5.4.5 These conflicts were observed in the context of 19-hour flows of 1,879 cyclists using all or part of the cycle path and 10,920 pedestrian movements across the cycle path. They therefore indicate that the interactions between cyclists and pedestrians were substantially incident free over this time period. Conflicts were more frequent at busy times.

5.4.6 As there were no contacts even at the busiest times, this would indicate that in general terms there is sufficient time and space for bus users, pedestrians and cyclists to interact with each other safely.

5.4.7 The 24 hour seven day video analysis also indicated there were no contacts between pedestrians and cyclists.

5.4.8 Incidents that were recorded in the 24/7 analysis related to drunken behaviour of pedestrians, someone slipping, vehicle parked on or blocking the path, motor cycles in the path and cyclists using the pavement.

6 Survey findings and key issues raised by stakeholders

6.1 Introduction

6.1.1 This section is structured around the findings from the surveys of the general public, with stakeholder perspectives on the issues raised included in the relevant section, shown in a grey box. A full summary of stakeholder perspectives is contained in Appendix A.

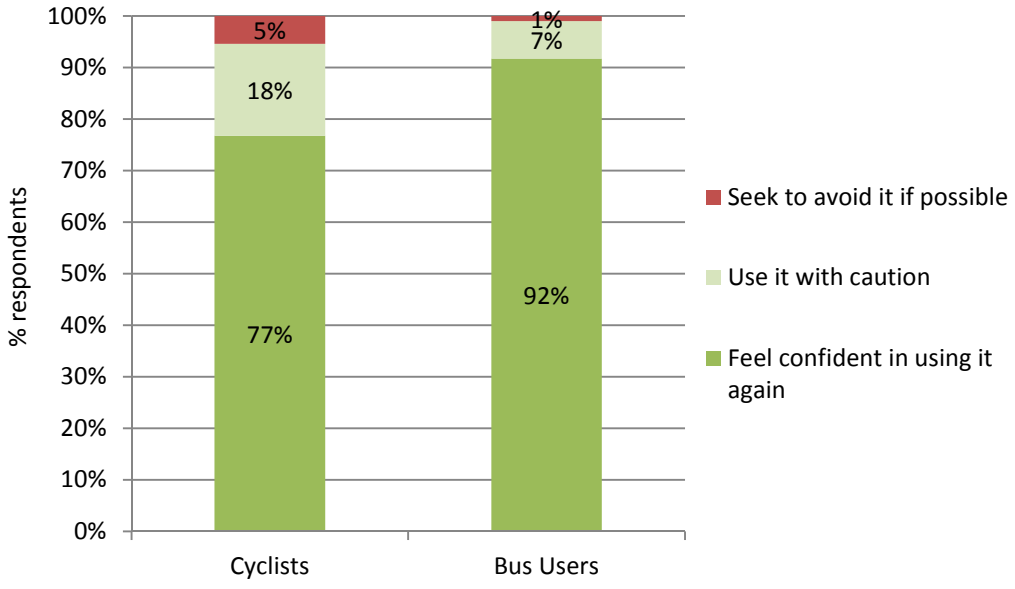
6.2 Overview of the ease of use of the facility

6.2.1 The view was positive in relation to the general design and layout of the trial facility, by all three of the surveyed groups – cyclists using the cycle path, bus passengers and other pedestrians.

6.2.2 Over 90% of bus users stated that they would be happy to use the stop again, with a similar percentage of pedestrians reporting no difficulties when using the pavements around the bus stop.

6.2.3 Figure 6.1 shows the cyclists returning survey responses. 77% stated that they would feel confident in using the cycle path again, with approximately 18% stating that they would use it with caution.

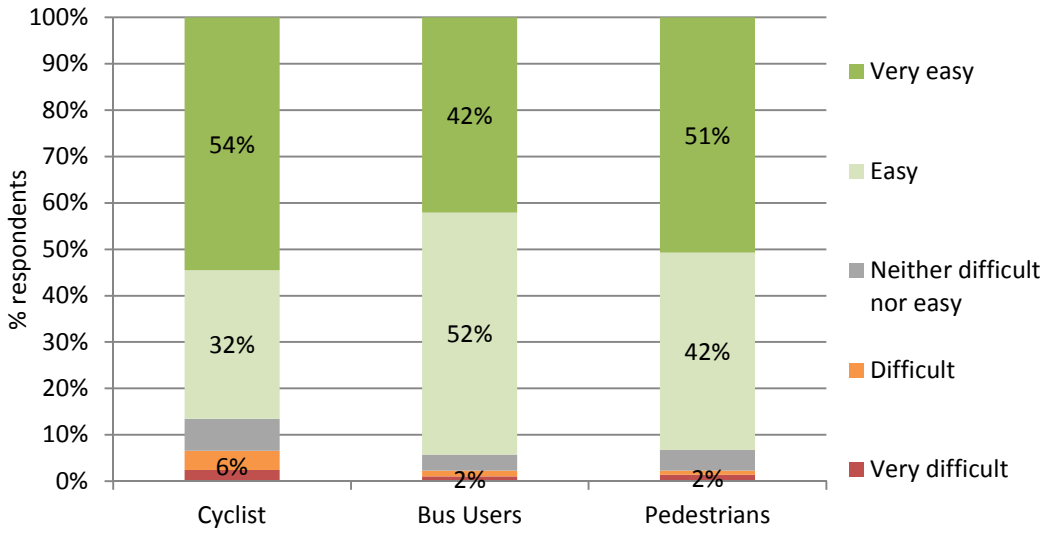
Figure 6.1: Q5 having used the bus stop and cycle bypass would you:



n Cyclist: 297, n Bus user: 438,

6.2.4 Figure 6.2 shows the ratings for each of the respondent groups, regarding how difficult or easy they found it to use the bus stop and cycle bypass.

Figure 6.2: Q2 How difficult or easy is this bus stop and cycle bypass to use



n Cyclist: 290, n Bus user: 485, n Pedestrian: 353.

6.2.5 6% of cyclists rated the bus stop and cycle bypass as difficult or very difficult to use compared to 2% percent of bus users and pedestrians. Although these percentages are small, the difference between ratings of cyclists and the bus users and pedestrians is distinct in statistical terms.

6.2.6 Of the nineteen cyclists (6%) who rated the bus stop and cycle bypass as difficult to use, eighteen cycled the route three or more times per week.

6.2.7 The improvement comments made by each of the three groups (cyclists, bus users and pedestrians), suggests that there is a recognised conflict issue between cyclists and bus users or pedestrians.

6.2.8 The major issue to emerge relates to a lack of clarity regarding which group has priority when crossing the cycle lane. Pedestrians crossed the cycle lane at any point, causing confusion regarding where priority lies at the designated crossing points.

6.2.9 Two cyclists reported having been in a collision with pedestrians, one reported having seen a collision and one pedestrian reported having been hit by a bicycle at the site (in relation to the 19 hours of video evidence summarised in Section 5, these reported collisions appear to have occurred at other time periods). A further ten cyclists reported having witnessed near misses.

6.2.10 A lack of clarity regarding priority is supported when reviewing satisfaction in relation to interaction between groups and the separation of groups.

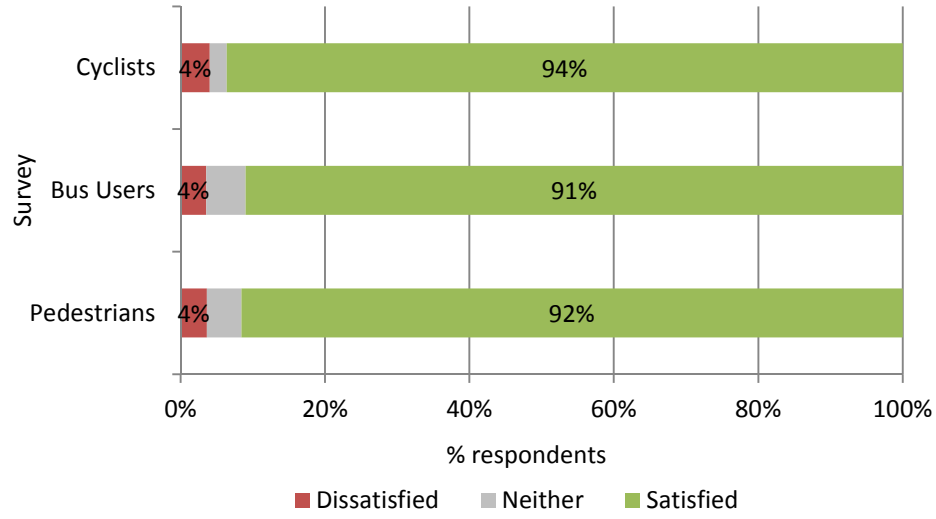
6.2.11 Across all groups there was satisfaction with clear markings denoting the cycle lane, but there were lower levels of cyclist satisfaction with the pedestrian crossing points being clearly marked. This may be as a consequence of bus users crossing the cycle lane at any point rather than at the designated crossing points.

6.2.12 In response to potential conflict issues, railings to separate the bus waiting area from the cycle bypass lane was suggested.

6.3 Whether the cycle path is clearly marked

6.3.1 There was a general consensus across the three groups that the cycle path was clearly marked, see figure 6.3.

Figure 6.3: Satisfaction with the cycle path being clearly marked



n Cyclist: 297, n Bus user: 477, n Pedestrian: 357

6.3.2 To prevent road traffic from stopping or parking in front of the entry to the cycle bypass lane improvements were suggested. These included – extending the bypass lane further along the road and the use of double yellow lines.

6.3.3 All groups mentioned the maintenance of the cycle bypass lane. It was noted that the bypass lane had already begun to accumulate litter.

Stakeholder Summary

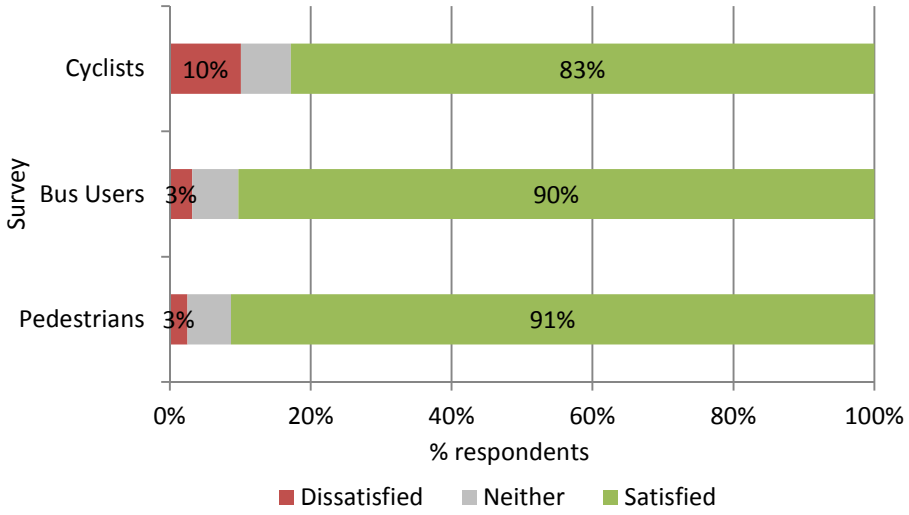
All of the following were viewed as positive attributes:

- That the cycle bypass lane was clearly marked and included 'user friendly' aspects;
- The high quality of the infrastructure;
- The use of green LED lights in the cycle lane was noted as a positive measure to improve visibility;
- Maintenance issues were raised as a concern.

6.4 Whether pedestrian crossing points are clearly marked

6.4.1 Both the bus users and pedestrians felt satisfied that the crossing points were clearly marked. This differed from the view held by cyclists. Figure 6.4 provides a summary of survey findings in relation to this issue.

Figure 6.4: Satisfaction with pedestrian crossing points being clearly marked



n Cyclist: 297, n Bus user: 472, n Pedestrian: 357

6.4.2 Some cyclists may believe that the pedestrian crossings were not clearly marked as they referred to pedestrians crossing the cycle lane at any point, reporting that they may not be clear enough for pedestrians to understand how to use them.

Stakeholder Summary

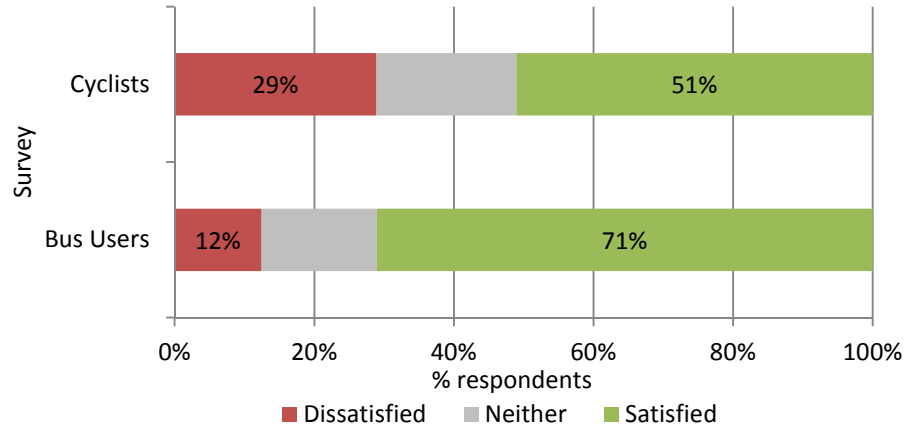
Stakeholders suggested:

- There were insufficient markings in the cycle lane to warn cyclists to slow down, and stop at the zebra crossing;
- Varying the colour of the LEDs at the zebra crossing, to raise cyclist's awareness of the zebra crossing point and the need to give way to pedestrians;
- Adding a signal controlled stop at the middle crossing point to assist the visually impaired when crossing the cycle bypass lane.

6.5 Issues about who has priority at crossing points

6.5.1 Priority at crossing points resulted in the highest level of bus user dissatisfaction across the range of aspects included in the surveys, figure 6.5. It also resulted in the highest level of dissatisfaction among cyclists - with almost one in three being dissatisfied with clarity regarding which group has priority at the different crossing points.

Figure 6.5: Satisfaction with it being clear who has priority at crossing points



n Cyclist: 294, n Bus user: 466

Stakeholder Summary

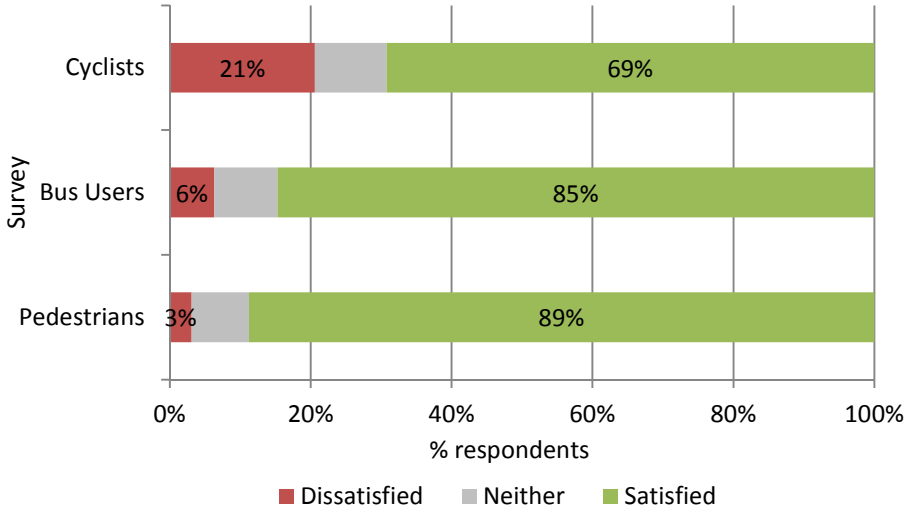
Stakeholders raised points including:

- Concerns regarding who has priority at the different crossing points;
- The ability of pedestrians to move freely across the cycle lane was praised;
- The speed of cyclists was a concern when discussing the issue of priority at crossing points.

6.6 Separation between cyclists, bus users and pedestrians

6.6.1 Both the pedestrians and bus users felt satisfied with the current separation method. Cyclists demonstrated a significantly higher level of dissatisfaction regarding the separation method used, compared to pedestrians and bus users, as Figure 6.6 shows.

Figure 6.6: Satisfaction with separation between cyclists, bus users and pedestrians



n Cyclist: 296, n Bus user: 459, n Pedestrian: 357

6.6.2 Two pedestrians in their comments felt that the facility was difficult to use, and had encountered difficulty crossing the path.

6.6.3 All 19 cycle respondents who rated the bus stop and cycle bypass as difficult to use, were dissatisfied with the separation aspect of the design. The majority of these respondents referenced the need for better separation between groups, with 5 noting near misses and 2 reporting collisions (these reported collisions do not appear to have occurred during the 19 hours of video monitoring, summarised in section 5).

Stakeholder Summary

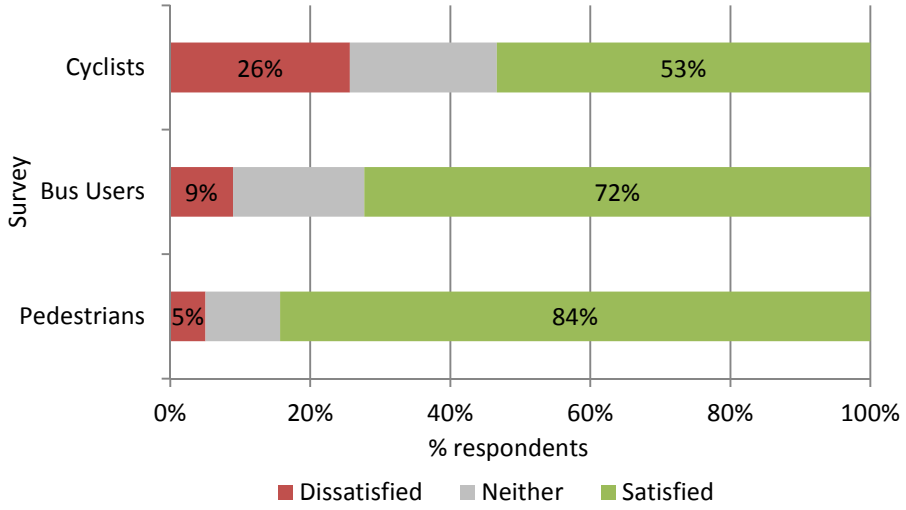
It was noted that:

- Pedestrians are likely to continue to follow their "desire lines" regardless of where crossings are positioned;
- Pedestrians being able to move freely about the space was noted positively;
- The guard-rail preventing bus users crossing in the blind spot to the rear of the bus shelters was noted positively;
- Adding more barriers to the cycle lanes may cause pressure points and generate more collisions with pedestrians.

6.7 Interactions between cyclists, bus users and pedestrians

6.7.1 How the groups interact further raised priority and separation issues, see Figure 6.7.

Figure 6.7: Satisfaction with how pedestrians, bus users and cyclists interact



n Cyclist: 296, n Bus user: 458, n Pedestrian: 357

6.7.2 Satisfaction with interaction was the second largest aspect of contention for cyclists, with 76 respondents (26%) stating dissatisfaction.

6.7.3 19 cycle respondents rated the bus stop and cycle bypass as difficult to use. All of these respondents were dissatisfied with how groups interact when using the facility.

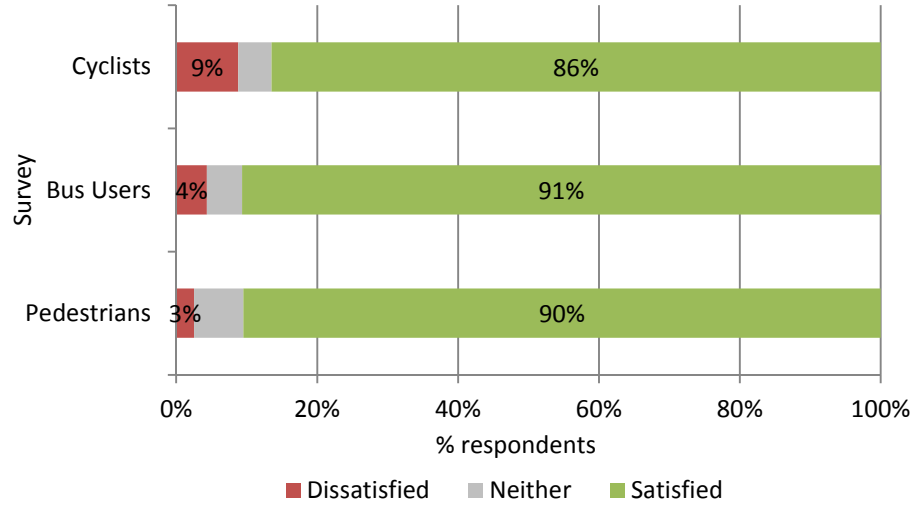
Stakeholder Summary

- Markings, rumble strips and clearly visible signs were suggested to address interaction issues;
- The speed of cyclists was noted as an area of concern;
- Cyclist groups raised the issue of insufficient Sheffield stands to lock bicycles to, resulting in cyclists standing in the bypass lane to lock their bikes to the railings on the bus stop platform.

6.8 Views on the cycle path passing behind the bus stop

6.8.1 The majority of users were satisfied with the introduction of a bypass lane that passed behind the bus stop, a small number of bus users and pedestrians (less than 4%) were dissatisfied with the arrangement, having noted that this raised the potential for conflict with safety as a concern, figure 6.8.

Figure 6.8: Satisfaction with the cycle path passing behind the bus stop



n Cyclist: 296, n Bus user: 460, n Pedestrian: 357

6.8.2 Of the 26 cyclists that were dissatisfied with the path passing behind the stop, 16 disagreed that the bypass lane improved cycle safety and felt that the lane put both cyclists and pedestrians at risk.

Stakeholder Summary

- Overall, the cycle bypass lane passing behind the bus stop was viewed positively;
- Safe access for visually impaired bus users was raised.

6.9 Issues concerning the width of the bus stop area

6.9.1 32 respondents (7%) of bus users were dissatisfied with the width of the waiting platform.

6.9.2 Of the 58 improvement comments made by the bus users, 19% referenced the width of the bus stop waiting platform as not being sufficient.

6.9.3 The width of the cycle bypass lane was also raised by 3 cyclists, with one cyclist suggesting that an additional 20cm on the current width would be enough.

Stakeholder Summary

- Stakeholders raised concerns in relation to the width of the bus stop platform, questioning whether it is wide enough to allow wheelchair users to board and alight buses safely;
- The adequacy of the width of the cycle bypass lane was also commented upon.

6.10 **Issues requiring further consideration**

6.10.1 The general design and layout of the trial facility was welcomed by the majority of each group surveyed and by most stakeholders. The demarcation of the cycle path appears to be clear to most groups.

6.10.2 The survey responses and stakeholder feedback did however highlight a number of issues that require further consideration.

6.10.3 These include:

- Who has priority - how to convey to cyclists and bus users/other pedestrians who has priority at the different cycle bypass lane crossing points;
- Separation and interaction issues - how to address separation and interaction issues between different groups of users; and,
- Speed of cyclists - how to deter cyclists travelling at high speeds through the cycle bypass lane.

6.10.4 Taking into account the feedback received from stakeholders, Section 7 outlines the measures agreed to address these issues.

7 Measures Proposed by Stakeholders

7.1.1 Table 7.1 provides an overview of all of the measures proposed by stakeholders and survey respondents in Section 6.

Table 7.1: Summary of measures for further discussion

Measure for discussion	Those suggesting the measure	Those with a different perspective	Section it relates to
Effective litter/ glass removal from cycle lane	Survey respondents, University of Manchester Sustainable Travel Planner, Love Your Bike	None	6.2 – Whether the cycle path is clearly marked
Prevention of buses and cars parking over the entrance/ exit of cycle path, e.g. by using double yellow lines	Survey respondents	None	6.2 – Whether the cycle path is clearly marked
Cycle lane markings or lighting to indicate that cyclists are to give way at zebra crossing	Survey respondents, the Visually Impaired Steering Group, members of the Disability Design Reference Group (DDRG), the Central Manchester University Hospitals Foundation Trust (CMFT), the Guide Dog Association	None	6.2 – Whether the cycle path is clearly marked
Measures to deter cycling at excessive speed	The Visually Impaired Steering Group, Living Streets, CMFT, the Guide Dogs Association	None	6.2 – Whether the cycle path is clearly marked 6.5 – Interactions between cyclists, bus users, pedestrians Also indicated in video analysis section (Section 5)

Measure for discussion	Those suggesting the measure	Those with a different perspective	Section it relates to
Signs to indicate who has priority at different crossing points and elsewhere on cycle path	Eight bus users referenced better signage. Arriva, the Visually Impaired Steering Group, members of the DDRG, Living Streets, The Guide Dog Association, CMFT	None	6.4 – Separation between cyclists, bus users, pedestrians 6.5 – Interactions between cyclists, bus users, pedestrians
More extensive use of guard rails or other barriers	Survey respondents, the Royal National Institute for Blind People (RNIB)	Living Streets, University of Manchester Bicycle Users Group	6.4 – Separation between cyclists, bus users, pedestrians 6.5 – Interactions between cyclists, bus users, pedestrians
Awareness raising and behavioural change	Love Your Bike, Transport Focus, RNIB, The Guide Dogs Association, University of Manchester Sustainable Travel Planner	None	6.4 – Separation between cyclists, bus users, pedestrians 6.5 – Interactions between cyclists, bus users, pedestrians
Signal controlled crossing instead of zebra crossing	RNIB, the Visually Impaired Steering Group, members of the DDRG	None	6.3 – Whether pedestrian crossing points are clearly marked
Increased width of cycle path, where space allows	Greater Manchester Cycling Campaign (GMCC)	None	6.7 – Issues concerning the width of the bus stop
Barriers which cannot be used for locking up bicycles	Contact Theatre, Transport Focus, University of Manchester Bicycle Users Group (UMBUG), University of Manchester Sustainable Travel Planner		6.5 – Interactions between cyclists, bus users, pedestrians

Measure for discussion	Those suggesting the measure	Those with a different perspective	Section it relates to
Sloped kerbing between footways and cycle lanes	GMCC	None	6.3 – Whether pedestrian crossing points are clearly marked
Adequate bicycle parking in close proximity to the cycle lane	Transport Focus, Love your Bike, UMBUG	None	6.5 – Interactions between cyclists, bus users, pedestrians
Increased width of the bus stop island	Living Streets, RNIB	None	6.9 - Issues concerning the width of the bus stop
Insufficient lip on the kerb	A member from DDRG	None	6.3 - Whether the cycle path is clearly marked
Bikes being locked to the guard rail	Transport Focus, UMBUG, Contact Theatre	None	6.5 – Interactions between cyclists, bus users, pedestrians

7.1.2 The measures and suggestions set out in Table 7.1 were discussed at an Evaluation Workshop, held in order to agree final recommendations following the trial bus stop evaluation.

8 The Evaluation Workshop

8.1 Overview

8.1.1 The trial bus stop Evaluation Workshop was held at TfGM's head office on Monday 16th November 2015 with 27 representatives in total, including 8 members of the TfGM/MCC project team and 19 external stakeholders.

8.1.2 The aim of the workshop was to provide an overview of the trial site evaluation, to present the key findings from the report and to provide an opportunity to discuss any concerns and potential design responses. The desired outcome from the facilitated workshop was an agreed set of recommendations which would be presented to Manchester City Council (MCC) for consideration and, if appropriate, implemented in the final scheme design.

8.1.3 All those stakeholders who attended an Evaluation Site Visit were invited to attend and participate in the Workshop. Representatives from the following organisations attended the workshop:

- Central Manchester University Hospitals NHS Foundation Trust (CMFT);
- Manchester Community Transport;
- Manchester Metropolitan University;
- Manchester City Council;
- TfGM;
- First Bus;
- Greater Manchester Cycle Campaign (GMCC);
- Guide Dogs;
- Living Streets;
- Royal National Institute of Blind People (RNIB);
- Stagecoach Bus;
- TfGM's Disability Design Reference Group (DDRG);
- Transport Focus;
- University of Manchester (UoM); and,
- Visually Impaired Steering Group (VISG).

8.2 Recommendations from the Oxford Road Trial Bus Stop Evaluation Workshop

8.2.1 Stakeholder discussions at the Evaluation Workshop centred on a number of key themes, which enabled the grouping of the agreed recommendations. These themes are set out below:

- Priority at pedestrian crossing points;
- Segregation between user groups;
- Inappropriate cycle speeds;
- Additional design aspects.

8.3 Priority at pedestrian crossing points

8.3.1 All workshop attendees agreed that there is a need for additional markings on the cycle bypass lane to promote understanding, encourage appropriate behaviours and safeguard users. In addition further signage is to be used which raises awareness and advises users of the priorities at the cycle bypass crossing points.

8.3.2 Agreed recommendations:

- 'SLOW' marking painted at the entrance to the cycle bypass lane;
- Rumble strips for cyclists on the approach to the crossing points, to both slow cyclists and provide an audible cue for pedestrians;
- A painted 'Give Way' line at the approach to the zebra crossing;
- A 'Give Way' sign at the approach to the zebra crossing;
- Red LED light's within the bypass lane at the approach to the zebra crossing (to replace the existing green LED in this location);
- Additional signage to raise awareness that cyclists are entering a pedestrian area and raise awareness of the pedestrian crossing points; and,
- A full signal-controlled pedestrian crossing to be considered for the pair of bus stops adjacent to the CMFT hospital site.

8.4 Segregation between user groups

8.4.1 There was clear consensus amongst the workshop attendees that the segregation between the footway, cycle bypass lane and bus stop platform

was positive and effective. The recessed bypass lane improved awareness of the different areas for pedestrians, cyclists and bus users.

8.4.2 Concerns were raised that pedestrians and bus users could misinterpret the zebra crossing and believe it to apply to the main carriageway beyond the bus stop platform, potentially leading to extended crossing movements.

8.4.3 Agreed recommendations:

- Following a group discussion it was agreed that no further guardrail is required along the length of the bypass lane (on either side). It was agreed that additional guard-rail would reduce usable widths and potentially 'trap' pedestrians and bus users in the cycle bypass lane;
- A design for a physical barrier to be considered for the bus platform, adjacent the zebra crossing, to prevent pedestrians entering the road in error, without overly restricting the useable width for users of the bus stop platform.

8.5 Cycle speeds

8.5.1 All representatives agreed that the additional markings discussed in relation to increasing awareness around crossing priorities (set out in 8.3) were equally applicable to the issue of inappropriate cycle speeds and should be introduced to help address this concern.

8.5.2 Agreed recommendations:

- 'SLOW' marking painted at the entrance to the cycle bypass lane;
- Rumble strips for cyclists on the approach to crossing points, to both slow cyclists and provide an audible cue for pedestrians;
- Additional signage to raise awareness that cyclists are entering a pedestrian area and raise awareness of the pedestrian crossing points.

8.6 Additional design aspects comments

8.6.1 Workshop attendees discussed and suggested:

- The existing guardrails could be used to affix materials and signage promoting the scheme and safe cycling practices during the initial promotional campaign. This could also help to reduce the amount of cyclists locking their bikes to the guardrails;

- Use the promotional launch campaign to highlight that the faster cyclists are able to cycle on the road and are not required to use the bypass lane. It is anticipated that when the scheme is complete this is more likely to happen as the road will be bus and hackney carriage only and be subject to a 20mph speed limit;

- Create a marked priority area for wheelchairs and pushchairs to wait within the bus stop shelter;

- Additional bins to be located on the footway as well as (or instead of) the bus stop platform. This will reduce pedestrians unnecessarily crossing the cycle bypass lane;

- Increase cycle parking provision to reduce the quantity of cycles being locked to the guard-rail, and;

- To investigate and consider a disabled indicator panel which alerts drivers that there is a disabled person waiting at the bus stop.

9 Final Scheme Changes

9.1.1 The Manchester City Council (MCC) Design Team were asked to review the agreed workshop recommendations with a view to developing an updated general arrangement plan for the Oxford Road cycle bypass lanes, inclusive of those recommendations felt to be appropriate.

9.1.2 MCC focused their review on the four key themes agreed at the Evaluation Workshop - priority at pedestrian crossing points, segregation between user groups, inappropriate cycle speeds and the additional design aspects comments.

9.1.3 MCC's review concluded with the production of an updated general arrangement drawing which incorporated the majority of the recommended additions. This plan is entitled 'SK06 Trial Bus Stop Workshop Recommendations' and is available to view in conjunction with this report. The additional measures incorporated into the design are set out below.

9.2 Priority at pedestrian crossing points

9.2.1 With regard to priorities and awareness at pedestrian crossing points, the updated general arrangement now includes;

- Installation of bollard mounted signs at the zebra crossing point and additional signs attached to the guard-rail, stating 'Look for Cycles' and 'Give Way to Pedestrians' as appropriate;
- Red LED lights at the give-way point on approach to the zebra crossing;
- 'SLOW' marking painted at the entrance to the bypass lane;
- Installation of rumble strips on the approach to pedestrian crossing points, and;
- A painted 'Give Way' line at the approach to the zebra crossing.

9.3 Segregation between user groups

9.3.1 To address the concern that pedestrians may use the zebra crossing and proceed onto the main carriageway in error, it is proposed to relocate one of the waste bins to create a barrier between the bus platform tactile paving and the main carriageway, effectively blocking the desire line.

9.3.2 To minimise the potential for interactions the second waste bin will be relocated from the bus stop platform to the main footway to help reduce the amount of people stepping across the cycle bypass lane to use them.

9.3.3 As stated in 9.2.1, additional signage has been introduced to the general arrangement to raise awareness amongst users of the bus stop bypass facility and reinforce the segregation.

9.3.4 In accordance with the agreed recommendations no further guard-rail has been introduced into the revised design.

9.4 Cycle speeds

9.4.1 The layout changes referred to in section 9.2 are applicable to the issue of inappropriate cycle speeds and were agreed at the Evaluation Workshop as a suitable design response.

9.5 Additional design aspects comments

9.5.1 In response to the Evaluation Workshop discussions, it is confirmed that the Oxford Road Bus Priority scheme will increase the provision of cycle parking along the route, which should reduce the likelihood of cycles being locked to the guard-rail on the bus stop platforms.

9.5.2 A ‘priority area’ for pushchairs and wheelchairs will be provided within the bus shelters on the bus stop waiting platforms.

9.6 Areas for Further Consideration

9.6.1 The purpose of the trial stop evaluation was to develop an agreed template for the bus stop bypass facilities to be delivered through the Oxford Road bus priority scheme. The desired outcome was a general arrangement which would be replicated throughout the scheme area, to provide a continuity and consistency of approach to aid understanding and legibility for users.

9.6.2 The introduction of a fully signal-controlled pedestrian crossing for the cycle bypass lanes adjacent to the central Manchester hospital site was suggested during the evaluation process. As these would need to be bespoke designs, specific to the locality of the Manchester Royal Eye Hospital, they will be considered outside of this report.

9.6.3 Initial investigations suggest that non-standard signalling designs may need to be explored as the scale and massing of existing signalling equipment is designed with full-width vehicular carriageways in mind.

9.6.4 The suggestion of a disabled indicator panel, alerting drivers that a disabled person is waiting at the bus stop, was suggested during the course of the trial evaluation. Whilst no approved design solution or product is known of at this stage, TfGM are currently developing a system in partnership with Henshaws that uses coloured passes and hailers to alert bus drivers that a visually impaired passenger is at the stop and may require additional assistance.

10 Appendix A: Feedback from stakeholders following site visits

10.1 Overall perspectives

10.1.1 Overall the comments from stakeholders were positive. The colour demarcation of the different areas, the dedicated and segregated lane, and the "user-friendliness" of the new cycle lanes and bus stops were noted by the majority of stakeholders. The protection offered to cyclists, away from the danger of having to overtake buses, was also noted by multiple respondents.

10.1.2 Some areas for consideration were raised by stakeholders, which have been detailed below.

10.2 Whether the cycle path is clearly marked

10.2.1 One of the most common responses in the site-visit feedback revolved around how "user-friendly" the new cycle lane appeared. This was noted by multiple stakeholders, particularly when noting the bright colour change of the bypass lane.

10.2.2 Greater Manchester Cycling Campaign (GMCC) noted that the orange colour should be extended to all cycling facilities across Greater Manchester.

10.2.3 Love Your Bike commented on the high quality of the infrastructure at the trial stop, in contrast to the "poor facilities in the surrounding areas, which have an impact on the bypass bike route". This was echoed by a representative from the University of Manchester.

10.3 Whether pedestrian crossing points are clearly marked

10.3.1 Transport Focus commented that the zebra crossing made the bus waiting platform seem very accessible, enabling it to be a dedicated space and not a walkway.

10.3.2 The kerb height and recessed cycle lane was noted as a positive design choice by The Guide Dogs Association.

10.3.3 GMCC raised the concern of vertical kerbs on the cycle lane. GMCC requested sloped kerbing, at an angle of thirty degrees, be considered in future for areas between footways and cycle lanes. For areas next to the general carriageway a forty-five degree angled kerb could be implemented.

10.3.4 Four of the six Visually Impaired Steering Group (VISG) members were very dissatisfied with the markings for the zebra crossings, and did not believe they were sufficient to cause cyclists to stop when a pedestrian attempts to cross. Zig zag markings on the cycle lane and a signal-controlled crossing were suggested by one stakeholder from the VISG as a suitable alternative.

10.3.5 The VISG also suggested having a pedestrian controlled crossing specifically at the hospital bus stop, to help those arriving and departing from the hospital via bus. It was commented that visually impaired members of the public cannot determine when a cyclist has stopped and the crossing is safe to use. The VISG suggested providing audio clues in the form of a signal controlled crossing, to highlight when the crossings are safe to use.

10.4 Issues about who has priority at crossing points

10.4.1 A member of the DDRG noted that lighting would be a useful addition, to light up cyclists who don't have lights on their bike and also to light up pedestrians waiting to cross at the zebra crossing.

10.4.2 The University of Manchester Student Union commented that the pathway in front of the Union is a very congested area, and may cause confusion amongst users. This was echoed by the University of Manchester Directorate, and the coordinator of the University of Manchester Bicycle Users' Group (UMBUG).

10.4.3 The Central Manchester University Hospitals Foundation Trust (CMFT) also noted concerns regarding who has priority at the different crossing points. The CMFT stated that it wasn't clear at any of the crossing points who had priority, and cyclists weren't slowing down enough to allow pedestrians to cross.

10.5 Separation between cyclists, bus users and pedestrians

10.5.1 A Local Councillor from the Moss Lane Ward noted the positive impact the separate lanes will have on her own cycle journey, by removing the need to interact with buses. Transport Focus concurred with this view, going on to state that the separation prevents any potential conflict between cyclists and those waiting, boarding and alighting buses.

10.5.2 The Royal National Institute of Blind People (RNIB) questioned whether barriers would be of use to prevent partially sighted pedestrians accidentally wandering into the cycle lanes. The RNIB noted they would need to be of reasonable length to be effective.

10.5.3 The coordinator of UMBUG stated that having guard rails would not be a preferable solution to preventing cyclist/pedestrian interaction, and could cause problems with pedestrians being trapped within the cycle lane. The risk of cyclists catching their handle bars on the barriers was also raised as a concern.

10.5.4 Representatives of the Contact Theatre noted that pedestrians are likely to continue wandering into, and crossing the bypass lane regardless to 'follow their own "desire path" rather than 'stick to pavements'. In contrast other stakeholders believed pedestrians would adjust when more cycle paths of this type had been implemented, and they had become accustomed to avoiding walking into them.

10.5.5 The ability of pedestrians to "move freely between the pavement and bus stop and the dedicated crossing spaces" was noted positively by Living Streets. Living Streets went on to praise the non-intrusive barriers by the bus stop, which did not block the potential "desire lines".

10.5.6 A wheelchair user from the DDRG noted that the barrier preventing people alighting from buses and walking directly across the cycle lane was a "great idea", highlighting how this covers the cyclists' blind spots effectively.

10.5.7 Love Your Bike commented that an awareness campaign would solve many of the "interaction issues" over time. At the time of their evaluation the Love Your Bike group witnessed mobility scooters and cashpoint queues using up space in the cycle lane.

10.6 **Interactions between cyclists, bus users and pedestrians**

10.6.1 Markings, rumble strips and clear, visible signs were highlighted as possible options for methods to slow cyclists down when entering the bypass lanes, by the VISG, Living Streets, the CMFT, and The Guide Dog Association.

10.6.2 Rumble strips would also serve to provide an audible cue to visually impaired pedestrians that a cyclist was approaching the bypass lane crossing points.

10.6.3 The CMFT also suggested installing LED lights "on the approach to any zebra crossings to act as a visual/psychological warning to cyclists that they need to give way to pedestrians (in addition to warning signs so that both day and night time frames are covered)."

10.6.4 Bus driver awareness training was raised as a crucial factor in the development and implementation of further bus stop bypasses on Oxford Road. The RNIB raised issues regarding observed driver behaviours at the bus stops, including stopping short of the pole which caused bus queuing

further down the stop. The RNIB went on to note that this is a common cause of concern for visually impaired people, and one that needs to be addressed for successful usage of the new bus stops. They suggested preventing the drivers from allowing passengers on or off until they've arrived at their designated stop.

10.6.5 The issue of bikes being padlocked to the guard rails was raised by the Contact Theatre and Transport Focus, stating that if the bikes were to topple for any reason they could create a hazard for other cyclists. The possibility of bicycles falling onto the bus platform, and hitting waiting bus users, was also raised as a concern relating to bikes being padlocked to the railings.

10.6.6 This issue was echoed by the coordinator of UMBUG, who stated that the railings should be altered so bicycles cannot be locked to them, and more Sheffield stands should be located in busier areas.

10.6.7 The locations of the new bypass lanes was called into question by the RNIB, who questioned whether an area that has a high number of visually/hearing impaired visitors is a sensible place to locate cycle paths with potentially hazardous crossings: "The Eye Hospital itself sees over 100,000 patients per year, many of whom will have recently suffered from sight loss and may be less confident when walking out and about".

10.6.8 The need for cyclists to recognise they are in a pedestrian zone was raised by multiple stakeholders. The speed at which cyclists were seen to be entering, journeying through, and exiting the cycle bypass lane was a cause for concern for some stakeholders.

10.6.9 A mobility impaired member of the DDRG pointed out that cyclists hadn't stopped at all when testing the zebra crossing and this could be remedied with writing on the road which highlights that the area is used by pedestrians. A member from the DDRG suggested implementing a speed limit on the cycle lane.

10.6.10 An Arriva representative suggested fitting a "Warning Pedestrians Crossing Ahead" sign at the entrance to the cycle lane, to sufficiently warn cyclists about the area they're entering.

10.7 **Views on the cycle path passing behind the bus stop**

10.7.1 The RNIB questioned the accessibility of the cycle path passing behind the bus stop for visually impaired users. Concerns regarding the uncontrolled zebra crossing, the lack of signs to encourage cyclists to slow down, and the need for safety barriers to protect vulnerable users, were all raised by the RNIB.

10.7.2 Three, out of the six, VISG members were dissatisfied that the cycle path passed behind the bus stop. One member of the VISG was very dissatisfied that the cycle lane passed behind the bus stop.

10.7.3 The majority of views regarding the location of the cycle bypass lane focused on how other users were accessing the space, and less on the principle of the cycle lane running behind the bus stop. The zebra crossing was recognised as a necessity, but concerns over whether or not cyclists would stop for pedestrians were raised.

10.8 **Issues concerning the width of the bus stop area**

10.8.1 The width of the new bus stop 'islands' was mentioned by Living Streets, in the context of wheelchairs users who need to gain momentum when using the boarding ramps onto buses. Living Streets believe that it must be wide enough to facilitate this activity effectively.

10.8.2 A wheelchair user from the DDRG also commented on the issue of wheelchair access at the bus stop, both in the waiting area and when trying to board a bus. Two wheelchair users from the DDRG went on to say there should be a dedicated waiting space for the elderly and disabled on the bus stop platform.

10.8.3 GMCC also noted the width of the bus stop (and the cycle lane) as an issue. GMCC stated that the cycle bypass lane and the bus stop should be 2m and 3m respectively, but they understand this bus stop is slightly narrower than what will be the norm at the others. GMCC went on to note that 2.5m is the "target width for this type of facility" in the Greater Manchester Cycling Design Guidance. GMCC also noted that the cycle lane should be wide enough to allow two cyclists to ride abreast without difficulty, and that a lane with an increased width would be safer overall, allowing cyclists to swerve if needed.

10.9 **Overall areas of agreement**

10.9.1 Stakeholders agreed that the colour contrast between the new cycle bypass lane and the pavement was a positive addition. Transport Focus highlighted how the colour clearly distinguishes the different uses across the highway, and creates a sense that the cycle lane is a different environment. This in turn would help raise awareness when walking close to these areas.

10.9.2 The majority of stakeholders were positive when discussing the segregation between buses, cyclists, and pedestrians that the design provides.

10.10 Areas for further consideration

10.10.1 The speed of cyclists using the cycle lane was questioned by multiple stakeholders, including Living Streets, a member of Arriva, the CMFT, the Disability Design Reference Group (DDRG), and GMCC, who mentioned the need of cyclists to be aware of crossing pedestrians and to make efforts to give way to them. An acute entry angle was noted as a way to slow cyclists down on their approach to the cycle lane.

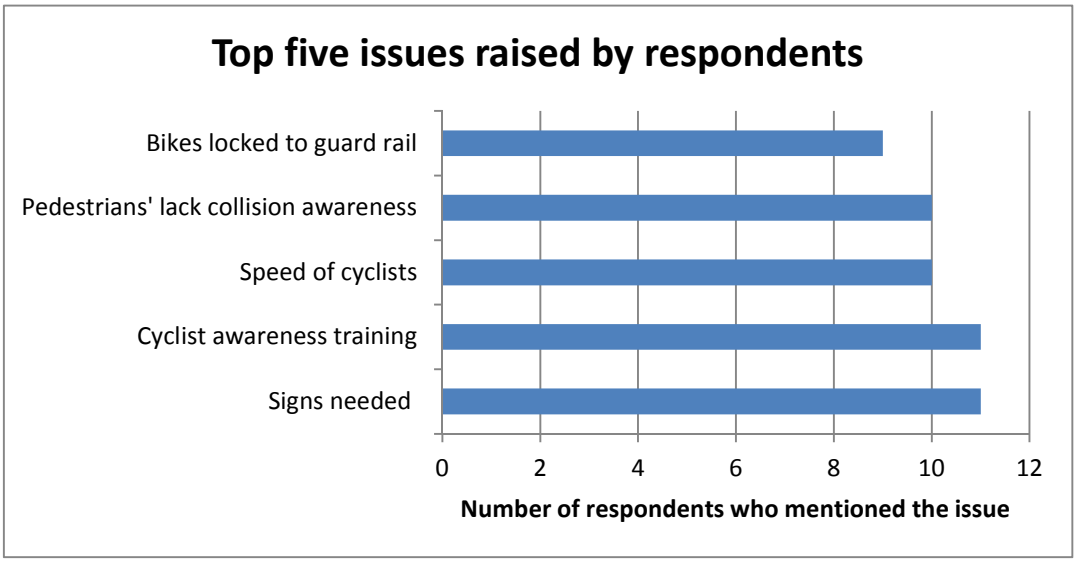
10.10.2 Signs were highlighted as a way to raise awareness as to who has priority. This was raised as a suitable approach by members from the DDRG, a member of Arriva, and the VISG.

10.10.3 The VISG and the RNIB both raised concerns about the cycle lane passing behind the bus stop, and the accessibility issues this raises for visually impaired users accessing the bus stop platform.

10.10.4 The University of Manchester Directorate, Student's Union, and coordinator of UMBUG all raised the issue of how busy the bus stop at the Student's Union usually is, and how this area will need special consideration to prevent collisions between users of the space.

10.10.5 The CMFT noted the importance of clear traffic management when constructing the cycle bypass lanes, to aid cyclists who are continuing to use the route.

10.10.6 A graph highlighting the top 5 issues raised is displayed below.



11 Appendix B: Analysis of Video Evidence

11.1 24/7 analysis of video footage

11.1.1 Tables 11.1 to 11.6 present the information on numbers and speeds of cyclist collected.

Table 11.1 Average Cycle Speed on cycle bypass lane (mph)						
Date & time period	00-07	07-10	10-16	16-19	19-24	All
Monday 05/10/2015	11.1	11.2	11.4	13.1	13.4	12.6
Tuesday 06/10/2015	12.5	13.1	13.5	13.4	13.8	13.4
Wednesday 07/10/2015	11.9	12.3	14.3	13.0	12.5	13.3
Thursday 08/10/2015	11.2	13.0	12.8	13.0	12.2	12.7
Friday 09/10/2015	11.6	12.0	12.3	12.0	10.5	11.8
Saturday 10/10/2015	13.5	13.9	12.0	11.8	11.8	12.2
Sunday 11/10/2015	12.4	11.1	11.2	12.0	12.3	11.9
All	12.3	12.5	12.7	12.8	12.5	12.7

11.1.2 The table shows average speeds by time period for cyclists who travelled the whole route. The average cycle speed over the whole week was 12.7 mph. Wednesday between 10:00 and 16:00 had the highest average speed (14.3 mph), Friday between 19:00 and midnight the lowest (10.5 mph). The time period between 16:00 and 19:00, the busiest time period, had the highest average speed over all days.

Table 11.2 Maximum Cycle Speeds on Cycle Bypass lane (mph)						
Date & time	00-07	07-10	10-16	16-19	19-24	All
Monday 05/10/2015	13.7	16.6	18.0	25.4	25.8	25.8
Tuesday 06/10/2015	19.9	18.7	24.1	25.8	23.5	25.8
Wednesday 07/10/2015	17.7	16.9	24.4	23.8	20.8	24.4
Thursday 08/10/2015	17.5	20.6	19.5	24.4	21.8	24.4
Friday 09/10/2015	17.2	17.0	18.4	18.5	16.0	18.5
Saturday 10/10/2015	18.0	17.3	18.7	19.1	19.5	19.5
Sunday 11/10/2015	20.4	16.7	20.2	18.5	18.9	20.4
All	20.4	20.6	24.4	25.8	25.8	25.8

11.1.3 The maximum speed that a cyclist travelled the full route was 25.8mph. Monday to Thursday had significantly higher maximum speeds than Friday and the weekend and these speeds mostly occurred after 16:00. The busiest time period (16:00 to 19:00) had maximum speeds well in excess of 20 mph from Monday through to Thursday.

Table 11.3 Cycle Count on cycle bypass lane (all)						
Date & time period	00-07	07-10	10-16	16-19	19-24	All
Monday 05/10/2015	19	36	404	567	299	1325
Tuesday 06/10/2015	41	55	402	580	281	1359
Wednesday 07/10/2015	25	36	406	430	215	1112
Thursday 08/10/2015	44	54	338	595	312	1343
Friday 09/10/2015	41	38	369	440	196	1084
Saturday 10/10/2015	64	26	184	160	153	587
Sunday 11/10/2015	65	20	160	136	146	527
All	299	265	2263	2908	1602	7337

11.1.4 In total, 7337 cyclists travelled on some part of the cycle route during the week. Monday, Tuesday and Thursday were equally busy and their busiest time period was 16:00 to 19:00 when there were on average more than 3 cyclists per minute travelling on some part of the lane.

Table 11.4 Cycle count on cycle bypass lane (full route)						
Date & time period	00-07	07-10	10-16	16-19	19-24	All
Monday 05/10/2015	16	27	265	424	204	936
Tuesday 06/10/2015	40	43	298	490	230	1101
Wednesday 07/10/2015	22	27	277	335	155	816
Thursday 08/10/2015	39	37	259	477	252	1064
Friday 09/10/2015	36	31	274	371	152	864
Saturday 10/10/2015	59	19	114	108	115	415
Sunday 11/10/2015	64	18	102	92	116	392
All	276	202	1589	2297	1224	5588

11.1.5 On average over the week, 76% of cyclists who used the cycle lane travelled the full route. The proportion was much higher between Midnight and 07:00 (92%) and lower between 10:00-16:00 (70%). Tuesday, Thursday and Friday all had approximately 80% using the full path whereas Monday and Saturday had 71%.

Table 11.5 Average Cycle Speed on road (mph)						
Date & time period	00-07	07-10	10-16	16-19	19-24	All
Monday 05/10/2015	15.5	20.8	21.1	20.6	20.5	20.3
Tuesday 06/10/2015	10.5	13.5	15.1	14.9	14.7	14.7
Wednesday 07/10/2015	9.3	18.9	19.8	18.8	17.4	17.9
Thursday 08/10/2015	12.7		15.5	15.8	14.7	15.4
Friday 09/10/2015	15.7	15.5	17.7	17.6	17.5	17.4
Saturday 10/10/2015	12.3	11.9	11.8	14.7	14.7	13.4
Sunday 11/10/2015	13.1	16.9	17.7	15.9	17.1	16.1
All	12.9	16.9	17.2	16.5	16.6	16.4

11.1.6 The average speeds of cyclist who used the road rather than the cycle lane was significantly higher at 16.4 mph.

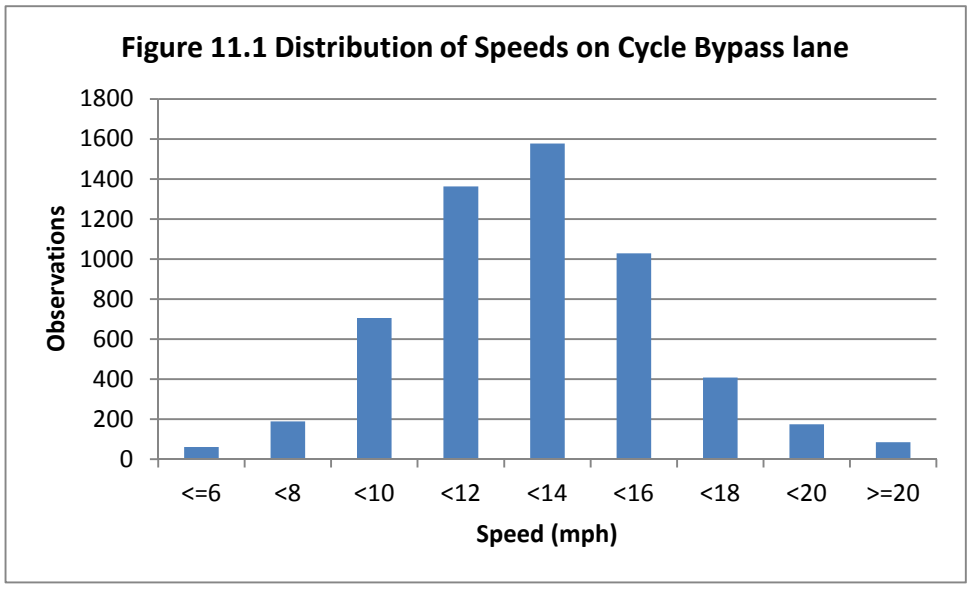
Table 11.6 Maximum Cycle Speed on road (mph)						
Date & time period	00-07	07-10	10-16	16-19	19-24	All
Monday 05/10/2015	18.6	23.2	25.9	25.9	25.9	25.9
Tuesday 06/10/2015	11.0	13.5	22.9	25.2	21.6	25.2
Wednesday 07/10/2015	17.4	20.1	25.9	25.6	25.2	25.9
Thursday 08/10/2015	13.9		24.5	24.5	20.6	24.5
Friday 09/10/2015	24.2	16.6	24.9	25.9	20.8	25.9
Saturday 10/10/2015	16.0	12.0	19.9	21.6	25.6	25.6
Sunday 11/10/2015	17.4	21.3	24.9	22.9	21.1	24.9
All	24.2	23.2	25.9	25.9	25.9	25.9

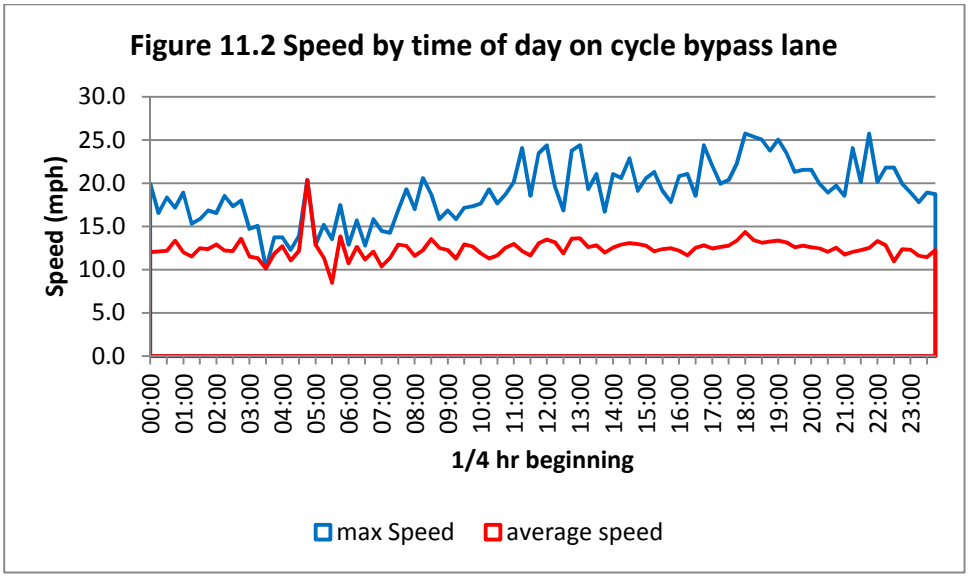
11.1.7 The maximum cycle speed on the road was only slightly faster than that on the cycle lane perhaps indicating that the fastest speeds on the cycle lane were wholly unconstrained.

Table 11.7 Cycle Count on road (mph)						
Date & time period	00-07	07-10	10-16	16-19	19-24	All
Monday 05/10/2015	6	3	18	32	20	79
Tuesday 06/10/2015	5	1	16	62	22	106
Wednesday 07/10/2015	4	2	16	15	27	64
Thursday 08/10/2015	2		21	68	36	127
Friday 09/10/2015	5	2	27	37	21	92
Saturday 10/10/2015	12	2	13	20	9	56
Sunday 11/10/2015	19	11	18	20	26	94
All	53	21	129	254	161	618

11.1.8 Only a small proportion of cyclists (8%) used the road as opposed to the cycle lane. The proportion was higher in the early morning and Sundays (18%).

11.1.9 Figures 11.1 and 11.2 show the distribution of speeds on the cycle bypass lane and the change in average and maximum speeds throughout the day respectively. Both only show cyclists who travelled the full route.





11.1.10 Figure 11.1 shows a normal distribution of speeds throughout the day. The number travelling 6mph or under roughly corresponds to the number that were recorded coming to a complete stop at a crossing. It is probable that the vast majority of those travelling under 10 mph adjusted their speed to accommodate pedestrians crossing. 1.5% were travelling at a speed that might be considered excessive (greater than or equal to 20mph). Perhaps counter intuitively the percentage was 2.2% at busier times (between 16:00 and 19:00 on a weekday).

11.1.11 Figure 11.2 shows little variation in the average speeds throughout the day aside from a spike in the early morning based on a small sample. Maximum speeds rise as volumes begin to rise after 11:00

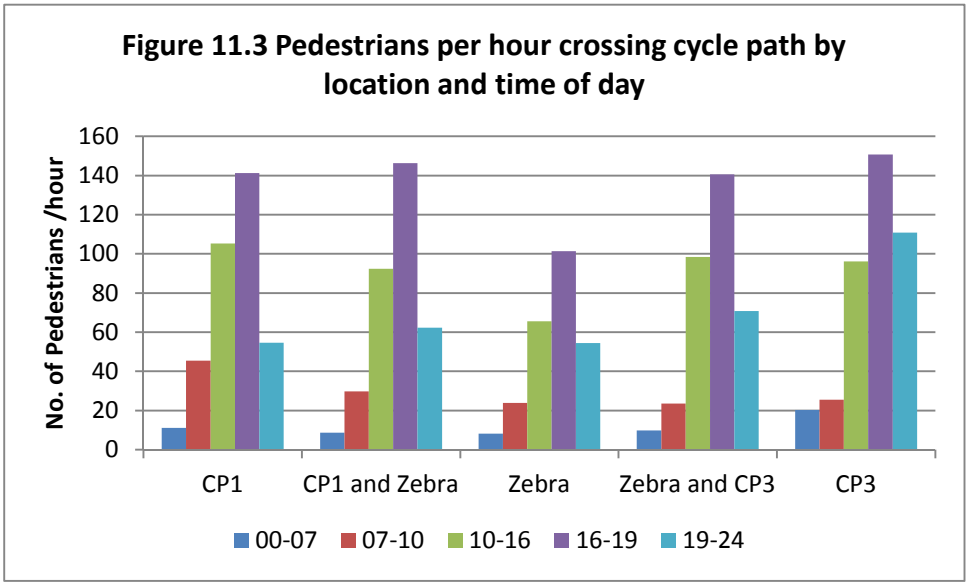
11.1.12 Table 11.8 and 11.9 and Figures 11.3 and 11.4 show numbers of pedestrians crossing the cycle bypass lane by location and time day and location and day of the week respectively.

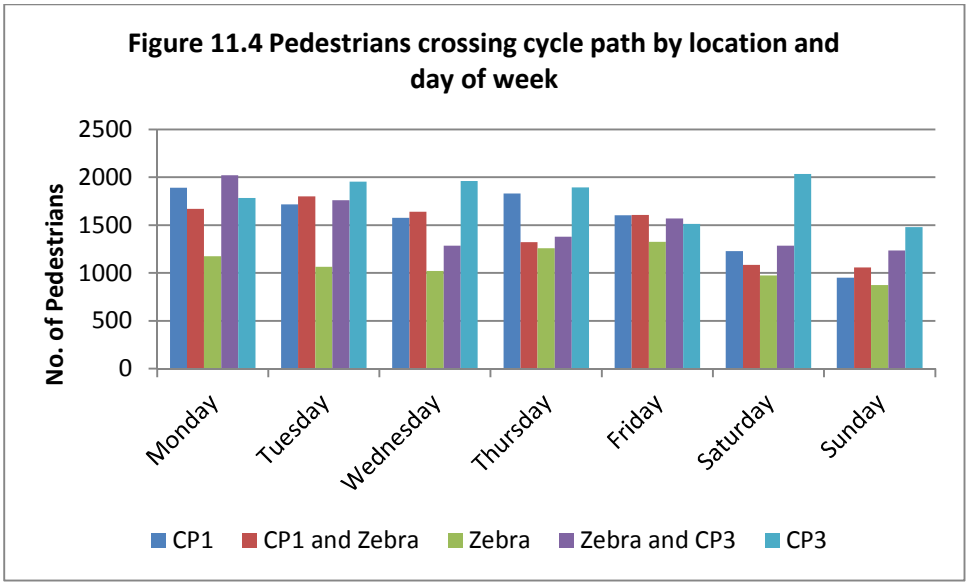
Table 11.8 Average Number of Pedestrians per hour crossing by Location and Time Period

Time period & Location	CP1	CP1 and Zebra	Zebra	Zebra and CP3	CP3	All
00-07	11	9	8	10	20	58
07-10	45	30	24	24	26	148
10-16	105	92	66	98	96	458
16-19	141	146	101	141	151	680
19-24	55	62	55	71	111	353
All	64	61	46	63	75	309
% of all Pedestrians Crossing	21%	20%	15%	20%	24%	100%

11.1.13 CP1 is the most north crossing point on the cycle bypass lane and CP2 is the most south crossing point on the bypass lane.

Table 11.9 Pedestrians crossing by Location and Day of Week						
Day & Location	CP1	CP1 and Zebra	Zebra	Zebra and CP3	CP3	All
Monday 05/10/2015	1891	1671	1176	2023	1785	8546
Tuesday 06/10/2015	1716	1802	1064	1760	1953	8295
Wednesday 07/10/2015	1575	1641	1022	1286	1960	7484
Thursday 08/10/2015	1831	1323	1260	1379	1893	7686
Friday 09/10/2015	1604	1607	1324	1571	1512	7618
Saturday 10/10/2015	1229	1086	973	1287	2036	6611
Sunday 11/10/2015	950	1057	874	1236	1480	5597
All	10796	10187	7693	10542	12619	51837





11.1.14 Mondays is the busiest day for pedestrians crossing the cycle lane and 16:00 – 19:00 the busiest time period.

11.1.15 On average during the week 60% of pedestrians use a crossing to cross the cycle path. 15% of pedestrians use the zebra. There is little variation in usage of the zebra by time of day but higher proportions use the first crossing point (north) between 07:00 and 10:00 (31%) and the third crossing point (south) between midnight and 07:00 (35%) when pedestrian flows are lower.

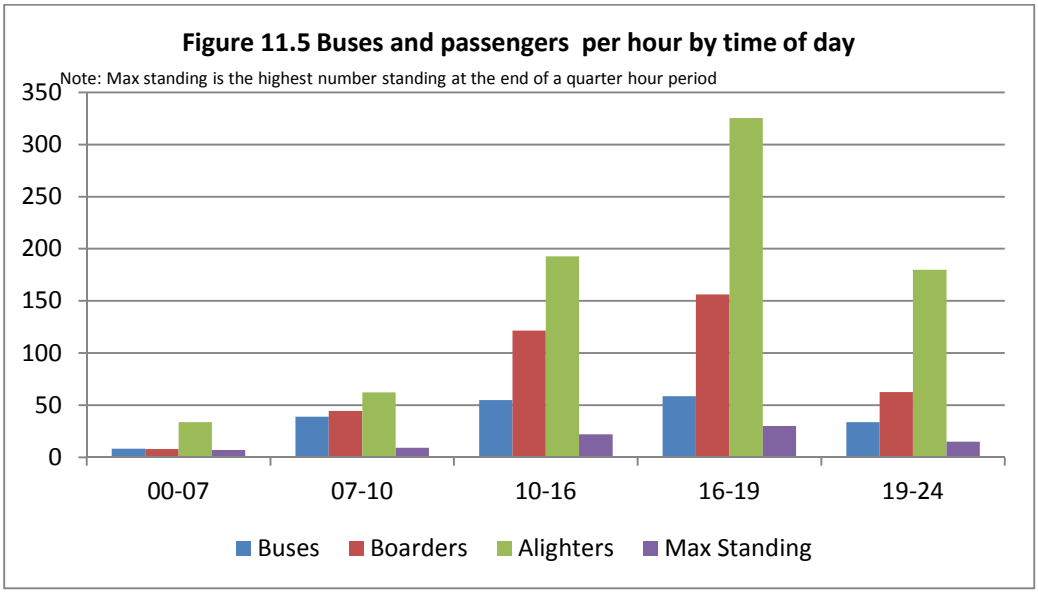
11.1.16 Likewise there is little variation in zebra usage by day of the week. There are a higher proportion of pedestrians using the other crossings on Wednesdays and Saturdays.

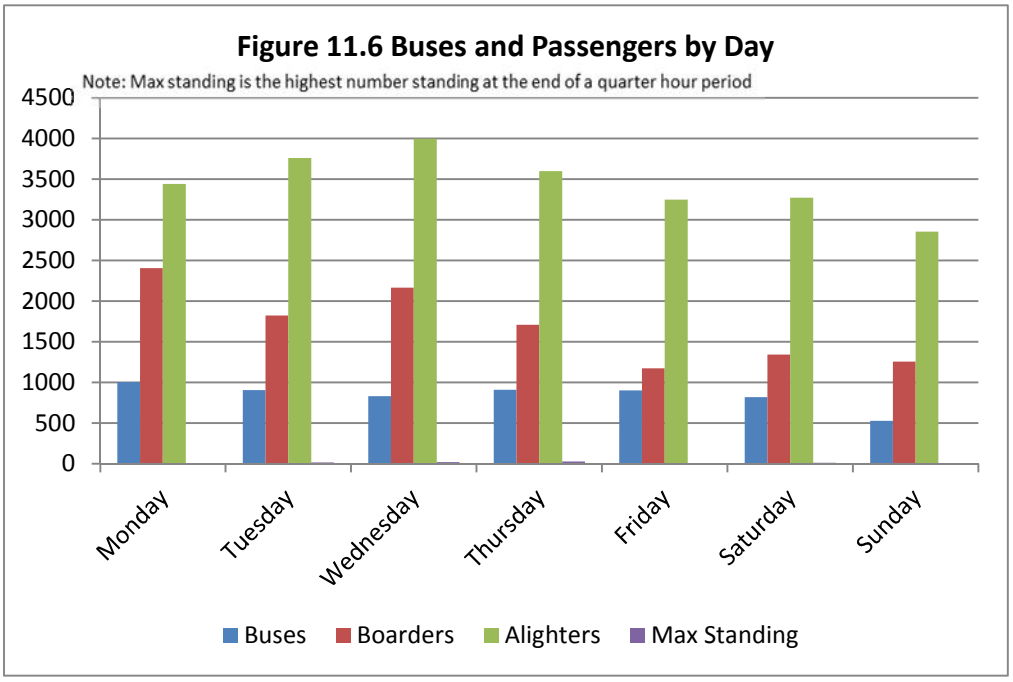
11.1.17 Table 11.9 and 11.10 and Figures 11.5 and 11.6 show buses and passengers by day and by day of the week respectively.

Table 11.10 Average Buses and Passengers per Hour by Time Period

Time period & Location	Buses	Boarders	Alighters	Max Standing
00-07	8	8	34	7
07-10	39	44	62	9
10-16	55	121	193	22
16-19	58	156	326	30
19-24	34	63	180	15
All	35	71	144	30

Table 11.11 Average Buses and Passengers by Day				
Day & Location	Buses	Boarders	Alighters	Max Standing
Monday 05/10/2015	1006	2407	3441	11
Tuesday 06/10/2015	905	1824	3759	18
Wednesday 07/10/2015	832	2166	3996	22
Thursday 08/10/2015	912	1708	3600	30
Friday 09/10/2015	902	1175	3251	7
Saturday 10/10/2015	819	1342	3274	14
Sunday 11/10/2015	527	1257	2855	10
All	5903	11879	24176	30





11.1.18 Wednesdays are the busiest day for all bus passengers and bus alighters but there are more boarders on a Monday. 16:00 – 19:00 is by far the busiest time period for boarders, alighters and all passengers with almost 10 bus passengers per minute on average using the stop. This is also when most buses arrive and the highest count of people waiting at the stop was made.

11.1.19 The number of passengers using the stop is only 70% of pedestrians crossing the cycle lane. Reasons for this include people crossing the cycle lane and then the road and vice-versa, people using the bus platform as a short cut or easier route and people crossing but not boarding.

11.1.20 A count was made of cyclists completely stopping at crossings. 63 were recorded as doing so throughout the week; fewer than half of these being at the zebra crossing where they are required to do so if a pedestrian is waiting.

11.1.21 A cyclist stopping was recorded when a bicycle came to a complete stop for a crossing, so that these numbers do not include other possible interactions / avoidances / slow-downs etc. While the numbers indicate few cyclists giving way, the figures do not account for the more fluid interactions of cyclist and pedestrians that appeared to arise where pedestrians crossed the bypass lane by means of ‘gap-selection’.

11.2 **Detailed analysis of 19 hours of selected footage**

11.2.1 Table 11.12 provides a period-by-period summary of the detailed video analysis of activity in the vicinity of the trial site. This covers a 19 hour time period. The paragraphs following the table provide commentary on the key statistics presented in the table and the specific and general comments made by the reviewer.

Table 11.12: Detailed Analysis of video footage

Day	Start	End	Hours	Pedestrians using designated crossings?		Are pedestrians looking before crossing?	Cyclists observing zebra crossing?	Bus passenger and/or Pedestrians using cycle lane as a pavement?	Are cyclists using the pavement?	Cyclists travelling with excess speed?	Conflicts by type		
				Yes	No	No	No	Yes	Yes	Yes	Minor	Major	Contact
Monday	**08:00**	**09:00**	1	145	93	2	0	10	8	1	0	0	0
Monday	**13:00**	**14:00**	1	291	313	26	0	21	2	0	8	2	0
Tuesday	**15:00**	**19:00**	4	1721	1420	98	0	61	10	0	22	5	0
Wednesday	**13:00**	**14:00**	1	433	296	32	2	35	2	3	0	0	0
Wednesday	**16:00**	**17:00**	1	405	296	15	2	34	0	0	0	1	0
Thursday	**08:00**	**09:00**	1	167	55	2	0	25	2	0	0	0	0
Thursday	**15:00**	**18:00**	3	1305	888	92	26	66	3	0	4	8	0
Friday	**12:00**	**13:00**	1	314	177	13	3	24	2	2	0	2	0
Friday	**19:00**	**21:00**	2	575	329	26	7	13	2	3	1	0	0
Saturday	**14:00**	**15:00**	1	273	149	5	0	16	0	0	0	0	0
Saturday	**20:00**	**21:00**	1	314	119	3	0	9	0	0	0	0	0
Sunday	**14:00**	**16:00**	2	503	339	16	3	21	3	0	0	0	0
Hours analysed			19	6446	4474	330	43	335	34	9	35	18	0

11.2.2 The proportion of crossings made using one of the three designated crossing points in the 19 hours (59%) was similar to that for the full week (60%). It was noticed that many pedestrians crossed diagonally across the lane following a desire lane using only part of the crossing.

11.2.3 The vast majority of cyclists did not need to come to a complete stop at the zebra crossing but 43 in the detailed analysis have been designated as failing to observe the zebra. A disproportionate number of cyclists (26) travelled during the evening peak on Thursday.

11.2.4 Further analysis of the camera covering the zebra in this time period confirms the findings and that, if pedestrians waiting within a couple of yards of the zebra were included, it would be higher. Cycles often come along the lane in convoys, perhaps due to patterns established on road and in one instance 6 cyclists did not stop while a pedestrian was waiting.

11.2.5 554 cyclists passed though, started at or left the lane at the zebra crossing. Taking the criteria that a cyclist should stop or at least slow down if a pedestrian is waiting or intending to cross within 2 yards of the zebra crossing, 498 cyclists were able to cycle through without adjusting their speed for the zebra as there were no pedestrians, 15 slowed or adjusted their speed to allow pedestrians to cross and 40 did not stop (although some may have slowed). There were three near collisions as a result of this although one involved a group of cyclists being photographed travelling down the bypass lane so could be considered atypical. It is also notable that almost 90% of cyclists in the busy time period passed through the zebra section of the lane with no hindrance.

11.2.6 It is difficult to distinguish whether it is bus passengers or pedestrians using the cycle lane as a footway or pavement but 335 bus passenger/pedestrians were identified as walking or standing in the cycle in the cycle lane during the detailed analysis of the video footage.

11.2.7 There were 34 cyclists who were noted as cycling on the pavement during the 19 hours of video footage analysis, though comments from the reviewers indicated this was sometimes due to the cycle path being obstructed.

11.2.8 Occasions on which cyclists were assessed as having travelled along the cycle path at excessive speed were rare, with nine having been considered to have been cycling above a safe speed level. “Excessive” speed is subjective and a study of the speeds in those hours where excessive speeds were recorded do not show speeds extraordinarily faster than at other times. Inappropriate speeds might be a better description though only one recording had a conflict (minor) associated with it.

11.2.9 Within the video footage, there were 53 instances that were considered to be conflict situations. Of these:

- No contacts were recorded;
- 18 were categorised as “major”, in which a cyclist had to brake or swerve rapidly or in which a pedestrian had to take rapid evasive action, such as jumping out of the way, to avoid a collision; and,
- 35 were noted as “minor”, in which either a cyclist and/or a pedestrian needed to adapt their movement to avoid a collision.

11.2.10 There were 330 instances in which someone was considered to have not looked before crossing the cycle path on foot. It should be noted that whether or not a pedestrian has looked before crossing is difficult to determine from video footage and therefore this figure will be to some extent an underestimate.

11.2.11 Three further questions that are also not shown in the table due to their relative rarity. These were when:

- One person tripped over the cycle path edge due to the difference in level from the surrounding area;
- There were two occasions on which the cycle path entry or exit point was blocked by a parked vehicle; and,
- There were no situations observed in which the level of litter on the cycle path was considered to have hampered a cyclist’s movement.

11.3 **Summary of period-by-period analysis**

11.3.1 This section complements the above statistical analysis by providing a commentary on each footage period’s events.

11.3.2 Monday 5th October 0800-0900: A van blocked the cycle path exit for a quarter of an hour and this caused cyclists to travel down the pavement and pedestrians to use the cycle path. Generally there was no conflict between cyclists and pedestrians on the cycle path but this appeared largely due to the low number of cyclists rather than observant pedestrian behaviour. There were as many pedestrians crossing elsewhere as using the designated crossing points.

11.3.3 Monday 5th October 1300-1400: The number of cyclists and pedestrians was higher. There were fewer cyclists using the pavement. The numbers of pedestrians not looking has also increased. The increased numbers led to quite a few minor and major conflicts as cyclists took action to avoid

pedestrians who were not looking or who were crossing away from the designated crossings or who were using the cycle path as a walkway. Cyclists are all observing the zebra crossing.

11.3.4 Tuesday 6th October 1500-1900: This was a very busy time period, particularly for cyclists. There was more evidence of cyclists behaving inappropriately in this time period i.e. not stopping at the zebra crossing, going round pedestrians, on the pavement and travelling the wrong way on the cycle path. This added to the conflicts as did a significant number of pedestrians not looking. However, pedestrian behaviour appeared to be better when it was dark rather than when there was good visibility. Pedestrians are crossing at the ends of the path and diagonally. Inappropriate use of the cycle path by pedestrians tends to escalate i.e. one starts then others follow.

11.3.5 Wednesday 7th October 1300–1400: Cyclists are generally looking out for pedestrians but some cyclists are travelling too fast and are not observant. Bus passengers are using the cycle path to wait for the bus. Pedestrians are spilling onto the cycle path when the pavement is busy. Pedestrians are crossing diagonally at the bends to shorten distance to crossing (i.e. they are travelling straight).

11.3.6 Wednesday 7th October 1600 – 1700: Pedestrians are still crossing diagonally at the bends, “short cutting” the cycle lane, particularly at busy periods. A cyclist almost knocks a pedestrian over due to a pedestrian walking out without looking from behind the bus stop. There is no overspill from bus stop in this time period but many pedestrians are walking up and down the cycle lane.

11.3.7 Thursday 8th October 0800–0900: Pedestrians are still walking up and down the cycle lane and a couple of cyclists are using the pavement, but generally pedestrians are being observant. Quite a few pedestrians are crossing the main road across the southern end of the cycle path.

11.3.8 Thursday 8th October 1500–1800: The apparent reason for pedestrians being on the cycle path is the busyness of the pavement. The path is blocked by a scooter, and a gang, for a while at the south end. Cyclists are mostly observant but a group didn’t observe the crossings and there was a minor confrontation between a cyclist and pedestrian. A wheelchair user struggled with the kerb while crossing from the other side of the main road. The individual sought to cross the cycle path away from the official crossing point at the southern end and blocked the cycle path for a while until they were given assistance. A car passenger left a car and almost collided with a cyclist on the cycle path. The evening time period

appears to be when more conflicts occur due to the increased numbers of bus passengers, pedestrians and cyclists.

11.3.9 Friday 9th October 1200-1300: Pedestrians are still "short cutting" the crossing and walking along the cycle lane. A major avoidance was required by a cyclist when a pedestrian with a trolley almost walks into a cyclist. Someone using an electric self-balancing electric scooter travels the wrong way along the cycle lane.

11.3.10 Friday 9th October 1900–2100: Quite a few cyclists not observing the zebra crossing and one travels the wrong way up the path causing others to take avoiding action.

11.3.11 Saturday 10th October 1400 -1500: There was generally good observance on all sides. However, a motor scooter used the whole length of the cycle lane.

11.3.12 Saturday 10th October 2000-2100: There are not many cyclists at this hour. Some pedestrian "short cutting" the crossing and walking up cycle lane.

11.3.13 Sunday 11th October 1400–1600: Some pedestrian "short cutting" the crossing and walking up cycle lane. A couple of joggers use the cycle lane and cyclists using the pavement.

11.4 **Overall summary of the analysed periods**

11.4.1 Some pedestrians were obviously unobservant at crossings and unaware of the cycle lane throughout the survey but the consequences of this were only noticeable when there were higher numbers of cyclists.

11.4.2 Bus passengers and other pedestrians are standing in the cycle lane and walking along it fairly consistently throughout the observed hours and there is not much evidence of a decrease in this over the course of the week. It is more apparent in busy periods - when conflicts occur.

11.4.3 There are isolated instances of conflicts, mainly due to pedestrian behaviour. These particularly occur in the evening peak when the number of cyclists travelling south is at its highest.

11.4.4 Occasionally cyclists are not observing the zebra crossing, using the pavement or travelling too fast. There is slight evidence that this was happening more towards the end of the week and later at night - aside from the time when the lane was blocked.