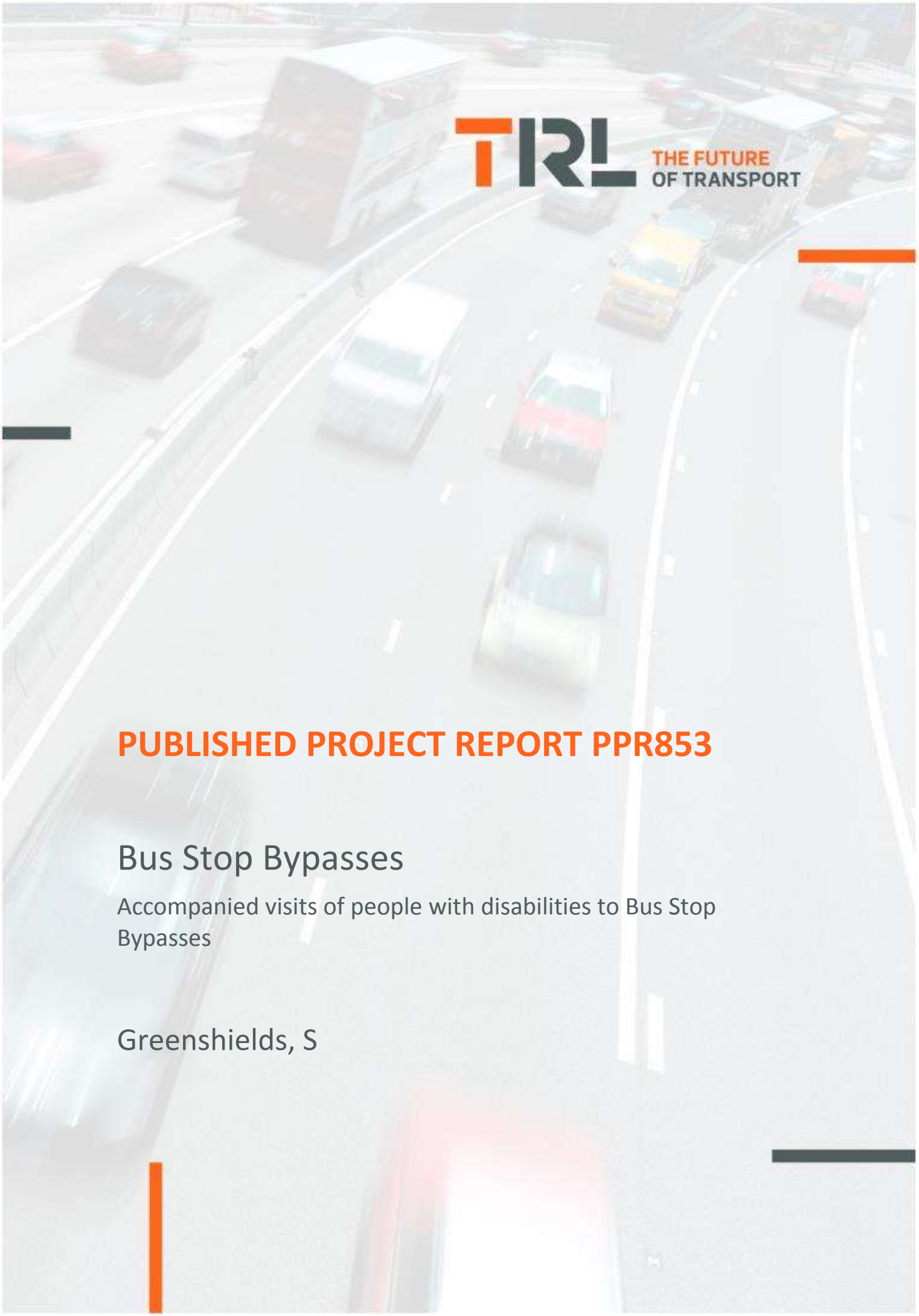

THE FUTURE OF TRANSPORT

PUBLISHED PROJECT REPORT PPR853

Bus Stop Bypasses

Accompanied visits of people with disabilities to Bus Stop Bypasses

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Report details

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Disclaimer

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Contents

Executive Summary

The purpose of this study is to understand the impact of Bus Stop Bypasses (BSB) on people from four disability groups (see below). Two types of BSB were trialled at six sites in London – first with uncontrolled crossings and then with zebra crossings installed. This study is part of a wider evaluation of BSBs, and considers the specific research question given below.

Disabled individuals from each of the four groups were recruited and taken on accompanied visits to BSB sites, asked to undertake actions (such as finding the bus stop), and then interviewed to complete a questionnaire. This investigated any challenges they face in undertaking typical actions at these types of bus stop, any differences between uncontrolled and zebra crossings, and the benefit of the addition of Belisha beacons at two zebra crossings.

The wording of the research question (RQ2 of the wider BSB monitoring programme) is shown below.

> *Compared to their usual experience of using bus stops, does the bus stop and cycle track crossing arrangement change the ability of visually and mobility impaired people to:*
>
> *- find the bus stop?*
>
> *- board the bus?*
>
> *- alight from the bus?*
>
> *For each of the three actions, how safe and comfortable do they feel, what difficulties arose, and what would help to overcome these difficulties?*

The participants were assigned to four groups, with 18 individuals accompanied to the uncontrolled crossings, and 18 different individuals accompanied to the zebra crossing:

- Blind and partially sighted - 9 participants per site type
- Mobility impaired (including wheelchair users) - 3 participants per site type
- Deaf or hard of hearing - 3 participants per site type
- Learning disabilities and mental health - 3 participants per site type

Whilst some of the issues faced were reported with all groups, the most impacted group were those people who are blind or partially sighted who reported difficulties in understanding the layout or not being able to instruct their assistance dog. Furthermore, wheelchair users were sometimes constrained in their manoeuvrability by the size of the bus stop island or hindrance caused by tactile paving.

A large amount of information was collected from participants that relates to challenges common to both the uncontrolled and zebra crossing versions. These have been noted as they provide good background context and in many cases may be addressed through design or often bus driver behaviour.

Overall, the zebra crossing was marginally preferred over the uncontrolled crossing in terms of feeling safe and comfortable. The addition of Belisha beacons at some sites did not appear to have any significant impact. Findings from other related reports which monitor behaviour of pedestrians and cyclists and BSBs suggest that zebra crossings (in comparison

to uncontrolled crossings) have a positive effect upon the level of interaction between cyclists and those using the crossing.

A key advantage of the zebra crossing was the accompanying tactile tail, which places a strip of tactile tiles across the footway thereby highlighting to blind and partially sighted pedestrians where the crossing is located.

1 Introduction

Bus Stop Bypasses have been introduced over the past few years at sites on London's Cycle Superhighways to enable the continuation of segregated routes through bus stops. A Bus Stop Bypass (BSB) routes the cycle track behind a given bus stop. This physical layout requires that the path of cyclists and of those pedestrians boarding and alighting buses will cross, leading to potentially new interactions between them where pedestrians cross the cycle track. TfL commissioned TRL to undertake a programme of on-street monitoring of BSBs at six sites.

Two different BSB crossing types were researched in phases, with monitoring of uncontrolled crossings being undertaken first, and then at the same locations these were converted to zebra crossings and monitored against the same criteria. This enabled the study to test the potential benefits of zebra crossings as compared with uncontrolled crossings at BSBs.

A set of research questions was developed for the monitoring programme on which the data collection and analysis methodology was designed. Three core research methods were used to answer the research questions:

1. Video analysis of natural (uncontrolled) behaviour by road users
2. A roadside survey of pedestrian and cyclists using the sites; and
3. Accompanied visits with disabled people.

This report presents the results from the accompanied visits with disabled people. This part of the monitoring programme was specifically included to assess potential impacts of the different crossing designs on disabled and visually impaired people. Oversight of this trial was assisted by a BSB working group comprising of representatives of disabled people. The decision to use accompanied visits with contemporaneous questionnaires was taken because the target groups of disabled people are unlikely to be present in the study locations in sufficient numbers for their needs to be properly assessed using random observations of the general public. The questionnaire approach allows a large amount of information to be received from each of the participants.

A set of accompanied visits was undertaken on both crossing configurations, with the uncontrolled crossing accompanied visits occurring in August 2016 and the zebra crossing accompanied visits occurring in spring 2017. Note that the zebra crossing accompanied visits were delayed by emergency third party water works.

Due to recent changes in legislation allowing Belisha beacons to be omitted from zebra crossings over cycle tracks, the project experiment tested two BSB crossings with and four without Belisha beacons.

2 Experiment

2.1 Study sites and modifications

The six study BSBs (Table 1) were located in pairs in Stratford, Whitechapel, and Southwark (Blackfriars Road). These are indicated in Figure 1, with the corresponding Cycle Superhighway scheme, bus stop description, and basic layout described. After the initial uncontrolled crossing assessment phase, the uncontrolled crossings at each site were modified to a zebra crossing and the same assessments made again so that they could be compared to each other. Two of the zebra crossings were fitted with a Belisha beacon, these are identified in Table 1.

Table 1 Bus stop bypass study site list

Cycle Superhighway	Bus stop location	Layout	Belisha beacon with zebra
CS2U	Whitechapel J	1-way track / busy location	Yes
CS2U	Whitechapel A	1-way track / busy location	No
CS2X	Stratford M	1-way track / quiet location	No
CS2X	Stratford J	1-way track / quiet location	No
CS6(NS)	Blackfriars SA	2-way track / busy location	Yes
CS6(NS)	Blackfriars U	2-way track / quiet location	No

Figure 1 Bus Stop Bypass site map

Two types of BSB layout were explored. The first, found at the Stratford and Whitechapel sites, has a 1-way cycle track that kinks around the back of a bus stop island where the bus shelter and bus stop flag are located. The bus flag and crossing dimensions are aligned with those of a bus, with the flag just ahead of the front doors and the crossing aligned with the rear doors. There are occasions where other buses or impediments may prevent a given bus from aligning with these features. The track is 1.5m wide at Whitechapel, and 1.7m at Stratford. The islands at their widest point are 2.5m wide at Whitechapel. Figure 2 indicates the general layout of the bus stop bypass at Stratford stop M, indicating both the uncontrolled crossing (above) and zebra crossing (below). Note figures are not to scale.

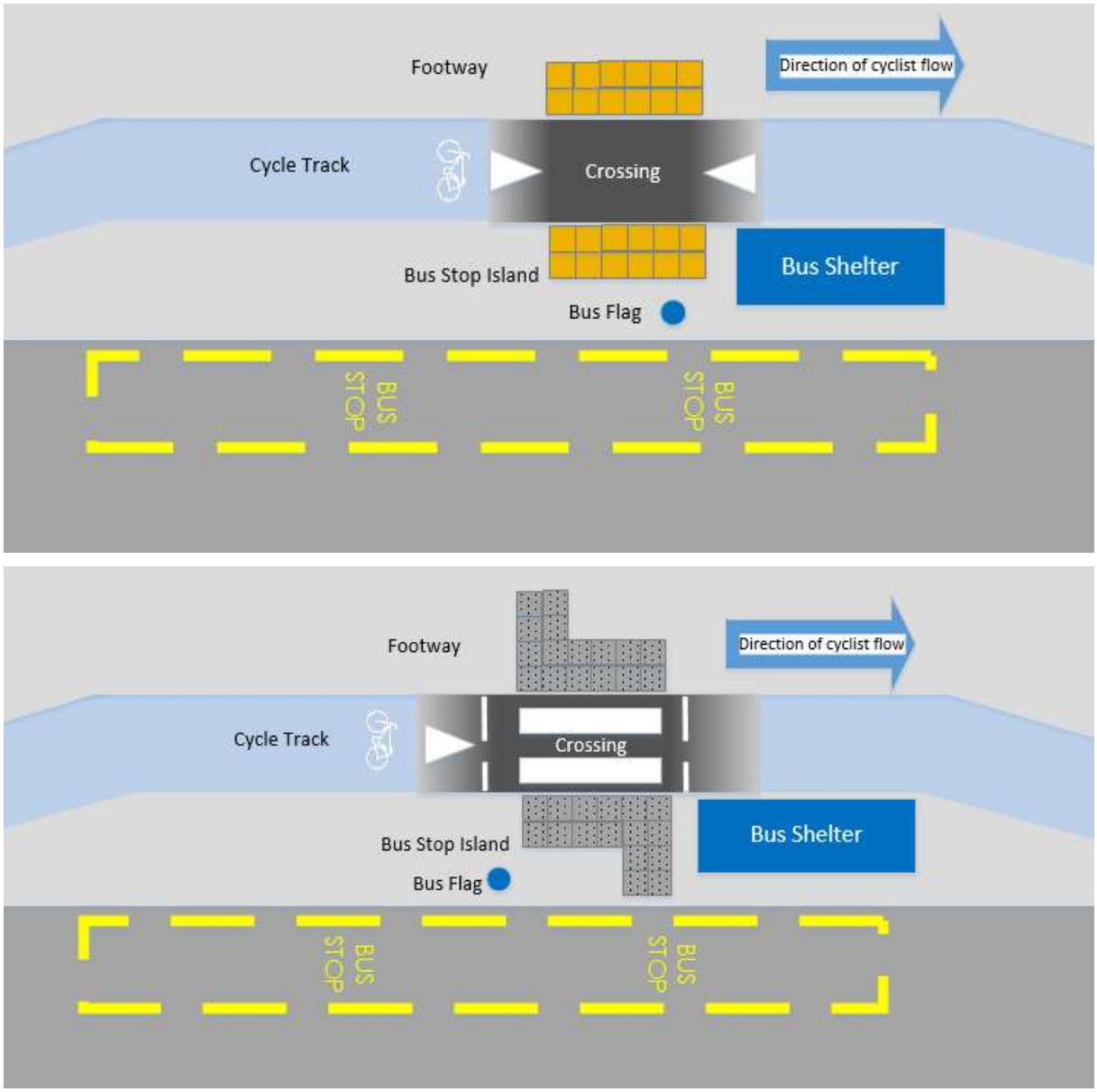


Figure 2 Bus Stop Bypass layout with 1-way cycle track

The second type of layout (Figure 3), with the uncontrolled crossing above, and the zebra crossing below), found at the Southwark sites on Blackfriars Road, has a two-way cycle track that does not kink around the back of the bus stop area and is continuously straight. The track is 4m wide, so is more than twice the width of the 1-way cycle tracks, and the islands are 3m wide at the Blackfriars U bus stop, and up to 3.5m wide at Blackfriars SA bus stop, which are also wider than the 1-way cycle track locations trialled. The crossing point at these locations was slightly further away from the bus stop flag, and the islands were slightly wider far longer. This provided considerably more waiting space for pedestrians.

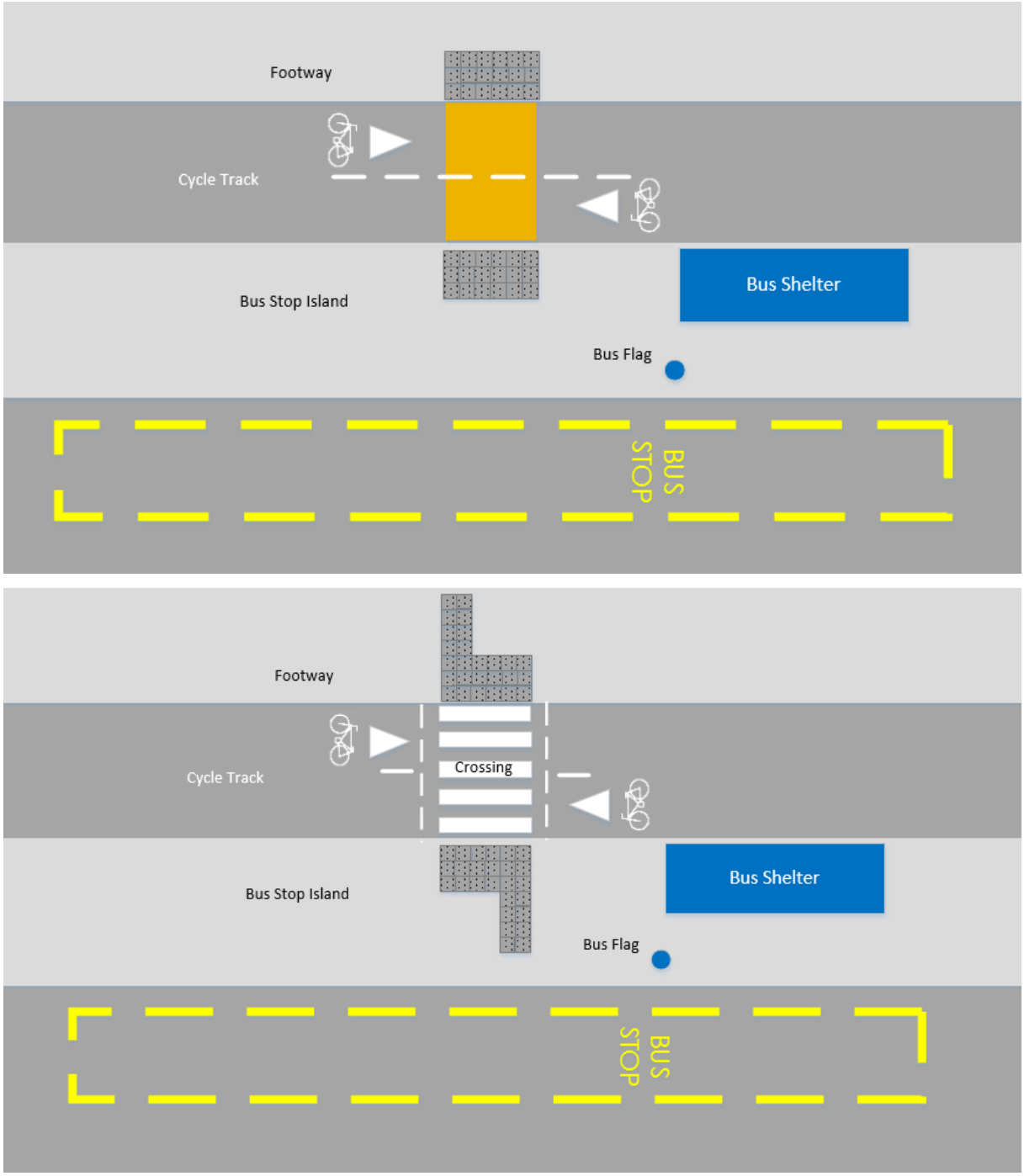


Figure 3 Bus Stop Bypass layout with two-way cycle track

A description and schematic layout of each site in both uncontrolled crossing and zebra crossing formats is given in Appendix A. It should be noted that there are subtle differences between sites, primarily related to the location of the bus flag which is usually left of the crossing (when crossing from the footway to the island), but is occasionally to the centre or the right. This has the potential to confuse blind and partially sighted pedestrians who would typically aim to locate the bus flag.

2.2 Experiment design

To obtain detailed qualitative feedback from, and observations of, disabled people, it was concluded that conducting a semi-structured interview during accompanied walks would be the most appropriate experimental method. The reasons for this choice of methodology are:

- This study focussed upon specific disabilities which affect a small proportion of the population. Therefore a very large number of people would need to be approached at the study BSB sites and rejected in order to find the specific disabilities being considered, which would not be cost-effective or practicable.
- The questions being asked of individuals (and agreed with the BSB working group) were relatively in-depth and would take more time that might be deemed reasonable for an intercept survey.

Participants were individually taken to two bus stop bypass sites accompanied by a researcher whilst they followed a set course around the trial bus stops, making their own decisions on where, when and how to cross. The interview questions are listed in Appendix B[1] and an example of a route for one site can be seen in Appendix C. The sessions were designed to be flexible, for example reducing to a single site should any participant be unable to proceed further. Participants were given information about the bus stop bypass and trial in advance, and a tactile small scale (A2 size) 3-dimensional map of the bus stop layout was available for all participants to familiarise themselves with the design (see Figure 4). This allowed participants to improve their understanding of the design and to have the knowledge to critique it, rather than basing their feedback on their first (and perhaps incomplete) impressions of it. Prior to the trial participants were also asked to sign their consent to participate (see Appendix D).

[1] For brevity Appendix B contains questions for just one bus stop bypass, rather than including the identical questionnaire for the second visit undertaken with each participant.

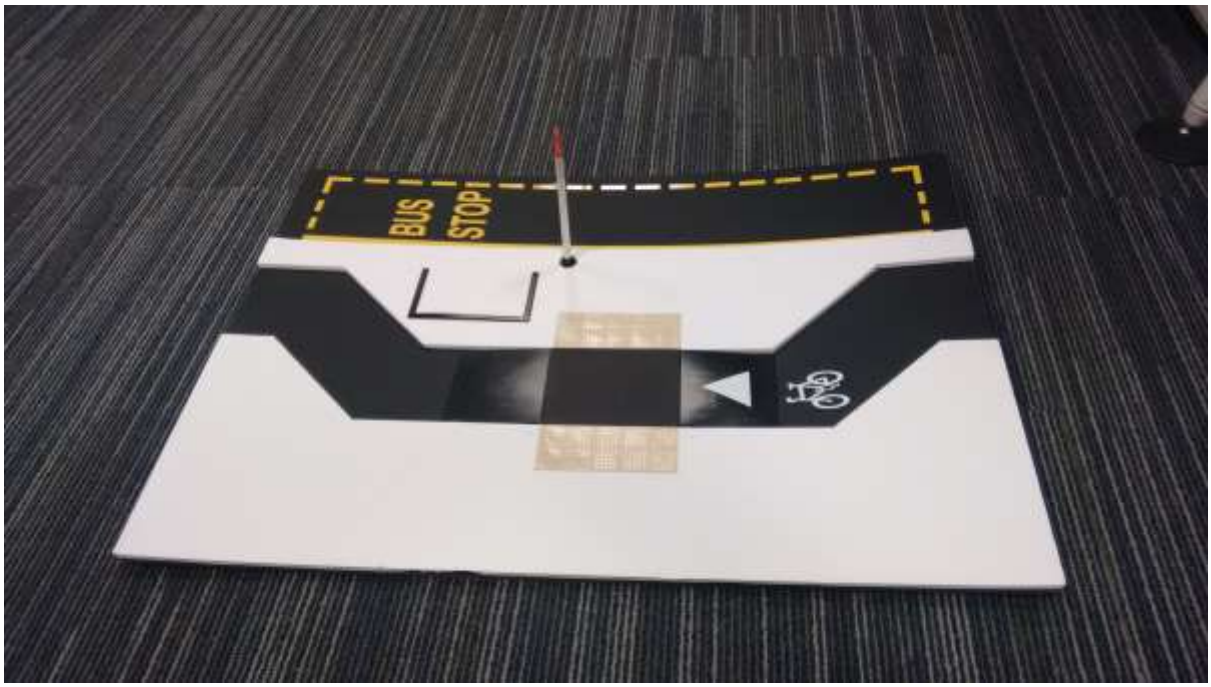


Figure 4 Tactile Map – Approximately A2 size

Participants were asked to navigate themselves around the bus stop bypasses as if they were alone. Researchers were instructed only to guide participants when away from the study sites, if specifically requested by the participant, or if it was considered that the participants' safety was compromised. Any companions accompanying the participant were required to refrain from providing answers on behalf of the participant.

2.3 Types of disability represented in trial

Four categories of disability were chosen by TfL, TRL and the BSB working group, and these were:

- Blind and partially sighted
- Mobility impaired (including wheelchair users)
- Deaf or hard of hearing
- Learning disabilities and mental health

Note that because of the need to safeguard vulnerable adults, any participant in the "learning disabilities or mental health" category was required to participate with a regular carer who could sign consent on their behalf.

Researchers with specialist training were chosen to accompany blind and partially sighted people.

2.4 Sample size

It is always difficult to pre-determine the minimum sample sizes required for qualitative data experiments. An approach was taken whereby an initial sample size was chosen, and a

rule applied that the sample size was considered to be sufficient at the point where collecting additional data would not be expected to yield significant new information.

The initial sample size was 36 participants, and this was considered to be sufficient as a final total when the sessions were completed. Sessions were allocated equally for each phase (18 at uncontrolled crossing and 18 at zebra crossing) as shown in Table 2.

Table 2 Number and type of participants

	Stratford	Whitechapel	Blackfriars
Blind and partially sighted	3	3	3
Mobility impaired (including wheelchair users)	1	1	1
Deaf or hard of hearing	1	1	1
Learning disabilities and mental health	1	1	1

2.5 Recruitment and selection process

In order to recruit participants, TRL and TfL contacted various disability representative groups (including members of the BSB working group) with a message directing potential participants to a contact email and telephone line. This included a notification that participants would receive a flat rate of £50 cash to cover their costs of involvement. These communication methods were chosen as this gave more flexibility for the variety of disabilities. Participants registered their interest with TRL and were asked to provide a range of information which would allow for more effective selection.

TRL selected participants on the basis of:

1. Disability type
2. Being usually independent travellers
3. Site preference
4. Available dates and timing
5. Having one distinct disability, rather than for example being both blind and using a wheelchair
6. Order of receipt of the participant's application

Volunteers were not asked questions regarding opinions towards the bus stops; however those who volunteered an obvious bias during the recruitment process (examples were typically against bus stop bypasses or cyclists) were excluded as this may have had an influence upon the responses they would give at the accompanied walk.

Individuals who were selected to take part were contacted and a session arranged and undertaken.

Over 160 applications were received for the 36 places. The largest proportion of applications came from the blind and partially-sighted community.

Note that although participants with a single distinct disability were preferred, some selected participants had more than one.

Figure 5 Accompanied visit pre-briefing with researcher (left), and participant (right)

3 Demographics

Demographic information was collected from participants in order to understand the representativeness of the sample.

3.1 Age

There was a spread of ages across the 36 participants as shown in Figure 6. This indicates a reasonable spread of ages.

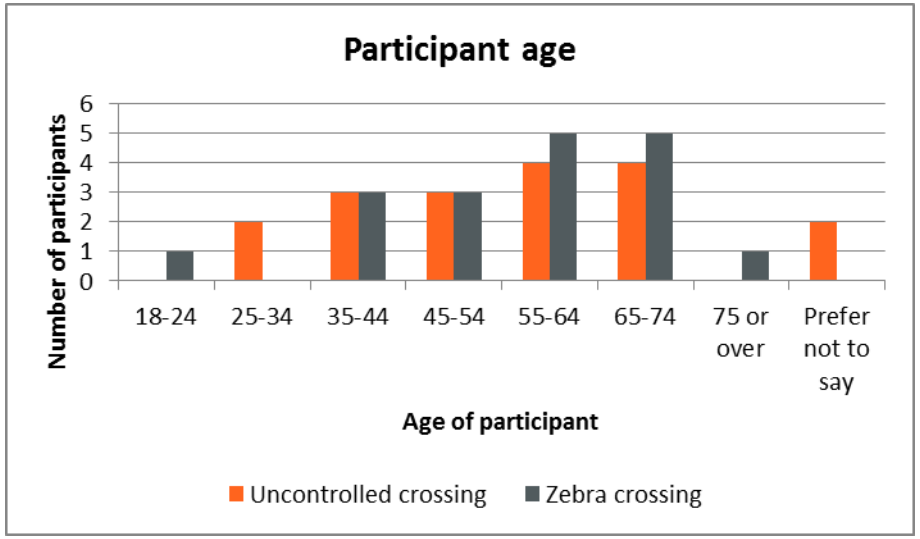


Figure 6 Age of participants

3.2 Gender

Genders were matched overall, with 9 males and 9 females in each of the uncontrolled and zebra controlled crossing groups

3.3 Ethnic group

The ethnic grouping has a slight bias (in comparison with the general population) towards white participants as shown in Figure 7. There is some evidence to suggest that this is broadly in line with the disabled population[2].

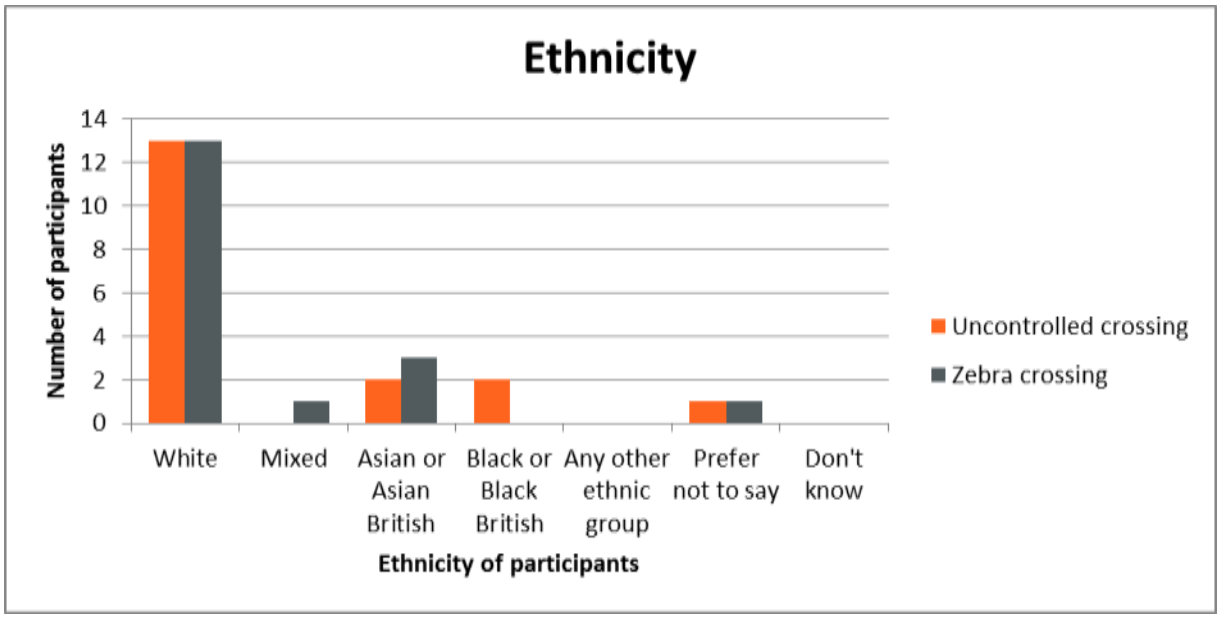


Figure 7 Ethnic group of participants

3.4 Use of wheelchair

One participant of at the uncontrolled crossing BSBs was a wheelchair user, whereas three of the participants at the zebra crossing BSBs were wheelchair users.

[2] http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/dcp171778_355938.pdf

3.5 Trips per week by bus

Most participants reported being regular bus users as shown in Figure 8.

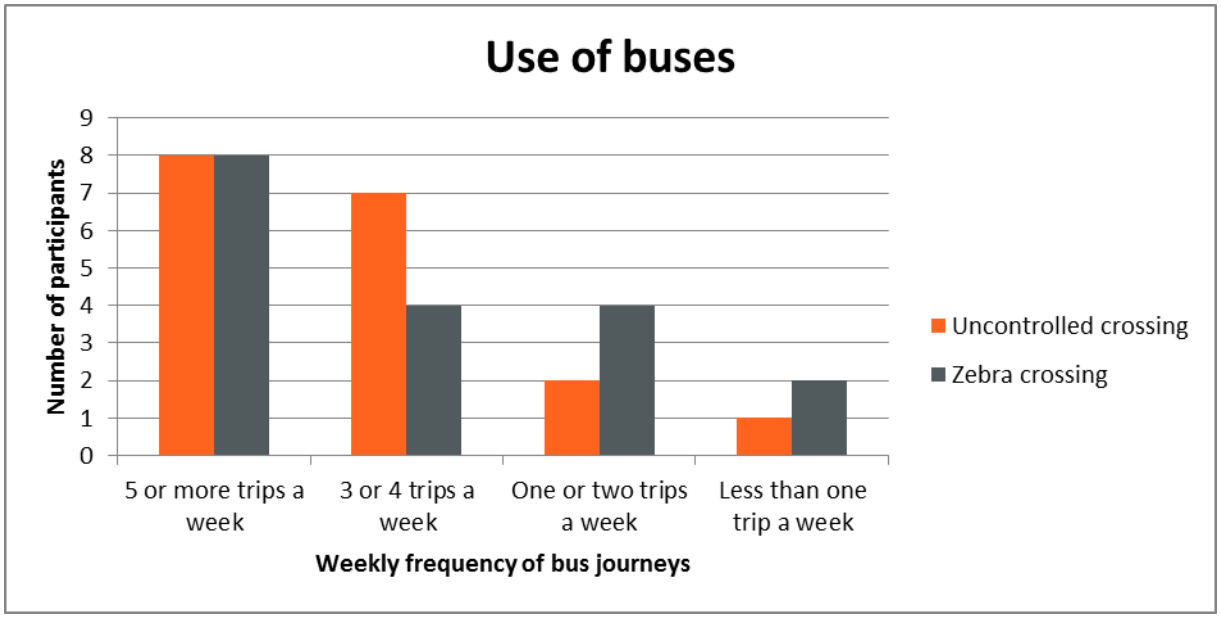


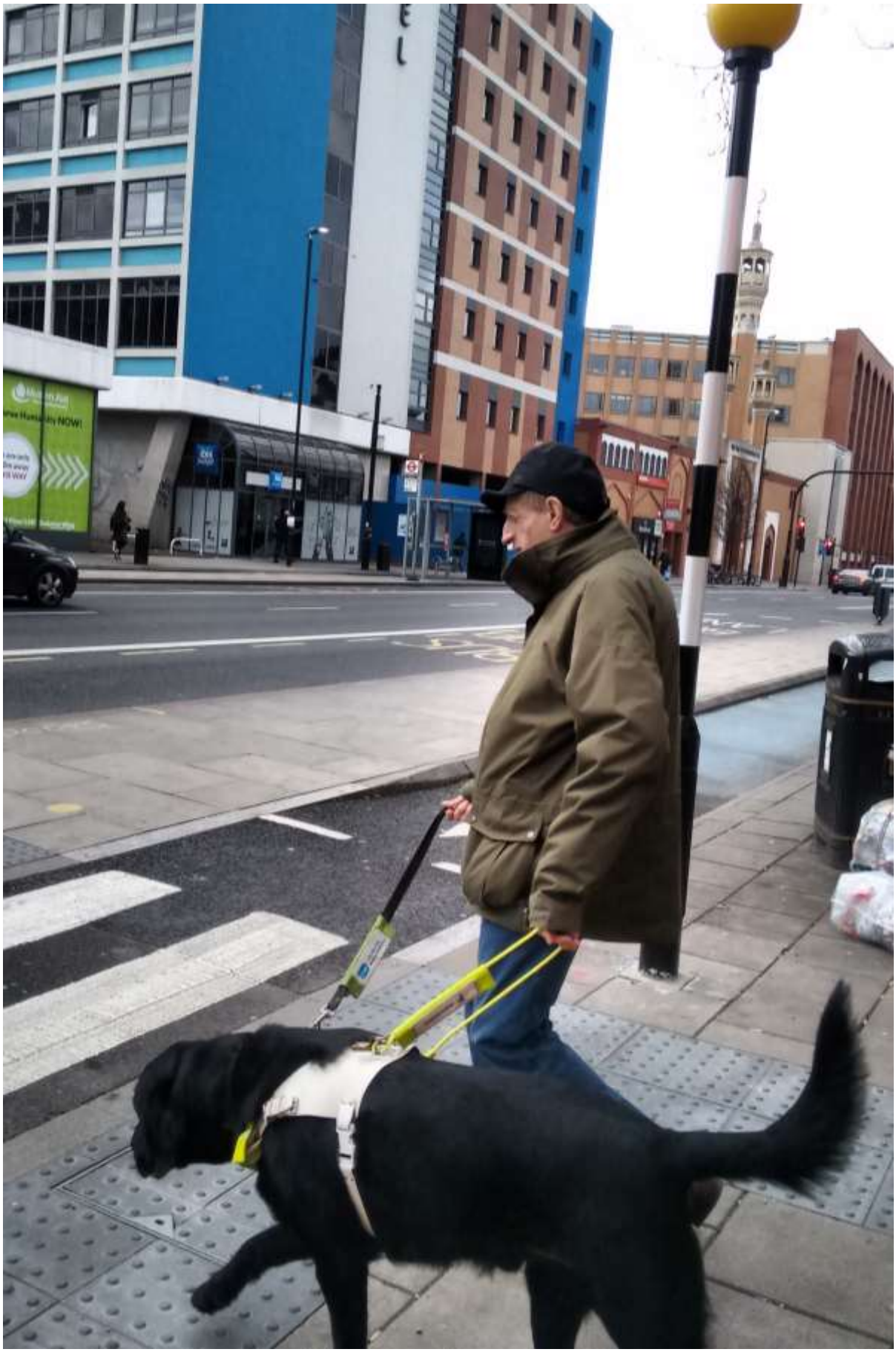
Figure 8 Bus use by participants

3.6 Use of study site bus stops

In the uncontrolled crossing group five respondents reported using the study site bus stops at some time in the past, compared to one in the zebra crossing group.

3.7 Use of bus stops which have bus stop bypasses

In the uncontrolled crossing group eight respondents report having used bus stop bypasses previously, to varying degrees of frequency, compared to two in the zebra crossing group.



4 Boarding the bus

4.1 Boarding the bus - ease of getting on the bus

Participants were asked "Q20. Overall, how easy or difficult did you find it to get on the bus?", where 1 is 'very difficult', and 5 is 'very easy'. As seen in Figure 9, a majority of participants found it 'easy' or 'very easy' to get on to the bus. Relevant comments from participants giving a score of 1 or 2 were "*bus ramp is too steep*" (wheelchair user), and "*didn't know where the bus was going to stop*" (blind and partially sighted).

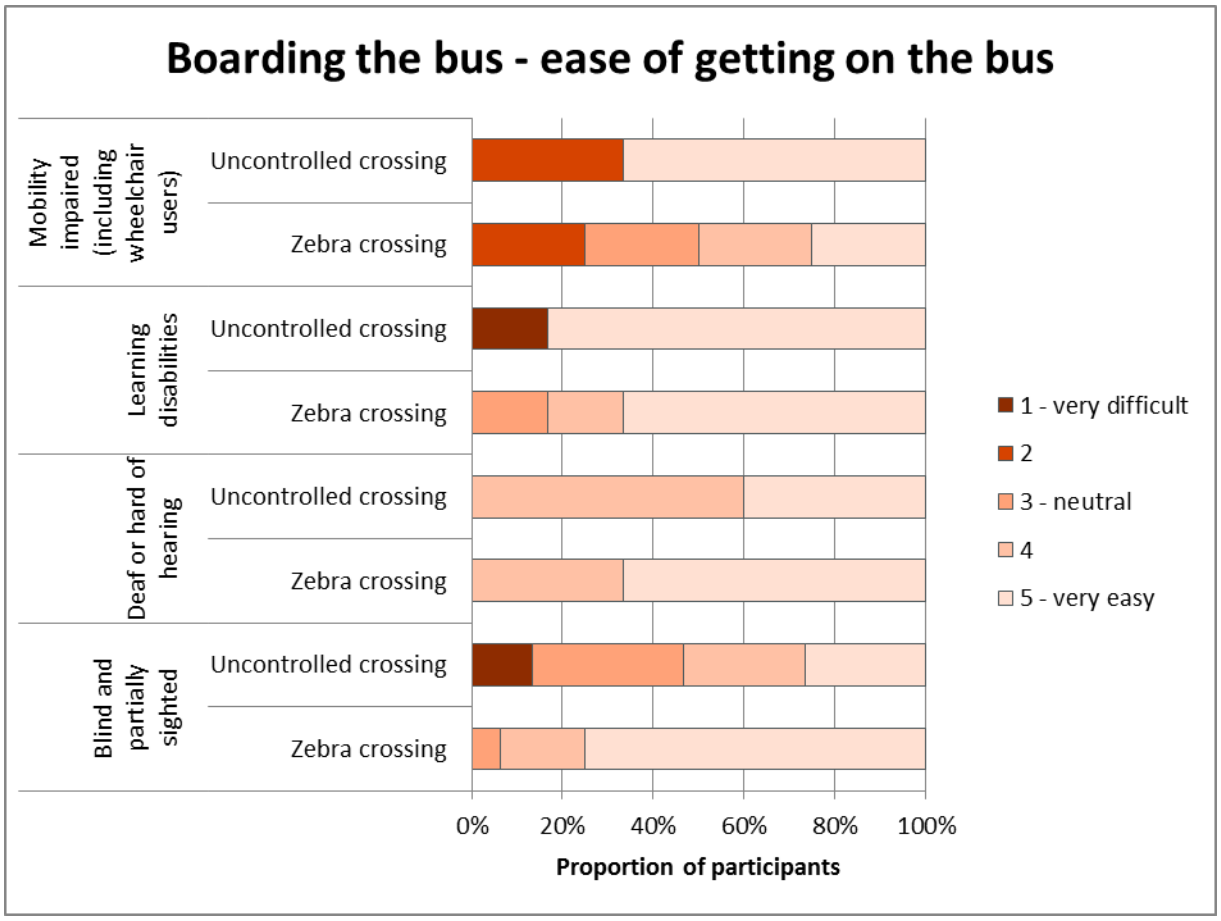


Figure 9 Boarding the bus - ease of getting on the bus

Figure 10 Wheelchair boarding the bus at Blackfriars SA

4.2 Boarding the bus - space on the island

Participants were asked "Q21. How much space did you feel was available on the island while waiting for the bus?", where 1 is 'very little space', and 5 is 'plenty of space' (see Figure 11). Most reported 'plenty of space'. A wheelchair user noted that the island can be a little narrow for the bus ramp – this was at Stratford, however given the dimensions this is likely to be similar at Whitechapel.

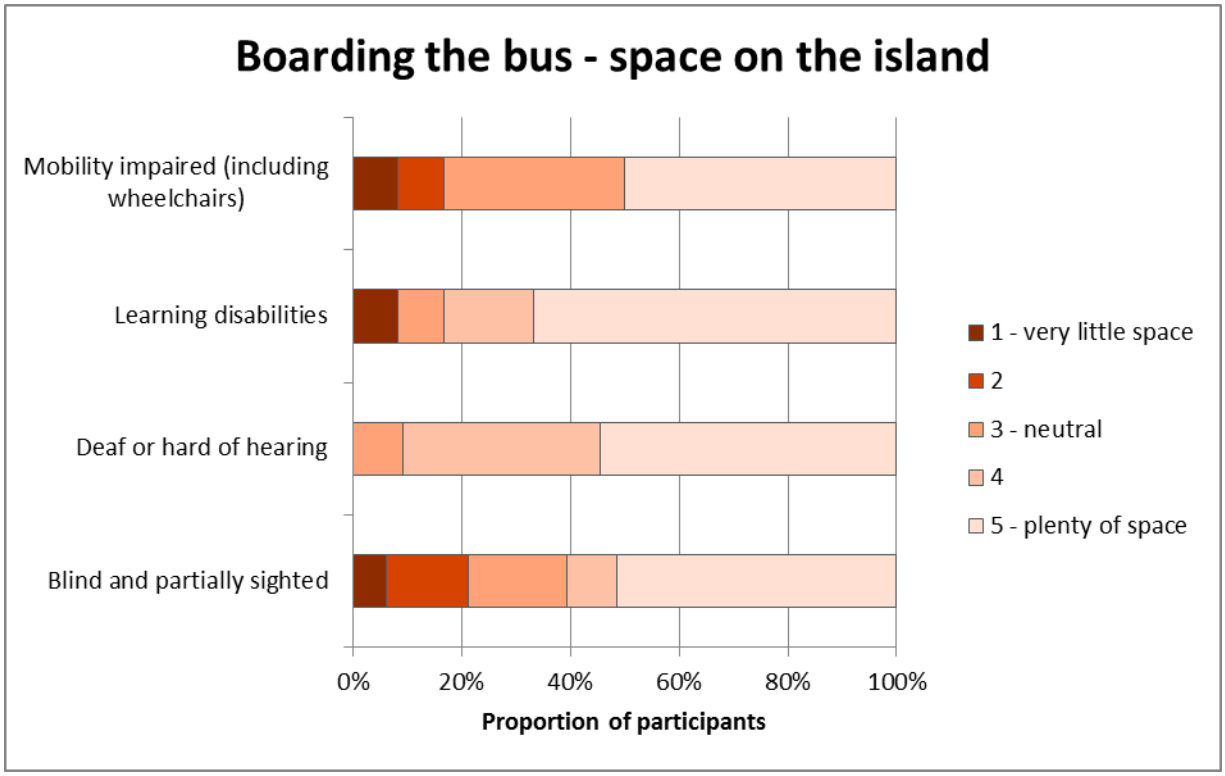


Figure 11 Boarding the bus – space on the island

4.3 Overall experience of getting on the bus

General overall experiences of getting on the bus were reported in response to the question "Q22. What was your overall experience of getting on the bus – did any aspect(s) of it stick out to you?" with largely neutral to positive comments.

40 responses were either positive or were 'no comment', a further 8 responses had elements of negativity however these were of a general nature that could be applied to any bus stop. 14 negative comments were received as follows:

- 4 related to there being too much of a gap between the island and the bus (it could be argued that as these dimensions are similar to general bus stops then this is not a BSB-specific issue).
- 2 related to the narrowness of the island and the challenge this was for manoeuvring a wheelchair (wheelchair user – Stratford J and Stratford M)
- 1 related to the camber of the island (wheelchair user - Blackfriars U)
- 2 related to the challenges of passing wheels over tactile paving (wheelchair user)

- 5 (all blind or partially sighted participants) related to not knowing if the bus would stop in the correct place (it could be argued that as these dimensions are similar to general bus stops then this is not a BSB-specific issue). Note that the bus did not stop at the flag in 3 of these occasions, however the responses given suggest that this is a regular concern for these blind and partially sighted participants.

Some commented that the island was well designed and it was straightforward to get on the bus provided it stopped in the correct place, one noted the difficulties of nearby cycle racks, and another mentioned obstructions to sightlines such as the bin placed by the crossing (see Figure 12) which appears to have been moved slightly following the installation of the zebra crossing (see image in section 3.7). Respondents did not have any concerns about the behaviour of other passengers on the island.

Figure 12 Obstructions to sight lines between cyclists and pedestrians

4.4 Boarding the bus - did the bus stop where expected?

TfL Accessible Bus Stop Design Guidance describes how the location of the bus stop flag relates to the 'correct' place for the driver to stop the bus:

> *The bus stop flag indicates to passengers where they should wait and serves as a marker to drivers to indicate where the bus should stop. These guidelines are based on the bus stopping with the rear of the front doors in line with the flag and passengers boarding from the downstream side of the flag.*

The following analysis is therefore based on the assumption that people expect to board immediately to the left of the bus stop flag. If the position of the front doors of the bus do not allow for this, then the bus is not regarded as being in the 'correct' position.

In response to the question "Q23. Did the bus stop where you expected it to?", most participants reported that the bus stopped where they expected it to (79%). For those that responded that the bus did not stop where expected, the only comment which was not common to general bus stops was that the rear doors stopped by the tactile paving and the tactile bobbles, combined with the ramp, made getting on to the bus a challenge for a wheelchair user. See Figure 14 for a photograph of a bus stopped in the wrong location for a blind participant. For those 14 participants who stated that the bus did not stop where they expected it to, six were recorded by the researcher as actually stopping at the bus flag, with the remainder being either 1 bus length or more further back.

4.5 Boarding the bus – different experiences to ordinary bus stops

Participants were also asked "Q24. Was this any different to the experience you might expect at ordinary bus stops?", with 79% responding that it was not, and 21% responding that it was different. The reasons of note given for these differences were:

Mobility impaired

- Tactile paving position is awkward to board bus (Stratford J - zebra crossing)
- Camber on pavement (Blackfriars U – zebra crossing)
- Fear of dropping in to cycle track from kerb

Blind and partially sighted

- Less space to manoeuvre with risk on both sides (Whitechapel J – uncontrolled crossing)
- Very noisy (Stratford M – uncontrolled crossing)

4.6 Boarding the bus – things about the layout which made getting on the bus easier or harder

Participants were asked "Q25. Was there anything about the layout of the bus stop that made getting on the bus easier or harder? (Free text).", with a follow-up question of "Q25a. If harder, what could have made your experience better?".

There were 21 instances of participants responding that there was no difference, this includes blind and partially sighted participants. This may be because once on the island, the interface with the bus is essentially unchanged.

There were 26 instances of participants responding that it was normal or easy.

Of the 12 instances of participants finding it harder:

Mobility impaired

- Narrowness of island an issue (Stratford and Blackfriars)
- Tactile paving (Stratford M – zebra crossing)

Blind and partially sighted

- Lack of room on the island (Stratford and Whitechapel)
- Consistency of parts location would be useful (crossing to flag direction and distance etc.) (Whitechapel A – uncontrolled crossing)

It should be noted that each BSB tested is subtly different – particularly with regards to the location of the bus flag in relation to the crossing. A need for greater consistency was mentioned by a number of participants throughout the trial because it would allow blind and partially sighted pedestrians to find the bus flag more readily.

4.7 Behaviour of other passengers

Participants were asked "Q26. Was there anything about the behaviour of other passengers that made getting on the bus easier or harder? (Free text).". 41 responses were that there were no issues or that it was easy, or that there were no other passengers. There were some positive comments regarding the helpfulness of the bus drivers. The more negative responses included:

- Too many passengers who sometimes don't move
- Passengers sometimes jump the queue
- People don't always offer a seat on the bus

4.8 Negotiating around other people waiting for buses

It should be noted that BSBs were often hosts to multiple bus routes, which means that a proportion of waiting passengers would be waiting for different buses. Casual observations from the separate video analysis of pedestrian and cyclist behaviour at the same BSBs has revealed that waiting passengers will tend to congregate around where they might expect the bus to stop, however this can be an issue when two buses arrive at once, meaning that many waiting passengers have to cross paths (and the exit door of the first bus) to get to their bus. The accompanying researchers noted whether the participant had to negotiate their way around other waiting members of the public when they were boarding the bus.

As might be expected, the need to negotiate around other waiting passengers increases with their number. Whilst it might be expected that the wider Blackfriars Road sites would have less of an issue, there didn't appear to be too much difference found between different sites. Furthermore, whilst not measured by this study, it is not envisaged that this is any different from ordinary bus stops. Also the issue did not appear to have prevented any given participant from getting on a bus.

Most, but certainly not all, buses stopped at the bus flag (see Figure 13). A fair proportion stopped behind the flag which often reflects the manner in which buses on a road will group together requiring more than one bus to occupy the same bus stop at the same time. This is a particular issue for blind people who will wait by the bus flag. Generally it means that people have to move further to board, and it was informally noted that drivers would occasionally see, or be signalled by, the disabled person and move the bus to meet them. This is however unlikely to be unique to bus stop bypasses.

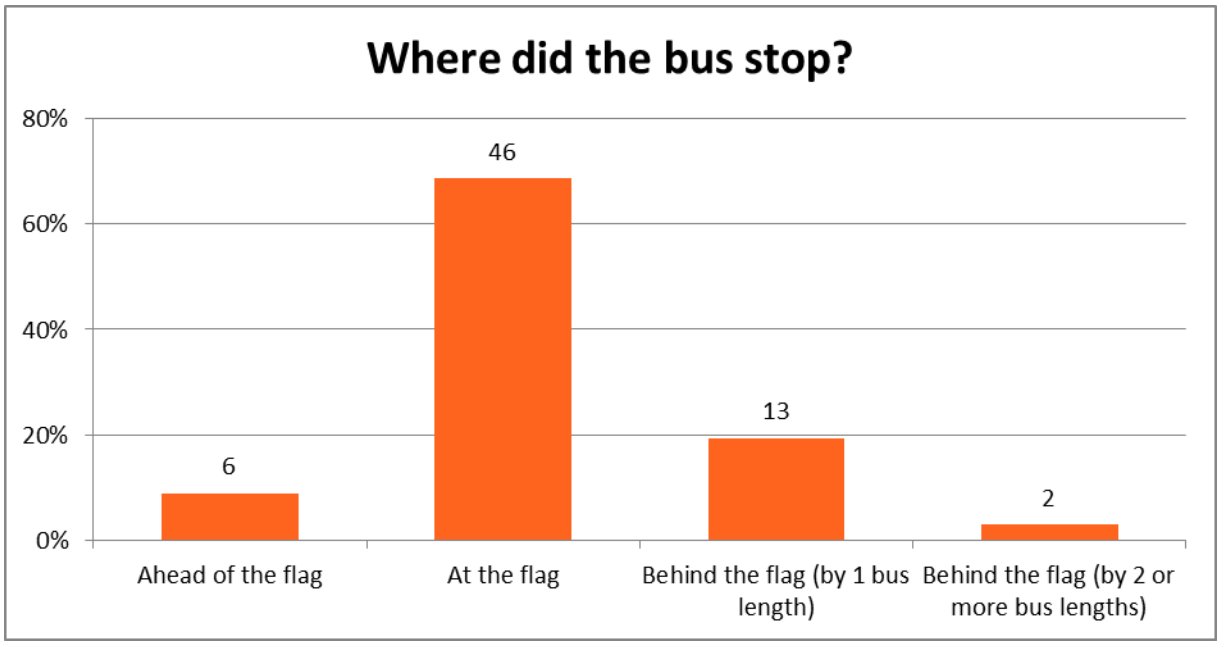


Figure 13 Stopping location of buses

Figure 14 Bus stopped in the wrong location

5 Alighting the bus

Participants were asked about their experiences of alighting the bus at the bus stops in the study, and were questioned once they had left the bus, crossed the island and cycle track, and arrived at the footway.

5.1 Bus stop to footway - experiences crossing to the footway

Participants were asked "Q30. Can you talk about your experience in finding the crossing to the footway?". The findings below are split by crossing type, mobility issue, and whether or not the middle doors stopped in a location aligned with the crossing. They show that finding and/or using the crossing is difficult for people in wheelchairs and blind or partially sighted people if the doors and the crossing are not aligned. It is a particular problem for guide dog users because the dogs can become disorientated.

Some positive mention was made of the zebra crossing markings in identifying the crossing location and of tactile markings (by blind and partially sighted participants). Table 3 provides selected representative comments. Note that the stopping location of any given bus was uninfluenced by the trial.

Table 3 Bus stop to footway - Experiences in crossing to the footway

Parameters	Selected representative comments
Blind and partially sighted, Uncontrolled crossing, bus stopped at the crossing,	• *Very good, dog was spot on* (Whitechapel J) • *Found crossing straight away* (Stratford J)
Blind and partially sighted, Uncontrolled crossing, bus stopped after the crossing	• *Could not find crossing at all* (Blackfriars SA) • *Dog was lost* (Whitechapel A) • *Surprised how far away crossing was* (Blackfriars SA) • *Relatively easy - brightly lit and colour contrast* (Blackfriars U)
Deaf or hard of hearing, Uncontrolled crossing, bus stopped at the crossing,	• *Clear where to cross* (Blackfriars U) • *Should be an indication that there is a cycle path* (Stratford J)
Deaf or hard of hearing, Uncontrolled crossing, bus stopped after the crossing	• *Too far from the bus stop* (Blackfriars SA)
Learning difficulties and mental health, Uncontrolled crossing, bus stopped at the crossing,	• *Found it easy* (Stratford J) • *Had to look for the crossing* (Whitechapel J) • *Different colour paving indicate the crossing*

Parameters	Selected representative comments
	(Whitechapel A)
Learning difficulties and mental health, Uncontrolled crossing, bus stopped before the crossing	• *Was fine* (Blackfriars SA)
	• *Easy to see, knew where I was* (Stratford M)
Mobility impaired (including wheelchairs), Uncontrolled crossing, bus stopped at the crossing,	• *Easy bus stopped right* (Stratford J)
	• *Bus stopped in front of the crossing, blue better colour* (Whitechapel J)
Mobility impaired (including wheelchairs), Uncontrolled crossing, bus stopped before the crossing	• *Very obvious where to cross, good colouring* (Whitechapel A)
Blind and partially sighted, zebra crossing, bus stopped at the crossing	• *It was simple as I know exactly what I was looking for* (Stratford M)
	• *Stepped off the bus, looked left and right, tried to establish whether there was a crossing, spotted zebra crossing to my right, checked clear and crossed. Checked left but should have checked right as well before crossing* (Blackfriars SA)
	• *I did not know where to cross, I guessed. They need to do audio announcement on bus that this is a cycle path stop* (Whitechapel J)
Blind and partially sighted, zebra crossing, bus stopped before the crossing	• *I did not realise I had to find the crossing, I did not hear the crossing/cyclists. Guide dog went across on my instructions* (guide dog crossed just before zebra crossing) (Blackfriars SA)
Deaf or hard of hearing, zebra crossing, bus stopped at the crossing	• *Just got off bus and walked across footway* (Whitechapel J)
	• *Easy* (Whitechapel A)
	• *Easy to find* (Whitechapel A)
Deaf or hard of hearing, zebra crossing, bus stopped before the crossing	• *Easy to see the crossing* (Stratford M)
	• *Easy to see clear white crossing* (Blackfriars U)
Learning difficulties and mental health, zebra crossing, bus stopped before the crossing	• *The participant crossed where the bus stopped and crossed the cycle path well before the crossing* (Whitechapel J)
Learning difficulties and mental health, zebra crossing, bus stopped	• *Easy to alight. She felt safe and comfortable* (Blackfriars SA)

Parameters	Selected representative comments
after the crossing	
Mobility impaired (including wheelchairs), zebra crossing, bus stopped at the crossing	• *Straight in front of the door- so obvious* (Stratford M)
	• *Bus stopped in front of ramp so it was easier* (Stratford J)
Mobility impaired (including wheelchairs), zebra crossing, bus stopped before the crossing	• *If you are in a hurry you take the shortest route, I was worried it was going to be too narrow to build up speed for wheelchair* (Blackfriars SA)
	• *Easy to find; zebra is very helpful* (Whitechapel A)

Figure 15 Crossing from bus stop to footway

5.3 Bus stop to footway - feeling safe when crossing the cycle track

Participants were asked "Q32. How safe or unsafe did you feel while crossing the cycle track to reach the main footway?", where 1 is 'very unsafe', and 5 is 'very safe', with the results shown in Figure 16.

Generally participants with learning disabilities felt most safe (this was unchanged between the uncontrolled and zebra crossings), followed by deaf or hard of hearing participants (improved scores with the zebra crossing), then mobility impaired participants (reduced scores with the zebra crossings), then blind and partially sighted participants (improved scores with the zebra crossing). There did not appear to be noticeable differences between the uncontrolled crossing and zebra crossing. Some selected comments from those giving scores of 4 or 5 include:

Was fine now I know what to do. (*Mobility impaired, uncontrolled crossing, Whitechapel J*).

Cyclists can see you easily due to no obstruction to sightlines. (*Deaf or hard of hearing, uncontrolled crossing, Whitechapel A*).

Some selected comments from those who gave a score of 1 or 2 are given below, and these were predominately from blind and partially sighted participants:

- *I hated crossing the cycle lanes, cyclists are soundless and I have been hit/had near misses before.* (Blind and partially sighted, uncontrolled crossing, Blackfriars U).
- *Guide dogs are trained to go from kerb to kerb, I didn't know where to cross and as it was at grade neither did the guide dog* – note that a later comment by the same respondent revealed that they could not find the tactile paving. (Blind and partially sighted, uncontrolled crossing, Blackfriars SA).
- *I had a spike of anxiety as I stepped out as just at that moment the nearby construction site workers started using a power tool. As a result I couldn't hear anything when crossing.* (Blind and partially sighted, uncontrolled crossing, Blackfriars SA).

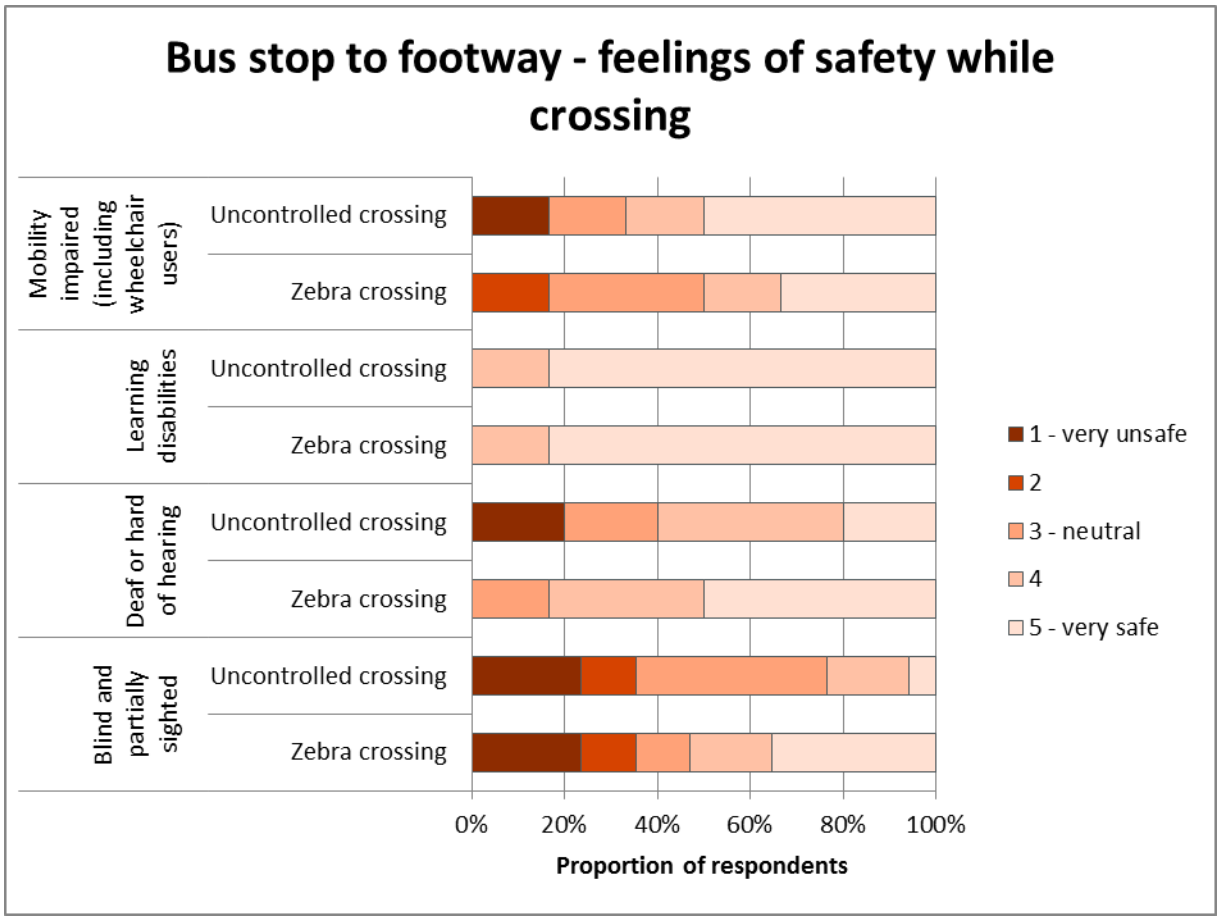


Figure 16 Bus stop to footway - feeling safe or unsafe while crossing the cycle track to reach the main footway

5.4 Bus stop to footway - understanding where to cross from the island to the footway

Participants were asked "Q33. How easy or difficult was it for you to understand where to cross?" where 1 is 'very difficult', and 5 is 'very easy'. Most participants found it 'easy' or 'very easy' to understand where to cross (see Figure 17). Whilst numbers are small, the ease of crossing appears to have improved with the zebra crossing. Respondents were given the opportunity to comment upon this, and most of the comments coming from those who gave a score of 1 or 2 were blind or partially sighted participants. Key selected comments include:

- *I didn't know where to cross because I could not find tactiles* – note that the bus doors stopped after the crossing. (Blind and partially sighted, uncontrolled crossing, Blackfriars SA).
- *It would score a 1 without the dog- there would be no way of knowing where the crossing was* – note that the bus doors stopped before the crossing. (Blind and partially sighted, uncontrolled crossing, Whitechapel J).
- *It was difficult as I was not expecting a crossing so I crossed straight ahead, if known there was a crossing I would have looked for it* – note that the bus doors stopped before the crossing. (Blind and partially sighted, zebra crossing, Whitechapel J).

- *I would have stayed there had I not had assistance.*

For those respondents giving a score of 4 or 5, the comments tended to focus upon items which drew their attention to the crossing, including the tactile paving with the uncontrolled crossing, and the zebra crossing markings with the zebra crossing. None of the respondents mentioned the Belisha beacons in invited comments to this question.

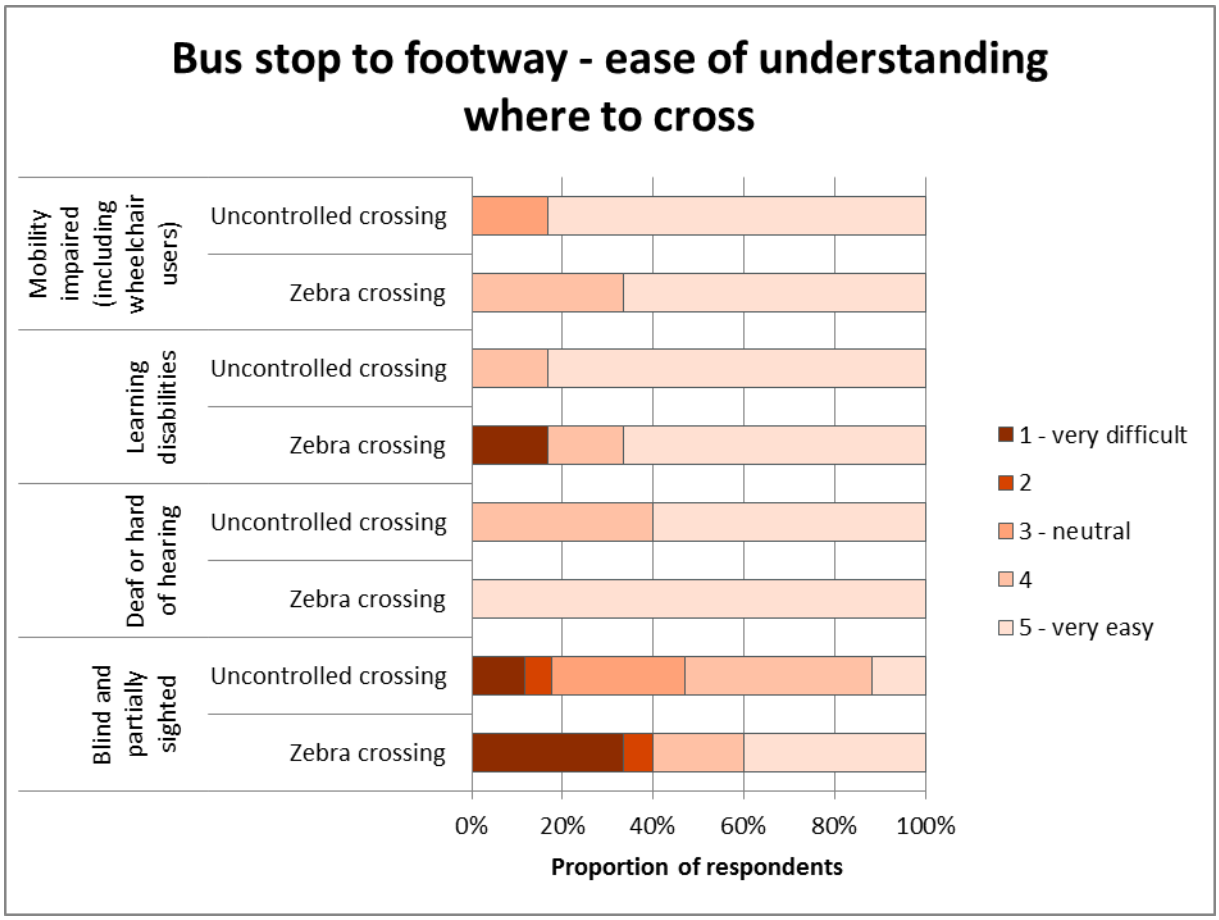


Figure 17 Bus stop to footway - ease or difficulty in understanding where to cross

5.5 Bus stop to footway - layout of the island

Participants were asked "Q34. Do you have any comments about the layout of the island itself?". Some selected representative comments are included below, and focus upon the need to have clear markings (lines, signs, contrast, and tactile) and to assist wayfinding:

Uncontrolled crossing

- *Distance of crossing from the bus stop* (Blackfriars)
- *No idea how the Highway Code works here*
- *Tactile stem should go all the way back to the wall*
- *A step or incline would be helpful to distinguish between footway/island/cycleway* (blind and partially sighted participant at Whitechapel A)

- *The colour of the crossings it's a good compromise but I expected it to be a zebra*
- *Layout is fine, plenty of room*

Zebra crossing

- *The tactile markings and drop down kerbs are very clear and helpful to navigate*
- *Tactile by crossing but could easily miss this and the crossing point.*
- *Nice, plenty of space*
- *Cycle track 'look left' sign would be useful*

5.6 Bus stop to footway - ease of using the type of crossing from the island to the footway

Participants were asked "Q35. How easy or difficult was it for you to use this type of crossing?", where 1 is 'very difficult', and 5 is 'very easy' (see Figure 18).

- Only 25% (4 of 7) of blind and partially sighted participants found the uncontrolled crossing 'easy' or 'very easy' to use, however more than 50% (8 of 15) found the zebra crossing either 'easy' or 'very easy' to use.
- 60% (3 of 5) of deaf or hard of hearing participants found the uncontrolled crossing easy to use, but 100% (6 of 6) found the zebra crossing 'very easy' to use.
- In contrast, while 100% of participants with learning disabilities (6 of 6) and mobility impairment (6 of 6) found the uncontrolled crossing 'very easy' to use, fewer of both groups found the zebra crossing 'very easy'.

Selected paraphrased comments from those participants giving a score of 1 or 2 were predominately from blind and partially sighted participants and their concerns mainly relate to a perceived danger from cyclists:

Uncontrolled crossing

- I'm conscious it's uncontrolled - I'd be very cautious if I was here independently, I'm unsure of the right of way even if pedestrian has right of way would it be observed, I've been knocked over before.
- It's difficult to know when a cyclist is coming especially in busy urban environment with lots of traffic noise, I'd probably hear when they were right by me.

Zebra crossing

- If there was something to stop cyclists I wouldn't mind - on approach of zebra crossing
- Because there is no beacon there is no confidence that cyclists will stop, you are therefore dependent upon hearing cyclists have stopped which is difficult in a noisy environment.

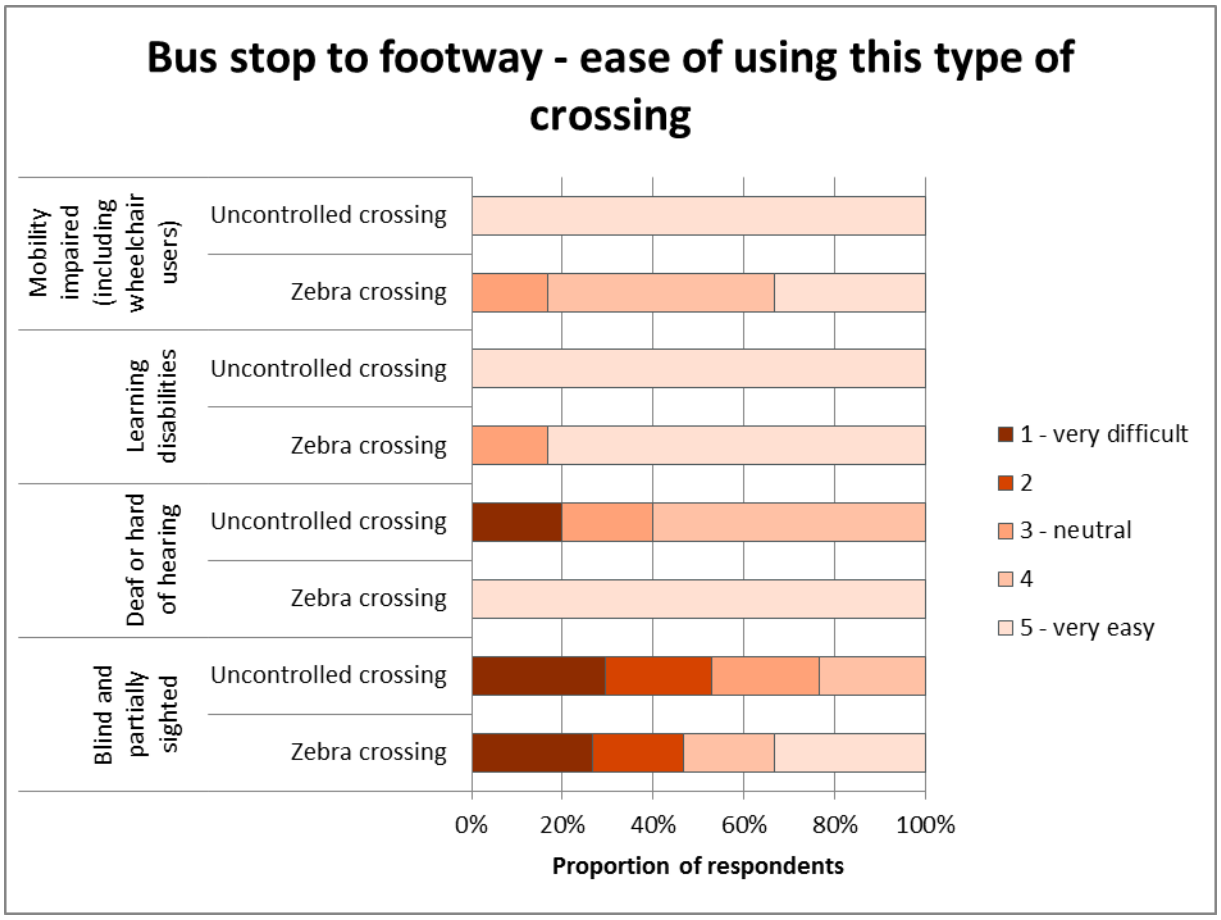


Figure 18 Bus stop to footway – how easy or difficult was it for you to use this type of crossing

5.7 Bus stop to footway - understanding if the cycle track is 1-way or 2-way when crossing

Participants were asked "Q36. Did you notice if the cycle track was 1 way or 2 way?" after crossing from the island to the footway. There were only two cases of this being incorrect, however in 47% of responses the participant answered that they did not know either way, and these were predominately blind and partially sighted people. Comments from participants related to a perception of increased exposure on 2-way cycle tracks, a need for signage (or demarcation lines), and a need for extra vigilance.

5.8 Bus stop to footway - noticing cyclists when crossing

There were 39 cases of participants correctly identifying that there were no cyclists present when they crossed, and three cases of participants stating they thought cyclists were present but there was not. There were 10 cases of participants correctly identifying that there were cyclists present when crossing. There were 15 cases where the participant thought no cyclist was present, however the researcher recorded that there were, and these were predominately blind and partially sighted participants. Note that a cyclist present means within about 100m, therefore this may fall outside of a distance of risk.

The researcher did note that on a couple of occasions cyclists avoided or stopped for participants, however in other cases they made no change to their speed or route. Some comments from participants in relation to this were:

- *Feel unsafe due to cycling at speed, people cycling side by side obscuring vision of other cyclists* (uncontrolled crossing)
- *Only one or two, cyclists seem to blend into the buildings behind* (uncontrolled crossing)

6 Overall thoughts about the bus stop

6.1 Bus stop layout

Participants were asked about their overall thoughts about the bus stop with the question "Q8. The bus stop you used was different to most bus stops. What were your overall thoughts on the bus stop layout? (Free text)" (see Table 4). Responses have been paraphrased below and to provide some level of significance to the comments, the score from "Q9. You needed to cross a cycle track to reach the bus shelter. How easy or difficult was it for you to understand where to cross?" has been used. The score of 1 (very difficult) to 5 (very easy) is shown in brackets either with the location or after the comment. Some blind and partially sighted people reported concerns with the BSB, and the key issue was that they found it difficult to know where to go as it is a new and unfamiliar layout. While assistance dogs can be instructed to find a crossing or find a bus stop, the users didn't know what instructions they should give their dogs, especially if they did not know whether the bus stop was conventional ("find the bus stop") or on a BSB island ("find the crossing"). The small size, and level changes, impacted upon some people with mobility impairments. Respondents who are deaf or hard of hearing found some issues with cluttered layouts, but people with learning disabilities and mental health responded positively. The zebra crossing was mentioned positively a number of times.

Table 4 Respondents' views on the bus stop layout

Disability	Uncontrolled crossing	Zebra crossing
Deaf or hard of hearing	• Good clear layout (Blackfriars U - 4) • Good sightlines (Blackfriars SA - 3) • Lots of trip hazards (Whitechapel J - 5) • Island is too narrow for number of people (Whitechapel A - 5) • Path around shelter is narrow and cannot see through billboard (Stratford J - 5)	• I like it, it is like northern Europe (Stratford J - 5) • Post and zebra are clear (Stratford M - 5) • Difficult to find bus stop as it is usually on the footway (Blackfriars SA and U - 4) • It is fine (Whitechapel J - 5) • Cycle racks are too close (Whitechapel A - 5)
Blind and partially	Blackfriars U • Shelter should be more adjacent to crossing (1)	Blackfriars U • Clear layout, few obstructions, little traffic noise

Disability	Uncontrolled crossing	Zebra crossing
sighted	• Difficult to find the stop from the crossing (3) • No acoustic echo from bus shelter (using human echolocation to understand the surrounding environment from returned sounds) (1) Blackfriars SA • Nervous with traffic on both sides (2) • No idea from crossing which way to turn for bus stop (3) • Prefer if the shelter was not on the island as it makes it difficult to locate the bus stop (2) Whitechapel A • Took some time to navigate around the bike racks, and mistakenly entered the cycle track • I live around here so am used to these • I'm getting used to these, but dog knows what to look for. Whitechapel J • Missed the crossing because of all the other obstacles in the area (2) • Not obvious where the bus stop is (3) • The dog found the flag (1) Stratford J • Dog noticed the tactile paving but I didn't. It was difficult	(5). • Found crossing OK, but did not check both ways before crossing (5) Blackfriars SA • I think it will take some time to get used to finding the bus stop. Difficult to navigate as not clearly defined, could not find the dropped kerb (2) • Easy, just asked the dog to find the crossing (5) • Layout is obvious (5) Whitechapel A • It is fine (5) • Found building line to the tactile to find the bus stop. A device used as at Moorfields may have similar application here (3) • No different from ordinary stops (5) Whitechapel J • No problem apart from gravel around nearby tree (5) • Followed building line to tactile paving (2) • Confusion with tactile finger across footway, believing it to be the cycle track crossing (5) Stratford J

Disability	Uncontrolled crossing	Zebra crossing
	to determine what was footway and what was cycle track (4) • Participant didn't understand tactile paving layout and missed the bus stop (4) • Dog failed to direct participant to the bus stop, as there was confusion with the instructions "find the crossing" vs "find the bus stop" (1). Stratford M • Participant thought they had no difficulty finding the bus stop, however the researcher had to redirect them for their own safety (4) • Dog chose quickest route to bus stop, not the crossing (5)	• No problem as long as there is an indication of the bypass (such as tactile paving which the dog would stop for) (5) • Aware of bus stop because of the shelter structure (4) • Scary, really unfamiliar and unsafe (1) Stratford M • It is fine, the tactile paving helps dog find the bus stop (5) • Crossed the cycle lane using the dropped kerb (1) • Was assisted by a member of the public to cross the zebra (1)
Learning disabilities	• Good, can see bus stop and numbers clearly (Blackfriars U - 5) • Easy to see, can read numbers (Blackfriars SA - 5) • It is OK, have to look out for bikes (Whitechapel J - 5) • No problem (Whitechapel A - 5) • Easy to use, easy to understand (Stratford M - 5) • Enough room, easy to use (Stratford J - 5)	• It is fantastic (Whitechapel J and A – 5 and 5) • Looked different but not a problem at all (Blackfriars SA and U – 5 and 5) • Bus stop design is fine, easy to use (Stratford J and M – 5 and 5)
Mobility impaired (including	• Needs better colouring, needs something to show it is safe to cross here, a sign would help (Blackfriars SA and U - 5 and 1)	• Looks complicated, need to be alert (Stratford J - 5) • A lot to take in with level changes (Stratford M - 5)

Disability	Uncontrolled crossing	Zebra crossing
wheelchairs)	• Easy to get to the shelter (Whitechapel A - 5) • Different colour stands out (Whitechapel J - 5) • Concerned that narrowness of island will make it difficult to manoeuvre on to the bus (Stratford M and J – 5 and 5)	• I looked for the zebra crossing and bus stop post (Blackfriars SA - 5) • Bus stop has a clear layout (Blackfriars U - 5) • Any bus stop which is on an island is not safe for people with disabilities. It doesn't protect the rights of disabled people to access the environment safely. Cyclists go very fast; it feels that they wouldn't stop for any reason. There should be road humps to slow them down a bit. (Whitechapel J - 5) • Easy to access as it was not busy with cyclists (Whitechapel A - 5)

Figure 19 Blackfriars U site with a zebra crossing

6.2 Footway to bus stop – understanding where to cross

Participants were asked, on a scale of 1 (very difficult) to 5 (very easy), "Q9. You needed to cross a cycle track to reach the bus shelter. How easy or difficult was it for you to understand where to cross?". Responses are shown in Figure 20.

- With the exception of blind and partially sighted participants a majority of all groups found it easy to understand where to cross with both crossing types, although the scores were higher for the zebra crossing.
- For blind and partially sighted participants, the proportion finding it 'very easy' increased from 12% (2 of 17) with the uncontrolled crossing to 65% (11 of 17) with the zebra.

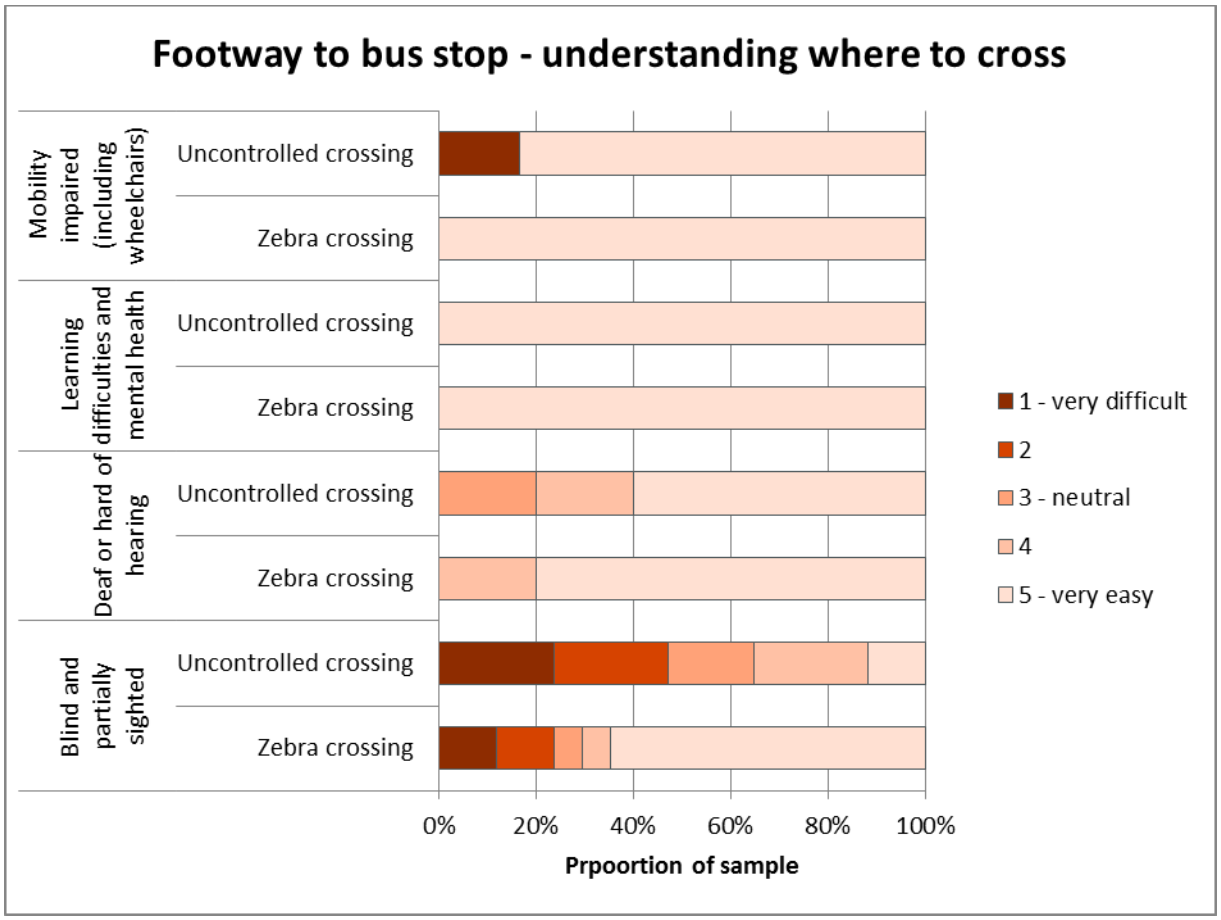


Figure 20 Footway to bus stop – understanding where to cross

The reasons given for scores 1 and 2 (which were primarily from the blind and partially sighted participants) were related to either getting lost, confusion regarding the tactile paving, the need for bolder colours, or would prefer an audible signal instead of the uncontrolled crossing, and flashing beacons for the zebra crossing.

6.3 Footway to bus stop - feelings of safety crossing cycle track

Participants were asked "Q10. How safe or unsafe did you feel while crossing the cycle track to reach the bus stop?", where 1 is 'very unsafe', and 5 is 'very safe' (see Figure 21).

- A large majority (over 80% - 10 of 12) of mobility impaired participants felt 'safe' or 'very safe' with both crossing types; however the proportion feeling 'very safe' fell from 67% (4 of 6) to 50% (3 of 6) with the zebra crossing.
- More than 80% (10 of 12) of participants with learning disabilities found it 'safe' or 'very safe' for both crossing types. The one participant with learning disabilities who responded that they felt 'very unsafe' was concerned about the possibility of injury should they be involved in an incident with a cyclist.
- 40% (2 of 5) of deaf or hard of hearing participants felt 'safe' or 'very safe' with the uncontrolled crossing, increasing to over 80% (5 of 6) with the zebra crossing.
- Less than 20% (3 of 17) of blind and partially sighted participants felt 'safe' with the uncontrolled crossing and none felt 'very safe'; around 47% (8 of 17) were 'neutral'. However, with the zebra crossing around 35% (6 of 17) felt 'very safe' and a further 30% (5 of 17) felt 'safe'. The proportion feeling 'unsafe' or 'very unsafe' fell from around 35% (6 of 17) to under 20% (3 of 17).
- The reasons given for scores 1 and 2 are that (for the uncontrolled crossing) blind and partially sighted people have no idea of whether there is a bike present, and that items close to the footway (bins etc.) make it hard to follow the kerbline to find the crossing. With the zebra crossing there were concerns that cyclists would not stop.

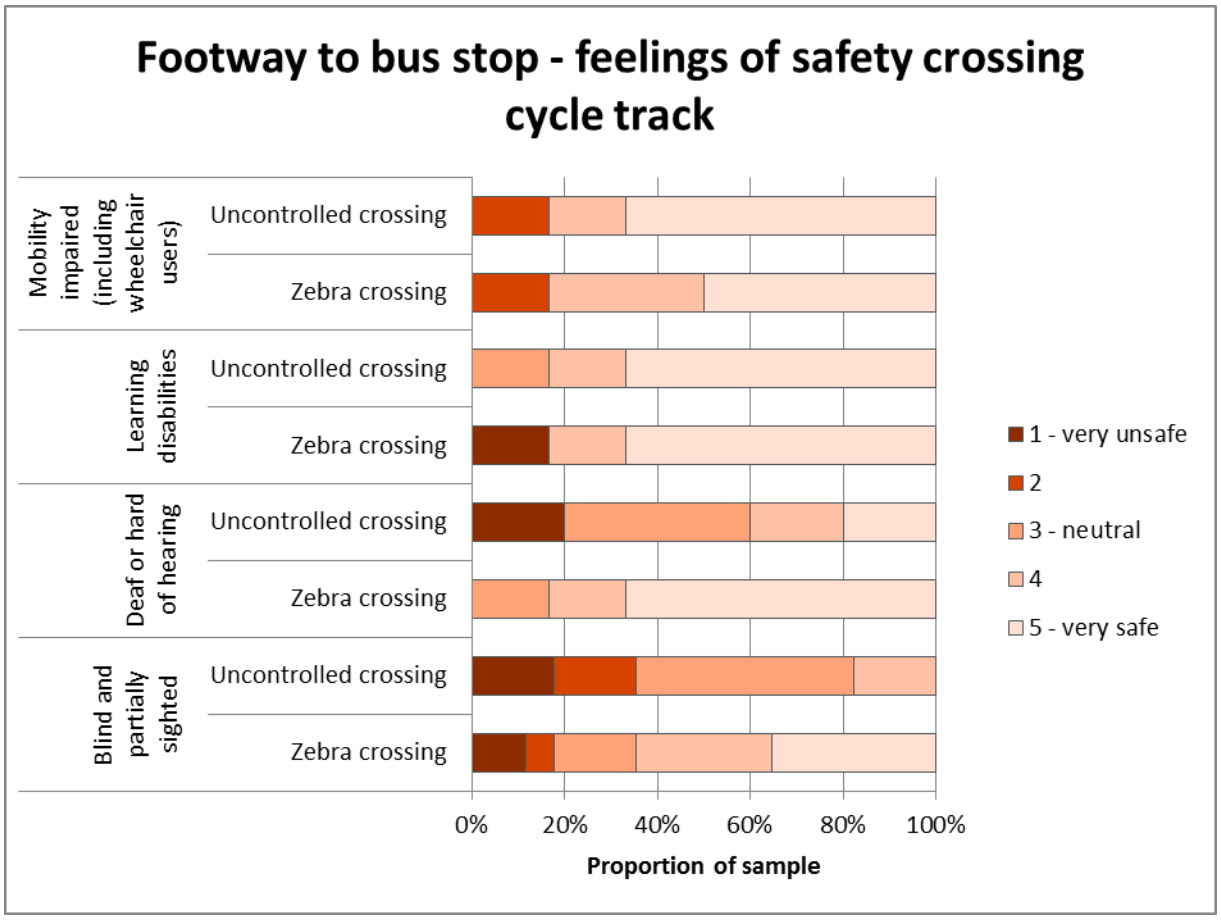


Figure 21 Footway to bus stop - feelings of safety crossing cycle track

6.4 Footway to bus stop - Ease of using the type of crossing

Participants were asked "Q11. How easy or difficult was it for you to use this type of crossing?", where 1 is 'very difficult', and 5 is 'very easy'. The responses are shown in Figure 22.

- Apart from blind or partially sighted participants, most found it 'easy' or 'very easy' to use both types of crossing; and a majority of all participants found the uncontrolled crossing 'easy' or 'very easy'.
- All of the mobility impaired participants found the uncontrolled crossing 'very easy' compared to 67% (6 of 6) for the zebra crossing; all participants with learning disabilities found the zebra crossing 'easy' to use, compared to 67% (4 of 6) for the uncontrolled crossing.
- The reasons given for scores 1 and 2 (which were all from blind and partially sighted people) for the uncontrolled crossing were that they have no way of knowing whether there is an approaching cyclist. With the zebra crossing one participant suggested that confidence might improve with training for blind and partially sighted people.

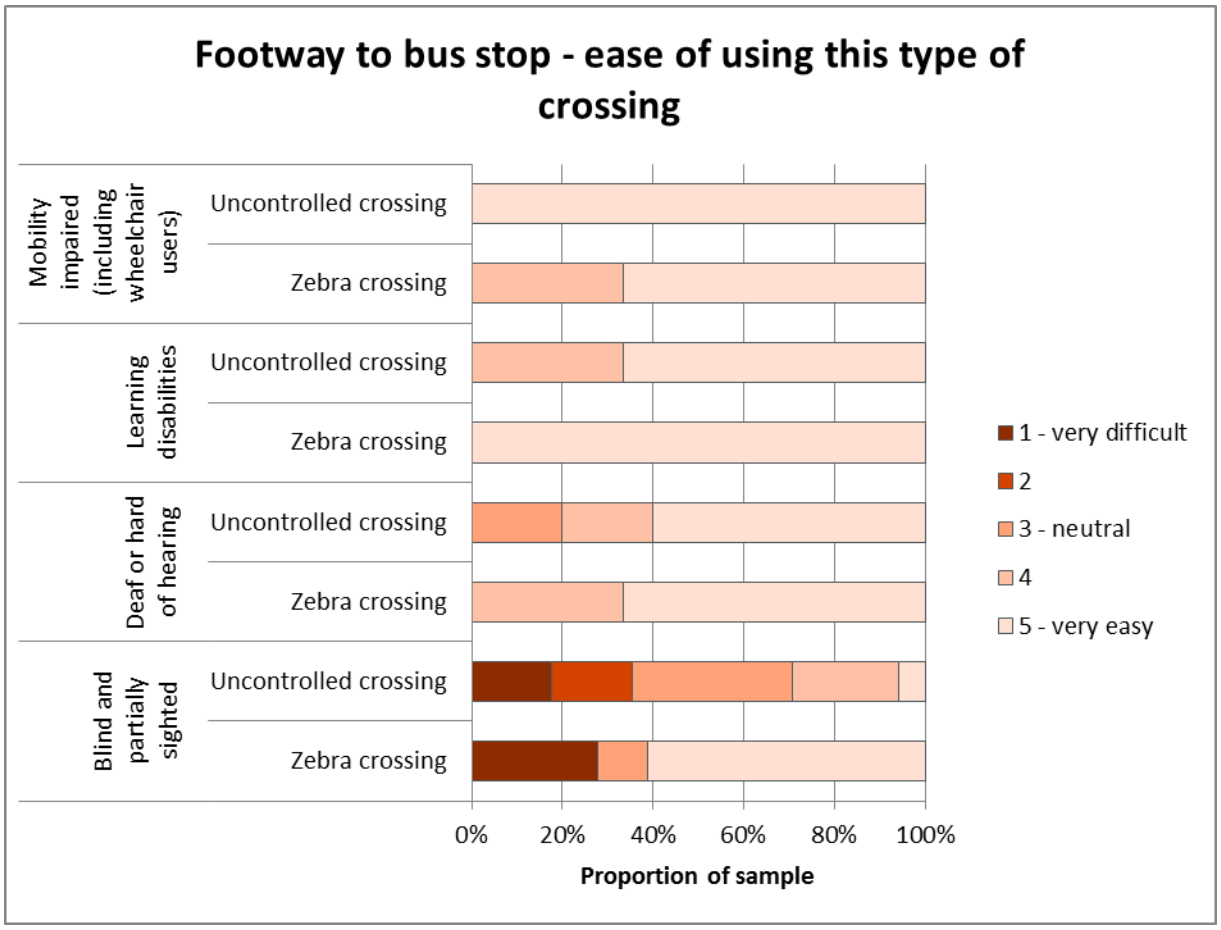


Figure 22 Footway to bus stop - Ease of using the type of crossing

6.5 Noticing cyclists when using the bus stop

Participants were asked "Q12. When you crossed to the bus stop, did you notice any cyclists using the cycle track that runs next to the bus stop?". The researcher was also asked to record whether they had noticed cyclists themselves so that it could be cross-checked with the participant's response. Cyclists were not always present, and participants were generally good at detecting them when they were present. Most participants were asked this question twice (once at each of the two BSBs visited).

In 35 cases the participant said there was no cyclist nearby and they were correct; however this does not necessarily mean that they would have detected a cyclist if there had been one there. In 5 cases the participant thought there was a cyclist nearby but the researcher recorded that there was not. In 17 cases the participants said there was a cyclist present and this was correct. In 13 cases the participant did not notice any cyclists, however the researcher did observe one or more cyclists within 100m, and that these participants were primarily, but not exclusively, blind and partially sighted – this occurred at all sites and there are no apparent site-specific reasons for this. Casual observation suggests that at off peak times quite significant periods of time can pass before a cyclist is seen.

Table 5 Noticing the presence of cyclists

	Participant statement	
	Cyclists are present	Cyclists are not present
Researcher observed cyclists	17	13
Researcher did not observe cyclists	5	35

Those participants who did notice cyclists were asked "Q12a. IF YES: How did you feel about the presence of the cyclist(s)? (Free text).", and responses were generally positive ("*felt completely fine about them being there*"), with three negative comments from mobility impaired people: ("*apprehensive*", "*stressed*", "*wary*"). And one from a blind and partially sighted person: ("*intense*").

There was a consideration that cyclists may alter their behaviour in response to observing a disabled person with the question "Q12b. Did you notice how the cyclist(s) reacted to your presence? (Free text)". As this may be due to a level of perception by the participant the researcher also completed the question "Q17. Question for accompanier: How did cyclists react to the presence of the participant? (Free text)" and responses are shown below in brackets after the participant quotes. It should be borne in mind that cyclists would not necessarily be able to notice the various disabilities of the participants. Some cyclists were too far away to observe their reaction; however at the uncontrolled crossing comments such as "*kept at same speed*" (cyclist kept constant speed), "*he did not notice me*" (cyclist was a little ahead of the participant so there was no contact), "*didn't react*" (cyclist didn't react, speed stayed the same) were received, and at the zebra crossing comments such as "*she ignored me*" (cyclist didn't react or change behaviour), "*yes – they took the right of way*" (cyclist was still going at speed) note that this participant was a wheelchair user so the disability should have been more obvious, and "*they just carried on*" (Rode straight through without stopping when we were clearly waiting to cross) were received. Whilst this sample

was small, none were positive which suggests that these participants did not feel they were afforded any special behaviour because of their disability.

Of the 22 times a participant noticed a cyclist, 12 times were noted by the researcher as the cyclist just going through the crossing without stopping whilst the participant was waiting or attempting to cross. In the remaining 10 cases three cyclists were noted to slow and others noted to be at a distance so whilst visible were not an issue. None were noted to stop to allow the participant to cross.

Figure 23 Blind participant with a guide dog using the crossing

6.6 Noticing 1-way and 2-way tracks

Participants were asked "Q13. Did you notice if the cycle track was 1 way or 2 way?", with responses of '1-way', '2-way' and 'Didn't notice either way". Not all of the blind and partially sighted participants responded to this question and it may be taken that they did not notice. Of those that did respond most did not notice either way. Of the remaining participants (who did not have impaired vision) none mistook the 2-way Blackfriars Road sites for 1-way which suggests that confusion at 2-way sites was not a problem. The presence of a zebra crossing did not appear to change participants' perception.

6.7 Differences between 1-way and 2-way tracks

Participants were asked "Q14. Can you talk to me about any differences you might find between crossing 1-way and 2-way cycle tracks? (Free text)." As individual participants were only taken to either 1-way or 2-way cycle tracks, their comments on the differences between them are hypothetical. Representative participant comments given were largely cautionary regardless of crossing type:

Uncontrolled crossing:

- *One-way would be safer because you would only have one way to look*
- *2-way I would feel less safe and more difficult. Exposure is longer as it's a broader expanse to cross*
- *Double the chance of being hit (2-way)*
- *There should be separate lanes for [*cyclists*] travelling in opposite directions.*

Zebra crossing:

- *I'd treat them all as 2 way*
- *Not relevant; always check both sides before crossing any street*
- *I assume it is 2-way as there is no way of telling*
- *2-ways is impossible to cross safely*

6.8 Finding the main items on the bus stop island

Participants were asked "Q15. Can you discuss your experiences of finding the main items on the island, such as the crossing point, the bus stop shelter, and the bus stop flag?".

At the uncontrolled crossing some blind and partially sighted respondents reported difficulty finding the shelter or flag (10 of 15 comments). Those with dogs noted that the dog could find the flag and shelter. Respondents in other (sighted) groups did not find significant issues. With the zebra crossing some blind and partially sighted participants mentioned the benefits of the tactile paving in finding their way around – this is particularly helpful for cane users as they do not have the benefit of a dog to guide them.

6.9 Use of the crossing point

Q18 was another question for the researchers: "Where did the participant cross?" on their journey from the footway to the island. Most (more than 80%) of participants used the crossing to cross between the footway and the bus stop bypass island, and this was largely unchanged between the uncontrolled crossing and the zebra crossing (see Figure 24). The small number of participants who did not use the crossing were predominately deaf or hard of hearing, with two cases of blind or partially sighted pedestrians not using the crossing (because they were confused by the layout).

A separate TRL study using a video survey considered the use of the crossing by the general population and found that 39% used the uncontrolled crossing, and 53% used the zebra crossing. Whilst these findings suggest that disabled people are far more likely to use the crossing, it should be cautioned that the presence of the researcher at the accompanied visit may have biased the actions of the participants.

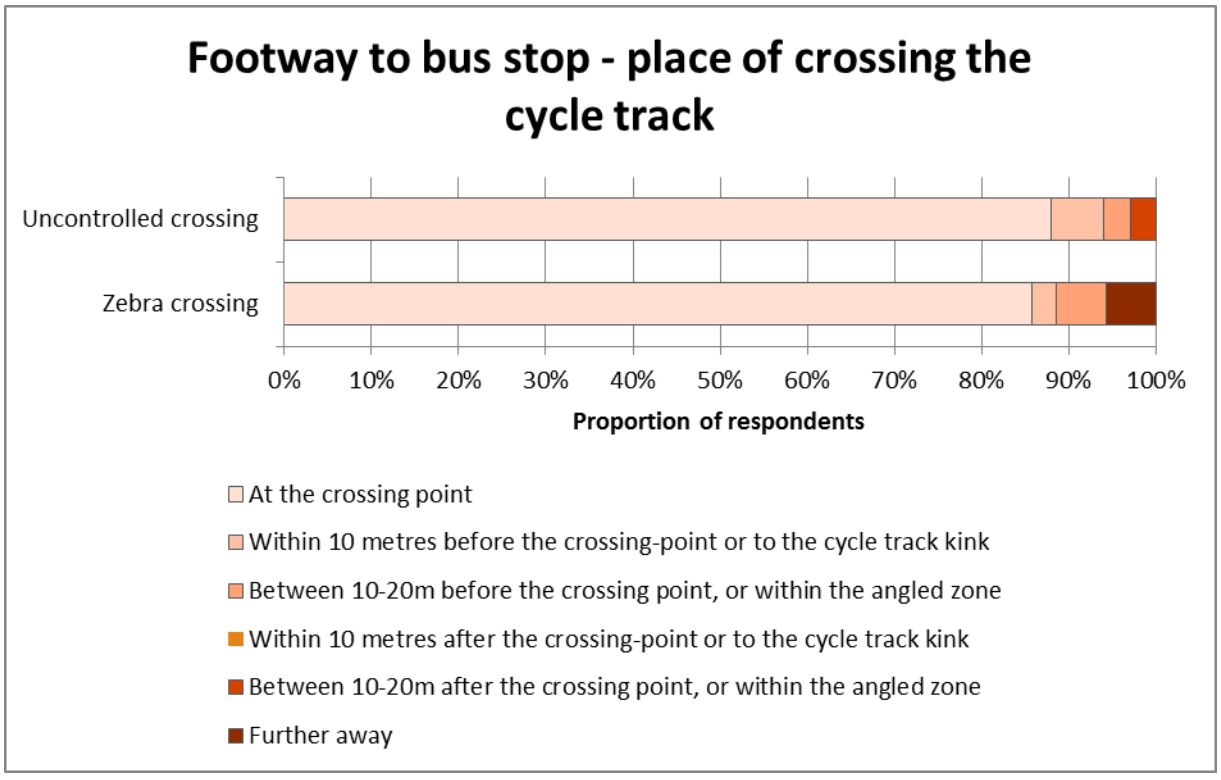


Figure 24 Footway to bus stop – place of crossing the cycle track

7 Final debrief

Participants were brought to a final debrief session where they could discuss more fully their experiences of using the bus stop bypass. Paraphrased comments are given below (some of which were made by multiple participants), and these are split by uncontrolled and zebra crossing.

7.1 Uncontrolled crossing

Blind and partially sighted

- Tactile information is key to finding the bus stop and telling you where the crossing is after you've got off the bus.
- Challenge in hearing cyclists coming.
- Need for consistency in layout in assisting navigation.
- Potential to get rehabilitation workers up to speed on bus stop bypasses so that they can better inform blind people.
- As kerbs are used to navigate, a bin right by the crossing means the crossing can be missed.
- Was confused by layout, and expected cyclists to be between the bus stop and bus, not behind them on the island.

Deaf or hard of hearing

- I am impressed with the quality and design of the bus stops - visually uncluttered (Blackfriars).
- Needs strong visual indicators (such as signs/lines).
- Did not notice cycle path, and confused by arrows on either side of the crossing (triangles).

Learning disabilities

- No comments.

Mobility impaired

- Limited room on island to manoeuvre on to the bus.
- Bus overshot bus shelter so had no room to let on wheelchair.

7.2 Zebra crossing

Blind and partially sighted

- Audio on bus could be used to advise of BSB.
- Guidance should be given to cyclists about stopping at BSB crossing.
- Fear actions of cyclists not stopping at crossings.

- Don’t want a kerb as this is a trip risk (note this contradicts comments from others regarding using kerbs to navigate).
- Found the session useful in understanding BSBs.
- Doesn’t appear to be anywhere obvious to cross (partially-sighted participant).
- There should be training in how to use these.
- The logos and colours need to be better – participant didn’t understand what the cycle logo meant, and interpreted the blue cycle track as water.
- Needs to be better lit.
- Could add BSBs on to GPS that blind people use.

Deaf or hard of hearing

- Need better signs to show it is a cycle lane.
- Needs better lighting.

Learning disabilities

- Easy to use.
- Perhaps have ‘look left’ signs.
- Zebra crossing is very useful.

Mobility impaired

- Narrowness of island makes access difficult, especially when passenger flows are high.
- The markings on the road bus stop U marking, line across lane, cycles next to each other- makes it easier to see it's two way traffic (Blackfriars).
- Bus stop flag can obscure wheelchair users from visual line of sight of driver.
- The bus stopped in a place too narrow to get the ramp out for the wheelchair.

Figure 25 Sight impaired participant attempting to find the uncontrolled crossing

Figure 26 Sight impaired participant using building lines to navigate – note that there is no tactile tail extending to the building because this bus stop bypass has an uncontrolled crossing

Figure 27 Sight impaired participant attempting to find the crossing

Figure 28 Sight impaired participant using white cane to feel across cycle track

Figure 29 A near-miss with a cyclist after mistakenly instructing the dog to cross

Figure 30 Sight impaired participant crossing at a zebra crossing at Blackfriars U

8 Comparison between uncontrolled crossing and zebra crossing

The research question addressed in the research and reported here is reiterated below and used as the basis for comparison between the uncontrolled and zebra crossing formats in the tables below.

> *Compared to their usual experience of using bus stops, does the bus stop and cycle track crossing arrangement change the ability of visually and mobility impaired people to:*
>
> *- find the bus stop?*
>
> *- board the bus?*
>
> *- alight from the bus?*
>
> *For each of the three actions, how safe and comfortable do they feel, what difficulties arose, and what would help to overcome these difficulties?*

The sections below specifically relate to comparison between the uncontrolled crossing and the zebra crossing. A summary of key issues and potential solutions is given in Table 6.

Overall the inclusion of the zebra crossing appears to improve the feeling of safety and be easier to see.

8.1 Comparison of feeling safe and comfortable between uncontrolled crossings and zebra crossings at bus stop bypasses

Find the bus stop (footway to bus stop): Note that this did require the participant to traverse the crossing. Overall all participants understood where to cross better with the zebra crossing than the uncontrolled crossing, although the difference was small for most groups except for blind and partially sighted participants who more strongly preferred the zebra crossing. Broadly similar findings were also found for the feelings of safety when crossing and ease of use, with better scores for the zebra crossing, again with blind and partially sighted participants reporting strong views.

Board the bus: Note that this did not require the participant to traverse the crossing. No issues were noted which would be solely attributed to the uncontrolled or zebra crossing (i.e. as distinct from difficulties associated with boarding at bus stops in general).

Alight the bus (bus stop to footway): Note this required participants to traverse the crossing.

Overall, deaf or hard of hearing, and blind and partially sighted participants felt slightly safer at a zebra crossing. Generally, participants felt that the zebra crossing made it easier to understand where to cross and easier to use the crossing.

It should be noted that the project was intended from the start to be qualitative in nature, and in many cases the differences in response for uncontrolled and zebra crossing are subtle because the number of participants is too low for statistical confidence. Responses were broadly positive, except for blind and partially sighted respondents who reported a more varied range of comfort levels.

8.2 Comparison of difficulties that arose relating to uncontrolled crossings and zebra crossings at bus stop bypasses and what would help to overcome these issues

Participants reported difficulties with *finding the bus stop* and found the inclusion of the tactile tail/fingers across the footway used in the zebra crossing helpful to bring the presence of the crossing to the attention of blind or partially sighted pedestrians. Nothing specific was mentioned regarding *boarding the bus* as this part is essentially identical for both types of crossing, however in relation to *alighting from the bus*, there was some mention of difficulty (from blind or partially sighted pedestrians) in finding the crossing when it was uncontrolled, and of the benefit of the zebra markings with the zebra crossing version. This suggests that a clearly indicated crossing with tactile tails/fingers on both sides is preferable and that the zebra crossing markings appear to fill this role. Note that a wheelchair user did note that the raised elements of tactile paving can cause manoeuvring difficulties.

8.3 Impact of the Belisha beacons

Respondents were not specifically asked about Belisha beacons, which were not included in the uncontrolled crossing (as is usual for this type), and were excluded from four of the six crossings in the zebra crossing format (Blackfriars SA and Whitechapel J had Belisha beacons with the zebra crossing). Note that until recent legislative changes established by the publication of the Traffic Signs Regulations and General Directions (2016), zebra crossings have always included a Belisha beacon. Some of the participants mentioned 'beacons' (none used the term Belisha) with the following comments:

- *I could see it easily but noticed no beacon* (Whitechapel A – zebra crossing)
- *The crossing was very clear but no beacon* (Blackfriars U – zebra crossing)
- *No beacons* – (Whitechapel A – zebra crossing)

Overall twelve participants were exposed to Belisha beacons at the zebra crossings. There were no comments about the sites that had them, and only three about sites which did not. This suggests that they are not a key feature of participants' thoughts at these types of crossing. None of the comments suggested that the Belisha beacon would have made crossing easier (however note that participants were not asked about this directly as this may have led a response).

8.4 Summary of issues

The majority of the issues reported were raised by blind and partially sighted people, and most of these relate to the layout in general rather than specific differences caused by the version of crossing used (uncontrolled or zebra). Table 6 below indicates the key issues found and potential solutions to these suggested by TRL, which would require more detailed consideration before considering enactment.

Table 6 Issues and potential solutions

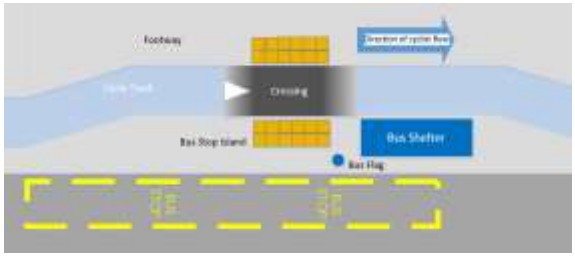
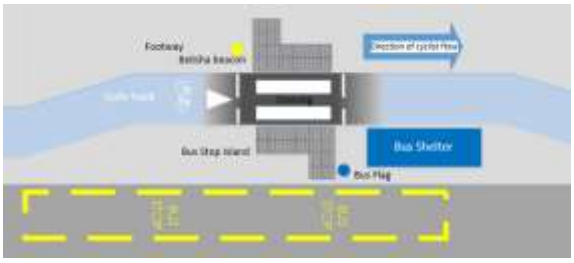
Difficulties	What would help to overcome these difficulties	Commentary
Island is too narrow for wheelchairs	• Ensure bus stops in correct place (not by taper of island), and that island is wide enough to allow entry along most of the island	Ensuring the bus stops in the correct place is not always possible (as multiple buses stop at the same bus stop), however bus drivers can be reminded to pull up to the bus flag when possible, and to look out for waiting people at the bus flag and pull up to it when the space becomes available. The bus island should be long enough for the likely number of buses at any given time, and bus drivers can be reminded to ensure that if the disability request stop button is pushed they pull up with the rear doors at the thicker parts of the island, preferably in line with the crossing.
Island is too narrow for number of passengers	• Ensure island is large enough to allow for a reasonable pedestrian level of service density, which might be achieved by having fewer bus routes at any given bus stop.	This will require a low level of pedestrian modelling at potential bus stop bypass sites, to understand the pedestrian peak flows and to provide a suitable amount of space to include those who may use a wheelchair or child buggy.
Wayfinding and knowledge	• Conformity of layouts, and tactile paving which extends to the wall across the footway. • Consistency of dropped kerbs to aid	This can be achieved via design guidance to engineers to ensure that tactile tails extend across the footway to any rear wall and that any dropped kerbs are consistent. There is a need to ensure that design guidance ensures that the

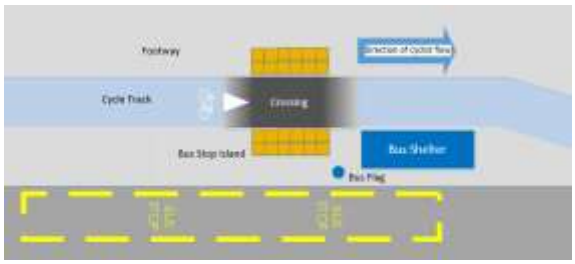
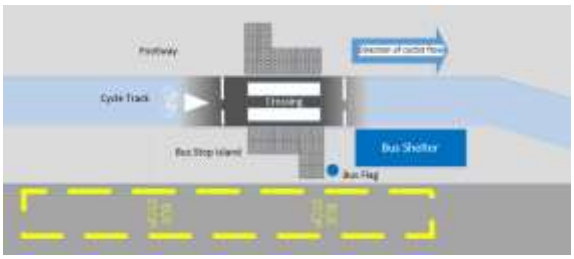
Difficulties	What would help to overcome these difficulties	Commentary
	wayfinding by cane. • Training for blind and partially sighted people, and their guide dogs, through rehabilitation officers. • Audible announcements on buses stopping at bus stop bypasses. • Better colouring and signage.	layout of any BSB is consistent for blind and partially sighted pedestrians, for example ensuring that the direction and general spacing of the crossing, bus flag, and shelter is consistent. Blind and partially sighted pedestrian training organisations and rehabilitation officers should be approached with a view to including the new layouts within training programmes. Consideration could be given to including audible announcements on buses that those exiting will be doing so across a cycle track. This might be enacted for a given amount of time only. More research would be needed to find colouring and signage that works for all road users in accurately conveying its message.
Clutter in area	• Ensure that bins and other clutter do not obscure crossings/kerbline or getting on the bus.	Guidance can be given to engineers when designing bus stop bypasses to avoid clutter along the kerbline either side of the cycle track which could cause blind and partially sighted people to miss the crossing.
Cyclists not stopping for disabled people	• Improve awareness raising for cyclists around stopping at zebra crossings. • Find ways to improve perception of cyclist behaviour amongst disabled people.	Some form of awareness raising campaign could be enacted to highlight the requirement of cyclists to stop at zebra crossings. It is clear from comments that many disabled people have a poor perception of cyclist behaviour which would limit their feelings of safety (and by extension may reduce their propensity to travel). Separate work might be undertaken to improve this.
Challenge in getting on the bus	• Ensure that bus stops in the correct place by the flag, and that the flag or other elements do not block the ramp.	There is a requirement for bus driver training/reminder to ensure that the bus access ramp is not blocked by items on the footway (note this is unlikely to be specific to bus stop bypasses). The same

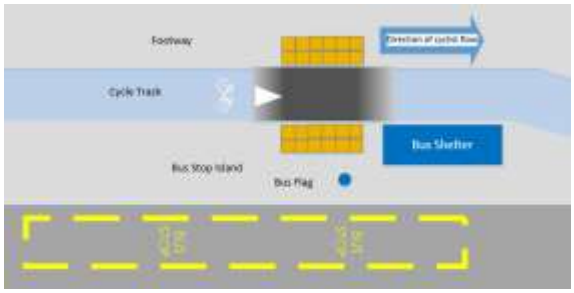
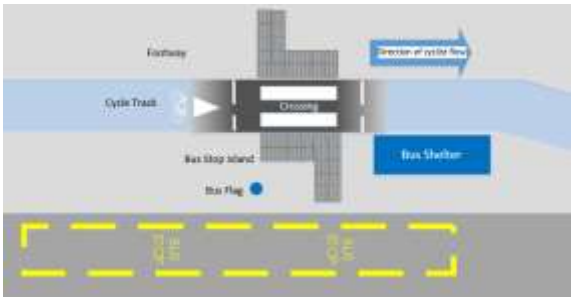
Difficulties	What would help to overcome these difficulties	Commentary
	• Ensure that bus stops close to the kerbline. • Ensure that tactile paving does not block wheels. • Ensure that the ramp is not too steep.	can be said of ensuring that the bus stops close to the kerbline The issue of tactile paving hindering the movement of wheelchair wheels is difficult to reconcile, as their removal would hinder blind and partially sighted people. Fundamentally it is an issue of the ramp being steep, and thought should be given to the designs of inclines of bus ramps and their relationship to island/bus boarder heights.
Getting off the bus	• Ensure that the bus stops so that the rear doors align with the crossing point. • Ensure signage and notification that there is a cycle track is clear. • Ensuring that tactile paving is obvious.	Ensuring that the bus stops so that the rear doors align with the crossing is not always possible. However bus drivers should be trained to do this when the disability stop button is pressed, and disabled bus users should be reminded of where to find this button (by the wheelchair bay) and to use it. Increased signage may not be practical, as this may lead to increased street clutter. Engineers should ensure that tactile paving (amongst other things) is correct. A design guidance document and checklist could be created for bus stop bypasses to help ensure this.

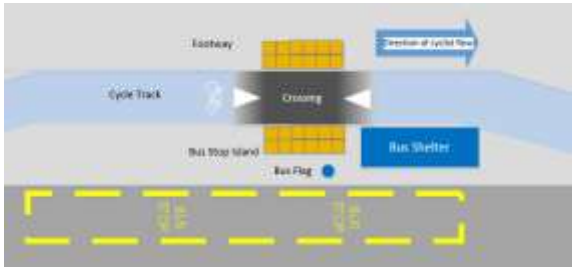
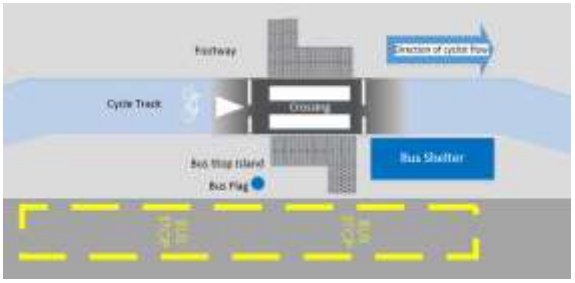
Appendix A Bus Stop Bypass study sites in uncontrolled crossing and zebra crossing configuration

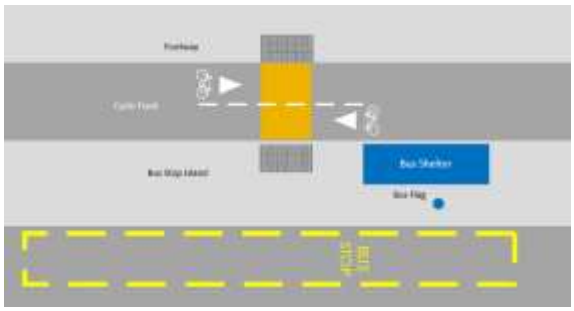
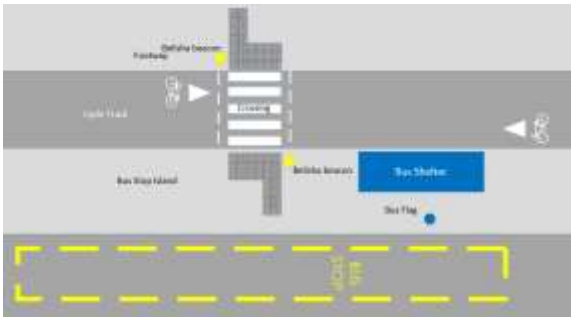
The photographs below indicate (from video cameras) the uncontrolled crossing and zebra crossing configurations at each of the six BSB study sites. A schematic of each crossing is also shown giving the key items (with a description of notable items), note these indicate the approximate relationship between key items but are not to scale.

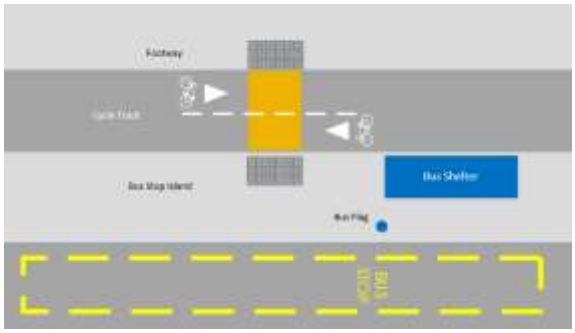
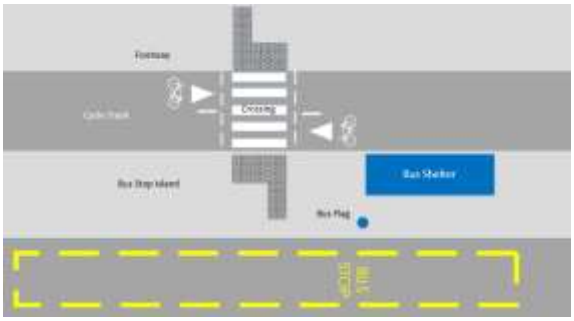
<table>
<tr><td>Whitechapel J uncontrolled crossing
  </td><td>Whitechapel J zebra crossing
  </td></tr>
<tr><td>Whitechapel J uncontrolled crossing layout
Bus flag is to left of crossing when passing from the footway to the island
Yellow tactile paving
  </td><td>Whitechapel J zebra crossing layout
Bus flag has remained in the same place.
Grey tactile paving replacing yellow tactile, with fingers across path and island.
One Belisha beacon on the footway side.
  </td></tr>
</table>

Whitechapel A uncontrolled crossing	Whitechapel A zebra crossing
	
Whitechapel A uncontrolled crossing layout Bus flag is to left of crossing when passing from the footway to the island Yellow tactile paving 	**Whitechapel A zebra crossing layout** Bus flag has remained in the same place. Grey tactile paving replacing yellow tactile, with fingers across path and island. 

Stratford J uncontrolled crossing	Stratford J zebra crossing
	
Stratford J uncontrolled crossing layout Bus flag is to left of centre of crossing when passing from the footway to the island Yellow tactile paving	**Stratford J zebra crossing layout** Bus flag has moved to right of crossing. Grey tactile paving replacing yellow tactile, with fingers across path and island.
	

Stratford M uncontrolled crossing	Stratford M zebra crossing
	
Stratford M uncontrolled crossing layout Bus flag is to left of centre of crossing when passing from the footway to the island. Yellow tactile paving. 	**Stratford M zebra crossing layout** Bus flag has moved to right of crossing. Grey tactile paving replacing yellow tactile, with fingers across path and island. 

Blackfriars SA uncontrolled crossing	Blackfriars SA zebra crossing
	
Blackfriars SA uncontrolled crossing layout Bus flag is to far left of crossing at centre of bus shelter when passing from the footway to the island. Grey tactile paving. Crossing colour is yellow/buff 	**Blackfriars SA zebra crossing layout** Bus flag is to far left of crossing at centre of bus shelter when passing from the footway to the island. Grey tactile paving with fingers extending across footway and island. A Belisha beacon added to each side 

Blackfriars U uncontrolled crossing	Blackfriars U zebra crossing
	
Blackfriars U uncontrolled crossing layout Bus flag is to far left of crossing but not as far as the bus shelter when passing from the footway to the island. Grey tactile paving. Crossing colour is yellow/buff 	**Blackfriars U zebra crossing layout** Bus flag is to far left of crossing at centre of bus shelter when passing from the footway to the island. Grey tactile paving with fingers extending across footway and island. 

Appendix B Semi-structured interview form

Questionnaire

Instructions for staff:

- Remember to brief the participant in the café, and always offer them a drink. Remember to mention that the trial may be foreshortened or a break taken at any time at the request of the participant
- Read out the information for participant, and consent form to the participant, they may also read it themselves
- Participants with learning disabilities MUST be accompanied by a regular carer who signs consent on their behalf
- Use a fresh sheet for each BSB
- Do not survey at BSBs which are not part of the research (but that you might have to incidentally cross as part of the routing). Make sure the participant is aware which bus stops are part of the trial and those which are not.
- Read out the questions to the participant, writing the answers they give in the space provided
- You may share what you write with the participant – nothing need be withheld
- Mark the route the participant takes on the approach to the bus stop on a map
- You may go over anything that is unclear at a debrief coffee session
- Use the tactile map at the debrief for all participants to help jog their memory (not just those with visual impairments)
- Remember to thank the participant after the survey
- Record the start and end times of each survey

Study and participant details

Area/site	
Start time	
End time	
Participant's type of mobility impairment	☐ Blind or partially sighted ☐ Mobility impaired ☐ Deaf or hard of hearing ☐ Learning disabilities ☐ Other
Participant's self-description of mobility impairment	

Self-completion demographic questions

THE FOLLOWING QUESTIONS SHOULD BE SELF-COMPLETED BY PARTICIPANTS, AS FAR AS POSSIBLE.

Q1. Please state your age:

☐ 18-24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ 65-74 ☐ 75 or over

☐ Prefer not to say

Q2. Please state your gender:

☐ Male

☐ Female

☐ Prefer not to say

Q3 To which of these ethnic groups do you consider you belong?

☐ White

☐ Mixed

☐ Asian or Asian British

☐ Black or Black British

☐ Any other ethnic group

☐ Prefer not to say

☐ Don't know

A disabled person is defined under the Equality Act 2010 as someone with a 'physical or mental impairment which has a substantial and long term adverse effect on that person's ability to carry out normal day-to-day activities.'

Q4. Do you consider yourself to be disabled under the Equality Act 2010?

☐ Yes

☐ No

☐ Don't know

☐ Prefer not to say

Q4a. If you answered YES, please mark all that apply below:

☐ Hearing impairment

☐ Visual impairment

☐ Speech impairment

☐ Mobility impairment

☐ Physical co-ordination difficulties

☐ Reduced physical capacity

☐ Severe disfigurement

☐ Learning difficulties (e.g. dyslexic)

☐ Mental ill health
☐ Progressive conditions
☐ Other (please specify)

Q4b. If you answered YES, do you ever use a wheelchair when travelling around London?
☐ Yes
☐ No

Q5. How many trips do you usually make by bus in an <u>average</u> week? (For example, a journey from home to the shops and back home, would count as one trip.)
☐ I don't use the bus regularly, and never have
☐ I don't use the bus regularly, but have used them in the past
☐ Less than one trip a week
☐ One or two trips a week
☐ 3 or 4 trips a week
☐ 5 or more trips a week

Q6. How often do you use the bus stops in this study? *(May leave this to the end once the bus stops have been visited)*
☐ I don't use these bus stops regularly, and never have
☐ I don't use these bus stops regularly, but have used them in the past
☐ Less than one trip a week
☐ One or two trips a week
☐ 3 or 4 trips a week
☐ 5 or more trips a week

Q7. How often do you use a bus stop that has a cycle track bypass?
☐ I don't use bus stops with cycle track bypasses regularly, and never have
☐ I don't use bus stops with cycle track bypasses regularly, but have used them in the past
☐ Less than one trip a week
☐ One or two trips a week
☐ 3 or 4 trips a week
☐ 5 or more trips a week
☐ I don't know

Finding the bus stop – site……..…bus stop letter……

This covers the action of travelling from the footway, finding the bus stop, crossing the cycle track to it, and finishing in a location where the participant is happy to wait for the bus, and should be administered at this point.

Bus stop reference:

Q8. The bus stop you used was different to most bus stops. What were your overall thoughts on the bus stop layout? *(Free text).*

Q9. You needed to cross a cycle track to reach the bus stop. How easy or difficult was it for you to understand where to cross?

1	2	3	4	5
Very difficult				Very easy

Q9a If your response was 1, 2 or 3, what could be done to make it easier to find the crossing point?: ***(Free text).***

Q10. How safe or unsafe did you feel while crossing the cycle track to reach the bus stop?

1	2	3	4	5
Very unsafe				Very safe

Q10a. Additional comments:

Q11. How easy or difficult was it for you to use this type of crossing?

1	2	3	4	5
Very difficult				Very easy

Q11a: Additional comments:

Q12. When you crossed to the bus stop, did you notice any cyclists using the cycle track that runs next to the bus stop?

Yes ☐

No ☐

Q12a. IF YES: How did you feel about the presence of the cyclist(s)? *(Free text).*

Q12b. Did you notice how the cyclist(s) reacted to your presence? *(Free text).*

Q13. Did you notice if the cycle track was 1 way or 2 way? *(Researcher to note which: 1-way / 2-way)*

Didn't notice either way ☐

1-way ☐

2-way ☐

Q14. Can you talk to me about any differences you might find between crossing 1-way and 2-way cycle tracks? *(Free text).*

Q15. Can you discuss your experiences of finding the main items on the island, such as the crossing point, the bus stop shelter, and the bus stop flag? *(Free text).*

***Q16. Question for researcher*: What were cyclist flow levels like at the time of starting to cross?** Note – consider both directions if it is a two-way track.

- No cyclists within about 100m ☐
- One cyclist within about 100m ☐
- Two cyclists within about 100m ☐
- Three cyclists within about 100m ☐
- Four cyclists within about 100m ☐
- Five or more cyclists within about 100m ☐

Q16a. Additional comments:

***Q17. Question for researcher*: How did cyclists react to the presence of the participant?** (*Free text*).

Q18. *Question for researcher*: Where did the participant cross? *Note that the Blackfriars Road cycle track does not have kinks in it, so go by distance. Other sites do, so go by the track kink points.*

- At the crossing-point ☐
- Within 10 metres **before** the crossing-point or to the cycle track kink ☐
- Between 10-20m **before** the crossing point, or within the angled zone ☐
- Within 10 metres **after** the crossing-point or to the cycle track kink ☐
- Between 10-20m **after** the crossing point, or within the angled zone ☐
- Further away ☐

Q19. *Question for researcher*: Was the crossing uncontrolled or with a zebra crossing?

Uncontrolled crossing ☐

Zebra crossing ☐

Boarding the bus – site……..…bus stop letter……

This covers the action of boarding the bus from a waiting position on the bus stop bypass island, and should be administered when sat on the bus or shortly afterwards.

Bus stop reference:

Q20. Overall, how easy or difficult did you find it to get on the bus?

1	2	3	4	5
Very difficult				Very easy

Q21a. Additional comments:

Q21. How much space did you feel was available on the island while waiting for the bus?

1	2	3	4	5
Very little space				Plenty of space

Q22a. Additional comments:

Q22. What was your overall experience of getting on the bus – did any aspect(s) of it stick out to you? *(Free text).*

Q23. Did the bus stop where you expected it to?

Yes ☐ No ☐

Q23a. If NO: What effect did this have on your experience of boarding the bus, if any? (*Free text*).

Q24. Was this any different to the experience you might expect at ordinary bus stops?

Yes ☐ No ☐

Q24a. Additional comments:

Q25. Was there anything about the layout of the bus stop that made getting on the bus easier or harder? *(Free text).*

Q25a. If harder, what could have made your experience better?

Q26. Was there anything about the behaviour of other passengers that made getting on the bus easier or harder? *(Free text).*

Q27. Question for researcher: **Approximately how many other people were waiting at the bus stop when the bus arrived? ____**

Q28. Question for researcher: **Did the participant have to negotiate other people waiting for the bus/other buses?**

Yes ☐ No ☐

Q29. Question for researcher: **Where did the bus stop?**

- Ahead of the flag ☐
- At the flag ☐
- Behind the flag (by 1 bus length) ☐
- Behind the flag (by 2 or more bus lengths) ☐

Alighting the bus – site……..…bus stop letter……

This covers the action of stepping off the bus on to the bus stop bypass island, and travelling to the footway on the opposite side of the cycle track. Administer this survey on the footway.

Bus stop reference:

Q30. Can you talk about your experience in finding the crossing to the footway? *(Free text).*

Q31. Researcher note: Did the bus middle doors stop…

☐ At the crossing

☐ Before the crossing

☐ After the crossing

Q32. How safe or unsafe did you feel while crossing the cycle track to reach the main footway?

1	2	3	4	5
Very unsafe				Very safe

Q32a. Additional comments:

Q33. How easy or difficult was it for you to understand where to cross?

1	2	3	4	5
Very difficult				Very easy

Q33a. Additional comments:

Q34. Do you have any comments about the layout of the island itself? *(Free text).*

Q35. How easy or difficult was it for you to use this type of crossing?

1	2	3	4	5
Very difficult				Very easy

Q35a: Additional comments:

Q36. Did you notice if the cycle track was 1 way or 2 way? (Researcher to note which: 1-way / 2-way)

Didn't notice either way ☐

1-way ☐

2-way ☐

Q37. Can you talk to me about any differences you might find between crossing 1-way and 2-way cycle tracks? (*Free text*).

Q38. When you crossed to the footway, did you notice any cyclists using the cycle track that runs next to the bus stop?

Yes ☐ No ☐

Q38a. IF YES: How did you feel about the presence of the cyclist(s)? *(Free text).*

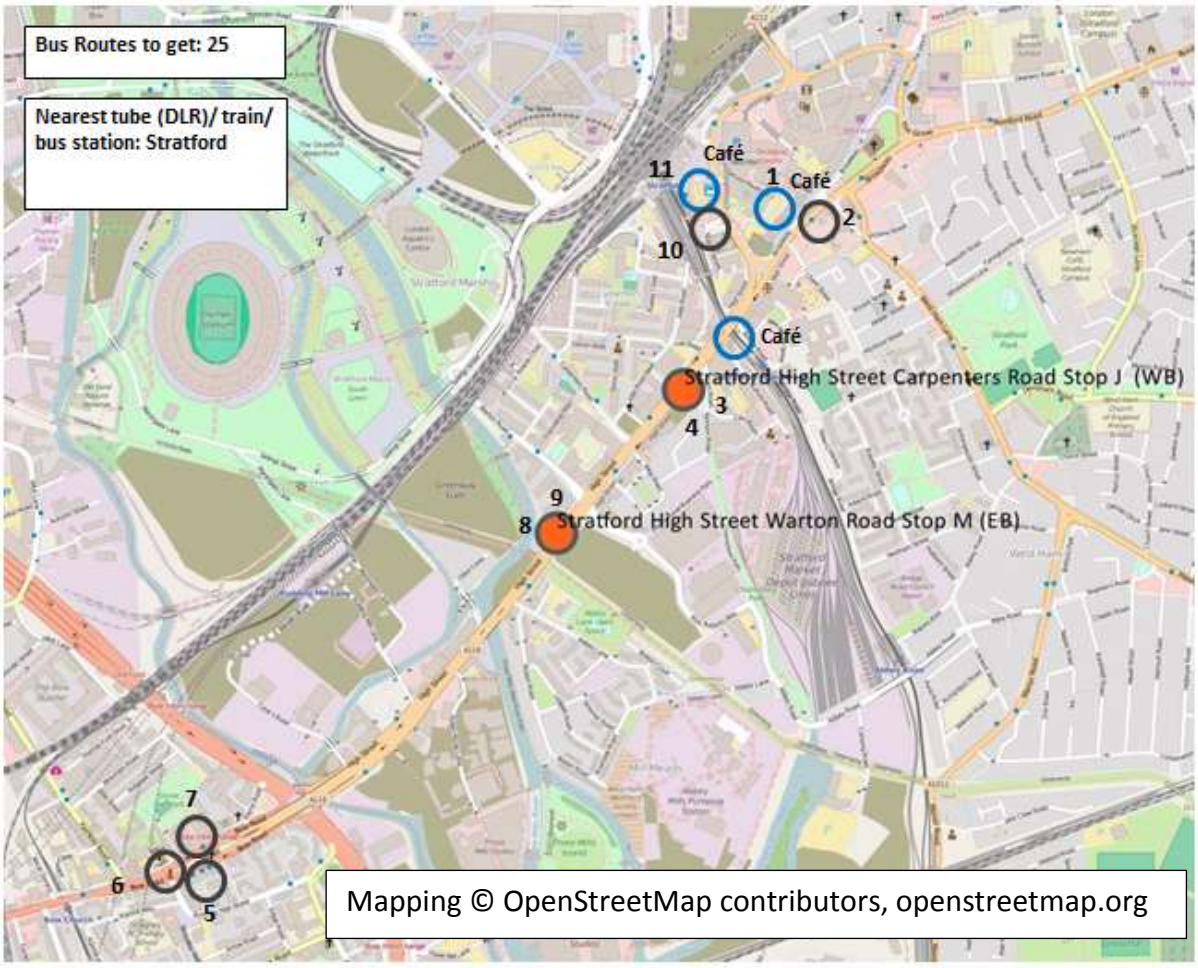
Q38b. IF YES: How do you think cyclists reacted to your presence? *(Free text).*

Q38c. Question for researcher: **How did cyclists react to the presence of the participant? (*Free text*).**

Q39. Question for researcher: **What were cyclist flow levels like at the time of starting to cross?**

No cyclists present within about 100m	☐
One cyclist within about 100m	☐
Two cyclists within about 100m	☐
Three cyclists within about 100m	☐
Four cyclists within about 100m	☐
Five or more cyclists within about 100m	☐

Appendix C Stratford course map



Staff movement instructions

1. Meet at Starbucks inside the Stratford Centre for briefing. Note: this on the other side of the shopping centre to the station. Remember to read the sign the consent form, and to fill out the Demographics part of the questionnaire.
2. Walk across the A118 and go right (westbound) to the Old Town Hall (Stratford Centre Burtons Court) Stop J. Get the 25 bus (going to Oxford Circus/Mile End) to Stratford High Street Carpenters Road Stop J (westbound direction). This is 2 stops.
3. Get off the 25 bus at Stratford High Street Carpenters Road Stop J and cross over the cycle superhighway (CS).
   - Administer the Alighting survey
4. Cross back over the CS to the same bus stop (Stratford High Street Carpenters Road Stop J)
   - Administer the Finding the bus stop survey

   and get on the 25 bus to Bow Church Stop K/L (westbound direction, as before). This is 3 stops.
   - Administer the Boarding the Bus survey
5. Get off the 25 bus at the Bow Church Stop K/L. Leave the bus stop and walk westbound (the same direction you were going on the bus) to the signalised crossing just after Bromley High Street (which you will need to cross).
6. Use the pedestrian crossing to cross the A11 to Bow Church. Walk up to bus stop Bow Church Stop M.
7. Get the 25 bus (going to Ilford) from Bow Church Stop M to Stratford High Street Warton Road Stop M (eastbound direction). This is the next stop.
8. Get off the 25 at Stratford High Street Warton Road Stop M and cross over the cycle superhighway (CS).
   - Administer the Alighting survey
9. Cross back over the CS to the same bus stop (Stratford High Street Warton Road Stop M)
   - Administer the Finding the bus stop survey

   and get on the 25 bus to Stratford Bus Station Stop AP (eastbound direction, as before). This is 2 stops.
   - Administer the Boarding the Bus survey (either here on when you get back to the café)
10. Leave the bus station and walk to the Pret A Manger at the entrance of Stratford Station.
11. Debriefing in Pret A Manger. Pay the participant and ensure that the payment form is signed.

Appendix D Accompanied Bus Stop Bypass Survey - Information and consent

Information for Participants

What is a Bus Stop Bypass?

A Bus Stop Bypass is a cycle track which runs behind a bus stop and bus shelter (where provided). This means that you must cross the cycle track to move between the bus stop and the footway. A tactile map is available to understand the layout before we start, please advise if you would like to use this.

What is the purpose of the trial?

The purpose of the trial is to understand how the design of the crossing point impacts how people with various impairments use bus stop bypasses.

How will the data be used?

Data gathered during the session will be anonymised and used to inform Transport for London who can then use the information in any design decisions.

Where will the trial happen?

The trial will occur in any one of three locations: Stratford, Whitechapel, and Southwark. You will be advised of the location ahead of the trial and we will make arrangements with you regarding a meeting location and time. If requested we can accompany you from nearby public transport locations.

What will happen during the trial?

To understand how you use the bus stop bypass, a researcher would observe you getting to a bus stop, crossing the cycle track at a bus stop bypass, boarding a bus, and then getting off a bus, crossing the cycle track to the footway. If you are able we will ask you to do this at two bus stop bypass sites. This will involve a number of bus journeys and some walking/movement.

You may take up to four short bus journeys on public buses as part of this trial, accompanied by the researcher. We may also use other bus stops with cycle track bypasses, however these are not part of the trial (the researcher would let you know which ones we are trialling).

During the trial, we will observe both you and those around you. At the end of each activity we will ask you some questions about it.

How long will the trial take?

It is expected that the trial will last for around 3 hours. The researcher will have a short discussion with you at the end of the trial in a café to hear your views about using the bus stop bypasses. You may ask to take a break at any time.

Are there any risks to my safety?

When crossing roads and cycle tracks and when boarding buses, you will need to be aware that other people on the street are not part of our trial, therefore you will be at the usual risks of navigating the street environment. Your safety is our primary concern, therefore if we see you in any obvious danger we will attempt to intercede.

Who will pay for my travel on the buses?

It is expected that you will use your Freedom Pass to pay for travel. If you do not have one, we will pay for your travel for the accompanied journeys. You will be responsible for the cost of any journey to the trial.

Consent form

By signing the consent form you confirm that you are independently mobile, and are capable of travelling on buses by yourself.

Please remember that you can withdraw at any time without having to give a reason. We will pay you £50 cash at the end of the trial (one accompanying person may also receive £50 cash).

If you have a learning disability it is compulsory that you are accompanied by someone (i.e. a regular carer) able to consent to your participation on your behalf. If you are a person accompanying any participant, we ask that you are present but do not influence the participant in any way.

Please sign your consent to take part in this trial using the form overleaf. If you have any questions, please do not hesitate to ask.

Consent form

Statement	Read and understood?
I the undersigned voluntarily agree to take part in the Bus Stop Bypass study.	
I am aged 18 or over.	
I have read and understood the *Information for Participants* information provided. I have been given a full explanation by the researcher of the nature, purpose, location and likely duration of the study, and of what I will be expected to do.	
I have been advised about any discomfort and possible ill-effects on my health and well-being which may result.	
I have been given the opportunity to ask questions on all aspects of the study and have understood the advice and information given as a result.	
I shall inform the researcher immediately if I suffer any deterioration of any kind in my health or well-being, or experience any unexpected or unusual symptoms.	
I understand that all personal data relating to volunteers is held and processed in the strictest confidence, and in accordance with the Data Protection Act (1998). On the understanding that my anonymity is preserved, I agree that I will not seek to restrict the use of the results of the study. I understand that I will not be personally named in any report.	
I understand that I am free to withdraw from the study at any time without needing to justify my decision.	
I acknowledge that I shall receive £50 cash for completing the study.	
I confirm that I have read and understood the above and freely consent to participating in this study. I have been given adequate time to consider my participation and agree to comply with the instructions and restrictions of the study.	

I do/do not consent for any **photographs** of me to be taken during the trial. I understand that any photographs taken may be used within any report relating to this trial.	Do consent ☐ Do NOT consent ☐

Name of volunteer participant (BLOCK CAPITALS)

……

Signed …… Date……

Name of any companion consenting on behalf of the trial participant (BLOCK CAPITALS). This MUST be completed before any participation of people with learning disabilities due to the need for informed consent regarding vulnerable adults.

……

Signed …… Date……

Relationship to participant……

Name of researcher/person taking consent (BLOCK CAPITALS)

……

Bus Stop Bypasses

The purpose of this study is to understand the impact of Bus Stop Bypasses (BSB) on people from four disability groups.

- Blind and partially sighted - 9 participants per site type
- Mobility impaired (including wheelchair users) - 3 participants per site type
- Deaf or hard of hearing - 3 participants per site type
- Learning disabilities and mental health - 3 participants per site type

Two types of BSB were trialled at six sites in London – first with uncontrolled crossings and then with zebra crossings installed. This study is part of a wider evaluation of BSBs.

Disabled individuals from each of the four groups were recruited and taken on accompanied visits to BSB sites, asked to undertake actions (such as finding the bus stop), and then interviewed to complete a questionnaire. This investigated any challenges they face in undertaking typical actions at these types of bus stop, any differences between uncontrolled and zebra crossings, and the benefit of the addition of Belisha beacons at two zebra crossings.

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