PEDESTRIAN PERCEPTIONS OF ROAD CROSSING FACILITIES

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Transport Research Laboratory

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EXECUTIVE SUMMARY

The government is committed to promoting walking as a mode of transport. The Scottish Executive commissioned research to identify factors associated with a range of pedestrian crossing facilities that might encourage or discourage walking in urban areas. The research involved conducting a series of surveys in different geographical locations throughout Scotland. The research consisted of an on-street survey of the general public; a self completion survey of school children; and surveys of pedestrians with a range of mobility impairments.

Three different questionnaires were developed suited to the individuals from whom opinions were sought. In each case care was taken in order that similar information could be obtained from each target group. The surveys were developed by a team in order that the questionnaires were comprehensive and made best use of a limited target duration of 5 minutes per interview. The questionnaires were piloted and changes made in order that they were comprehensible obtained the desired information.

The main street surveys were targeted at people in a range of ages from young to old and 890 interviews were undertaken. These surveys were conducted at ten different crossing types in 30 sites in six towns and cities in Scotland. The survey aimed to identify differences in peoples’ opinions of the different crossing provisions in order to identify measures that might be employed to improve pedestrian crossing facilities and thus encourage walking. The interviewers were asked to obtain interviews from people who used the crossing and also people who crossed near but not at a crossing facility since their opinions might be particularly revealing with regard to why people might be discouraged from using crossings.

As well as the main on-street surveys, two additional surveys were targeted at school children and people with mobility impairments. These were carried out in order to obtain the attitudes of a younger age group and those with special walking needs.

Main findings of the research were:

- The main reasons pedestrians used formal crossing points, in broadly equal proportion, were those of convenience, on their route and safety.

- The majority of pedestrians used crossings correctly; however 6% used them incorrectly and 23% of those interviewed in the vicinity of a crossing had not used them at all.

- The main reasons given for not using a pedestrian crossing located near the position at which the road was crossed, were that the traffic was light or non-existent or that it would take too long.

- The main general factors in deciding to use a crossing facility were road safety, rated as important by 96% of the sample, followed by volume of traffic cited by 91%, particularly those crossing at puffins, toucans and zebras.
• The majority of pedestrians tended to prefer signalled crossings to pedestrian islands and zebra crossings. Zebras were preferred to traffic islands at traffic calming schemes.

• Children (under 16 years of age) are much more concerned with safety when crossing roads than other age groups.

• People with mobility impairments considered that some crossing facilities were impediments to their walking trips, and preferred crossings with audible or tactile enhancements such as knurled knobs.

• The carers of people with learning disabilities who were interviewed were of the view that there should be an educational package for people with learning disabilities explaining how different crossing types should be used.

• The research concluded that provision of crossings is probably a minor factor in maintaining levels of walking among the population. Pedestrians are generally satisfied with current provision and no great increase in trips would be achieved by changing them.

Although this project has demonstrated that users and non-users are generally satisfied with what is provided, TRL made a number of recommendations arising from the analysis of the data generated from this project:

• Urban planners, aiming to maintain levels of walking, should remember that a majority of existing pedestrians, given the choice, prefer signalled crossings to pedestrian islands and zebras.

• Children, who do not walk to school, should be made aware of the health benefits, social opportunities and practicality of walking on the school journey.

• Research is needed to explore how crossing provision and other aspects of safe route provision affect parental decisions to allow children to walk to school.

• People with impaired mobility need crossings that do not tax their physical ability and that function unambiguously for people with impaired sight, hearing or learning ability.

• Steps, including badly installed drop kerbs, are a barrier to movement.

• Pedestrian light signals need to be as large and bright as is practical.

• Pedestrian light signals need to be well maintained and kept clear of stickers and other obstructions.

• Voiced crossing announcements are desirable at Green man crossings.

• Two stage crossings are confusing for blind people and separate voices controlling each stage are desirable.
• A number of users feel threatened by traffic at crossings.

• Publicity aimed at drivers describing priorities and promoting correct behaviour may be helpful.

• Publicity aimed at pedestrians explaining that pedestrian priority on a green man crossing is protected after the tone ceases until they clear crossing, may reassure slow moving pedestrians and maintain their intentions to continue walking.
CHAPTER ONE  INTRODUCTION

AIMS AND OBJECTIVES

1.1 The main aims of this study were:

• to explore pedestrians’ perceptions of how different types of road crossing facility affect their walking journey
• to establish pedestrians’ priorities in road crossing provision and the trade-offs they make between safety and mobility
• to identify which types of crossing have the greatest and least effects on pedestrians' mobility
• to make recommendations on how pedestrian crossing facilities might be better used to reflect pedestrian needs, encourage walking journeys and contribute to local walking strategies

1.2 In order to identify how pedestrians’ perceptions of different road crossing types affect their walking journey, the study used questionnaires to obtain this information (See Appendix B). Pedestrians’ priorities in road crossing and the trade-offs they made between safety and mobility in relation to crossing provision were investigated by asking pedestrians why they use particular crossings or why they chose not to use a particular crossing that was close to where they crossed. For example the questionnaire identified whether time was crucial, or the location of the crossing relative to their most direct route affected their choice. The issues of identifying the types of crossings that have the greatest and least effects on pedestrians’ mobility was addressed by focusing on specific road crossing facilities in the vicinity where the pedestrian was being interviewed. The conclusions and recommendations on how pedestrian crossing facilities might contribute to local walking strategies by better reflecting pedestrians’ needs and encouraging walking can be found in Section 5 of this report.

METHODOLOGY

1.3 The main experiment surveyed pedestrians who had been observed crossing a road either on or near some sort of crossing facility. The questionnaire explored why pedestrians had or had not used the nearby facility and also some of their general views on walking and crossing facilities. Two subsidiary surveys were held with people with impaired mobility and also with school children. The interviews with the mobility-impaired were held at centres or clubs for such people. The school children were surveyed using a self-completion questionnaire that was distributed to a sample of schools.

1.4 The processes used were as follows

• design of questionnaire
• pilot survey (approximately 30 interviews)
• analysis of pilot interviews
• redesign of questionnaire
• design of child self-completion questionnaire
• design of questionnaire for people with mobility impairments
• survey of 890 people who had crossed a road on or near a pedestrian crossing
• analysis
• reporting

1.5 The main questionnaire was designed to obtain the general public's perceptions of crossing facilities. This questionnaire was then adapted to obtain the views of the mobility-impaired, and modified again to identify children’s perceptions. The proformas can be found in the Appendix B.
CHAPTER TWO   SITE SELECTION

2.1 The initial stages of the study consisted of the design of questionnaires, site selection and carrying out a pilot survey of the general survey questionnaire. The pilot took place at a pelican crossing in the centre of Edinburgh. Two interviewers asked 30 people to complete the questionnaire. This included people that did and did not use the crossing. The results of the questionnaires were then analysed to make minor changes to the questionnaire. Full details of this part of the study can be found in Appendix A.

2.2 TRL proposed six towns and cities throughout Scotland in which to conduct the main survey. These were selected on the basis that they included a broad geographic range and settlement size within Scotland and would obtain results from a representative sample of Scotland’s people. These were agreed with the SE on award of the contract. They were:

- Aberdeen
- Dumfries
- Edinburgh
- Galashiels
- Glasgow
- Inverness

2.3 The Roads Department in the Local Authorities (LAs) in each of the above areas was contacted and asked to provide the locations of each of the following types of pedestrian crossings in their areas.

- **Pelican** - A pedestrian light controlled crossing. Pedestrians press a button and wait for the pedestrian crossing phase (the green-man phase). A flashing pedestrian signal phase and a flashing amber signal for vehicles follow this. During this phase pedestrians clearing the crossing have priority over vehicles but no pedestrians should enter the crossing.
- **Puffin** - As a pelican but with no flashing amber light, but with pedestrian detection to allow sufficient time for pedestrians to cross, and also cancels if pedestrian's move off the sensors, therefore allowing traffic to continue freely
- **Toucan** - A traffic signal controlled crossing for use by both cyclists and pedestrians. In addition to the red and green man there is a red and green bicycle. where cyclists have a clearly defined approach, detectors can be provided to enter a demand for the crossing phase, eliminating the need for cyclists to dismount to reach the pedestrian button
- **Zebra** - An uncontrolled crossing intended to give pedestrians priority over traffic. It consists of black and white stripes in the carriageway, with metal studs to define the limits of the crossing, combined with a continually flashing amber light on top of a black and white striped pole at each end of the crossing
• **Under-bridge (Underpass/Subway)** - A walk way, such as a tunnel, that is built under the motorised traffic road above, it is designed for non-motorised use

• **Over-bridge** - A walk way, such as a bridge that is used by pedestrians and sometimes cyclists, with traffic flowing underneath the bridge

• **Pedestrian island** - A concrete refuge with lit bollards, situated in the centre of a carriageway and wide enough for pedestrian use, but not motorised traffic. The function is to assist pedestrian road crossing by providing a refuge between traffic streams.

• **Traffic light (pedestrian phase at a signalled junction)** - A set of lights at an intersection of two or more roads, which include specific phases showing pedestrians when they may safely cross and when they must wait

2.4 All of the LAs agreed to help and provided TRL with several examples of the eight crossing types. The LAs were asked to provide as many of the typical crossing types in town/city centres as was possible. It was appreciated that by the very nature of some crossing types this would not always be possible. In those instances, crossings farther away from the town/city centres were sought. It was understood that the sites complied with standard crossing design guidelines.

2.5 The number of examples suggested ranged from 5 in Inverness to 33 in Galashiels.

2.6 The information obtained was mostly provided on Ordnance Survey maps, which made planning site visits relatively easy. Site visits were conducted to survey most of the sites suggested by the LAs. Photographs were taken at all sites visited, in order that they could be reviewed later. The information from Dumfries arrived after the site visits were completed and the three sites there were selected on the basis of the location data supplied to TRL.

### Distribution of Pedestrian Crossings

2.7 Table 3.1 below shows the distribution of road crossing facilities at which surveys were conducted in each area. These were selected in order to obtain a reasonable number of responses to each crossing type after the site visits were conducted and photographs were examined to identify those, which were suitable. A full list of the sites used can be found in Appendix C.

#### Table 2.1 Distribution of Pedestrian Crossing facilities at Each Selected Site

<table>
<thead>
<tr>
<th>Crossing type</th>
<th>Aberdeen</th>
<th>Dumfries</th>
<th>Edinburgh</th>
<th>Galashiels</th>
<th>Glasgow</th>
<th>Inverness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelican</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Puffin</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toucan</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zebra</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ped Phase</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ped Island</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Under-bridge</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Over-bridge</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.8 The most common types of crossing facilities were pelicans and pedestrian phases at traffic lights. Five of each were included in the survey. Puffins and Toucans are fairly rare in Scotland and interviews were conducted at just two of each of these.

2.9 Figures 2.1 to 2.4 show a sample of the sites that were used in this study.

**Figure 2.1 Zebra Crossing at Rosehill Dr/Hilton Ave, Aberdeen**

![Zebra Crossing at Rosehill Dr/Hilton Ave, Aberdeen](image1)

**Figure 2.2 Toucan Crossing at Bruntsfield Pl/Leamington Terr, Edinburgh**

![Toucan Crossing at Bruntsfield Pl/Leamington Terr, Edinburgh](image2)
School Selection

2.10 Edinburgh and Glasgow City Councils were asked to provide details of some crossing facilities near secondary schools in addition to those listed above. The schools, which were selected for survey, were chosen partly on a random basis, using the information that the Councils provided. Schools that had already participated in SE surveys such as "Safer Routes to School" were avoided. From the information supplied and local knowledge, four Secondary Schools (two in Edinburgh and two in
Glasgow) were selected. Four primary schools, again two in each city, were also selected.

2.11 The following schools were surveyed in Edinburgh:

- Flora Stevenson Primary School
- South Morningside Primary School
- Boroughmuir High School
- Forrester High School

2.12 The following schools were surveyed in Glasgow:

- Caledonia Primary School
- Thornwood Primary School
- Cleveden Secondary School
- Hyndland Secondary School

2.13 The Directors of education in Glasgow and Edinburgh were asked to allow TRL to contact the eight schools listed above. After obtaining this permission, TRL approached the head teachers of each school to ask if they would allow their school to participate in the survey. Agreement was given by all and subsequently thirty self-completion questionnaires were sent to each school. Primary six and primary seven pupils (age 10 years to 12 years) took part in the survey and secondary school pupils in year one (S1) to year four (S4) (age 12 years to age 16 years) took part. Only eight secondary four (S4) pupils took part in the survey; this was because the survey took place during examination time and these pupils were considered too busy with revision to take part.
CHAPTER THREE  QUESTIONNAIRES AND OBSERVATIONS

MAIN SURVEY QUESTIONNAIRE

3.1  A discussion of the design and redesign of questionnaires following the pilot study can be found in Appendix A.

3.2  The main survey was conducted between the 31\textsuperscript{st} March and the 5\textsuperscript{th} April at the sites in six towns and cities indicated in Appendix C of this report.

3.3  The Survey Company, Count On Us, conducted the on-street surveys on behalf of TRL. The company was briefed on how the interviewers should pose the questions. Specifically, they were told not to prompt members of the public, or to explain the differences between crossing types to interviewees, during the survey. The interviewers also made various observations about the sites that they were interviewing at. The interviewers at each site consisted of two people. This gave a variation in the site-specific observational data that was collected. For example some of the interviewers felt that levels of pedestrian activity were important and noted that down, whereas others provided observations regarding pedestrian behaviour and general complaints made by interviewees at each site.

3.4  The interviewers asked questions which were pertinent to the type of crossing where particular interviews were undertaken. Count On Us were asked to ensure that in the sample they aimed for at least 40\% male interviewees. In addition they were asked to ensure that at least 35\% of the interviewees were not using the crossing and that at least 25\% of the interviewees were over the age of 60 years.

3.5  In addition in Edinburgh and Glasgow, four sites (two in each city) were chosen near the secondary schools that took part in the self-completion questionnaire survey. Permission was granted from the Head Teachers of the schools for the children to be surveyed outside the schools.

3.6  A team of two interviewers was used for each crossing per survey period, these teams moving between the sites to obtain a variation in interview times.

3.7  The total number of sites and interviews obtained in each town is shown in table 3.1 below.

Table 3.1 Breakdown of Crossing Sites and Interviews

<table>
<thead>
<tr>
<th>Town/City</th>
<th>Number of sites</th>
<th>Number of interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td>4</td>
<td>116</td>
</tr>
<tr>
<td>Dumfries</td>
<td>3</td>
<td>88</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>8</td>
<td>237</td>
</tr>
<tr>
<td>Galashiels</td>
<td>3</td>
<td>98</td>
</tr>
<tr>
<td>Glasgow</td>
<td>8</td>
<td>231</td>
</tr>
<tr>
<td>Inverness</td>
<td>4</td>
<td>120</td>
</tr>
</tbody>
</table>
A total of 890 interviews took place. It was intended to interview 30 people at each site, however at some sites it was not possible to obtain a sample of 30 people during the survey period.

General Site Observations

The interviewers were asked to note any particular observations about the sites that may be pertinent to the study. Observations included whether most pedestrians used the crossings in general, any obstacles thought to distract pedestrians and whether the sampling fell in any holiday periods.

The first piece of data that was recorded was how the crossing facility was used. There were four options for this:

- correctly used - did not have to wait as the green man was already on and crossed within defined limits (The Highway Code, 1999)
- correctly used - had to wait for the lights to change/traffic to stop
- incorrectly used - pedestrian started or finished on the crossing but also had movement outside the defined crossing, also if the crossing was used when the red man was illuminated
- did not use - but crossed within 20m of the crossing

Aberdeen Site 1 - Zebra Crossing

It was observed that the majority of pedestrians used the crossing in order to get to the bus stop. Several pedestrians complained that some vehicles do not stop at zebra crossings when they are approaching and it is clearly evident that a pedestrian wishes to cross. The majority of people that did not use the crossing correctly had parked their vehicles to go to shops on the opposite side of the road and also to use cash machines. Most of these people declined to be interviewed.

Aberdeen Site 2 - Pedestrian Phase

The majority of pedestrians used this crossing, although occasionally it was used incorrectly. There were short sections of guardrail next to the crossing point. The presence of this guardrail could be the reason why this crossing was used correctly for the most part.

Aberdeen Site 3 - Under-bridge

For the whole of the survey period, only four people used the under-bridge. When pedestrians were asked why they did not use the under-bridge, the reason given was because it was inconveniently located and some pedestrians felt it to be unsafe. Aberdeen University was on holiday during the survey period. This could have decreased the numbers using the under-bridge during the survey.

Aberdeen Site 4 - Over-bridge

In addition to the over-bridge at this site, there was a set of steps leading from the over-bridge to the road and pavement below. Occasionally pedestrians used these
steps to the pavement below, but then walked to a roundabout rather than cross the road where there was no crossing. However, due to the road layout at the over-bridge, most of the pedestrians used the over-bridge, as this was the main route across the road.

Dumfries Site 1 - Pelican

3.15 The pedestrians at this crossing were concerned about the speed of approaching vehicles. Infirm and blind pedestrians complained that they did not have enough time to cross the road before the signals changed.

Dumfries Site 2 - Zebra

3.16 There was little pedestrian activity at this crossing. Pedestrians tended to cross the road at a bend further away from the crossing since they had better visibility at that point, of oncoming vehicles. Drivers are blind to the zebra crossing until they turn a bend in the road. Several pedestrians complained that the speed of the approaching vehicles was too fast.

Dumfries Site 3 - Over-bridge

3.17 All pedestrians used the over-bridge at this site, since it is on the main route across a road to the town centre. Young people tended to play with their bikes on the bridge.

Edinburgh Site 1 - Pelican

3.18 The pedestrian flow across the road was quite light during the sample periods, approximately 10-15 every five minutes. There were no children at this site during the entire survey period.

Edinburgh Site 2 - Puffin

3.19 The pedestrian flow was similar to that at the pelican crossing (see above), however children were observed at this crossing.

Edinburgh Site 3 - Toucan

3.20 The majority of pedestrians used this crossing incorrectly, except between 13:00 and 13:40, when there was a school crossing patrol present. There is 35 metre of pedestrian guardrail at both ends of the junction.

Edinburgh Site 4 - Zebra

3.21 The pedestrian flow at this Zebra was approximately five to eight crossing every five minutes. This was because there is very little reason to cross the road at this position.
Edinburgh Site 5 - Pedestrian Phase

3.22 The pedestrian flow across the road was fairly light at about 10-15 people every five minutes.

Edinburgh Site 6 - Pedestrian Island

3.23 This site had a constant flow of approximately 20 pedestrians every five minutes. There was a school nearby, which increased the pedestrian flow to about 30-50 in a five-minute period when the school was “out”.

Edinburgh Site 7 - Under-bridge

3.24 The road has bus stops on both sides of the road and two banks within 20 metres of the junction. Pedestrians were more inclined to cross at these points rather than at the crossing. Only one side of the road could be used to survey incorrectly crossing pedestrians because the other arm of the junction was dual carriageway with high fencing on the central reservation.

Edinburgh Site 8 - Over-bridge

3.25 At this site there is an over-bridge and a relatively new pelican crossing underneath. More people used the pelican to cross the road than used the bridge.

Galashiels Site 1 - Pelican

3.26 This site had a light, but constant flow of pedestrians, approximately 10-15 people every five minutes.

Galashiels Site 2 - Pedestrian Phase

3.27 This site has similar characteristics to site 1.

Galashiels Site 3 - Pedestrian Island in a Traffic Calmed Area

3.28 The pedestrian flow was very light at this crossing with approximately five pedestrians using it every five minutes. The lack of pedestrians made it difficult to obtain the specified distribution of user groups. This site was described as being a single pedestrian island by the LA; however there was a series of three traffic islands in the road. For the purposes of the survey, any pedestrian using any of the islands were considered as using the crossing correctly.

Glasgow Site 1 - Pelican

3.29 The majority of pedestrians were school children. Pedestrians crossed the road from any point within the crossing area. Vehicles were parked on both sides of the road, and in the middle of junctions on the side roads. The side roads had central reservations to assist residential parking. Many drivers used the middle of the junction to complete a U-turn manoeuvre.
Glasgow Site 2 - Puffin

3.30 The puffin crossing is very close to a roundabout. When the crossing operates for pedestrians, the traffic can queue back onto the roundabout. The pedestrians in general felt that the puffin was an adequate facility, but that it was located too close to the roundabout. Vehicles approaching from the roundabout often did not see the crossing and drove through the red traffic light. Drivers approaching the crossing on the other side of the road see the roundabout and for this reason sometimes did not see the puffin crossing and hence drove through a red light as well. Pedestrians tended to cross approximately 30m west of the crossing, as they felt safer crossing at that point. Pedestrians said that they would prefer to see the crossing moved away from the roundabout.

Glasgow Site 3 - Toucan

3.31 Very few pedestrians used this crossing correctly. People do not wait for the 'green man' phase. Pedestrians crossing from the south side of the road, do so to avoid crossing another road. School children, who intended visiting the shops, crossed straight over without using the crossing.

Glasgow Site 4 - Zebra

3.32 This crossing was used by a considerable number of elderly people. Vehicles stopped to allow pedestrians 'right of way', although many had to brake harshly when exiting a roundabout. A number of pedestrians cross to the south of the zebra in order to get to the bus stop and also to get to their cars, which they had parked, on the eastern side of the road.

Glasgow Site 5 - Pedestrian Phase

3.33 The majority of pedestrians used this crossing correctly. A few pedestrians crossed at the signals but did not press the button. This had a fairly frequent 'green man phase'. This, combined with the volume of traffic, led to very few pedestrians not using the crossing properly.

Glasgow Site 6 - Pedestrian Island

3.34 There was a lot of pedestrian activity, although the majority did not cross the road. Those pedestrians who crossed without using the crossing did so when there was no traffic to compete with. The main complaint from pedestrians about this particular crossing was that although the crossing gives good protection from traffic, it takes too long to reach the other side of the road.

Glasgow Site 7 - Under-bridge

3.35 There were very few pedestrians at this crossing. Pedestrians said that they were reluctant to travel under the bridge since it is very dark, filled with litter and is too much of a diversion to their trip route.
Glasgow Site 8 - Over-bridge

3.36 Office workers and shoppers mainly used the bridge. There were no children present throughout the survey period. There is no alternative route for pedestrians other than the bridge, due to the road, footpath and bridge layout.

Inverness Site 1 - Pelican

3.37 Due to building works, the north footway was closed adjacent to the crossing and therefore most people used the crossing.

Inverness Site 2 - Pedestrian Phase

3.38 There was an extensive barrier rail at this site so pedestrians had to cross at the signals. This site was busy, but there was a high rate of pedestrians who declined to be interviewed.

Inverness Site 3 - Pedestrian Island

3.39 The majority of pedestrians did not cross at the island, they preferred to cross farther up the road towards the town centre or at the traffic lights. The majority of pedestrians, who did not use the island to cross the road, declined to be interviewed. The footpath pavements at this site were uneven, causing people to stumble or trip.

Inverness Site 4 - Under-bridge

3.40 The underpass is on the pedestrian desire line and no pedestrians were seen to cross the dual carriageway above it.
CHAPTER FOUR ANALYSES

MAIN SURVEY

General Survey Information

4.1 This section describes general survey data and observational data resulting from the main on-street survey.

4.2 The survey was carried out in each of the six towns between the 31st March 2000 and the 5th April.

4.3 There were 890 people surveyed in total for this part of the study. Males accounted for 52% of the survey respondents and females for 48%. Children accounted for 17% of those interviewed, 23% were over the age of 60 years and the remaining 60% were between the ages of 16 and 59.

4.4 The minimum age of respondent was 10 years old and the maximum was 88 years old.

4.5 The majority of the interviews took place during dry weather, but 3% were conducted when it was raining or snowing.

4.6 The earliest interview took place at 09:50 and the latest interview took place at 16:08.

4.7 Most people interviewed (80%) were not walking with another adult, 17% were accompanied by one other adult, 3% by two other adults. There was virtually no difference between males and females in this category.

4.8 As with the observations as to how many adults were accompanying the person interviewed, 79% of the people interviewed were not accompanied by children. One child accompanied 12% of the interviewees, 5% were accompanied by two children, and 4% were accompanied by three or more children.

4.9 Most people were not pushing anything (91%). 6% were pushing a pram/pushchair: the remaining 3% were pushing a wheelchair or a shopping trolley.

4.10 The majority of people (93%) did not have a mobility aid. A walking stick was used by 5% of the people interviewed.

4.11 Traffic conditions were generally light (45%) or moderate (47%) during the times when the interviews were conducted.
4.12 The crossing types that were examined were:

- crossing within a traffic calming scheme
- over-bridge
- pedestrian island
- pelican
- puffin
- toucan
- pedestrian phase at a signalled junction (traffic light)
- under-bridge/ subway/underpass
- zebra

4.13 The percentage of interviews completed at each crossing type are shown in Table 4.1 below:

**Table 4.1 Distribution of Surveys by Crossing Type**

<table>
<thead>
<tr>
<th>Crossing Type</th>
<th>Percentage of Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic calming</td>
<td>3%</td>
</tr>
<tr>
<td>Over – bridge</td>
<td>14%</td>
</tr>
<tr>
<td>Pedestrian island</td>
<td>10%</td>
</tr>
<tr>
<td>Pelican</td>
<td>21%</td>
</tr>
<tr>
<td>Puffin</td>
<td>7%</td>
</tr>
<tr>
<td>Toucan</td>
<td>6%</td>
</tr>
<tr>
<td>Pedestrian phase</td>
<td>14%</td>
</tr>
<tr>
<td>Under – bridge</td>
<td>12%</td>
</tr>
<tr>
<td>Zebra</td>
<td>13%</td>
</tr>
</tbody>
</table>

4.14 The way in which pedestrian crossings were used was analysed and details can be found in Table 4.2 below. The majority of people interviewed used the crossing correctly (71%).

**Table 4.2 Use of Crossing**

<table>
<thead>
<tr>
<th>Use of Crossing</th>
<th>Number of interviewees</th>
<th>Percentage of interview sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correctly used</td>
<td>374</td>
<td>42%</td>
</tr>
<tr>
<td>Correctly used - had to wait</td>
<td>258</td>
<td>29%</td>
</tr>
<tr>
<td>Incorrectly used</td>
<td>57</td>
<td>6%</td>
</tr>
<tr>
<td>Did not use</td>
<td>201</td>
<td>23%</td>
</tr>
</tbody>
</table>

4.15 Additional modes of transport to the interviewees walking journey were investigated. Walking was the only mode of transport used by 63% of the people that were interviewed. Other modes of transport used included taxis and a wheelchair. Table 4.3 shows the distribution of mode use in more detail.
Table 4.3 Other modes of transport

<table>
<thead>
<tr>
<th>Mode</th>
<th>Number of respondents</th>
<th>Percentage of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk only</td>
<td>558</td>
<td>63%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>47</td>
<td>5%</td>
</tr>
<tr>
<td>Car</td>
<td>130</td>
<td>15%</td>
</tr>
<tr>
<td>Motorbike</td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td>Bus/tram</td>
<td>129</td>
<td>14%</td>
</tr>
<tr>
<td>Train</td>
<td>20</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>0%</td>
</tr>
</tbody>
</table>

4.16 Over half the people interviewed (56%) had used the crossing that they were being interviewed at often. Table 4.4 shows the distribution of how familiar pedestrians interviewed were with the crossing facility by which they were interviewed.

Table 4.4 Pedestrian familiarity of crossings

<table>
<thead>
<tr>
<th>Familiarity of crossing</th>
<th>Number of responses</th>
<th>Percentage of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Often</td>
<td>495</td>
<td>56%</td>
</tr>
<tr>
<td>Sometime</td>
<td>158</td>
<td>18%</td>
</tr>
<tr>
<td>Occasionally</td>
<td>172</td>
<td>19%</td>
</tr>
<tr>
<td>First time</td>
<td>7</td>
<td>7%</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
<td>0%</td>
</tr>
</tbody>
</table>

4.17 When people were asked why they used the crossing rather than cross the road at another point, some respondents gave several reasons. No alternative was the least popular answer given by only 3% of the respondents. There were 689 people who had used the crossing. Convenience was defined as the crossing was easy to use and presented no difficulties in relation to time or complexity of use to the pedestrian.

Table 4.5 Why choose specific crossing types

<table>
<thead>
<tr>
<th>Why choose to use crossing</th>
<th>Number of responses</th>
<th>Percentage of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenient</td>
<td>271</td>
<td>39%</td>
</tr>
<tr>
<td>On route</td>
<td>270</td>
<td>39%</td>
</tr>
<tr>
<td>Safety</td>
<td>248</td>
<td>36%</td>
</tr>
<tr>
<td>No alternative</td>
<td>25</td>
<td>4%</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
<td>0%</td>
</tr>
</tbody>
</table>

4.18 Respondents were asked to suggest what alternative type of crossing they might like to see replacing the current type at the site at which they were interviewed. The most popular choice of alternative crossing was a pelican (24%). It was felt that the interviewees were mainly happy with the type of crossing present.
Table 4.6 Best type of crossing considered by the interviewee

<table>
<thead>
<tr>
<th>Best type of crossing</th>
<th>Number of responses</th>
<th>Percentage of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green man</td>
<td>90</td>
<td>10%</td>
</tr>
<tr>
<td>Pelican</td>
<td>214</td>
<td>24%</td>
</tr>
<tr>
<td>Puffin</td>
<td>31</td>
<td>3%</td>
</tr>
<tr>
<td>Toucan</td>
<td>27</td>
<td>3%</td>
</tr>
<tr>
<td>Zebra</td>
<td>122</td>
<td>14%</td>
</tr>
<tr>
<td>Underpass</td>
<td>56</td>
<td>6%</td>
</tr>
<tr>
<td>Over-bridge</td>
<td>71</td>
<td>8%</td>
</tr>
<tr>
<td>Pedestrian island</td>
<td>31</td>
<td>3%</td>
</tr>
<tr>
<td>Traffic light (ped phase)</td>
<td>74</td>
<td>8%</td>
</tr>
<tr>
<td>None</td>
<td>51</td>
<td>6%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>116</td>
<td>13%</td>
</tr>
<tr>
<td>other</td>
<td>7</td>
<td>1%</td>
</tr>
</tbody>
</table>

4.19 Respondents were asked about the importance of certain features when they decide to cross a road. The amount of traffic present and if the people were safe from traffic was considered very important factor (63% and 77% of respondents respectively). Fear of crime was considered very important by 15% of the people interviewed. This is most likely to be a reflection on the number of people that used under-bridges. This is also reflected in the percentage of respondents that felt that fear of crime was not an important factor when deciding to cross the road (69% in total) (Table 4.7).

Table 4.7 Importance of features when using a crossing

<table>
<thead>
<tr>
<th>Factor</th>
<th>Very Important</th>
<th>Quite important</th>
<th>Not very important</th>
<th>Not important at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of traffic</td>
<td>561 (63%)</td>
<td>248 (28%)</td>
<td>63 (7%)</td>
<td>18 (2%)</td>
</tr>
<tr>
<td>Safety from traffic</td>
<td>681 (77%)</td>
<td>165 (19%)</td>
<td>37 (4%)</td>
<td>7 (1%)</td>
</tr>
<tr>
<td>Time spent waiting to cross</td>
<td>227 (26%)</td>
<td>368 (41%)</td>
<td>219 (25%)</td>
<td>76 (9%)</td>
</tr>
<tr>
<td>Fear of crime</td>
<td>136 (15%)</td>
<td>146 (16%)</td>
<td>265 (30%)</td>
<td>343 (39%)</td>
</tr>
<tr>
<td>Its position - how far to detour</td>
<td>349 (39%)</td>
<td>304 (34%)</td>
<td>141 (16%)</td>
<td>96 (11%)</td>
</tr>
</tbody>
</table>

Main Survey In depth Analysis

4.20 This section analyses the data in more depth. Differences between sex and age were looked at, as well as any differences between crossing types and reasons as to why people used the crossings.

People Who Used Crossings

4.21 The reasons given for why people used a particular crossing type were examined by sex, age and crossing type.

4.22 Figure 4.1 shows pedestrian use of the various crossing types surveyed. The chart shows the proportion of people interviewed in the vicinity of each crossing type and whether the crossing was used correctly, incorrectly or was not used at all. The crossing use was assessed by the interviewers.
4.23 The interviewers were instructed to obtain data from pedestrians who used the crossing correctly and pedestrians who used them incorrectly. The interviewers found that many pedestrians who had used the crossings incorrectly declined to be interviewed. Consequently, the proportions of interviewees using the crossings correctly and incorrectly do not provide reliable estimates of the populations who use crossings correctly and incorrectly. The data are peculiar to the sample and do not provide generalisable estimates of those crossing correctly or incorrectly.

4.24 Most of those interviewed used the crossings correctly. Nobody interviewed actually used the under-bridge incorrectly. Proportionally, pedestrian islands were the least correctly used crossing, followed by crossings in traffic calmed areas, but even in these cases the correct use was still around 65%. The crossing with the highest correct use rate was the over-bridge type. This type of crossing had a use rate of almost 90%; this was most probably due to the style of the crossing, which would leave little opportunity for crossing incorrectly.

4.25 Figure 4.2 shows the reasons why people chose to use a crossing (regardless of type). It should be noted that multiple responses were possible. This question was asked only of those people who had used the crossing correctly.

4.26 Figure 4.2 shows the data for those who crossed correctly, that is started and finished on the crossing. The majority of respondents felt that convenience, the fact that the crossing was on their route and safety were the reasons for their use of the crossing. Very few people (26) felt that there was ‘no alternative’ to crossing at a particular site.
4.27 The responses of those pedestrians who crossed correctly were analysed by sex. This is illustrated in Figure 4.3. The reasons why females stated they used the crossing facility were slightly different to those of males. A greater proportion of women were concerned with safety than men, whilst men were more concerned with the fact that the crossings were convenient or on their route. Safety was an issue for women more so than for men. The differences are not statistically significant.

4.28 The age distribution was examined when looking at reasons why the different types of crossings were used (Figure 4.3). The age bands used were children (aged
under 16 years), the elderly (aged 60 years and over) and the general group (aged 16 to 59 years of age). There are some clear patterns in the different responses of the pedestrians of different ages. There are gradations in all responses from the young to general group to elderly for all factors.

4.29 Child pedestrians were concerned much more with safety and whether or not the crossing was on their route than respondents of the other age groups, and placed the least emphasis on convenience or lack of an alternative.

4.30 Elderly pedestrians were the group most concerned with the convenience of the crossing type or lack of an alternative. This group was least concerned with safety or whether the crossing was on their route. This is a surprising result, as it is generally considered that elderly people do have a strong concern about safety.

**Figure 4.4 Reason for using crossing facility by age distribution**

4.31 The reasons that people used the specific crossing types were also examined. This information is summarised in Figure 4.5.
Figure 4.5 Influential factors by crossing type

4.32 Traffic calming, pedestrian island, Toucans and pedestrian phases were felt to be convenient and on route for the people in the survey that used them. Safety was an important factor for pedestrians who used the Puffin, Toucan and Zebra crossings and was in fact the most important factor for Puffin crossings. Safety was, however, not seen as important by people who used the crossing in the traffic calmed areas. Very few people suggested no alternative was an influential factor when taking the decision to use a pedestrian crossing.

Importance of Factors when using a Crossing

4.33 The interviewees were also asked how important they felt certain factors were in making a decision to use a road crossing facility. The factors investigated were the following.

- amount of traffic
- safety from traffic
- time spent waiting to cross
- fear of crime
- its position and how far one would have to detour to use it

4.34 Figures 4.6 - 4.10 illustrate the importance that the respondents placed on the above factors. The proportion of the whole sample who rated the factor very important or quite important is shown on each figure as a starred line and its level is printed at the right margin of the graph.
The volume of traffic was very important or quite important for 91% of the total sample. This proportion was lower than average at the site with traffic calming 84%, the over-bridges, 80%, the island sites, 88% and the underpasses, 87%. The proportions were markedly higher than average at the puffin crossings, 99%, at the toucan crossings, 98%, and at the zebra crossing, 97%.

Safety from traffic was rated very or quite important by 96% of the sample. The response was slightly below this average for user of over-bridges, 89%, pedestrian phases at traffic signals, 94% and underpasses, 94%. This may be a
consequence of physical segregation at the bridges and underpasses and unambiguous temporal segregation at the pedestrian phase signals.

**Figure 4.8 Importance of time spent waiting to cross when using a pedestrian crossing**

4.37 Time spent waiting to cross was rated very or quite important by 66% of the respondents. More than the average gave this rating at the pelican, 75%, and toucan crossings, 74%. Fewer than average rated this factor at the island, puffin and underpass crossings. The data suggest that the pelican and toucan users were more sensitive to delays and conversely the users of the island, puffin and underpass crossings were less aware of delays.
Fear of crime was the factor that fewest people rated very or quite important, 30%. However, 43% of the over-bridge sample and 63% of the underpass sample rated this factor important. Clearly fear of crime is prevalent among users of these type of facility, especially underpasses.

The position of the crossing facility was very important or quite important for 72% of the total sample. 98% of the toucan sites sample rated position important. This may indicate that the users did not think these facilities were as conveniently sited as the other facilities.
Non Use of Crossings

4.40 The most common reason given for people not using a crossing was that there was little or no traffic. It was felt that the traffic flow on the road did not warrant the use of a crossing. The other common reason was the length of time added to the pedestrians’ journey, by using a crossing. If the responses, ‘too long’, ‘too far’, ‘I’m in a hurry’ are pooled this factor exceeds the ‘no traffic’ response. The responses given by those who were classified as not using the crossing are shown in Figure 4.11.

Figure 4.11 Reasons for not using a crossing

4.41 The percentage of responses for people not using the crossing was only 23% therefore it was not appropriate to look at reasons for not using a crossing by the nine different types of crossings. To facilitate some analysis the crossings were grouped as island (includes traffic calming), over-bridge, any signal controlled crossing, underpass and zebra. In addition the reasons for non-use, not on the route, in a hurry, too far, and too long were grouped as a single reason, ‘too long’. This analysis showed statistically significant differences in responses between the aggregated crossing types. 86% of non-users at the over-bridge site, 60% at the underpasses, 49% at the signal sites, 29% at the island sites and 19% at the zebra sites cited one or more of the too long reasons for not using these crossings. No traffic was a frequent reason for non-use at the island sites, 48%, at the signal sites, 48%, and at the zebra sites, 27%. Inconvenience was mentioned as a reason for non-use by 29% of the underpass non-users.

4.42 The reasons that people did not use crossings were also categorised by sex (Figure 4.12).
Figure 4.12 Reasons for not using a crossing by sex

There appears to be some differences between the responses of the sexes for not using a crossing facility. Most markedly, male respondents gave the reasons that using the crossing would take too long, and that the traffic was light enough to cross without using the facility more frequently than women. Females stated more frequently that they felt the crossing to be unsafe.

4.44 Reasons for not using a crossing was also examined by age distribution (Figure 4.13).

Figure 4.13 Reasons for not using crossings by age
The main reasons for people not using pedestrian crossings (takes too long and no traffic) are prominent responses for all age groups, but there is a gradation in the response between the age groups from the young to the elderly. The most common reason given for the under 16s not using crossings was that it would take too long. A surprising result was that the most common reason for the elderly not using a crossing was that there was little or no traffic.

**Suggested alternative crossings**

All respondents were asked to suggest what alternative crossing, if any, they would like to see at the point where they were interviewed (Question 5 Appendix B). Since it was clear from the pilot study used to test the questionnaire’s effectiveness that there was confusion over the crossing types which have a ‘green man’ control (Puffin, Pelican, Toucan, and Phase) a choice of ‘green man’ was included. This was done since it was desirable that any leading of the respondents was avoided, which might occur if the interviewers were to explain the crossing types to interviewees.

The results are shown in Table 4.8, which gives the numbers of responses given at each crossing type.

**Table 4.8 Number of suggested crossings by the crossing type the interview took place**

<table>
<thead>
<tr>
<th>Crossing where interviewed</th>
<th>Green Man</th>
<th>Pelican</th>
<th>Puffin</th>
<th>Toucan</th>
<th>Zebra</th>
<th>Under</th>
<th>Over</th>
<th>Pedestrian</th>
<th>Phase</th>
<th>None</th>
<th>Don't Know</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calming</td>
<td>1</td>
<td>7</td>
<td>14</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over-bridge</td>
<td>17</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>63</td>
<td>2</td>
<td>17</td>
<td>16</td>
<td>89</td>
<td></td>
<td></td>
<td>123</td>
</tr>
<tr>
<td>Ped island</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>24</td>
<td>19</td>
<td>1</td>
<td>7</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>Pelican</td>
<td>14</td>
<td>114</td>
<td>2</td>
<td>21</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>24</td>
<td>186</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puffin</td>
<td>5</td>
<td>4</td>
<td>23</td>
<td>8</td>
<td></td>
<td>5</td>
<td>13</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toucan</td>
<td>3</td>
<td>5</td>
<td>25</td>
<td>6</td>
<td>1</td>
<td>7</td>
<td>10</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ped phase</td>
<td>9</td>
<td>18</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>69</td>
<td>14</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under-bridge</td>
<td>15</td>
<td>14</td>
<td>8</td>
<td>50</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zebra</td>
<td>26</td>
<td>29</td>
<td>2</td>
<td>30</td>
<td></td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>15</td>
<td></td>
<td></td>
<td>110</td>
</tr>
<tr>
<td>Totals</td>
<td>90</td>
<td>214</td>
<td>31</td>
<td>27</td>
<td>122</td>
<td>56</td>
<td>71</td>
<td>31</td>
<td>74</td>
<td>51</td>
<td>116</td>
<td>883</td>
</tr>
</tbody>
</table>

Interpretation of the data is not particularly simple because there are a large number of variables involved. Table 4.8 shows for each suggested crossing type the proportion of respondents at each actual crossing type who made that suggestion. In most cases the respondents stated that the crossing type that was already present was the best for that point, these figures have been highlighted in bold in Table 4.9.
Table 4.9 Proportion of responses for best crossing type

<table>
<thead>
<tr>
<th>Crossing where interviewed</th>
<th>Green Man</th>
<th>Over Ped Island</th>
<th>Pelican</th>
<th>Puffin</th>
<th>Toucan</th>
<th>Phase</th>
<th>Under</th>
<th>Zebra</th>
<th>None</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calming</td>
<td>0.03</td>
<td>0.00</td>
<td>0.16</td>
<td>0.23</td>
<td>0.00</td>
<td>0.00</td>
<td>0.03</td>
<td>0.00</td>
<td>0.45</td>
<td>0.00</td>
</tr>
<tr>
<td>Over-bridge</td>
<td>0.00</td>
<td>0.00</td>
<td>0.16</td>
<td>0.07</td>
<td>0.00</td>
<td>0.00</td>
<td>0.02</td>
<td>0.00</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Ped island</td>
<td>0.17</td>
<td>0.00</td>
<td>0.00</td>
<td>0.61</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
<td>0.27</td>
<td>0.00</td>
</tr>
<tr>
<td>Pelican</td>
<td>0.08</td>
<td>0.01</td>
<td>0.00</td>
<td>0.38</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
<td>0.11</td>
<td>0.00</td>
</tr>
<tr>
<td>Puffin</td>
<td>0.12</td>
<td>0.00</td>
<td>0.00</td>
<td>0.44</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
<td>0.11</td>
<td>0.12</td>
</tr>
<tr>
<td>Toucan</td>
<td>0.05</td>
<td>0.00</td>
<td>0.00</td>
<td>0.44</td>
<td>0.00</td>
<td>0.00</td>
<td>0.02</td>
<td>0.00</td>
<td>0.47</td>
<td>0.00</td>
</tr>
<tr>
<td>Ped phase</td>
<td>0.08</td>
<td>0.00</td>
<td>0.01</td>
<td>0.58</td>
<td>0.00</td>
<td>0.00</td>
<td>0.02</td>
<td>0.00</td>
<td>0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Under-bridge</td>
<td>0.14</td>
<td>0.00</td>
<td>0.02</td>
<td>0.47</td>
<td>0.00</td>
<td>0.00</td>
<td>0.02</td>
<td>0.00</td>
<td>0.27</td>
<td>0.00</td>
</tr>
<tr>
<td>Zebra</td>
<td>0.24</td>
<td>0.00</td>
<td>0.02</td>
<td>0.26</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>0.00</td>
<td>0.27</td>
<td>0.00</td>
</tr>
</tbody>
</table>

4.49 At the crossing within the traffic calming scheme, nearly half the respondents (45%) suggested that a zebra crossing would be best at that position, next most popular suggestion was a pelican crossing (23%) followed by a pedestrian island (16%). 10% of the people interviewed did not know what to suggest.

4.50 Just over half the respondents interviewed at over-bridges suggested that this crossing type was the best for the sites (51%). Next most popular suggestion was a pelican. (14%). A relatively large proportion of those interviewed felt that there should be no crossing facility at that point or did not know what to suggest (14% and 13% respectively).

4.51 Of those respondents interviewed where a pedestrian island was the crossing facility, most suggested that there should be a zebra at that position (27%); the second most popular choice was the current provision (21%). 17% of the respondents felt a “green man” crossing was most suitable, whilst 16% didn’t know what to suggest.

4.52 By far the majority of respondents felt that the pelican crossing facility already provided was best (61%). The second most popular response was a zebra crossing with just 11% of people expressing this choice, 13% of the respondents did not know what to suggest.

4.53 22% of respondents interviewed at a puffin crossing did not know what the best type of crossing at these sites would be. This might be a reflection of the interviewees’ confusion as to what type of crossing was already provided. The most numerous response was that it should be a puffin (38%) which was the highest proportion in this category. 13% and 12% of respondents suggested a zebra or pelican for these sites respectively.

4.54 Those interviewed at the toucan crossing sites felt that they were best served with the current crossing facility (44%). A high proportion of these respondents did not know what alternative might be best (18%), possibly for the reasons explained in the previous paragraph. 12% thought no crossing would be best and 11% felt a zebra would be appropriate at that position, 12% felt that no crossing facility was preferred.
At the pedestrian phase crossings, most respondents replied that the current crossing provision was best (58%). 15% felt that a pelican would be best at these sites, 12% didn’t know what to suggest.

At the under-bridge sites, most felt the current provision was best (47%), 14% and 13% felt that a ‘green man’ or pelican facility would be best respectively.

Most respondents at the zebra crossing sites felt that this type of crossing was best (27%), but similar number felt that a pelican (26%) or ‘green man’ crossing (24%) would be best.

The data were analysed using a simplified set of variables. These were (Table 4.10):

<table>
<thead>
<tr>
<th>Crossing type</th>
<th>Preference</th>
<th>Use of crossing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Island</td>
<td>Preferred same</td>
<td>Used correctly</td>
</tr>
<tr>
<td>Bridge</td>
<td>Preferred other (or none)</td>
<td>Did not use correctly</td>
</tr>
<tr>
<td>Signal</td>
<td>Didn’t know</td>
<td></td>
</tr>
<tr>
<td>Zebra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subway</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis showed significant three-way and two-way interactions, pointing to two conclusions:

1. Significantly fewer people said that they preferred the same type of crossing at the island and zebra sites than at the other sites. At these sites, more of the people who used the crossing correctly said that they preferred some other type of crossing (or none) than at the other sites. These crossing types are not as popular, even with their users, as other crossing types.

2. More of the respondents than expected at the bridge sites had used the crossing correctly. Fewer of these than expected said that they preferred some other crossing or no crossing. However this does not signal an unambiguous endorsement of bridges. There was no significant increase in the number who said that they preferred a bridge, most of the increase was in the number who did not know what they preferred. It may be that the nature of most of the bridge sites surveyed was such that alternative routes were difficult if not impossible, forcing correct use, and that within the existing layouts the respondents could not conceive any alternative crossing type.

PEOPLE WITH MOBILITY IMPAIRMENTS

This section describes the results from the survey carried out involving people with mobility impairments.
For the purposes of this study various groups/clubs for people with mobility impairment were approached. The groups that contributed to the study were the National Federation for the Blind, the Lothian Coalition for Disabled People, Sense Scotland, The Artificial Limb Centre (Princess Margaret Rose Hospital) and the Firrhill Resource Centre.

Thirty-two interviews were conducted, hence statistical analysis would not be appropriate. This section reports results as numbers and percentages of the people interviewed for this element of the project.

The interviewees comprised 18 males (56%) and 14 females (42%). The sample included 8 blind people (25%) and 17 people with walking difficulties (53%), people with learning difficulties, amputees. People who had a combination of the above disabilities made up the remaining 7 (22%) interviewees.

Wheelchairs were used by 31% of the respondents (10 people), 19% (six people) used a walking stick, 6% (two people) had guide dogs, 22% (seven people) used a cane (for the visually impaired). Amputees (all had an artificial leg) accounted for 13% (4) of the respondents, whilst only 9% (three people) used no form of mobility aid.

Most of these people (91%) said that they tended to use pedestrian facilities when crossing a main road. The remaining 9% (three people) all had walking difficulties and only sometimes used pedestrian crossings. The reasons given were:

- that it was quicker not to use the crossing,
- that crossing facility could be too far out of the way
- that it was difficult to see the ‘green man’; therefore it is easier to cross away from the facility, provided that the traffic on the road was not heavy.

Only two people had not experienced problems when using a pedestrian crossing. Three-quarters of the respondents said they felt that the ‘green man’ phase was too short. There was a problem that not all kerbs are dropped for 28% of the respondents and uneven surfaces were given as a problem by 22%. The problems experienced were mainly with the ‘green man’ style of crossing reported by 84% (27 people) of the people interviewed.

When asked what type of pedestrian crossings those surveyed preferred, the majority of people (59%) opted for a ‘green man’ crossing type. Pelican crossings were identified by only one of the respondents and 13% (four people) preferred to use a Puffin crossing. One respondent would have preferred to use either a puffin or a ‘green man’ style crossing. Most people (44%) preferred to use a ‘green man’ style of crossing since it saved them time. Better-perceived safety from traffic was the reason given for using a ‘green man’ type crossing by 25% of the respondents, and 25% of the respondents preferred the ‘green man’ since it assisted their visibility.

When asked which type of pedestrian crossings people with mobility impairments disliked using, 31% said they would avoid an over-bridge. Of these ten respondents, 9 had walking difficulties and one was blind. The reasons given for this
avoidance were mainly because there were too many steps and that the over-bridges were too steep, also the respondents said that they were awkward and tiring to use.

4.69 Zebra crossings were not very popular, 28% of respondents had a very strong dislike of using them. This was because people felt that they did not have adequate control over the traffic. 40% of those who responded to this question reported a lack of confidence due to a feeling that it was unsafe to cross.

4.70 A quarter of those interviewed did not like using pedestrian islands. There were various reasons for this. The people interviewed, who were blind, felt that there was too much background noise from traffic, and felt unsafe because they were uncertain when it was safe to cross.

4.71 The reasons given for people not using an underpass was that they felt it was unsafe, and also that their journey’s length was increased. Nearly all of the people who disliked using an underpass also did not like to use over-bridges.

4.72 In addition to the specific questions on the proforma, people were asked in general what they thought about pedestrian crossings. The results varied between people with the different types of mobility impairment, but were reasonably consistent within each group.

**Blind Pedestrians**

4.73 The general comments from the blind people were that the pedestrian phases were not long enough to allow them to cross the road, with all those interviewed saying that they took a long time in crossing roads. The actual type of 'green man' crossing was irrelevant to this group of people, however enhancements on the types of crossings were very much appreciated. These included:

- audible enhancements - talking not just beeping sounds, when it was safe to cross,
- knurled rotating knobs (tactile signals) underneath the button/wait sign box,

4.74 Most of the blind people interviewed, although registered as blind, had partial sight. Many of them relied on the illuminated yellow 'wait sign' on the pedestrian crossing pole. In several cases they felt that these were poorly maintained. Many of the wait signals were covered in graffiti or had flyers stuck on them, making it very difficult for the blind people to see whether the wait sign was illuminated or not. It should be noted that extinction of the yellow wait sign does not always indicate that the green man is showing. It is a potentially dangerous practice to assume that extinction of the wait sign signals the start of the green-man pedestrian phase because there could be other reasons for the wait sign to become extinguished and traffic may still be moving at speed through the crossing.
Pedestrians with Walking Difficulties

4.75 The main problems experienced by pedestrians who had walking difficulties was that they felt that the pavements were too high, and that the 'green man' phase was too short. Most did not like to use an over-bridge as it involved a great deal of extra effort in crossing the road. The majority of people interviewed in this category preferred to use a controlled crossing as it gave them a feeling of being in control and therefore they felt safer when crossing the road.

Amputee Pedestrians

4.76 In general the people interviewed that were amputees, had no specific problems with pedestrian crossings, apart from saying that sometimes the phase was too short.

Pedestrians with Learning Difficulties

4.77 It was very difficult to obtain information directly from this small category of interviewees. Those interviewed could not properly understand the questions. An 'enabler' always accompanies these people when they are outside on roads. The enabler translated the questions to the person and then told the interviewer the answers. Unfortunately this may have led to the questions being perhaps not wholly answered by the interviewee, but prompted to some extent by the enabler. However, using the enablers to interpret was the only way that any useful information could be obtained.

4.78 A discussion was held between the interviewer and the enablers. The enablers said they were unaware of any educational packages specifically or people with learning disabilities. The feeling was that there should be some form of very basic road safety educational package made available to this group of people.

School Children

4.79 This section describes the results of the self-completion form by the school children.

Selection of Schools

4.80 Two hundred and forty self-completion questionnaires were sent out and 233 forms were returned. Of the forms returned, three pupils neglected to say whether they were a boy or a girl. These three forms have been omitted from the analysis, giving a total return rate of 96%. Of these, 43% were boys and 57% were girls. This was an exceptionally good response rate.

4.81 Pupils who walk to school accounted for 63% of those who completed the forms. Of the boys who responded, 66% of them walked to school, whilst 60% of the girls who answered the questionnaire said that they walked to school. The bus was used by 16% of school pupils, and a car was used by 11%. 10% of pupils used a
combination of transport modes (walking, cycling, bus and car). Only one pupil in the survey cycled to school.

4.82 When travelling home from school, there was a slight increase in the number of children who walked from 144 to 155 children (a 4% increase). The number of children who got a bus home was 33 (14%), a 2% drop from those who took a bus in the morning. The biggest drop in numbers in the mode of travel home, as opposed to going to school was by those who travelled by car (a drop of 4%). The number of pupils who used a combination of modes, including the underground) increased negligibly by 1%.

**Children who walk to or from school**

4.83 This section analyses the responses of children who normally walk to or from school.

4.84 Of the children within this sample who walked to school 55% were girls and 45% were boys. Of the 21% of children, who walk to school by themselves, most were boys rather than girls. Of the boys that walk to school, 30% walk by themselves, whilst only 14% of girls walk on their own. Most of the children that took part in the survey and who walk to school, walk with other children and no adult (68% of all children).

4.85 Secondary pupils were less likely to walk to school than primary school pupils (59% and 66% respectively). There were no major differences in mode of travel to school between the sexes in either primary or secondary, with the exception of girls walking to and from secondary schools. Whilst 69% of the secondary boys who completed the form said that they walked to school, only 50% of girls said they walked to school. Similarly, 78% of boys walked home from secondary school but only 55% of girls (Figure 4.14).
4.86 The picture for children going home *from* school is very similar, although the differences between secondary and primary are not as pronounced as it is for the modes children use to get *to* school.

**Accompaniment**

4.87 Some primary school children walked with an adult whilst none of the secondary children who completed the form said they walked to or from school with an adult. In both primary and secondary schools more children walked home from school with other children than walked to school. Girls were less likely to walk to either primary or secondary schools on their own than boys were. In primary schools fewer girls walked home on their own than boys. Whilst in secondary schools there were about the same numbers of boys walking to school on their own as there were girls.

4.88 The only significant difference between the sexes concerning their accompaniment to or from school was that more primary school girls tended to walk to and from school with other children than primary school boys, the percentage of girls being about 70% and 65% in each case.

**Crossings**

4.89 Most children had to cross at least one busy road to get to or from school (77%). Children, who had to cross more than one busy road, accounted for 28% of the respondents. A crossing was used by 79% of the children who had to cross at least one busy road. A smaller proportion of primary school children, 20%, had to cross more than one busy road than secondary children, 36%.
4.90 The main types of crossings used by children were crossings attended by a school crossing patrol and 'green man' crossings. These accounted for 52% and 64% of the types of crossings used. No children used a zebra crossing.

Figure 4.15 Crossing type use by primary and secondary children

4.91 Figure 4.15 shows the use of the entire crossing types children who completed the questionnaire encounter on their journey to and from school. More primary children used a lollipop man when crossing a road than secondary children. Whilst more secondary children used a green man. No children used a zebra crossing. Underpasses and footbridges were used by more primary children than secondary children in the survey were.

4.92 When asked what they would do if there were no crossings present, 45% of children said that they would cross carefully at the same place. 17% said that they would seek an alternative. Children also said that they would cross with another adult or with other children (8%). Running across the road was an option for 8% of the children, whilst 10% said that they would cross anyway. Combinations of the above answers, and also getting a lift instead, and other unique answers accounted for 11% of the replies. The various responses are shown in Figure 4.16 below.
Figure 4.16 Responses to how children would cross the road if there were no crossing provision

<table>
<thead>
<tr>
<th>Percentage of Responses</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross carefully</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>Cross alone</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Cross with an adult</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>Find alternative</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Run</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Cross anyway</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>No response</td>
<td>10%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Children Who Do Not Walk to School

4.93 Children who did not walk to or from school accounted for 37% of the respondents. In some instances there was more than one reason that the children did not walk to school (85 children).

Figure 4.17 Reasons for not walking to or from school

<table>
<thead>
<tr>
<th>Percentage of Responses</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too far</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Parent’s disallow</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Roads too busy</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Parents drop me off</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

4.94 The pattern of responses that both primary and secondary children gave for not walking to school was very similar as illustrated in Figure 4.17. The most common
The number of children who said what could persuade them to walk to school was 53. Of these, 26% said that if they lived closer to the school, or the school was closer to them, that might possibly persuade them to walk. Similarly 26% of pupils said that there was nothing that could be done to persuade them, or that they couldn't think of anything that would. Other answers were walk with friends, convince parents that it is safe and stop school buses. Only two children said that they might walk if the authority put in additional crossings. The responses are shown in Figure 4.18.

**Figure 4.18 Reasons children gave that would persuade them to walk to school**
CHAPTER FIVE CONCLUSIONS

5.1 Three surveys have been undertaken to explore how different crossings affect people’s experience as pedestrians.

5.2 The surveys were:

- A survey of 890 pedestrians who had just crossed a road on or near to a crossing
- A survey of 32 people with some mobility impairment, interviewed at various centres
- A self-completion survey of 233 children, approached via their schools.

5.3 The main survey was conducted at a range of nine different crossing types. At most of the sites it was possible to cross the road near but not on the crossing. At a small number of sites, footbridges and traffic signals, guard rails and other barriers prevented non-use of the crossing. The interviewers were asked to obtain a quarter of the responses from pedestrians who had crossed near but not at a crossing. The interviewers observed that people who had not used the crossing were more likely to refuse to be interviewed than users.

5.4 The interviewers were instructed to survey a balanced number of males and females and to include quotas of children and elderly pedestrians.

5.5 People, who had used the crossings, gave their reasons as convenience, that it was on-route and safety from traffic in almost equal numbers. There was little difference between males and females but there were differences when the data were analysed by age. Elderly pedestrians mentioned convenience more frequently than other groups; children were least concerned about convenience but more concerned than other age groups about whether the crossing was on route or safe from traffic.

5.6 People, who had not used the crossing, gave as their most frequent reasons either that there was no traffic about or that using the crossing would take too long. Men said that there was no traffic more frequently than women did; the elderly said this more frequently than the others. Children, who had not used the crossing, were most likely to say that using it would take too long.

5.7 Users and non-users were asked to suggest what sort of crossing should be provided at the site where they had crossed. The most frequent response was the type already installed for all crossings except at the pedestrian island sites. Here respondents just preferred a Zebra crossing; various signal crossings were also mentioned. For the Zebra sites, Zebra was only just preferred over both Pelican and Green Man; combining these types gives a clear majority in favour of the signalled crossing.

5.8 Those interviewed with impaired mobility included people with walking difficulties, blind people, amputees, people with learning disabilities and people with combinations of these.
5.9 Difficulties dealing with steps and structures meant that this group did not favour footbridges and some subways. Zebra crossings could be difficult because members of this group were worried that traffic would not stop for them and several could not see traffic easily. The problem with traffic also worried some at Green-man crossings: at these sites seeing the green-man signal can be a problem and the need for tactile devices and extra audible cues were mentioned by several respondents. Respondents also complained that the pedestrian phase was too short for people whose condition meant that they moved slowly. In addition, respondents with walking difficulties complained of the frequent absence or poor installation of drop kerbs, which left a difficult height change at the edge of the carriageway. The blind people did not like pedestrian islands because they found that the traffic noise was confusing.

5.10 The survey of school children showed that the most frequent reason for not walking to school was that the distance was too far. Small numbers might be encouraged to walk if they lived nearer their schools.

5.11 A major reason for undertaking this research was to examine how crossing provision interacts with people’s decisions to walk or not on trips, particularly in town centres. The contemplation of change model provides a convenient framework for exploring such decisions.

| Pre-contemplation | Change not being considered  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never thought of it</td>
</tr>
<tr>
<td></td>
<td>Would never consider it</td>
</tr>
<tr>
<td>Contemplation</td>
<td>Perceive a link between problem and behaviour</td>
</tr>
<tr>
<td></td>
<td>Could conceive possibility of change</td>
</tr>
<tr>
<td>Ready for action</td>
<td>Costs and benefits known</td>
</tr>
<tr>
<td></td>
<td>Attracted to the prospect</td>
</tr>
<tr>
<td></td>
<td>Actively considering activity and implications</td>
</tr>
<tr>
<td>Action</td>
<td>Experimenting with new behaviour</td>
</tr>
<tr>
<td></td>
<td>Has experienced and is assessing</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Regularly undertaking behaviour</td>
</tr>
<tr>
<td></td>
<td>May revert to not doing</td>
</tr>
</tbody>
</table>

5.12 The pedestrians interviewed just after crossing the road can be considered as mainly at the maintenance stage but with some at the action stage. The evidence shows little concern about crossing provision among this sample. It should be noted that at the signalled crossings over-bridge and footbridges half or more respondents thought that the existing provision was the type needed. Almost half of the underpass users thought an underpass was best at their crossing site. Most respondents at the pedestrian island crossings suggested that a Zebra or signalled crossing would be appropriate and at the Zebra crossings over half suggested that a signalled crossing would be appropriate.

5.13 Provision of crossings is probably a minor factor in maintaining levels of walking among the population. However, urban planners should note the slight bias among pedestrians against pedestrian island crossings and Zebra crossings.

5.14 The sample of school children included respondents at every stage of the contemplation of change model. There were children who said that they would never
consider walking and so were clearly at the pre-contemplation stage; there were children, who gave reasons such as distance, weather and convenience, and are at the contemplation stage; other children said that they might walk with friends or if they could convince their parents that it was safe, which places them at the ready for action stage; and finally, the children, who were walking to school, were at the action and maintenance stages.

5.15 As with the respondents at the crossings, the school children seemed unlikely to vary their walking behaviour if the crossing provision on their school route were changed. Children who walked were asked what they would do if crossing facilities were removed and only a small number said that they would get a lift instead of walking. Among the group who did not walk, only two children said that they might walk if the local authority provided additional crossings. Of course the children’s views do not provide the whole story when considering school travel; parents’ views are also important, particularly in the case of the travel decisions of primary children. Some research to survey parents could explore this issue further.

5.16 Very small numbers of people with any sign of mobility impairment were interviewed in the crossings survey and the supplementary sample at the various centres was also small. It would be unwise to use this data as more than indicative. There are strong indications that quite small variations between and within crossing types can cause major problems for members of this group. There is the clear message that, if they are to walk about, they need crossings that do not tax their physical abilities and that function unambiguously for people with impaired sight, hearing or understanding.

5.17 In the main survey the children that were interviewed appeared to be able to differentiate between the crossing types better than the adults in the survey. This could be due to the educational programmes on road safety given in schools (System 3 (1998)).
CHAPTER SIX  RECOMMENDATIONS

6.1 In Scotland it is known that people make more walking trips in urban areas than in other parts of the UK already (Scottish Executive (1999), Department of Environment (1998)). This project has demonstrated that users and non-users are generally satisfied with what is provided and as a result no great increases in walking would be available through changes in crossing facilities.

6.2 The research findings confirm that the existing appraisal framework used is appropriate, and that pedestrian crossings should be tailored within this framework, to local circumstances and need.

6.3 Children, who do not walk to school, should be made aware of the health benefits, social opportunities and practicality of walking on the school journey.

6.4 Research is needed to explore how crossing provision and other aspects of safe route provision affect parental decisions to allow children to walk to school.

6.5 People with impaired mobility need crossings that do not tax their physical ability and that function unambiguously for people with impaired sight, hearing or learning ability.

6.6 An educational pack aimed at people with learning disabilities should be designed and made available to organisations that could help promote safe road crossing procedures to this user group.

6.7 Steps, including badly installed drop kerbs, are a barrier to movement. Dropped kerbs should replace steps, and poorly installed dropped kerbs should be replaced and maintained as necessary.

6.8 Pedestrian light signals need to be as clear as is practical. New installations have signals with improved visibility (fibre optic signals with 200 mm diameter signals and enhanced LED luminance - European standard). All new signal installations should be either this standard or at the very least to the Puffin crossing standard.

6.9 A program should be implemented to replace existing pelican crossings with either the new European Standard fibre optic signals, or the Puffin crossing.

6.10 Pedestrian light signals need to be well maintained and kept clear of stickers and other obstructions.

6.11 Enhanced facilities such as voiced crossing, announcements, tactile devices and keyed facilities are desirable at all Green man crossings.

6.12 Two stage crossings are confusing for blind people and separate voices controlling each stage are desirable.
6.13 As a number of users feel threatened by traffic at crossings a publicity campaign describing priorities and promoting correct behaviour by drivers may be helpful.

6.14 Publicity about pelican crossings should be targeted at pedestrians. This should highlight the operation of the pelican crossing, particularly that a green man crossing is protected after the tone ceases until all pedestrians clear the crossing. This may reassure slow moving pedestrians and maintain their intentions to continue walking.

6.15 A national study looking at children and their walking activities would be advantageous for the Safe Routes to school programme. The results of this would be able to be fed into School travel plans, which are currently being used as part of local Transport Plans.
APPENDIX A

DESIGN OF QUESTIONNAIRES

A1 It was decided that there should be three versions of the questionnaire in order to gather adequate information for three defined pedestrian groups from whom views were sought; children, the mobility impaired and the general public (Ref. §1.5).

A2 Several TRL psychologists were involved in designing the questionnaire, in order to ensure that the best possible information was gained from the public.

A3 The Scottish Executive (SE) specified a maximum of five minutes duration for the on-street interview, so care was taken in order that the maximum useful information could be gathered within this time. The process of producing the questionnaire entailed developing a large number of questions, which were then refined to clarify their meaning, sifted and selected with emphasis on making the survey as effective as possible within the time available.

A4 The questionnaire was then passed to the SE Advisory Group for comment, input and approval prior to carrying out the pilot survey.

PILOT SURVEY

A5 The pilot survey of the main questionnaire was essential in identifying any sections of the questionnaire that were not readily understood by the public, and also to assess whether interviews could be completed within the time allotted. The following sections discuss the selection of the pilot survey site and the results of the pilot survey, which guided final revisions to the main survey questionnaire.

Site selection

A6 A pelican crossing on Hanover Street in Edinburgh was selected for the pilot study. The survey was conducted on a typical working day, (Tuesday 15th February) at a time when the real survey was to be undertaken (between 10:45 am and noon). Thirty pedestrians, including some that used the crossing and some that did not, were interviewed.

Observational Data

A7 The majority of people observed during the survey period were women (70%). There were only two young men in the sample (7%). Of all those surveyed, 83% were unaccompanied by other adults, and 13% had children with them. None of those interviewed were pushing anything (i.e. a pram, shopping trolley or a wheelchair). Only one person used a mobility aid (a walking stick in this instance) The traffic conditions were light to moderate throughout the period. The weather was dry.
A8 People who did not use the crossing, but crossed within 20m, were reluctant to be interviewed. The main reason given was that they were ‘in a hurry’, or ‘didn’t have time’.

**Redesign of Questionnaire**

A9 The main survey questionnaire was redesigned after two processes. Firstly the results of the pilot survey were assessed with regard to how the questionnaire might be modified to obtain the information required (paragraphs 2.9 to 2.15 below). Secondly the SE was again consulted, and further amendments were made on the basis of the experience of their personnel from similar exercises.

A10 The results and observational information obtained from the pilot survey indicate that only minor changes to the questionnaire were necessary. These changes were discussed at an interim meeting with the SE. As a result of the meeting the following changes to the main survey questionnaire were made.

- The incorrectly used option in question 1 was changed from 'crossed diagonally or did not wait for green man' to ‘started/finished on crossing’.
- Taxis and vans were removed from question 2 leaving cars as an option in their own right.
- The order of question 3 was reversed to reflect the most common response given in the pilot survey.
- The open question (question 4) was split into two parts. For those that used the crossing, correctly or incorrectly, options were given. For those that did not use the crossing the open question remained as in the pilot survey.
- Those that did use the crossing were asked a closed question, as the answers to the pilot open question were almost always the same.
- The interviewer was instructed NOT to read out the alternative types of crossings when discussing the most appropriate type of crossing at the interview site, so as not to “lead” the respondent.
- ‘Green man’ was added to the list of crossing types in question 5, ‘What type of crossing would be best here’ because this was the term that almost all of the respondents used when talking about a Pelican crossing.
- Waiting to cross in Question 6, ‘How important is each of the following..’ was changed to 'Time spent waiting to cross' as it appeared to confuse the interviewees.
- ‘Fear of crime’ in Question 6, was used as an alternative to the term ‘personal security’, which respondents confused with ‘safety from traffic on the roads’.
The first drafts of the school-child self-completion questionnaire and the questionnaire for people with mobility impairments were sent to the SE for approval. At an interim meeting with the SE, the following changes were suggested:

- The child pedestrian self-completion questionnaire was redesigned, to make some of the questions more relevant and the format more ‘user-friendly’, with colour coding employed.
- The questionnaire designed for people with mobility impairments had one minor change. The term ‘tactile’ paving as a category was removed, since this was thought to give the definition a negative rather than a positive connotation.

The modified child questionnaire was then tested on the children of TRL staff. Only one further amendment was made and that was to change the coding for sex from 1 for boy to ‘B’ and from 2 for a girl to ‘G’.

The pilot questionnaire together with the main survey, the child and mobility impairment questionnaires can be found in Appendix B.
APPENDIX B

QUESTIONNAIRES
APPENDIX C

SITES
ABERDEEN:

1) Zebra at Rosehill Drive/Hilton Avenue
2) Pedestrian phase on Guild Street/Carmelite Street, by the bus station
3) Under-bridge/pass at Mounthooly Roundabout, by Gerard Street
4) Over-bridge on Commerce Street at Castle Hill

EDINBURGH:

1) Pelican at Shandwick Place/Stafford Street
2) Puffin at Princes Street/Castle Street
3) Toucan at Bruntsfield Road/Leamington Road
4) Zebra at Frederick Street/George Street
5) Pedestrian Phase at Chamber Street/South Bridge
6) Pedestrian Island at Marchmont Road/Warrender Park Terrace
7) Under-bridge at Calder Road/Bankhead Avenue
8) Over-bridge at Broomhouse Road

GALASHIELS:

1) Pelican at Overhaugh Street/Market Street
2) Pedestrian Phase at Island Street/High Street
3) Pedestrian Island in Traffic Clamed Area at Scott Street to Park entrance

GLASGOW:

1) Pelican on Clarence Drive/Lauderdale Gardens
2) Puffin at Springboig Road/Windsor Street
3) Toucan at Kelvindale Road/Ferngrove Avenue
4) Zebra on Drive Road by Skipness Drive in Govan (3 at Roundabout)
5) Pedestrian Phase at Bothwell Street/West Campbell Street
6) Pedestrian Island at Cambridge Street/Cowcaddens Road
7) Under-bridge at Stobcross/Finnieston Street (by entrance to expressway)
8) Over-bridge at Charing Cross (Woodside Crescent to Renfrew Street)

**INVERNESS:**

1) Pelican on Academy Street, adjacent to the back of Marks Spencers
2) Pedestrian Phase on Bridge Street (up from Castle Road and Bank Street)
3) Pedestrian island at Young Street/Tomnahurich Street by Tesco entrance
4) Under-bridge under A82 Longman Road, Rose Street to Innes Street

**DUMFRIES:**

1) Pelican Nith Place (by St Michael Street and Shakespeare Street)
2) Zebra on Moffat Road South (just North East of Victoria Terrace)
3) Over-bridge College Mains Footbridge (at A75/A76 roundabout)
REFERENCES


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Scottish Executive (1999) *Scottish Household Survey QB1*

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