

# Designing for Disabled People in Home Zones



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## **Executive Summary**

The concept of a Home Zone is one in which the design and layout of the road and pedestrian space within a residential area are designed and managed to be shared between pedestrians, vehicles and other road users. It is proposed that sharing a space in this way encourages motorists to drive with greater care and at lower speeds, whilst pedestrians, children and cyclists have greater choice of accessible areas in which to move, play and socialise.

A successful Home Zone should improve the quality of life for all residents and other users. What is paramount however is that all players using the environment should do so with respect and consideration to the needs of other people using the space.

In general, however, disabled people do experience difficulties when using Home Zones and, for some, those difficulties can significantly affect their frequency and independent use of the external environment. Design issues such as the lack of any traditional delineation within the space to identify the proposed uses for particular areas clearly has a negative effect on people's experiences. The lack of 'protection', whether perceived or real, that disabled people can feel within Home Zones is also clearly an issue.

In terms of design, there is no single 'blueprint' for a Home Zone and any guidance that can be offered to those designing Zones can never be prescriptive. However, there are clear issues for disabled people relating to the manner in which likely or preferred uses for different spaces within a Zone can be identified, and how their safety when using the Zone can be ensured.

Therefore, whilst the concept of a Home Zone is one of a shared area that incorporates little or no use of hard physical features to delineate space, users clearly prefer that the areas that represent the most likely routes to be used or followed by vehicles, pedestrians and cyclists are clearly identifiable, unambiguous, and, to some degree, offer a level of protection.

Understanding such issues and paying careful attention to the design, layout and management of features used within a Zone can go some way to addressing the concerns of disabled people. The data gathered in this study from a representative sample of site tests, focus groups and user questionnaires has contributed to our understanding of these issues. It has also identified how a generic approach to the provision of design features within a Home Zone can assist in making decisions and selections that will improve the quality of life for everyone.

### **Key Findings and Guidance**

This project has identified several key areas that affect the use of Home Zones by disabled people, and the extent to which they feel comfortable and safe when doing so.

These can be summarised as follows:

- **Home Zones and similar shared areas can pose problems for disabled people. In general, disabled people prefer to have the option of using a complementary delineated pedestrian area that is clearly defined and unambiguous (7.1.1.4 and 7.1.1.5);**
- **Orientation is aided where there is a continuous building line or where there is a readily identifiable pedestrian pathway or route (7.1.3.4);**
- **Identifying the proposed uses of areas or routes to be used or followed by vehicles and pedestrians can be done by -**
  - **delineating space and activity at surface level (using, for example, visual contrast - although this will not be of benefit blind people with no remaining vision);**
  - **physical features at ground level (using, for example, tactile surface finishes);**
  - **intermittent physical features above surface level (using, for example, bollards, trees, individual planters, lampposts, and individual seats); or,**
  - **continuous physical features above surface level (using, for example, long planters, rows of seating and railings) (7.1.1.4 and 7.1.2.4);**
- **Any method used to delineate space should not unduly restrict the general freedom of movement of pedestrians (7.1.2.4);**
- **Whilst clearly identifiable pedestrian pathways benefit disabled people, attention is also needed to the siting and provision of appropriate crossing points or routes (7.1.4.4 and 7.2.7.5);**
- **The provision for disabled people to cross the paths of vehicles or to identify the preferred uses of different areas should be clearly identifiable and unambiguous for drivers, disabled pedestrians and cyclists (7.1.2.4 and 7.1.5.3);**
- **Pedestrians are more positive about using a Home Zone if it has identifiable pedestrian pathways and the speed of vehicles is kept below 20mph to aid detection (7.2.2.4, 7.2.3.5, 7.2.5.4 and 7.2.8.4);**
- **Freedom of movement is a positive factor within a Home Zone. However, safety and security are also important factors to be considered;**
- **Gateways to a Home Zone should be readily identifiable to all users. This can be done by the appropriate provision and positioning of signs,**

and by a tactile indicator incorporating the use of differing surface finishes (7.1.6.4);

- **At gateways, care should always be taken that the design and extent of any tactile surfaces do not impede access and egress to the Zone by people using mobility aids. (7.1.6.4);**
- **The position of areas allocated for parking and the vehicle routes to those areas should be identifiable and predictable (7.1.7.5);**
- **Informing residents, motorists, cyclists and the wider community of what a Home Zone is and how it should be used will have an important and beneficial effect on how it is used (7.2.8.4, 7.2.9.4, and 7.10.5);**
- **Street furniture can be used to assist in identifying the preferred use of areas, provide protection, and influence the movement and flow of vehicles, pedestrians and cyclists (7.1.8.4);**
- **It is important that street furniture is only provided where it is necessary and it should always act as an integral part of the overall design (7.1.8.4);**
- **The potential for street furniture to present a tripping or collision hazard will be lessened if it:**
  - **is logically placed;**
  - **extends at least one metre above surface level;**
  - **is positioned such that any horizontal elements do not project into circulation routes (i.e. the horizontal section of a seat);**
  - **has its position identified by surface level visual contrast or a tactile area.**
  - **contrasts visually against the background against which it will be viewed in both natural day-light and artificially-lit situations (7.1.2.4 and 7.1.8.4);**
- **Good lighting is essential to enhance a feeling of personal safety, to identify routes and obstacles, and to gather information (for example, from signs and visual contrast) (7.1.10.4);**
- **Lighting should not cause undue or confusing shadows and be positioned to deliver a uniform distribution of lighting within the Zone (7.1.10.2);**
- **The recommended standard maintained illuminance within a Zone should be between 20 and 50 lux (7.1.10.4);**

- **The selection of light sources (bulbs and lamps), should consider their effect (for example, colour rendering performance) on the visual contrast selected to identify features within the Zone. Management practices should be in place to ensure that lighting is appropriately maintained (7.1.2.5 and 7.1.10.3);**
- **Surface finishes should be smooth, level, and slip resistant in all weather conditions. Surfaces should always be appropriately managed to reduce seasonal hazards, such as ice and leaves (7.1.9.5);**
- **Surface gradients should be kept to a minimum but should always be designed to prevent standing water. Adverse cambers should be avoided (7.1.12.4);**
- **Drainage features should be located away from main pedestrian routes and any drainage covers and gratings used should have a maximum size of openings of 13mm (7.1.12.4);**
- **Obstructions overhanging circulation routes caused by projecting features such as seating, signs, trees and other vegetation etc, should be avoided. Where unavoidable, the obstruction should be protected with a barrier at low level and clearly identified using visual contrast (7.1.11.5);**
- **Overhanging trees and shrubs should not extend below 2.1m above surface level (7.1.11.5).**

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## 1.0 Introduction and Background

Home Zones are a concept originally developed in the Netherlands in the 1970s in which the road space within a residential street is shared between drivers of motor vehicles and other road users. The overall aim is to change the way residential streets are used so that they become a valued public space rather than just a place for movement.

### 1.1 Aims and Objectives

The aim of this study was to identify guidelines for design that might be applied to Home Zone areas for disabled people without compromising the integrity of the concept.

This project also considered the safety of disabled people in Home Zones around Britain and how any problems identified may be resolved, whilst maintaining the concept's integrity. The assessment of safety of disabled people includes:

- navigation
- spatial awareness
- crossing the street
- conflict with motorists and other road users
- conflict with other pedestrians
- perception of safety

### 1.2 Why the Study was Needed

Many organisations of disabled people have argued for the basic right of independence and freedom of movement<sup>1</sup> when using the external environment, and for the safety of disabled people to be paramount in the way such environments are designed, managed and used. For many disabled people, this right is not being achieved, or indeed being addressed appropriately, in the provision of the modern external environment.

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<sup>1</sup> The term 'freedom of movement' has been used within this project to differentiate between an area with features that physically stop peoples movement (such as a long wall) and features that give some delineation but that people could pass through (such as a line of bollards, tonal contrast or a low kerb). Complete freedom of movement is being able to move almost anywhere in a space. It is likely that most streets will have a level of freedom of movement, but that this may be reduced by features including pedestrian guardrails, high kerbs, hedges, walls, the building line etc.

One organisation, the Joint Committee on the Mobility of Blind and Partially Sighted People (JCMBPS), believes that safe and independent movement within external environments is currently not possible, and that blind, deafblind and partially sighted people experience a considerable number of barriers to freedom of movement, seriously limiting their opportunities and choice (JCMBPS, 2002).

Despite (the Disabled Persons Transport Advisory Committee (DPTAC) itself also promoting the view that everyone should be able to use the walking environment (DPTAC 2006), various research projects have illustrated concerns with the suitability of external environments in meeting the needs of disabled people.

In a MORI poll commissioned by DPTAC, disabled people identified problems in using the pedestrian environment as being of greater concern to them than those experienced when using public transport (DPTAC, 2002). Other research projects carried out by organisations representing blind and partially sighted people have identified that poor provision in the pedestrian environment is a major factor in limiting the mobility and independence of blind and partially sighted people (Guide Dogs, 1999).

Mobility within the street environment will present different experiences and issues across the disabled population as a whole. The term 'disability' is itself a very broad definition and for which any further detailed exploration was considered outside the scope of this project. Therefore, in this project, reference to disabled people relates to the current generally recognised inclusion of 'people with a physical, sensory or mental impairment'.

### **1.3 Overview of the Methodology**

The research was undertaken utilising three main methods of information gathering, namely, a literature review, site tests and focus groups, supported by additional information gathered from a structured interview of site test participants.

- a) Literature reviews were undertaken by both JMU Access Partnership (JMU) and the Transport Research Laboratory (TRL), with JMU focusing on publications relating to the needs of users, design and management issues related to the provision of Home Zones, and a review of current design guidance. TRL's review focused on publications relating to safety, design guidance and the provision and evaluation of Home Zones.

An overview of the Literature Review is given in Section 2.0 and the Reviews in full are contained in Appendices A and B.

- b) Eleven sites were selected (see Section 3.0); this included sites from the Home Zones Challenge (see section 2.4) and others containing the types of features, facilities and issues that were to be studied to meet the objectives of the project

described earlier in Section 1.1 and the potential access issues for disabled people identified in the literature review.

Structured site tests comprising a 'walk through' of each Home Zone were undertaken by disabled and non-disabled participants. In total, 73 people took part in the tests, and the age, gender and disability profiles are described in Section 3.4.

Analysis of the results was undertaken by TRL identifying the issues experienced by the participants based on:

- the common issues experienced by people with similar impairments;
- the common issues experienced with Home Zone design features;
- the experiences identified by participants for individual Home Zones tested;
- an analysis of the questionnaire of general issues and experiences of Home Zones gathered from all the participants in the site tests.

A résumé of the findings of the site tests are given in Section 3.3 and the full analysis is given in Appendix D.

- c) Focus Groups were carried out at 7 locations in the UK, and 4 of the Focus Group sessions were preceded by a visit to one of the Home Zone sites selected for the tests.

In all, 79 people took part in the Focus Groups, comprising 29 disabled people, 21 access professionals (some of whom were also disabled people), and 27 design professionals. Two guide dog rehabilitation workers also took part.

The aim of the Focus Groups was to gather additional information to be used in the analysis of the site tests, and to enhance the usefulness and appropriateness of any solutions, recommendations and guidance emanating from the study. A résumé of the make-up of the Focus Groups and the findings are described in Section 4.0 and the full analysis is shown in Appendix C.

## **1.4 The Steering Group**

The project enjoyed the support of a Steering Group throughout the project. In all, three meetings were held and the research team is very grateful for the contribution made by members of the Group.

Members of the Steering Group were:

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Pippa Jackson	Access Association
Phil Jones	Phil Jones Associates Ltd
Gary Kemp	DPTAC
Grahame Lawson	DPTAC
Carol Thomas	JCMBPS
Judith Walker	IHIE
Catherine Ward Thompson	Open Space Research Centre
Clint D'Souza	MIU

## **2.0 Literature Review** (see also Appendices A and B)

### **2.1 Literature Review Aims**

The literature review was undertaken by both JMU and TRL. The main objective of the literature review was to identify and evaluate the available research and other relevant literature concerning the issues of Home Zone design, safety and navigation in regard to disabled people.

Therefore the literature review sought to:

- a) provide an overview of current literature and research in relation to safety of disabled people in 'traditional' street environments;
- b) consider current literature and research in relation to the design of Home Zones for disabled people;
- c) identify any conflicts between a) and b) and any gaps in knowledge in order to inform this research or possible future research;
- d) identify the existence of any potential design standards and solutions that could be incorporated in to Home Zones to improve the safety of disabled people;
- e) to identify any methodologies that could be used to assess levels of safety;
- f) consider the development and experience of Home Zones in other European Countries.

The review also considered the development of other provisions in the public realm, such as the concept of 'shared space', and sought to identify any similarities and differences between them and the concept of Home Zones.

The review also considered previous research by TRL into the pilot Home Zone schemes, and also considered the topic area in a wider European context.

The following is a résumé of the findings of the literature review, with the full findings being contained in Appendix A and B.

### **2.2 What is a Home Zone?**

The concept of the Home Zone originated in the Netherlands, where they are known as 'Woonerven' (residential precincts). They are also known as 'Winkelerf' (Living Shopping Street) (Bristol City Council, 2003).

In such areas, the Home Zone principle is expressed in the design and layout of residential areas where road space is shared between motor vehicles and other road users. Importantly, residential functions, including the needs of pedestrians, children and cyclists, have a higher priority than traffic provision. Motorists are encouraged to drive with greater care and at lower speeds, and in that respect Home Zones can be seen as a way of 'reclaiming' the street environment from domination by the car.

Home Zones were originally suggested for the UK in the 1980s as a low cost measure to reduce casualties to young children in residential areas and allow them to play outside safely (TRL 646, 2005).

More detailed information on the European experience of Home Zones is given in Appendix A.

In terms of design, there is no single 'blueprint' for a Home Zone. Individual schemes may comprise similar elements, but each scheme should be designed to address or reflect the aspirations of the community in that particular area.

However, there are some key design principles that should be considered (IHIE 2002). These are:

- Shared surfaces
- Indirect traffic routes
- Areas for planting
- Features to encourage the use of the street (i.e. seating)
- Gateways and signs to mark the limits of the Home Zone area.

### **2.3 Definition of a Home Zone**

Many definitions of Home Zones were identified in the literature review, but all follow a common thread, which is described in guidelines on Home Zones issued by the Institute of Highway Incorporated Engineers (IHIE) as:

“Home Zones are residential streets in which the road space is shared between drivers of motor vehicles and other road users, with the wider needs of residents (including people who walk and cycle, and children) in mind. The aim is to change the way that streets are used and to improve the quality of life in residential streets by making them for people, not just for traffic. Changes to the layout of the street should emphasise this change of use, so that motorists perceive that they should give informal priority to other road users”

The IHIE (2002) further define the aim of Home Zones as:

“Home Zones are about people; improving the quality of life of residents by removing the traffic barriers that militate against neighbourliness”

One local authority that has Home Zones within its area, Bristol City Council (BCC), defines them as:

“A Home Zone is a street or group of streets designed primarily to meet the interests of pedestrians and cyclists rather than motorists.”

(BCC, 2003)

In essence, Home Zones aim to improve the quality of life for residents within them. This is achieved through redesigning a residential area in a way that reflects the views of the residents, in relation to the use or the purposes of the street. It is hoped that by introducing a Home Zone, certain positive effects can be achieved.

The Department for Transport (DfT) define the key objectives of the Home Zone concept as a way to:

- turn residential streets into valued public space, and not just a place for movement;
- foster a sense of community;
- encourage a greater diversity of activity and use of the street by residents;
- reduce social isolation, particularly amongst older people;
- increase opportunities for active and creative children's play;
- increase natural surveillance, deterring casual crime;
- reduce traffic speeds significantly – to well below 20mph;
- improve (or at least maintain) the safety of residential areas, and perhaps more importantly, residents' perceptions of safety;
- enable less mobile members of the community - children, older people and disabled people - to reclaim their local environment from the car;
- encourage people to walk and cycle within their local area, and to nearby destinations;
- improve the environmental quality of urban streets; and
- help increase the demand for urban living.

(DfT Home Zones Challenge Website, 2005b)

Dutch guidance on Home Zones advises that treated streets should have fewer than 100 vehicles per hour at peak times, and that continuous treatments in a street should be less than 600 metres in length. Streets being considered for treatment should also typically become the destination for traffic within the area with very low levels of through-traffic (ANWB 1980).

## **2.4 Home Zone as a Policy**

The Government's White Paper on the Future of Transport *A New Deal for Transport: Better for Everyone* published in July 1998 (paragraphs - 3.115 and 3.116):

- recognised the value of home zones in improving the places where people live and children play;
- states "with good design many of the objectives could be achieved within existing legislation";
- gave a commitment to work with local authorities who wished to pilot the idea.

Pilot schemes in England and Wales were established August 1999.

In Scotland, Home Zone pilot schemes were established in July 2000.

Provisions for Home Zones in England and Wales are made in the Transport Act 2000 [clause 268]. This came into effect on 1 February 2001.

The local traffic authority may designate any road for which they are the traffic authority as a Home Zone

They can also make orders about the use of the roads and about speed reduction measures in Home Zones, subject to regulations to be made by the Secretary of State (for England) or the National Assembly (for Wales).

The transport (Scotland) Act 2001 makes provisions for Home Zones in Scotland.

Home Zones were trialled by the government as a tool with which to meet its objectives. In April 2001 the Prime Minister announced the creation of the Home Zones Challenge Fund which would provide financial aid to winning Home Zone bids. 61 winners were announced. In England eight pilot Home Zones were announced as areas where their development would be monitored. Also there were four pilot schemes in Scotland, and one in Wales. These are shown in Table 2.1 below.

<b>UK pilot projects</b>
<p><b>England and Wales</b></p> <ul style="list-style-type: none"> <li>• Ealing Five Roads, West Ealing</li> <li>• Holmewood, Lambeth</li> <li>• Methleys, Leeds</li> <li>• Magor, Monmouthshire</li> <li>• Northmoor, Manchester</li> <li>• Nobel Road, Nottingham</li> <li>• New England, Peterborough</li> <li>• Morice Town, Plymouth</li> <li>• Cavel Way, Sittingbourne, Kent</li> </ul> <p><b>Northern Ireland</b></p> <ul style="list-style-type: none"> <li>• Long Streets, Belfast</li> </ul> <p><b>Scotland</b></p> <ul style="list-style-type: none"> <li>• Alexander Terrace, Tillydrone, Aberdeen</li> <li>• Gorgie and Dalry, Edinburgh</li> <li>• Dundee Royal Infirmary, Dundee</li> <li>• Ormlie, Thurso</li> </ul>

**Table 2.1: Pilot Home Zones**

Following the pilot project, the Prime Minister announced in April 2001 a £30 million Challenge Fund to accelerate the growth in the programme of Home Zones in England.

In January 2002, the winners were announced and out of the 237 bids received, 61 were selected as Challenge Sites. Some of these Challenge and Pilot Sites have been included in this study.

## 2.5 Comparing Home Zones and Shared Space Areas

Shared Space is a relatively new concept in urban transport planning that is being embraced in many parts of Europe including the UK.

The EU funded project 'Shared Space' defines shared space as:

“the integration of traffic, pedestrians and other road users to reduce the dominance of vehicles on the roads and create a more social space”  
(Shared Space website, 2005b).

The project sets out the requirements for structure and use of public shared spaces as:

- “conductive to recreation, interaction and observation
- a high frequency of interaction is encouraged at certain points (urban squares), while other areas are conducive to more relaxed interaction between residents themselves and between residents and visitors. Still other areas should be designed for people to circulate and encounter only a few other people
- the ‘casual’ use of public space for utility-based and necessity-based programmes (including traffic) should be possible (dynamism, information), but the programmes should not dominate the public space and its potential uses
- objects and structures that are neither useful nor necessary in an economic sense, but have a social relevance, should be included in the space
- there is space for informal, spontaneous (non-designed) qualities
- there is contact between the space allocated for public use and other domains.”  
(Shared Space Project, 2005a).

All of these objectives are similar to the aims of a Home Zone, however there are some differences:

- Whilst Home Zones make use of traditional traffic calming installations such as raised humps and chicanes, the concept of shared space relies more upon the fact that:

“behaviour on roads in areas with a public character is influenced more by the expression of the environment than by the usual tools of the traffic profession.”  
(Shared Space Project, 2005b).

- Whilst Shared Space may make use of various installations such as street furniture, bollards or planters to guide users, it is unlikely to use the more obvious traffic calming measures that are incorporated into Home Zones.
- Home Zones rely on a measure of ambiguity and 'perception of risk' to increase the interaction between drivers and pedestrians, Shared Space exploits this further.
- Home Zones often indicate a partial pathway for vehicles while Shared Space often has no separation of traffic flows as:

"Separating traffic flows blinkers people and causes an increase in speed. Because everyone has their own lane, people take less account of other road users."

(Shared Space Project, 2005b).

### 2.5.1 Shared Surface Research

Shared surface research, recently undertaken by Guide Dogs highlighted the following key issue in relation to Shared Space:

"Shared surfaces often have no clear demarcation between the footway and carriageway. Guide Dogs is concerned that the removal of the kerb edge puts the safety and security of blind and partially-sighted people seriously at risk, and undermines their confidence, independence and mobility"

(Guide Dogs 2006).

This research concluded:

"that in many instances blind and partially-sighted people are avoiding town centres with shared surface areas, to the detriment of their independence, freedom and quality of life. Research and monitoring of street schemes must take into account those people who no longer feel able to use the area"

(Guide Dogs 2006).

## 2.6 Core Concepts of Design Standards for Home Zones - a résumé

There is no 'standard fit' model for a Home Zone. Innovation should be used when developing an area, and should be context specific. One local authority that has included Home Zones in its highways provision, Bristol City Council, notes that:

"consideration should be given to gateways, on-street / off-street parking, street furniture, traffic signs, planting, street lighting, refuse collection, play areas, community areas, health and safety, catering for the needs of mobility/visually impaired, pedestrians and cyclists, access for emergency vehicles, 'crime and disorder', publicity and marketing and maintenance."

(BCC, 2003)

In 2002, the Institute of Highways Incorporated Engineers (IHIE), published 'Home Zones Design Guidelines'. The aim of these guidelines was to identify and explain the dialogue and terminology that was emerging around the new concept of the Home Zone, to bring together the academic and practical knowledge of Home Zones available at the time, and to promote design standards and good practice.

The design guidance element explains the core principles of Home Zones, although some elements and areas covered in other guidance documents such as, for example, Biddulph, 2001 and DfT, 2005 are not covered in the IHIE guidance.

A full description of the literature review undertaken by TRL is given in Appendix A.

## **2.7 Design Guidance and Standards Considered in the Review**

Several currently available publications were considered in the Literature Review stage and these included:

Home Zones Design Guidelines	- IHIE (2002)
Home Zones - A Planning and Design Handbook	- Mike Biddulph (2001)
Home Zones - Challenging the future of our streets	- DfT (2005)

In 1999, DfT commissioned TRL to evaluate the Home Zone Pilot Programme that had been implemented in nine local authorities across England and Wales. The study was made available to this research project and a more detailed description of the findings is given in Appendix A.

## **2.8 Mobility of Disabled People**

There are many organisations that argue for the basic right for disabled people to be able to enjoy a reasonable level of freedom when using an external environment, and to do so without fear of danger, risk or injury. For many disabled people that is not possible because of the barriers created for them by the design, management and operation of the external environments they use.

## **2.9 Common Issues across Disabilities**

Mobility within the street environment will present different issues for people with different disabilities. Whilst the definition of the term 'disability' is not part of the remit of this project, it is interesting to note that the Disability Rights Commission (DRC) is currently undertaking a consultative review of the 'definition of disability'.

For the purposes of this research project, the term 'disabled people' refers to the current generally recognised inclusion of people with a physical, sensory or mental impairment.

## 2.10 Mobility of Blind and Partially Sighted People

Organisations such as the Joint Committee on the Mobility of Blind and Partially Sighted People (JCMBPS) have expressed concern over issues relating to the basic rights discussed in section 2.8. The JCMBPS suggests that safe and independent movement is currently not possible and that blind, deafblind and partially sighted people experience a considerable number of barriers to freedom of movement. This seriously limits their opportunities and choices (JCMBPS, 2002) (JCMBPS, 2005).

Previous research (DPTAC, 2002) identified that disabled people considered problems with the environment to be more important or influential in their everyday life - ahead of other issues such as transport.

Other research (Guide Dogs, 1999) has shown that poor provision of the pedestrian environment is a major factor in limiting the mobility and independence of blind and partially sighted people. All research identifies the importance of the appropriateness of design to the usability of the external environment.

People who are blind and partially sighted experience either reduced or total loss of vision, with their ability to gather information and move around an environment dependent on the extent and nature of their sight loss. The coping strategies they adopt will depend upon the extent and effectiveness of their residual vision and may include the use of mobility aids, such as a cane or guide dog, or by them using visual or haptic senses.

However, Guide Dogs have identified that 90% of blind and partially sighted people have never received any mobility or rehabilitation training. This is an unfortunate situation given that the majority of those who have received training report that such training has improved both their quality of life and independence.

Blind and partially sighted people may also use non-visual clues to gather information about their surroundings and assist their mobility. These could include, for example, the sound of traffic, the slope of a surface and changes in texture. However, the most reliable information, and especially in unfamiliar environments, will come from the more permanent clues (Beneficial Design, 1999). These will include a kerb, an adjacent building line, or an appropriately defined edge to a pathway or walkway.

Further information of the strategies adopted by blind and partially sighted people is described in Appendix B.

## 2.11 Inclusive Design

This research project considered the suitability of an environment against the principles of 'Inclusive Design', namely one that can be used by everyone regardless of disability, ethnicity, age or gender.

Providing information that can be accessed using more than one sense has the potential to increase the number of people who can find it and utilise it. Therefore, there is a greater likelihood that disabled and non-disabled people will be able to make informed decisions about where they travel and how they do it. Using visual contrast alone within an environment is a good example of this as it can be used as a source of information to everyone except those with little or no colour perception - about 18% of the blind and partially sighted population. By also developing tactile clues this will further enhance the environment for blind people with no remaining vision.

Inclusive Design principles have been defined in several publications. However, the definition taken for the purpose of this project is that adopted by DPTAC whose definition of an Inclusive Environment is one which:

- Provides equitable access
- Allocates appropriate space for people
- Ensures ease of use, comprehension and understanding
- Requires, minimal stress, physical strength and effort
- Achieves safe, comfortable and healthy environments.

(DPTAC)

## 2.12 Design Guidance on Access for Disabled People to the Street Environment

The literature review identified that the availability of guidance relating specifically to the needs of disabled people using the residential street environment is limited. In general terms the key literature identified as offering good practice guidance on access to the general street environment, with particular reference to the residential environment, was:

- Inclusive Mobility, DfT (2003)
- Guidance on the use of Tactile Paving Surfaces, DfT (2002)
- Traffic Advisory Leaflet 4/91: Audible and Tactile Signals at Pelican Crossings, DfT (1991)
- Traffic Advisory Leaflet 5/91: Audible and Tactile Signals at Signal Controlled Junctions (Superseded), DfT (1991)
- Easy Access to Historic Landscapes, English Heritage (2005)
- Easy Access to Historic Buildings, English Heritage (2004)
- BT Countryside for All, Fieldfare Trust (2005)

- Building Sight, RNIB (1995)
- Housing Sight, RNIB (2003)
- Access to the Built Heritage - Technical Advice Note 7, Historic Scotland (1996)
- By All Reasonable Means, The Countryside Agency (2005)
- Overcoming the Barriers, CADW (2002)

The documents that were identified as being of particular interest to this study with regard to understanding the design issues related specifically to Home Zones and of use in addressing the needs of disabled people also included:

- Home Zones Design Guidelines, IHIE (2002)
- Home Zones: Challenging the Future of Our Streets (2005), DfT (2005)

A primary aim of the latter of these two documents is to:

“Disseminate good practice in Home Zone design and scheme development.”

Therefore, this document was used in the study as a major source to assess the practical application of the design guidance outlined in the former document and assist in any assessments of the success of the Home Zone concept.

All of the documents identified above were reviewed and key issues, including design principles, relating to the accessibility of Home Zones for disabled people were selected for further consideration in this study. The guidance contained in these documents was also used as a benchmark against which to measure the suitability of features and facilities encountered in the subsequent site tests. For some design issues, non-UK guidance and research was also identified with a view to addressing any gaps encountered in the UK guidance. However, due to the limited scope of this project and the time available, a comprehensive and exhaustive review of non-UK guidance was not undertaken.

Further information on the literature review undertaken by JMU is given in Appendix B.

### **2.13 Community Involvement and Consultation**

In order that a Home Zone scheme meets the needs of the local community, any changes to the street environment should be developed in partnership with people within that community (DfT, 2005). Guidance and consultation should be inclusive, and fully consider the specific needs of disabled people (IHIE, 2002; DfT, 2005; DfT, 2002).

It is highlighted by disability groups that the consultation process should maximize the involvement of disabled people by addressing issues such as the availability of

information in alternative formats, the accessibility of any venues for meetings etc, the effectiveness of communication methods throughout the whole process (JCMBPS: response to draft document: IHIE Homes Zones Design Guidelines).

### **3.0 Site Tests**

Data was gathered from a number of Home Zones (n=11) using semi structured site tests from a sample of disabled and non-disabled participants (n=73).

#### **3.1 Method for Selection of Home Zones**

The method of selection of the Home Zones to be considered in the project was clearly an important part of the research process. There is no 'blueprint' for Home Zones and so selection as originally proposed was to be based around the criteria (see section 1.1) taking into account the following:

- whether a Home Zone was a Challenge or Non-Challenge site;
- whether a Home Zone: was a retrofit or new build project;
- the social status of the area in which the Home Zone was situated;
- the area of the UK;
- the availability of existing statistical information to allow for assessments to be made of safety audits and/or previous residents surveys.

However, the research team decided that to classify and select the Home Zones to be considered using only the above criteria would lead to some key issues not being fully addressed. These issues included, for example, how the different layouts of a Home Zone might either affect or be affected by disabled people themselves, especially when considering the various activities that may take place within a Home Zone environment. Therefore, the findings of the literature review were also used to develop and hone the key issues that the research team felt should be considered in the selection of the sites.

##### **3.1.1 The Findings of the Literature Reviews**

The Literature review undertaken by JMU identified a number of issues that had the potential to affect the safety and mobility of disabled people when using Home Zones. It was established that these issues could be categorised into three stages of a Home Zone's implementation identified as 'development', 'design' and 'success'. These are fully described in Section 5.1 of the JMU Literature Review (see also Appendix B). These stages will now be briefly described.

###### **3.1.1.1 Development**

As there is no blueprint for Home Zones, it was decided that an aim of the project should be to investigate the development process of a site in terms of how the design of a site and its subsequent accessibility had been influenced by:

- Consultation with disabled people;
- Cost restraints;
- The influence of issues such as being in a conservation area;

- Any National Joint Utilities Group (NJUG) activities.

It was decided to select one site for which consultation with disabled people had been carried out in accordance with best practice recommendations, and one site where no consultation was undertaken.

### **3.1.1.2 Design Practicalities**

Individual Home Zones may utilise similar design elements, but each Home Zone also needs to reflect the aspirations of the community it serves. The literature review identified key design principles which were also used in the selection of the test sites. These included:

- Generic issues to be tested in all sites such as, for example, the provision of lighting, street furniture, materials, planting etc (see also Sections 3.3.1 later in this report and 6.2 in Appendix B);
- Non-generic issues that can have an impact on the safety and mobility of disabled people including, for example, shared surfaces, indirect traffic routes and the presence (or otherwise) of guidance paths.

Therefore sites were selected that displayed features whereby the research team could examine the use by disabled people of the following layouts:

- Shared Surfaces
  - Complete removal of delineation between vehicles and pedestrians;
  - Some delineation of vehicles and pedestrians by:
    - Standard height kerbs.
    - Low height kerbs.
    - Delineation using visual contrast (colour) and/or surface texture.
- Indirect Traffic Routes
  - Clear continuous pedestrian-only route provided.
  - No provision of clear continuous pedestrian route.
- Guidance Path
  - Provision of a guidance path through the Zone.

### **3.1.1.3 Scheme with Known Difficulties for Disabled People**

The literature review identified that Darcy Gardens in Barking and Dagenham had previously been highlighted by the JCMBPS as being a site that had been identified as adversely affecting the navigation of blind and partially sighted people. Although not designated as a Home Zone, the site contains many features that are present in other Home Zones. After further discussion about the issues at this site it was selected for examination in this research project.

### 3.1.1.4 Number of Schemes Selected

In response to the above selection process, a total of 10 home zones schemes and one further site were selected, this included 8 Challenge Home Zones, 1 English non challenge scheme which was retrofitted, 1 new pilot scheme in Scotland and the site discussed in section 3.1.1.3 which was previously identified as presenting difficulties for disabled people.

## 3.2 Selected Schemes

The selected Home Zones demonstrated a wide geographical spread throughout the UK, a mix of both new and retrofit sites with the inclusion of some sites that had been included as either Pilot or Challenge sites. The selection was as follows:

Home Zone site	New	Retrofit	Pilot site	Challenge site	Non Home Zones Site
Bristol (Southville)		X		X	
Dundee (former Royal Infirmary site)	X		X		
Camden (Lupton St)		X		X	
Gateshead (Staiths South Bank)	X			X	
Kingston Upon Hull (Albany St)		X		X	
Portchester (Castle Grove/Suningdale Rd)		X		X	
Malvern,Worcs (Duke of Edinburgh Way)		X		X	
Plymouth (Morice Town)		X	X	X	
Harrow (Maryatt Ave)		X			
Momouthshire (Magor Village)		X	X	X	
Barking and Dagenham (Darcy Gdns)					X

### 3.2.1 Southville (Bristol)

This retrofit Home Zone has a shared surface (no delineation between vehicles and pedestrians) with parking present which is not designated via colour surface or bollards.



**Figure 3.1: Southville Home Zone**

### 3.2.2 Former Royal Infirmary, Constitution Road (Dundee)

This new build Home Zone has a shared surface with limited delineation via a low height kerb. The kerb delineates the highway and garden area which provides a limited pedestrian area and therefore freedom of movement.



**Figure 3.2: Former Royal Infirmary Home Zone**

### 3.2.3 Lupton Street (London Borough of Camden)

This retrofit Home Zone has various fixed above surface features (that allow freedom of movement – bollards, trees, planters, bins etc) and has a limited use of colour contrast to demarcate space.



**Figure 3.3: Lupton Street Home Zone**

### 3.2.4 Staiths South Bank (Gateshead)

This new-build Home Zone has various fixed above surface features (that restrict freedom of movement – long walls, long planters). In addition it has various non-fixed above surface features e.g. designated and non-designated car parking. While some areas may have clear pedestrian routes, there are other areas where a pedestrian route is not clear. The scheme also makes use of many planted areas.



**Figure 3.4: Staiths South Bank Home Zone**

### 3.2.5 Albany Street (Kingston Upon Hull)

This retrofit Home Zone makes use of a kerb (which restricts free movement). A kerb line with 2m clear distance from the back of the footway to the kerb was utilised at the request of local groups of blind and partially sighted people. This was kept free from any street furniture. Conservation kerbs with a 450mm splay and 50mm upstand used.



Figure 3.5: Albany Street Home Zone

### 3.2.6 Suningdale Road and Castle Grove (Portchester, Hampshire)

This retrofit Home Zone provides a clear continuous pedestrian route. It has a clear 1.2m width adjacent to property boundaries to assist blind and partially sighted people.



Figure 3.6: Portchester Home Zone

### 3.2.7 Duke of Edinburgh Way (Malvern, Worcestershire)

This retrofit Home Zone demonstrates additional features for improved access. Additional tactile paving is included at key crossing points to alert blind and partially sighted residents of the most direct route into and out of the estate, along with corduroy tactile paving at steps.



**Figure 3.7: Duke of Edinburgh Way Home Zone**

### 3.2.8 Morice Town (Plymouth)

This retrofit Home Zone has fixed above surface features (that restrict freedom of movement such as long walls). The space has several routes that utilise bollards and planters and also has non-fixed above surface features such as car parking.



**Figure 3.8: Morice Town Home Zone**

### 3.2.9 Maryatt Avenue (London Borough of Harrow)

This retrofit Home Zone has an upstand measuring 15mm in height of a contrasting, coloured, chamfered type block on both sides of the street delineating where the existing kerbs are currently in place.



**Figure 3.9: Maryatt Avenue Home Zone**

### 3.2.10 Magor Village (Monmouthshire)

This retrofit Home Zone has fixed above surface features (that allow freedom of movement such as bollards, trees, planters, bins etc). The Home Zone also uses texture to demarcate space containing various different surface types including: Tegula Blocked paving, Stonemaster Flag paved area and cobbled areas.



**Figure 3.10: Magor Village Home Zone**

### 3.2.11 Darcy Gardens (London Borough of Barking and Dagenham)

This is not a Home Zones scheme. This area is a paved shared surface cul-de-sac with non-fixed above surface features such as non-designated car parking.



**Figure 3.11: Darcy Gardens**

## 3.3 Test Methodology

The nature of the individual Home Zones examined in this project varied from zone to zone, although some of the characteristics were identified as being generic to all sites. Therefore, it was established early in the project that the varying features and designs found within the individual sites would require the development of a test procedure that was flexible enough to allow the strategies people adopted in moving around and making decisions to be observed and recorded, whilst maintaining a valuable thread of comparability between Home Zones.

Of the five main senses available to users when gathering information (vision, hearing, touch, smell and taste), it was considered that the participants in the tests would most likely utilise only three of these (vision, hearing and touch) when undertaking the proposed tasks. It was expected that they would maximise these senses depending on their own individual residual abilities and the tests undertaken were designed to reflect this.

### 3.3.1 Classifying Home Zone Features

To establish this thread a methodology was adopted whereby individual features commonly found within Home Zones could be described in generic terms of how they may affect the use of the Zone, rather than by their name. For example, bollards, waste paper bins, trees, lampposts and individual seats, are often found in Home Zones and can often be used to delineate space.

However, all of these features can be categorised as features that project above ground level and delineate space whilst still allowing freedom of movement and decision on the part of the users. Conversely, a continuous planter, flower bed or row of seating would not.

What was considered to be important was to determine from the users how the presence or absence of such features affected their ability, confidence etc, when using the Home Zone, not simply the identification of the features that were present. This, it was felt, would also allow the development of more generic and 'designer-friendly' design guidance at the end of the research.

Therefore, for this project, Home Zone features were considered in terms of:

- Information at surface level to delineate space and activity;

For example, the use of visual contrast to identify hazards or give information about features that assists navigation or segregation of activities;

- The provision of physical features at ground level to delineate space and activities.

For example, tactile surfaces to identify hazards or give information about features that assist navigation or segregation of activities, and which project sufficiently above surface level to be detectable.

- The provision of physical features that project above ground level to delineate space or activities but which allow users a good degree of freedom of movement and decision making:

For example, bollards, trees, planters, lampposts, individual seating etc.

- The provision of physical features that project above ground level to delineate space or activities but which **do not** allow users a good degree of freedom of movement and decision making:

For example, continuous or long length planters, rows of seating, railings etc;

- The effect of lighting (natural and artificial).

### **3.3.2 Recording of Data**

Measurable data was gathered using an audit of the site, the design of which was based on the findings of the literature review which is a combination of design guidelines outlined in the IHIE and other Home Zone documents and, where appropriate, other best practice guidance in the access field. Much of the data captured from the subsequent site tests was qualitative.

Participants were asked to consider and offer comments on how they orientated and navigated around a site, and between two specific points within the site. During and after the test they were asked about decision points, crossing points and their preferred route. A number of participants were videoed during their navigation task and this information was used to supplement other recorded data.

The individual nature of Home Zones meant that it was not possible to select a navigation task for participants that was identical in all test locations. However, across the sites the tests did consider the interaction of the participants with the generic issues described earlier (for example, the provision of lighting, visual contrast, street furniture), and also any non-generic issues found at individual test sites. These included, for example, any differences in implementation of the design of site layout, with reference to application of the 'shared space' concept.

A questionnaire about general issues and experience was used to gather information about participant behaviour and opinion on issues related to navigation and safety. The findings of this questionnaire are described in Section 7.3 (see also Appendix E).

As the information gathered in this process was complex, a coding system was used in the analysis of the data.

Note:

The coding system used assigned interpretive tags to text based on relevant categories and themes (Cope, 2003). The method adopted is one that is encouraged in the Magenta Book (Government Chief Social Researchers Office, 2004), which outlines "Thematic data ordering in which raw data from different cases are brought together under thematic headings" (Government Chief Social Researchers Office, 2004).

In the analysis, data was broken down into statements under headings such as 'ease of movement', 'colour contrast', 'surface texture and layout', etc and entered into a qualitative software program (XSight, QSR International). Within this program, statements are broadly classified according to whether they were 'positive' or 'negative', and this allows the study to compare any patterns experienced with different features/layouts and experiences of people with similar impairments.

### **3.3.3 Changes in Methodology**

In the earlier development phases of the project, the proposal was to gather a greater degree of quantitative data than was actually possible.

The changed strategy took place following the pilot test when it was identified that the method of data gathering originally proposed for the navigation task was not practical for this project, and there were a number of reasons for this.

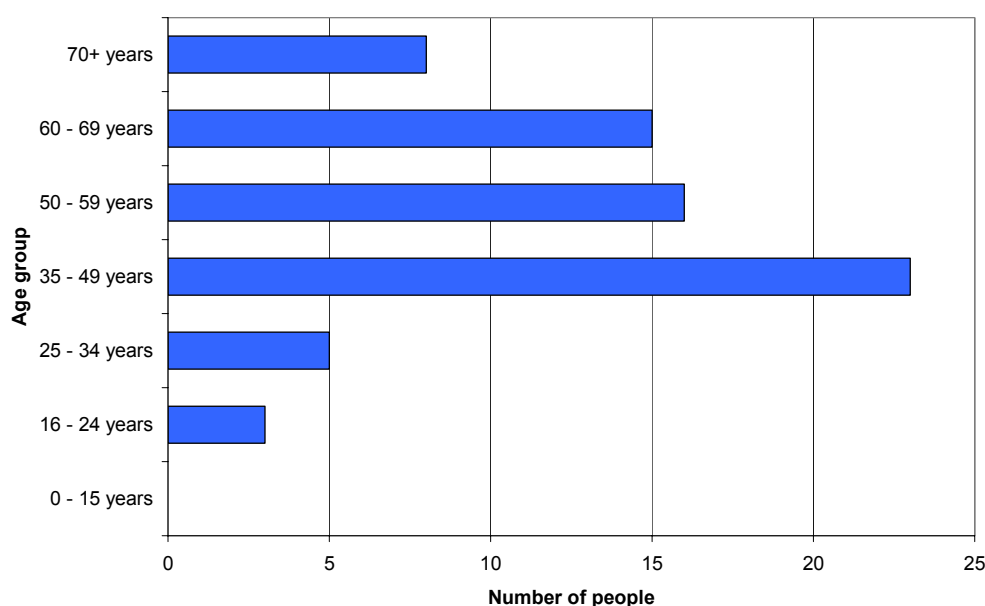
Initially, it was proposed to adopt a methodology first established in the FIT project (Yohannes et al, 2004), which examined the navigation and identification strategies used by blind and partially sighted people when negotiating unfamiliar internal transport environments.

However, the pilot test identified certain factors relating to Home Zones, such as, for example, the need to negotiate surfaces shared with moving vehicular traffic, resulting in the need to adapt the original methodology.

### 3.4 Participant Profiles

#### 3.4.1 Gender and Age

Of the 73 participants who took part in the site tests, 40 (55%) were male and 33 (45%) were female. Whilst some participants were under the age of 35, the majority were older. The age range with the greatest number of participants was 35 to 49 years. See Figure 3.12.



**Figure 3.12: Age profile of participants**

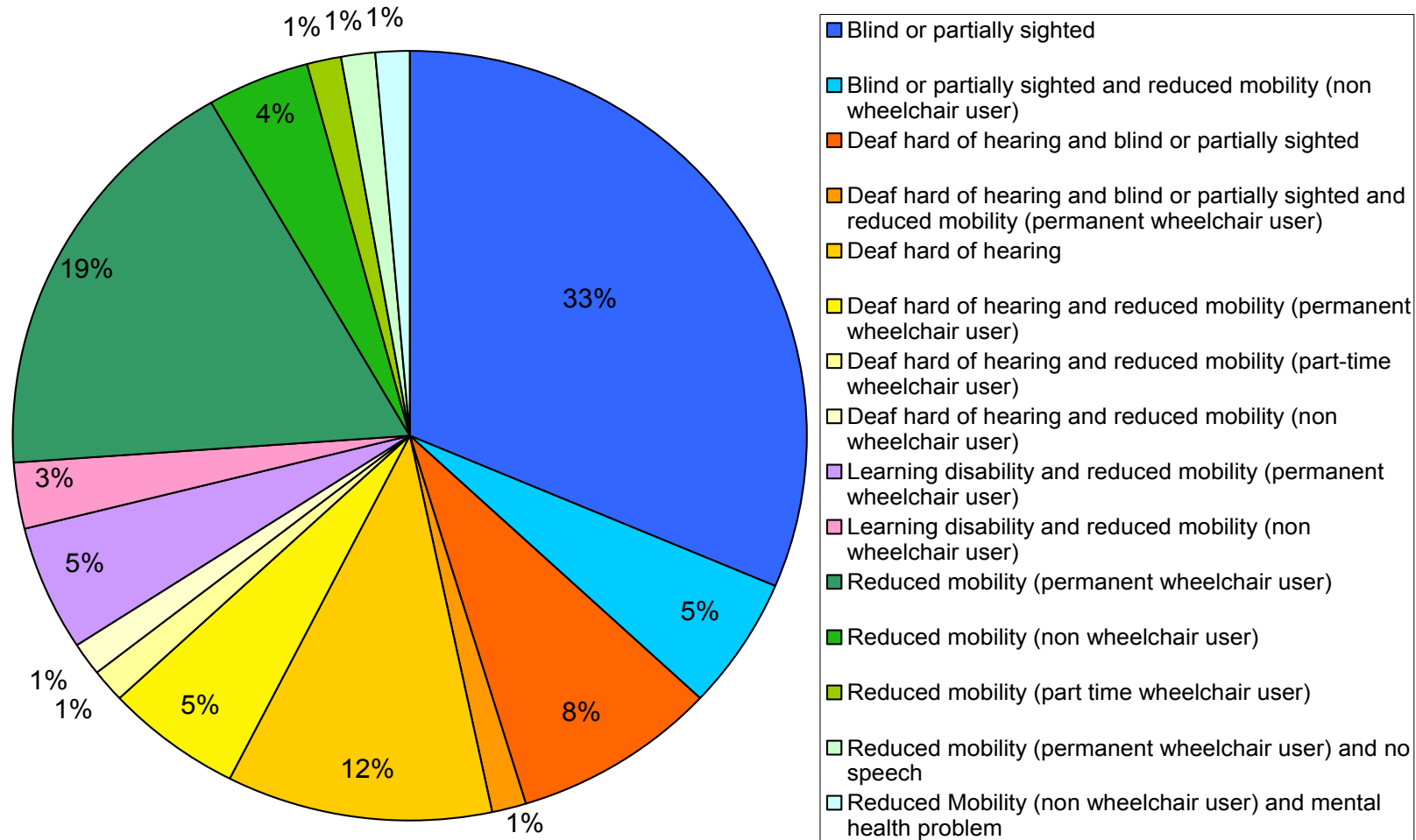
#### 3.4.2 Description of Disability (see also Figure 3.13)

The disabilities of the 73 participants who took part in the site tests were as follows:

- Blind or partially sighted - 23
- Blind or partially sighted and reduced mobility (non wheelchair user) - 4
- Deaf or hard of hearing and blind or partially sighted - 6

- Deaf or hard of hearing and blind or partially sighted and reduced mobility (permanent wheelchair user) - 1
- Deaf or hard of hearing - 8
- Deaf or hard of hearing and reduced mobility (permanent wheelchair user) - 4
- Deaf or hard of hearing and reduced mobility (part-time wheelchair user) - 1
- Deaf or hard of hearing and reduced mobility (non wheelchair user) - 1
- Learning disability and reduced mobility (permanent wheelchair user) - 4
- Learning disability and reduced mobility (non wheelchair user) - 2
- Reduced mobility (permanent wheelchair user) - 13
- Reduced mobility (non wheelchair user) - 3
- Reduced mobility (part time wheelchair user) - 1
- Reduced mobility (permanent wheelchair user) and no speech - 1
- Reduced Mobility (non wheelchair user) and mental health problem - 1

**Figure 3.13: Participants by Disability**



## 4.0 Focus Groups

### 4.1 Aims and Objectives

#### 4.1.1 Overall Objectives

- To assess the safety of disabled people when using Home Zones.
- To assist in developing recommended solutions to identified problems.
- To ensure that disabled people, with a variety of impairments, are consulted throughout the fact finding and recommendation process.

#### 4.1.2 Aims of this Task

- To gather additional information to be used in the analysis of the site tests, and to enhance the usefulness and appropriateness of any solutions, recommendations and guidance emanating from the study.

## 4.2 Methodology

The original brief stated that the design-professional focus groups and end-user focus groups would take place separately and in sequence. In order to meet the objectives of Phase Three, which was to recommend solutions to the issues identified in site testing and evaluate these solutions with end users, it was decided to combine the design-professionals and end-users into the same focus groups. This would encourage dialogue and consensus, building towards proposed solutions. Combining the two groups of participants would ensure that solutions are agreed by both categories of participant rather than passing information between the two groups and potentially never reaching a solution that is agreed by both.

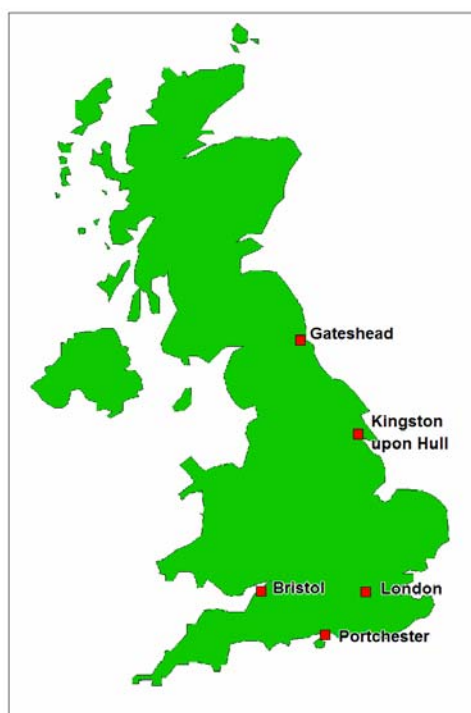
## 4.3 Locations

The project undertook 7 focus groups around the UK at the following locations:

1. **London** (28/09/2006) Focus group with design professionals
2. **Bristol** (04/10/2006) Mixed focus groups with design professionals and end users with a site visit at Southville Home Zone
3. **Kingston upon Hull** (11/10/2006) Mixed focus groups with design professionals and end users with a site visit at Albany Street Home Zone
4. **Gateshead** (12/10/2006) Mixed focus groups with design professionals and end users with a site visit at Staiths South Bank Home Zone
5. **Portchester**, Hampshire (17/10/2006) Mixed focus groups with design professionals and end users with a site visit at Portchester Home Zone
6. **London** (23/10/2006) focus group with end users

7. **London** (26/10/2006) Joint seminar between Guide Dogs 'Shared Surface Street Design Research Project' and DPTAC 'Design Guidelines for Home Zones reflecting the needs of disabled people project'

These locations are shown in Figure 4.1. While all of the focus groups took place in England, the venues were chosen so as to be accessible for participants from Scotland and Wales. Four of the focus groups included a site visit at one of the Home Zone test sites and then moved to a nearby venue for a solution finding session.



**Figure 4.1: Locations of Focus Groups**



**Figure 4.2: Site visit at the focus group in Southville Home Zone, Bristol**

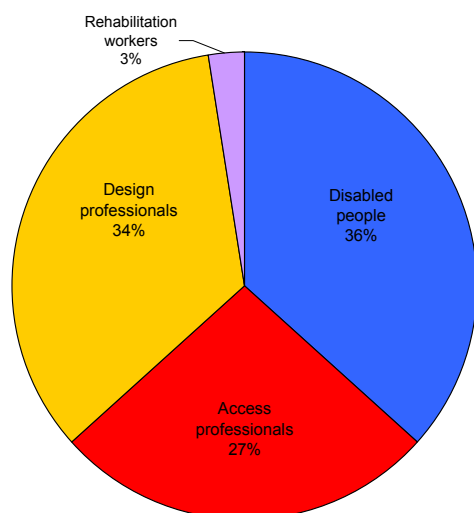
## 4.4 Participants

### 4.4.1 Gender

Of the 79 participants who took part in the focus group sessions, 51 (65%) were male and 28 (35%) were female.

### 4.4.2 Backgrounds and Experiences

Participants came from a variety of backgrounds and experiences including 29 (37%) disabled people, 27 (34%) design professionals, and 21 (28%) access professionals, some of whom were also disabled people. 2 guide dog rehabilitation workers also participated.



**Figure 4.3: Types of people participating in focus groups**

The design professional participants included access consultants with experience of Home Zones, Local Authority Home Zone Project Officers, and design consultants from Home Zone sites.

Disabled people, contributed to the Focus Groups as end users, access professionals and/or as members of organisations representing disabled people.

## **5.0 Questionnaire on General Issues and Experiences**

The questionnaire is shown in full in Appendix E.

### **5.1 Aims of the Questionnaire**

- To collect the general experiences of site test participants with specific reference to safety and navigation;
- To collect suggestions and recommendations for improvements from participants;
- To establish the views of participants on comparisons between Home Zone and traditional street environments;

### **5.2 Methodology**

Each participant was asked to consider the questionnaire immediately after completing their respective site test.

The questionnaire was constructed to establish the views of each participant in the following areas:

- The ease with which they found the tasks of navigation and wayfinding;
- The problems they experienced navigating a route;
- Their experiences in navigation at night;
- Their personal perception of safety;
- Their personal views of comparison between the Home Zone and traditional street environment for navigation;
- Their personal views of comparison between the Home Zone and traditional street environment for safety.

Questions required standard yes/no or selected responses with some requiring open ended responses. The open ended questions were used to provide additional information to the essentially 'how many' and 'how often' responses to the standard questions.

### **5.3 Findings**

The findings of the questionnaire on general issues and experiences in Home Zones, were analysed by individual Home Zone sites, are described in Section 7.3.

## **6.0 Method of Analysis**

### **6.1 Process of Analysis and Development of the Findings**

Three main methods of data gathering were utilised in the project. These were:

- Observation and recording of site tests;
- On site completion of a questionnaire of experiences;
- Focus Group sessions.

The data gathered from each method was analysed and the full findings are described in Appendices C and D.

The following gives an overview of the method of analysis adopted for each method of data collection listed above.

### **6.2 Site Test Analysis (see also Section 7.0 Findings Report)**

#### **6.2.1 Aims**

- Analyse the data collected in order to establish the main results and analyse the consistency of data from the site tests;
- Understand the subjective assessments of the search, navigation and safety strategies adopted by disabled and non-disabled people when using Homes Zones.

#### **6.2.2 Methodology**

##### **6.2.2.1 Primary Data**

The data generated from the 11 Home Zone site tests with 73 participants is in the form of questionnaire responses and notes made by the assessor. Detail of the methodology for data collection is outlined in Section 3.

Information was gathered on the test sites using a navigation test, which comprised a flowing narrative gathering the comments of participants as they moved through the sites and experienced various issues.

In this process:

- The frequency of an occurrence was gathered by categorising the responses of participants against factors such as, for example, design typology and interaction amongst factors/vehicles.
- Comments were then analysed against the relevant factor.

In that respect, only actual comments made during the tests are being used in the analysis.

Where the report shows that 18% of blind and partially sighted people identified problems using the building line to navigate, it is not appropriate to assume that, by contrast, 82% did not experience such problems, given that there are likely to be a number of factors in the built environment that will affect whether people have a positive or negative experience of using the building to navigate. Where appropriate, such issues have been further considered against the general positive and negative comments received in the tests.

#### **6.2.2.2 Data Coding and Data Input**

Much of the data captured from the site tests is qualitative. The 'questionnaire about general issues and experience' gave participants the opportunity to rate the Home Zone on different scales and so is easier to categorise in this regard.

The 'semi-structured questionnaire from walk through' is a flowing narrative and so is slightly more complex to analyse, consequently a coding system is used for this data. This coding system was developed through findings from the literature review of the key design features within a Home Zone that might affect wayfinding and/or safety for disabled people. These design features were then used as the key headings for the coding system under which to allocate the data from the site tests. Ensuring all data could fit these raw headings was an ongoing process throughout data input and slight amendments were made as required. The system therefore assigned interpretative tags to text based on relevant categories and themes (Cope, 2003). This method is also encouraged in the Magenta Book (Government Chief Social Researchers Office, 2004) which outlines "Thematic data ordering in which raw data from different cases are brought together under thematic headings" (Government Chief Social Researchers Office, 2004).

This means that the data is broken down into statements under headings such as design features e.g. orientation cues, surface materials, colour contrast, surface texture, and also interactions, strategies and tactics e.g. freedom of movement, speed of vehicles etc and entered into a qualitative software program (XSight, QSR International). Within this, statements are broadly classified as to whether they were positive or negative. This allows the study to compare any patterns experienced with different features / layouts and experiences of people with similar disabilities.

Whilst the study has indicated the number and percentage of people making different statements, this is not intended to be interpreted for use in prioritising recommendations. Rather the proportions are intended to show the overall context of opinion and stated perceptions of the participants.

#### **6.2.2.3 Analysis of the Data**

The coded data was analysed in the following ways:

## **1. Commonalities experienced by people with similar disabilities**

Considering blind people, partially sighted people, deaf or hard of hearing people, people with a reduced level of physical mobility, people with learning disabilities and any others:

- Outlining any common issues highlighted by participants regarding navigation and safety, suggestions for improvement and comparison to traditional street environment;
- Looking at any particular features, interactions, strategies and tactics experienced by people with similar disabilities in the Home Zone environment.

## **2. Common issues experienced with Home Zone design features, layouts and interactions**

Considering factors such as delineation of shared surface, colour contrast, surface texture, gateways, provision of footways, width of routes, lighting, seating, parking, and maintenance.

Investigating any common issues highlighted by participants regarding navigation and safety, suggestions for improvement and comparison to traditional street environments.

## **3. Outline of each Home Zone**

Considering any common issues highlighted by participants regarding navigation and safety. Looking at any commonalities experienced with design features, interactions, strategies and tactics.

In addition this section took into account casualty statistics (STATS 19) and user levels at each of the sites which had been collected through desktop research.

## **6.3 Questionnaire on General Issues and Experiences**

### **6.3.1 Aims**

- To collect the general experiences of site test participants with specific reference to safety and navigation;
- To collect suggestions and recommendations for improvements from participants;
- To establish the views of participants on comparisons between Home Zone and traditional street environments.

### **6.3.2 Methodology**

Scaled ordinal responses meant analysis was straightforward. The data collected via the open-ended responses was transferred to the data for the site tests and categorised under the relevant headings.

### **6.3.3 Analysis**

The responses to each question were analysed by the:

- percentage of responses to the question across all sites;
- percentage of responses to the question at each site;
- number of responses to the question at each site.

This questionnaire was included to ensure that there was a controlled structure to the information gathered on navigation and safety around the site and to gather an overall impression of the participant on the issues experienced during the site tests. It also enabled comparison and commonalities between the different sites and also traditional street environments.

## **6.4 Focus Group Analysis**

### **6.4.1 Aims of this Task**

- To analyse the recommended solutions to problems identified in the site tests.

### **6.4.2 Methodology**

Identifying issues and developing solutions was a key objective for the Focus Group sessions. It was also considered essential to move the emphasis away from focusing on problems and towards ensuring that the potential solutions were also identified and discussed. Therefore, the focus group discussions were recorded and written up. In the sessions, discussions were allocated to the categories and typology for the site test coding for both design and non-design issues, which enabled cross analysis with the site tests.

### **6.4.3 Analysis**

Analysis of the Focus Group discussions included considering the positive and negative issues identified. It also concentrated on the level of agreement or disagreement of potential solutions to the issues identified, and especially differences of opinion between the different disability groups, disabled people and design professionals participating.

## 7.0 Findings

The comments contained in this section are derived from the comments made by the participants in the site tests. The comments are described on a pan-disability basis and in terms of whether they represented positive or negative views to individual participants. Where appropriate, reference is also made to comments received in the Focus Groups to enhance or explain the information gathered in the site tests.

### 7.1 Design Features

The 73 people who took part in the tests made 186 positive statements about the design features in the Home Zones. Overall, 26 people (36%) made positive statements about the shared surface design of the Home Zones they experienced.

They also made 500 negative statements about design features encountered. Overall, 41 people (56%) made negative statements about the shared surface design features of the Home Zones experienced.

The following résumé of the findings derives from the positive and negative comments on common issues experienced by disabled people with regard to design features, layouts and interactions.

Where additional information was recorded in the Focus Groups or identified in the analysis of the site tests by the common issues experienced by people with similar disabilities (see Section 6.2.2.3) or the Site Specific analyses that either enhances, conflicts or is otherwise relevant to this résumé, this has been identified in the sections entitled "Complementary Information". The full findings are included in the Appendices.

#### 7.1.1 Using Shared Surfaces with Delineation

##### 7.1.1.1 Positive

Fifteen people (21%) mentioned that they used cues and delineation such as colour contrast, surface texture, bollards and trees to navigate in shared surface areas.

*"Within the shared surface area (with yellow lines, bollards and trees separating the vehicle path from the pedestrian area) the user felt safer as they could tell the different area was for pedestrians and had a clear view of what was approaching."*

Comment from a wheelchair user.

##### 7.1.1.2 Negative

Fourteen people (19%) mentioned that they experienced problems using shared surface areas that had delineation provided by colour contrast (5 people, 7%), surface texture (9 people, 12%) and bollards and trees (4 people, 5%). This

included problems with not being able to understand what different coloured surfaces symbolised, inconsistencies in the layout of street furniture, not being able to tell when in the vehicle path, confusion about the use of tactile paving and not feeling protected from vehicles.

*“It’s okay having bollards but it’s not enough to indicate that you have moved out of the pedestrian only area.”*

Comment from a partially sighted participant

### **7.1.1.3 Complementary Information**

In the Focus Groups, comments were made by several participants regarding the provision of delineation by various methods including by visual contrast, surface texture and changes in level. In general, designers identified the need for more detailed guidance, especially on what constitutes appropriate visual contrast in an external environment, and users commented on the usefulness in different types of surface in conveying information about where they are walking. Asphalt was identified as being particularly useful to identify preferred vehicular routes. Examples of the latter were given as Portchester (see 3.2.6) and Hull (see 3.2.5). Both were seen as useful methods of delineating space.

What was also identified however was that visual contrast often diminished with time as materials 'weathered in' and that should be factored into the initial selection process.

The potential for paved and cobbled areas to cause discomfort both for people with mobility impairments and using mobility aids such as long canes was identified, which concurred with the findings of the site tests.

Some comments were made about the use of shared surfaces generally. For example, concerns about interacting with vehicles when using shared surfaces and finding safe areas in which to feel safe from approaching vehicles were identified by a large number of disabled participants.

It was also noted that the concerns raised were, in the main, primarily about interactions with vehicles, motorists' attitudes/behaviour and perceptions of safety i.e. non - design features (see also Section 7.2.6).

On design features, issues identified or suggested included ideas for an alternative to a current kerb provision, and also how to effectively protect a pedestrian area whilst maintaining the perception of shared space to drivers. Some participants considered that intermittent above surface features, such as bollards, did not provide sufficient separation as some vehicles could still access the safe area, and were the features are often not easily identifiable.

The site specific analysis identified areas which illustrate examples of good and bad practice with regard to using shared surfaces with little or no delineation. For example, in a focus group session, visual contrast at the Portchester Home Zone

(see Section 3.2.6) was identified as a good example of how to indicate to users where they were in the space (the grey area), and where vehicles were less likely to be moving.

In the site tests, several participants with reduced mobility identified that they experienced difficulty negotiating uneven surface textures used to delineate spaces. This was also the view expressed by several access professionals during the Focus Groups.

#### **7.1.1.4 Summary - Using Shared Surfaces with Delineation**

See Section 7.1.2.4.

#### **7.1.1.5 Guidance - Using Shared Surfaces with Delineation**

See Section 7.1.2.5.

### **7.1.2 Using Shared Surfaces that have Little or no Delineation**

#### **7.1.2.1 Positive**

Fourteen people (19%) made positive statements about using shared surfaces that had very little delineation; these included having no problems using a shared surface (mentioned by 7 people), being able to cross the space at will and how guide dogs will improvise in order to navigate in the space:

#### **7.1.2.2 Negative**

Out of the 73 participants, 32 people (44%) made negative statements about using shared surface areas that have no delineation. These included issues over not being able to tell where the pedestrian path ended and the vehicle path began, a lack of distinguishing features to navigate with, guide dogs being unsure about how to use the space, not being protected from vehicles, participants walking in vehicle path and not having a 'safe' area to go when approached by a vehicle.

*"I crossed the central area without thinking about vehicles approaching due to a lack of designated footway and carriageway; I forgot that this was not all pedestrianised."*

Comment from a wheelchair user

#### **7.1.2.3 Complementary Information**

Few references were made to the use of shared surfaces that have little or no delineation although some comments were made about the use of shared surfaces generally. These are described in Section 7.1.1.3 earlier.

Home Zones where a lack of delineation was identified as real issue of concern were Portchester (see 3.3.6) and Camden (3.3.2).

#### **7.1.2.4 Summary - Using Shared Surfaces**

The site tests and Focus Groups identified the dichotomy between the need to provide an environment shared by pedestrians, cyclists and vehicles and the need

to ensure it can be designed to be safe, both in reality and in the perception of the users. Indeed some users and access professionals suggested that the issues of safety and navigation were so compromised that shared surfaces should not be a recommended design feature.

The project also confirmed the commonly held view amongst designers that there is insufficient evidence-based guidance on important, but complex, issues such as the use of visual contrast, and that the conflicting benefits and problems amongst people of different disabilities in using some surfaces such as raised tactile remains an important, as yet still unresolved, issue.

There is also a clear conflict amongst designers, access consultants and users of how to provide areas that allow sharing of the space whilst maintaining some element of delineation. However, an example of the effective use of visual contrast to identify delineation between use by vehicles and pedestrians was the Duke of Edinburgh Way, Worcestershire Home Zone (see 3.2.7)

#### **7.1.2.5 Guidance - Shared Areas and the Delineation of Space**

**Whilst the concept of a Home Zone is one of a shared area that incorporates little or no use of hard physical features to delineate space, the areas that represent the most likely routes to be used, or followed, by vehicles and pedestrians should be identifiable to all users of the area.**

**Whether this is done by providing information -**

- **to delineate space and activity at surface level**
- **(using, for example, visual contrast - although this will not be of benefit blind people with no remaining vision);**
- **by physical features at ground level (using, for example, tactile surface finishes);**
- **by intermittent physical features above surface level (using, for example, bollards, trees, individual planters, lampposts, and individual seats); or,**
- **by continuous physical features above surface level (using, for example, long planters, rows of seating, and railings),**

**- it is important for all users that they can identify any likely or preferred uses for different areas within the Zone, and that any methods used to do that are clear, unambiguous, and do not unduly restrict general freedom of movement.**

### **7.1.3 Orientation Cues in the Home Zone**

#### **7.1.3.1 Positive**

Out of the 73 participants, 20 people (27%) made positive statements about using orientation cues in the Home Zones. Nine people (12%) made positive statements about orientating without a kerb or by using surface 'lips' or partial kerbs to navigate

in the space. Eight people (11%) indicated that they were able to use the building line to move in the space as well as identifying places to cross. Two participants used audio cues such as the sound of traffic and one participant indicated that their guide dog used the edge of parked cars as a line to follow.

#### **7.1.3.2 Negative**

30 participants (41%) indicated that they were having problems using or finding orientation cues in the Home Zone environment. This included problems using audio cues (3 people, 4%) and using a kerb (23 people, 32%) such as the lack of a kerb, falling off a sloping kerb, no colour contrast on kerbs, no cue for guide dogs and areas that used a mixture of kerb and shared surface.

*"I prefer the kerb as you know that when you're up it you are in a pedestrian area and when down it you're in the vehicle area, without it you don't know where anything is, you really have to concentrate."*

Comment from a partially sighted participant

7 people (10%) had problems using the building line as an orientation cue, this included identifying entrances to houses, becoming lost in private gardens and walking into parked cars while following the building line. Of the 7 people who tested the Harrow site, which had a guidance path, 3 people could not detect the guidance path when it was provided.

#### **7.1.3.3 Complementary Information**

In the Site Test held in the Southville Home Zone (see section 3.2.1), 2 participants indicated that they were able to use the sound of vehicles as an orientation clue. However, in several tests, participants identified a number of problems caused by vehicles obstructing orientation clues.

*'I started off along using the edge of the building (the front garden) until I went around a parked car. At this point I lost my sense of direction and diagonally crossed the road. If I had not been helped and told to turn left at the end of the road I would have ended up in someone's front garden'*

Comment from a blind or partially sighted participant.

#### **7.1.3.4 Summary - Orientation Cues in the Home Zone**

Of the comments received in the Site Tests and in the Focus Groups it is clear that identifying and understanding orientation clues is a major factor in a person's ability to use a Home Zone independently and, importantly, safely. The problem appears to be compounded by the unpredictable and often inappropriate influence of non-permanent factors such as vehicles.

However, using kerbs as an orientation cue was a common issue amongst participants with around one third of participants making negative statements about the lack of a kerb. In addition, there were twice as many negative comments than positive ones regarding the lack of a readily identifiable pedestrian pathway.

### **7.1.3.5 Guidance - Orientation Cues in the Home Zone**

**Orientation is aided where there is a clear and continuous building line and where there is a readily identifiable pedestrian pathway.**

## **7.1.4 Provision of a Footway or a Pedestrian Pathway**

### **7.1.4.1 Positive**

Out of the 73 participants, 11 people (15%) made positive comments about the provision of a pedestrian pathway. This included statements about the positioning of planters creating a pathway and good widths of pathways and footways.

### **7.1.4.2 Negative**

Out of the 73 participants, 23 people (32%) made negative comments about pedestrian pathways. This included a desire for a footway with a kerb, poor width on pedestrian pathways and street furniture and parked cars reducing the effective width of pathways.

*"I prefer separation because if a car came, for my own peace of mind, I could go somewhere safe and get out of the way."*

Comment from a participant with reduced mobility

### **7.1.4.3 Complementary Information**

Comments made by participants about experiencing problems because of the lack of a footway were made by all disability groups with the exception of those with a learning disability.

An example of where good practice had been experienced in terms of the positioning of planters was Bristol (see 3.2.1) and for widths of pathways and footways was Worcestershire (see 3.2.7).

### **7.1.4.4 Summary - Provisions of a Footway or a Pedestrian Pathway**

In the Focus Groups, some design professionals suggested that people with different disabilities often identified conflicting requirements for the provision of features within Home Zones. One feature identified was that of a kerb, where design professionals stated that they thought people with reduced mobility preferred no kerb and blind and partially sighted people preferred a kerb so they can use it as a reference point. However, in the site tests, some 47% of participants with restricted mobility experienced problems using shared surfaces and over half (53%) identified a preference for a pathway of some kind.

**7.1.4.5 Guidance - Provisions of a Footway or a Pedestrian Pathway**  
**Identifiable pedestrian pathways will benefit disabled users, but careful attention is needed in the design of the Home Zone to the provision and siting of appropriate crossing points.**

### 7.1.5 Crossing the Space

#### 7.1.5.1 Positive

Eighteen people (25%) made positive comments about crossing in the space, this included being able to use textured areas across the vehicle path, good visibility, using road humps to cross on, using well positioned tactile paving and how the shared surface provides more options to cross:

*“The good thing is that I don't have to go a long way to a 'proper' crossing to cross the road.”*

Comment from a wheelchair user

#### 7.1.5.2 Negative

23 people (32%) indicated that they were having problems crossing parts of the Home Zones such as the vehicle path. This included dropped kerbs being blocked by parked cars, poor visibility, no tactile paving at crossing points, a desire for controlled crossings and a lack of indication of where it is safe to cross.

#### 7.1.5.3 Complementary Information

Little comment was made in the Focus Group sessions specifically related to crossing the space. However, participants did suggest that the provision of 'pseudo-crossing' areas with orientation cues for disabled people would be helpful. Suggestions on how this could be achieved included using different materials to aid navigation using acoustics, tactile surfaces, lighting, and the use of aromatic plants to assist navigation using aromas.

Note: A 'pseudo crossing' is the term adopted by this project to describe an area that is delineated by visual contrast at surface level, physical features at ground level, or intermittent obstacles above ground (see also Section 7.1.2.5), and which 'suggests' a crossing route for pedestrians within a Home Zone. However, due to the level and 'open' nature of the space, it may not be the only crossing route actually used.

#### 7.1.5.4 Guidance - Crossing the Space

**The method used to provide routes for pedestrians to cross the path of vehicles should be unambiguous and clearly identifiable to pedestrians, motorists and cyclists.**

### 7.1.6 Gateways to Home Zone

#### 7.1.6.1 Positive

12 people (16%) indicated that they could tell when they were entering or exiting the Home Zone, this included using features such as tactile paving, planters and signs (mentioned by 6 people, 8%).

#### 7.1.6.2 Negative

30 people (41%) made negative comments about identifying and using gateways to the Home Zones. These included having problems using signs (21 people, 29%)

such as signs positioned too high, not seeing Home Zone signs, confusion caused by conflicting signs and suggestions to put signs on the ground surface. 2 people (3%) had problems understanding what tactile paving at the entrance meant and several people indicated that they did not know that they were in the Home Zone.

*"Could not tell it was a Home Zone, didn't see a sign, not in vision of wheelchair users, could see swirls but didn't know if these meant you should behave differently"*

Comment from a permanent wheelchair user

### **7.1.6.3 Complementary Information**

The Focus Groups identified a clear preference amongst users for the provision of appropriately placed signs at Gateways to Home Zones. However, it was also acknowledged that the height of signs needed to take into account issues such as the need to discourage vandalism.

Tactile surfaces were also identified as a useful 'sign' of the approach of a Home Zone and Southville, Bristol was identified as a good example of this (see 3.2.1 and Appendix C).

The project identified that it is blind and partially sighted people who experienced the greatest difficulty with Gateways, with almost half of the blind and partially sighted participants in the site tests indicating they experience problems identifying the entrances and exits to the Zones. However over one third of deaf and hard of hearing participants also experienced difficulty at Gateways, particularly with not being able to identify signs.

### **7.1.6.4 Summary - Gateways to Home Zones**

The project identified several issues for users with identifying where Home Zones start and finish, and the importance across disabilities of appropriate signs. Interestingly, the provision of tactile surfaces to indicate the presence of a Home Zone was also identified across people with different disabilities as a useful cue.

### **7.1.6.5 Guidance - Gateways to Home Zones**

**The gateway to a Home Zone should be readily identifiable to all users. This can be done by the appropriate provision and positioning of signs, and by a tactile indicator incorporating the use of differing surface finishes. Care should always be taken that the design and extent of any tactile surfaces do not impede access and egress to the Zone by people using mobility aids such as wheelchairs, frames and crutches.**

## **7.1.7 Parking**

### **7.1.7.1 Positive**

Out of the 73 participants, 6 people (8%) made positive comments about cars parking in Home Zones. This included being able to identify parking areas by colour

contrast and surface texture and parking being well positioned so as not to reduce the width of the pedestrian pathway.

#### **7.1.7.2 Negative**

Out of the 73 participants, 23 people (32%) made negative statements about car parking in the Home Zones. The majority of these comments related to safety including walking into cars parked on the pedestrian pathway, participants walking into vehicle paths to avoid parked cars, car parking reducing crossing options and the need for disabled parking bays.

#### **7.1.7.3 Complementary Information**

Participants in Focus Groups supported the negative experiences of parking identified in the site tests, with confirmation that it represented a 'significant' problem in Home Zones. A general view was expressed that delineating parking spaces by physical above ground barriers, rather than by using surface level delineation (such as visual contrast) presented a more effective design practice.

#### **7.1.7.4 Summary - Parking**

There was a clear and significant feeling amongst participants of the negative influence of cars on their ability to use a Home Zone, and to feel safe and confident when doing so. The unpredictability both of the routes that vehicles would take and the hour-to-hour changing nature of where they would be parked were issues. The ability of vehicles to provide unexpected obstructions, or to reduce/remove clear manoeuvring space was also clearly an issue for disabled users.

#### **7.1.7.5 Guidance - Parking**

**The position of areas allocated for parking and the vehicle routes to those areas should be identifiable and predictable.**

### **7.1.8 Street Furniture**

#### **7.1.8.1 Positive**

16 people (22%) indicated that they had positive experiences with street furniture in the Home Zones. These included statements about good design, being able to detect above ground features with a cane, being able to negotiate street furniture when it is well colour contrasted (mentioned by 3 people, 4%), good effective width created by well positioned furniture and appreciating the provision of seating in the space (4 people, 5%).

*“Seating is at a good height - easy to get up from via edge of planters”*

Comment from a partially sighted participant

#### **7.1.8.2 Negative**

32 people (44%) indicated that they were having problems with street furniture in the Home Zones. This included problems with furniture reducing the width of pathways (5 people, 7%) problems with bollards (14 people, 19%) such as bollards not being sufficient to stop vehicles, colliding with low bollards and stainless steel bollards having little colour contrast.

5 people (7%) had problems with temporary street furniture such as A-frames and wheelie bins, 6 people (8%) also complained about seating including a lack of seating, seats having no back and being too low. 4 people (5%) made negative comments about inconsistently placed and poorly colour contrasted lampposts.

#### **7.1.8.3 Complementary Information**

In Focus Groups, discussions included the use of intermittent above surface features, such as bollards, to delineate space and segregate pedestrian and vehicular use. Comments ranged from views that delineating space in such a way was contrary to the whole concept of a shared space to views that bollards do not provide sufficient segregation to protect disabled users. A clear consensus was identified in terms of the general lack of visibility of bollards, and this was both in terms of visual contrast and insufficient height. Stainless steel bollards were identified as being a particular problem in terms of identification using visual contrast.

In Southville Home Zone, there was a good example of seating which was accessible to 5 (71%) of the participants visiting this specific site (see Figure 5.1).

#### **7.1.8.4 Summary - Street Furniture**

Whilst street furniture can provide a positive experience and useful cue for disabled people when moving around and identifying routes/areas, it is clear that when provided inappropriately the negative consequences can be considerable. Simply identifying the presence of an obstacle itself in terms of its size and visual contrast can still cause problems for a considerable number of disabled people. However, the method of classifying obstructions as developed in this project, and described in Section 3.3.1 earlier, does offer a very useful tool for the development of generic guidance on the use and provision of street furniture and other potential obstructions.

#### **7.1.8.5 Guidance - Street Furniture**

**Street furniture can be used to assist in identifying the preferred use of areas, provide protection, and influence the movement flow of motor vehicles, pedestrians and cyclists.**

**The use of continuous or intermittent street furniture can be used to influence the mobility and movement of the various users of a Home Zone, and can be useful in achieving the desired aim of any design (See also Section 7.1.2.5).**

**Street furniture should only be provided where it is necessary. Its positioning should be logical and it should always act as an integral part of the overall design. The potential for street furniture to present a tripping or collision hazard will be lessened if it:**

- **is logically placed;**
- **extends at least 1m above surface level;**

- **is positioned such that any horizontal elements do not project into circulation routes (i.e. the horizontal section of a seat);**
- **has its position identified by surface level visual contrast or a tactile area.**
- **contrasts visually against the background against which it will be viewed in both natural day-light and artificially-lit situations,**

### **7.1.9 Surface Materials**

#### **7.1.9.1 Positive**

19 people (26%) made positive statements about using surface materials in the Home Zones. This included using gravelled areas to navigate, good surface quality with few trip hazards, appreciating smooth tarmac and using changes in surface to find their way

#### **7.1.9.2 Negative**

Out of the 73 participants, 31 people (42%) indicated that they experienced problems with surface materials such as discomfort caused by cobbling, compacted gravel and slabs (8 people, 11%) and confusion caused by different surface patterns (3 people, 4%). In addition there were problems with tactile paving (6 people, 8%) such as paving causing discomfort, inconsistent use and a lack of tactile paving.

18 people (25%) identified trip hazards in the Home Zone caused by dispersed gravel, gutters, drain covers, parking studs, tree roots, broken paving slabs and uneven block paving.

#### **7.1.9.3 Complementary Information**

No specific reference was made to surface finish in the Focus Group sessions. However there were associated comments made and these are covered in other areas in this Section.

#### **7.1.9.4 Summary - Surface Materials**

The finish of the surface is an important issue to many users not only in terms of the need to ensure level, smooth and consistent surface finishes, but also in terms of the need to ensure that surfaces are slip resistant (especially when wet), and not affected by standing water, moss or seasonal hazards such as fallen leaves etc.

#### **7.1.9.5 Guidance - Surface Materials**

**Surface finishes should be smooth, level, and slip resistant (including when wet).**

**Surface gradients should be kept to a minimum but should always be designed to prevent standing water. Home Zones should always be appropriately managed to reduce hazards to users from moss or seasonal hazards, such as ice and leaves.**

## 7.1.10 Lighting

### 7.1.10.1 Positive

No positive comments about lighting were recorded at any of the sites tested. However, as all tests took place in the daytime, no inference should be drawn from the lack of positive statements

### 7.1.10.2 Negative

8 people (11%) made negative comments about the provision of lighting during the day in the Home Zones. These included a lack of lighting and inconsistent distribution of lighting.

### 7.1.10.3 Complementary Information

In the responses made in the questionnaire in relation to ease of navigation in the day or night a significant number of participants (60%) indicated that they considered that there would be a difference. 19 participants (26%) mentioned that better street lighting would be needed to aid night time navigation. Other concerns included reduction in colour contrast at night and potential collision with street furniture if not adequately illuminated.

### 7.1.10.4 Summary - Lighting

Participants highlighted principally negative concerns in relation to the provision of lighting within a Home Zone. The largest response was from the questionnaire where a significant number of people had concerns in relation to lighting at night although no specific testing was carried out.

However, as the tests took place in daylight, no meaningful examination of the participants' experiences in artificially lit situations was possible. Illuminance readings were not taken. The negative comments received were given as general and personal experiences of artificial lighting and did not relate to any particular Home Zone used in the test.

Lighting was not discussed in the Focus Group sessions. However, in the Questionnaire (see section 7.3.3), poor provision of lighting was identified by over 25% of the respondents as being an important factor in their ability to navigate and identify visual contrast at night.

### 7.1.10.5 Guidance - Lighting

**Good lighting is essential to enhance a feeling of personal safety, to identify routes and obstacles, and to gather information (for example, from signs and visual contrast).**

**Lighting should not cause undue or confusing shadows and be designed to deliver a uniform distribution of lighting within the Zone. It is recommended that the standard maintained illuminance within a Zone is between 20 and 50 lux.**

**The selection of light sources (bulbs and lamps), should consider their effect (for example, colour rendering performance) on the visual contrast selected to identify features within the Zone.**

**Management practices should be in place to ensure that lighting is appropriately maintained.**

### **7.1.11 Obstructions (including vegetation)**

#### **7.1.11.1 Positive**

2 people (3%) made positive comments regarding the use of intermittent above ground obstacles such as bollards and trees to delineate the space. Some participants (deaf/hard of hearing) were able to negotiate street furniture successfully due to a good level of colour contrast.

#### **7.1.11.2 Negative**

The main obstructions encountered in the pedestrian pathway consisted of vegetation, parked vehicles, street furniture and a few objects identified as potential collision hazards (for example telephone boxes, wheelie bins, A-frames sign boards).

Out of the 73 participants, 22 people (30%) had concerns regarding vegetation which included walking into overhanging vegetation, falling onto open flower beds and tripping on exposed tree roots, which was considered a potential trip hazard. Some participants also indicated that they experienced difficulties with some aspects of street furniture, predominantly bollards and lampposts, which they considered were poorly contrasted and they perceived as obstacles.

An example of a poorly contrasted hazard is at Maryatt Avenue, Harrow where giant concrete balls were both low in height and poorly contrasted against the colour of the footway (see Figure 3.9).

#### **7.1.11.3 Complementary Information**

Some of the focus group participants stated that to reduce the potential collision hazards within a Home Zone any street furniture or planter should be at least the height of a car bonnet so it can be easily identified and located.

#### **7.1.11.4 Summary - Obstructions (including vegetation)**

Generally there were a higher number of negative comments in relation to obstacles than positive. Participants felt that reducing the risks associated with the obstacles identified would require improvements to tonal contrast on street furniture and a minimum height for all above surface street furniture. Also when considering landscaping in the design of the Home Zone, care needs to be taken in the type of flower beds used and the impact of trees and shrubs on the area in relation to ongoing maintenance. This is essential to prevent overhanging shrubs and exposed tree roots increasing the number of potential hazards.

Some participants welcomed the use of intermittent above ground obstacles (for example the use of trees and bollards) as they helped to delineate space. In the Camden Home Zone, wheelchair users welcomed the use of bollards and trees as it gave them a sense of safety from vehicles, but allowed them to see what was approaching. In contrast, in the same Home Zone some blind and partially sighted participants and some deaf/hard of hearing participants identified problems with above ground obstacles.

#### **7.1.11.5 Guidance - Obstructions (including vegetation)**

**Some features, whilst being potential obstacles when moving around, can also be used in a positive way to identify pedestrian pathways or routes, something that will benefit disabled users. However, careful attention is needed to their design, the number used, and their location within the Home Zone.**

**Obstructions overhanging circulation routes caused by projecting features such as seating, signs, trees and other vegetation etc, should be avoided. Where unavoidable, the obstruction should be protected with a barrier at low level and clearly identified using visual contrast.**

**All potential obstacles should be readily identifiable in different lighting conditions and have a good level of visual contrast with the background against which they will be viewed. The use of high visibility bands on street furniture improves identification.**

**Overhanging trees and shrubs should not extend below 2.1m above surface level**

**The position of areas allocated for parking should be identifiable and predictable to minimise potential obstructions.**

**The number of temporary obstacles located within circulation routes (for example, wheelie bins) should be kept to a minimum and, wherever possible, avoided.**

**See also Sections 7.1.2.5 and 7.1.5.4.**

#### **7.1.12 Drainage and Gradient**

##### **7.1.12.1 Positive**

2 people (3%) made positive comments regarding drainage.

##### **7.1.12.2 Negative**

Out of the 73 participants, 9 (12%) indicated that they experienced difficulties with drainage features, this included tripping over gutters, the location of some drainage gulleys close to ramped areas, and walking sticks getting stuck in the drains.

8 people (11%) experienced problems with the gradient within the Home Zone area. The main areas of concern were adverse cambers, which caused wheelchairs to rock and destabilise and affected their turning ability (this was particularly evident at the Darcy Gardens Site, Dagenham, which is not a Home Zone Site but has some Home Zone characteristics). This resulted in some wheelchair users being concerned about losing their balance and experiencing backache. Also some wheelchair users experienced dizziness and discomfort from the undulations.

*'Steep cambers designed to channel water into drains are a problem – wheelchair users feel unstable. I would prefer drains on both sides of the area in order that steepness of the cambers could be reduced.'*

Comment from a wheelchair user

### **7.1.12.3 Complementary Information**

No specific references were made in relation to drainage and gradients.

### **7.1.12.4 Summary - Drainage and Gradient**

From the findings of the site tests there were generally more negative issues highlighted in relation to the adverse cambers and drainage features. These issues predominantly affected people with mobility impairments, both ambulant and wheelchair users.

### **7.1.12.5 Guidance - Drainage and Gradient** **Adverse cambers should be avoided.**

**Drainage features should be located away from main pedestrian pathways.**

**Drainage covers and gratings used should have a maximum size of openings of 13mm (Inclusive Mobility, Dept for Transport, 2002).**

**See also Section 7.1.9.5.**

### **7.1.13 Summary of Comments - Design Features**

The issue of shared surfaces were mentioned by the most number of people, with shared surfaces generating negative comments from over half the participants and positive comments from over a third of participants.

When these responses are broken down shared surfaces with no delineation seem to be the most contentious with over 40% of participants making negative comments. A shared surface that had some kind of delineation was slightly less contentious (under 20% of participants made negative comments about these areas) and actually more participants made positive comments than negative for this design feature. Shared surfaces with delineation provided by colour contrast were the most popular and areas where delineation was provided by surface texture proved to be less popular.

Significantly fewer participants made positive comments about orientation cues than those who made negative comments. Issues around the lack of a kerb as an orientation cue was the most popular theme with almost a third of participants making negative statements. Similarly the provision or lack of a pedestrian pathway generated many more negative comments than positive ones (more than twice as many).

Identifying gateways to the Home Zone also prompted more people to make negative comments than positive comments (41% negative, 16% positive) with tactile paving proving much more popular than signs in this design area. Overall street furniture was criticised by exactly as many people as those who made positive statements about it, with bollards being the feature most disapproved of.

Over 40% of participants made negative statements about surface materials compared to the 26% who praised certain aspects of surface materials. Vegetation was heavily criticised with ten times as many participants making negative statements than positive statements.

## **7.2 Non-design Issues**

### **7.2.1 Parking Behaviour**

#### **7.2.1.1 Positive**

3 participants (4%) out of the 73 participants indicated that they were not concerned about cars reversing into them.

#### **7.2.1.2 Negative**

7 participants (10%) indicated that they had concerns regarding parking behaviour within a Home Zone. Some of the concerns raised regarding parking behaviour included a resident reversing into a participant while using the Home Zone space, vehicles parking in front of entrances therefore restricting access, cars parking in the pedestrian pathway therefore restricting participants' movement in the space, drop kerbs being blocked by parked vehicles and participants having to walk around parked cars.

*“Cars can easily park on the pavement which is a hazard when using British Sign Language”*

Comment from deaf and hard of hearing participant

#### **7.2.1.3 Complementary Information**

Feedback collected from the focus groups provided further evidence regarding people's concerns about parking behaviour within Home Zones. The participants indicated that more use should be made of both physical enforcement and the strategic positioning of bollards and other street furniture to identify parking areas. However participants recognised that if more street furniture was used there could be implications for blind and partially sighted people. Whilst it was recognised that

cars parked on a pavement posed a hazard for people using British Sign Language, participants in the focus groups also stated that it also affected their navigation and safety when they were lip reading.

#### **7.2.1.4 Summary - Parking Behaviour**

There was a higher number of negative concerns regarding the general parking behaviour of people within a Home Zone. Parking behaviour within the site tests impacted on the participants' ability to move freely through the space and having appropriate access to design features, for example using drop kerbs. Participants indicated that they would prefer an increase in the strategic use of street furniture to identify parking areas however they also recognised that this could have a detrimental impact on some users.

#### **7.2.1.5 Guidance - Parking Behaviour**

**The position of areas allocated for parking should be identifiable and predictable, therefore providing pedestrians with free movement through the space without obstructions from parked vehicles.**

### **7.2.2 Expected Behaviour**

#### **7.2.2.1 Positive**

Out of the 73 participants, 3 (4%) indicated that they were happy to interact with vehicles in the Home Zone environment.

#### **7.2.2.2 Negative**

6 participants (8%) indicated concerns about the behaviour that was expected of them in a Home Zone. Areas of concern included participants not knowing what to do when approached by a vehicle, people not knowing what the tactile paving indicated and also not having a 'safe' area to use when approached by a vehicle.

*"I was aware that there is no constant foot way, was concerned about required behaviour such as having to move off vehicle path."*

Comment from a participant with reduced mobility

#### **7.2.2.3 Complementary Information**

No specific references were made to expected behaviour within the questionnaires or focus groups.

#### **7.2.2.4 Summary - Expected Behaviour**

A small number of participants involved in the site visits had some negative concerns about expected behaviour within a Home Zone. Some of their concerns related to interaction with vehicles and lack of a 'safe' area when approached by vehicles.

#### **7.2.2.5 Guidance - Expected Behaviour**

**Pedestrian behaviour can be more positive if the Home Zone has identifiable pedestrian pathways and vehicle speeds are reduced.**

### **7.2.3 Vehicle Flow and Speed**

#### **7.2.3.1 Positive**

3 participants (4%) indicated that there were not many vehicles using the site and this enhanced their feeling of security. 1 participant (1%) indicated that they liked the lower number of cars and that they were happy to use the shared surface if vehicle speeds remained slow.

#### **7.2.3.2 Negative**

Out of the 73 participants, 7 (10%) expressed concerns about the speed of vehicles, including cyclists. They suggested that speeds were reduced to 10 mph.

#### **7.2.3.3 Complementary Information**

The feedback from the focus groups indicated that participants felt that once motorists became familiar with the Home Zone layout their speeds would increase. Design professionals stated that if vehicle speeds were reduced to less than 20 mph then the safety of both disabled and non disabled people would be improved.

#### **7.2.3.4 Summary - Vehicle Flow and Speed**

Although feedback from design professionals within the focus groups indicated that a reduction in vehicle speeds to less than 20mph, improved safety for all pedestrians would be achieved, there was still some concern about speeds of vehicles and cyclists particularly when people became familiar with the Home Zone layout.

#### **7.2.3.5 Guidance - Vehicle Flow and Speed**

**Vehicle speeds of less than 20mph within a Home Zone will increase safety for all users, and enhance security.**

### **7.2.4 Freedom of Movement**

#### **7.2.4.1 Positive**

4 participants (5%) made positive statements about being able to move around the Home Zones space freely.

#### **7.2.4.2 Negative**

No significant negative comments about Freedom of Movement were recorded in the site tests, focus groups or questionnaires.

#### **7.2.4.3 Complementary Information**

In the responses made in the questionnaire, four participants (5%) made positive comments in relation to the freedom of movement that the Home Zone enabled.

#### **7.2.4.4 Summary - Freedom of Movement**

There was a general consensus that for some people a Home Zone provided freedom of movement within a space.

#### **7.2.4.5 Guidance - Freedom of Movement**

**Freedom of movement within a Home Zone is a positive factor of such areas and should be maintained wherever possible. However, freedom of movement should never compromise other important factors such as, for example, safety and security.**

#### **7.2.5 Detecting Vehicles**

##### **7.2.5.1 Positive**

2 participants (3%) made positive comments about being able to detect slow moving vehicles in the Home Zone and how this allowed them to interact within the shared surface areas.

##### **7.2.5.2 Negative**

No significant negative comments about detecting vehicles were recorded in the site tests, focus groups or questionnaires.

##### **7.2.5.3 Complementary Information**

No specific references were made in relation to detecting vehicles within the questionnaires or focus groups.

##### **7.2.5.4 Summary - Detecting Vehicles**

From the site findings, a small number of participants were able to detect slow moving vehicles and this allowed them to interact within the shared surface areas.

##### **7.2.5.5 Guidance - Detecting Vehicles**

**Slower vehicle speeds within a Home Zone aids vehicle detection.**

#### **7.2.6 Attitude of Motorists**

##### **7.2.6.1 Positive**

Out of the 73 participants, only one participant (1%) made a positive comment in relation to attitude of motorists.

##### **7.2.6.2 Negative**

Out of the 73 participants, 7(10%) made negative comments about the attitude of motorists. Concerns raised included motorists not changing their behaviour, expectations that motorists would still have priority and motorists' not familiar with the Home Zone unsure about what the area was for.

*"My concern is whether drivers know where the boundary is? I am terrified at zebra crossings but there at least they know where the kerb and limits are; and they (drivers) know the difference."*

Comment from a wheelchair user

##### **7.2.6.3 Complementary Information**

No specific references were made in relation to motorists' attitudes within the questionnaires or focus groups.

#### **7.2.6.4 Summary - Attitude of Motorists**

From the findings, participants expressed more negative concerns regarding the behaviour of motorists. Their concerns focused on how familiar the motorist would be with the layout and the motorists understanding of who has priority. Also participants were concerned as to whether motorists' behaviour would change.

#### **7.2.6.5 Guidance - Attitudes of Motorists**

**Providing information to motorists of the expected priorities and speed limits within a Home Zone is essential.**

### **7.2.7 Interactions with Vehicles**

#### **7.2.7.1 Positive**

No significant positive comments about interactions with vehicles in the Home Zone were recorded in the site tests.

#### **7.2.7.2 Negative**

6 (8%) out of the 73 participants made negative comments regarding interactions with vehicles within the Home Zone areas. Concerns raised included not knowing who has right of way, assuming that the area was pedestrianised, and people choosing the routes that avoided vehicle interaction. One participant stated that they would always be looking for a safe place off 'the road' as an area to go if approached by a vehicle.

*"I was concerned what to do when a car approached, presumed that I was required to move to the side of the (vehicle path) but was concerned that the road was not wide enough for cars and pedestrians."*

Comment from a participant with reduced mobility (non-wheelchair user)

#### **7.2.7.3 Complementary Information**

In the responses to the questionnaire, four participants (5%) indicated that they were concerned about interacting with vehicles.

#### **7.2.7.4 Summary - Interactions with Vehicles**

The main negative concerns identified both in the site survey and questionnaire was how pedestrians interacted with vehicles and again the mention of a 'safe place' for pedestrians (see also 7.2.2.4).

#### **7.2.7.5 Guidance - Interactions with Vehicles**

**The safety, comfort and confidence of pedestrians when interacting with vehicles in a Home Zone can be improved if there are carefully sited and readily identifiable crossing points.**

## 7.2.8 Perceptions of Safety

### 7.2.8.1 Positive

No significant positive comments about perceptions of safety were recorded in the site tests.

### 7.2.8.2 Negative

Of the 73 participants, 11 (15%) made negative comments in relation to their safety perception within a Home Zone. The main concerns related to a fear of colliding with vehicles, increased levels of anxiety associated with their interaction with vehicles and a general feeling of vulnerability. General concerns were also raised about children's safety when playing in a Home Zone and people being less aware within the designated Home Zone area as it is 'supposed' to be a safe area and therefore providing pedestrians with a false sense of security.

### 7.2.8.3 Complementary Information

From the data collection relating to the design issues of delineation in shared surface areas 2 participants (3%) felt the use of above ground obstacles such as bollards or trees used to delineate the shared space made them feel safer.

In the responses made in the questionnaire to the perception of safety, over half of the participants indicated that they felt either very safe (8%) or safe (50%) while navigating around a Home Zone. Of the participants who felt unsafe, their concerns were in relation to driver behaviour, avoiding vehicles and their speed.

Participants also made negative comments in relation to using the shared space and lack of a footway, which affected their perceived safety. When comparing a Home Zone to a traditional street just over a third of participants (34%) thought that the Home Zone environment was better than a traditional street for safety.

### 7.2.8.4 Summary - Perceptions of Safety

Some participants from the site surveys had negative concerns in relation to their perceived safety within a Home Zone, principally concerned with interaction with vehicles and pedestrian vulnerability. However the results from the questionnaire indicated that over half of the participants felt safe navigating around a home zone.

### 7.2.8.5 Guidance Perceptions of Safety

**A pedestrian's perception of safety is increased if there are identifiable pedestrian pathways and vehicle speeds are reduced.**

## 7.2.9 Familiarity

### 7.2.9.1 Positive

Of the 73 participants, only 1 (1%) made a positive comment in relation to their familiarity within a Home Zone.

### **7.2.9.2 Negative**

4 Participants (6%) indicated that they would need to be more familiar with areas before being able to use it. Unfamiliarity made using and navigating the Home Zone area much more difficult.

### **7.2.9.3 Complementary Information**

In the responses made in the questionnaire, 6 participants (8%) indicated that if they were more familiar with the area then they might find it easier to use. From the focus groups it was suggested that to increase a person's familiarity with navigating through the Home Zone training could be provided, particularly of relevance to any resident. However some focus group participants felt that the Home Zone should be self explanatory. Feedback from focus groups also suggests that the profile of Home Zones needs to be raised to ensure that every user type knows how to use them and motorists change their behaviour accordingly.

### **7.2.9.4 Guidance - Familiarity**

**Informing residents about the design features and use of their Home Zone, together with increasing the general awareness within the wider community of what a Home Zone is and how it should be used, will have an important and beneficial effect on its use.**

## **7.2.10 Cyclist Behaviour**

### **7.2.10.1 Positive**

Of the 73 participants, only 1 participant (1%) made a positive comment in relation to cyclist behaviour within a Home Zone. The person welcomed the opportunity to be able to interact with cyclists

### **7.2.10.2 Negative**

8 participants (11%) expressed negative concerns over cyclists' behaviour in relation to them approaching from behind and also at speed. Concern was also expressed that cyclists and skateboarders would weave in and out of street furniture. Generally, participants were reluctant to share the space with cyclists.

### **7.2.10.3 Complementary Information**

No specific references were made in relation to cyclist's behaviour within the questionnaires or focus groups.

### **7.2.10.4 Summary - Cyclist Behaviour**

From the findings more participants made negative comments in relation to cyclist behaviour, with the main areas being the speed cyclists approach pedestrians often from behind and their behaviour in treating street furniture as slalom courses and the associated safety risks.

### **7.2.10.5 Guidance - Cyclist Behaviour**

**The design should minimise the safety risks to pedestrians associated with cyclists using the space. As with motorists, cyclists should also be made**

**aware of their responsibilities in ensuring the satisfactory operation of a Home Zone, and the influence their actions may have on the safety of other users of the area.**

### **7.2.11 Guide Dog Strategies and Tactics**

#### **7.2.11.1 Positive**

3 participants (4%) expressed negative comments in relation to Guide Dogs strategies and tactics. However, 4 participants (6%) indicated that their guide dogs navigated well in the Home Zone using parked cars as an orientation line and avoiding moving vehicles. One general comment that was made was that in a shared space without delineation guide dogs will improvise in order to navigate.

#### **7.2.11.2 Negative**

4 (5%) of the 73 participants made negative comments in relation to how their Guide Dog coped within the Home Zone. They felt that the Guide Dogs lacked cues to focus on and therefore became distracted.

*“A guide dog needs to be shown a route as he won't walk right if there is no line he can pick up and he must have one”*

Comment from a blind participant

#### **7.2.11.3 Complementary Information**

At one focus group a Guide Dog Mobility Instructor stated that cues were needed in the environment in order to train guide dogs to recognise and react to cues.

#### **7.2.11.4 Summary - Guide Dog Strategies and Tactics**

Both negative and positive comments were made by participants in relation to their Guide Dog's ability to cope with the Home Zone. Some owners felt that their Guide Dog would adapt and improvise whilst others felt that there was a lack of cues for the dogs to focus on.

#### **7.2.11.5 Guidance - Guide Dog Strategies and Tactics**

**A Home Zone that has few orientation clues may have implications for guide dog users, and especially if they are also unfamiliar with the Zone. The transient nature of some of the obstacles likely to be encountered such as, for example, parked cars, wheelie bins etc, may also hinder the work of the guide dog or the owner's understanding of the area.**

### **7.2.12 Summary of Comments - Non-design Issues**

Fewer participants made comments about non-design issues (interaction, strategies and tactics), but the most contentious issue was perceptions and concerns over safety with over 15% of participants making negative statements about this issue. A concern over cyclist behaviour was also important to many participants (over 10%).

Negative statements were made about parking behaviour, the speed of vehicles, the attitude of motorists and interaction with vehicles by over 8% of participants.

Only two issues, namely, freedom of movement within the Home Zones and being able to detect vehicles, prompted people to make more positive than negative statements.

In general, the comments made in the focus groups supported the findings gathered from the site tests.

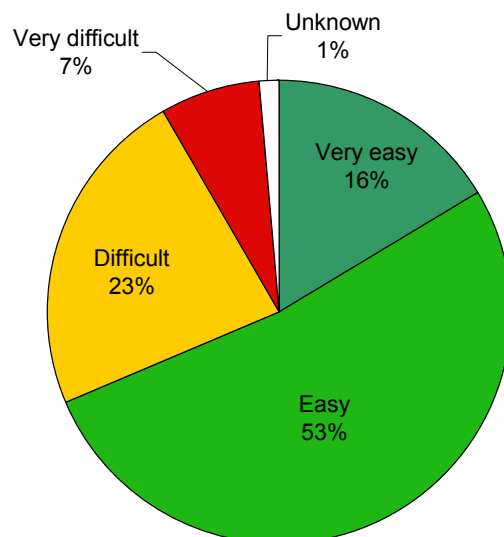
### 7.3 Questionnaire on General Issues and Experiences

The questionnaire on general issues and experience obtained participants' more generalised views about navigation and safety within the Home Zone. It also gained participants' suggestions for improvement and how participants thought the Home Zone compared to the traditional street environment.

#### 7.3.1 Ease of Undertaking Navigation and Wayfinding

Participants were asked "How easy did you find undertaking the navigation task in the Home Zone?" Over two thirds said that the task was either very easy or easy (see Figure 7.1) while 30% thought it was either difficult or very difficult.

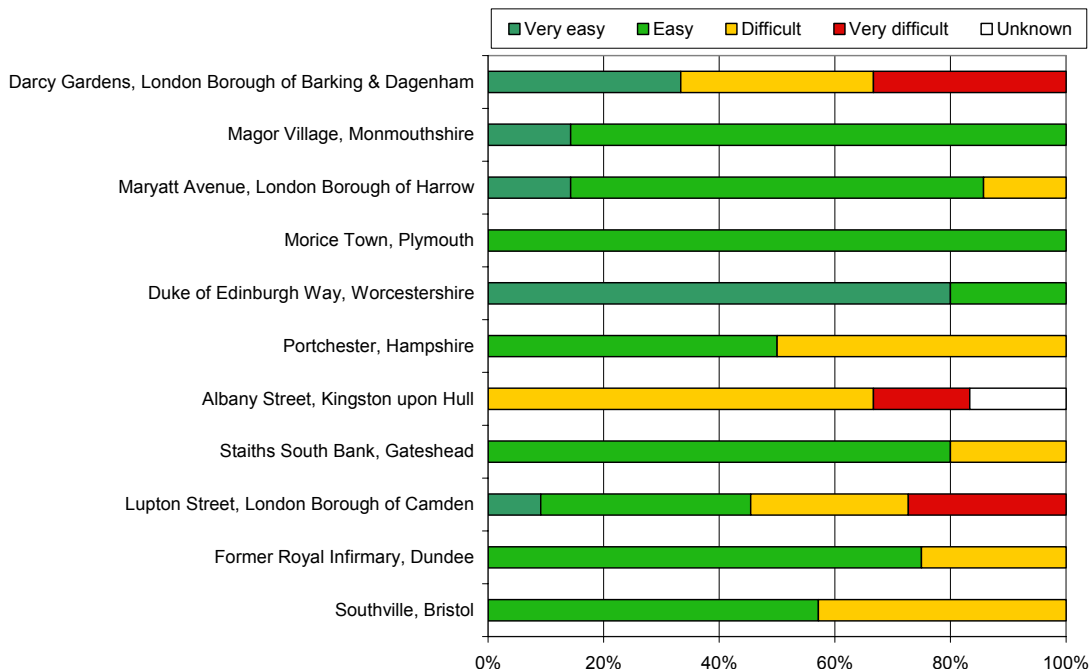
4 people (5%) indicated that they liked the freedom of movement that the Home Zone enabled, while 2 people (3%) made negative comments about using the shared surface. 6 people (8%) indicated that if they were more familiar with the area then they would find it easier to use, while 3 people (4%) mentioned that being unfamiliar with the area made it more difficult to navigate. 10 people (14%) indicated that they experienced problems with street furniture in the Home Zone and 4 (5%) were concerned about interacting with vehicles.



**Figure 7.1: How easy did you find undertaking the navigation task in the Home Zone?**



**Figure 7.2: How easy did you find undertaking the navigation task in the Home Zone? - number of participants**

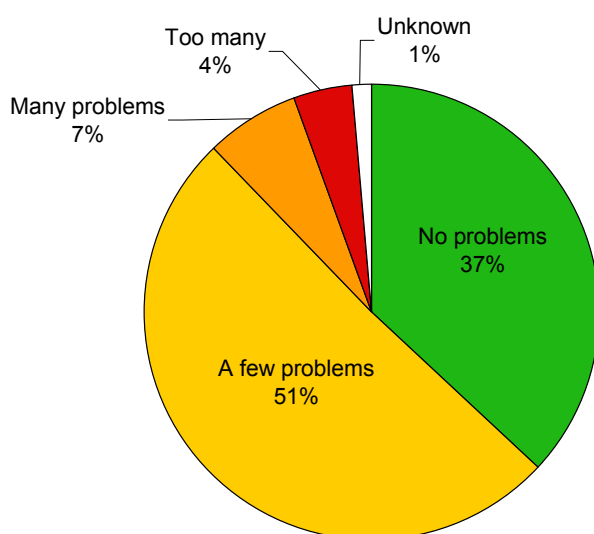


**Figure 7.3: How easy did you find undertaking the navigation task in the Home Zone? - percentage of participants**

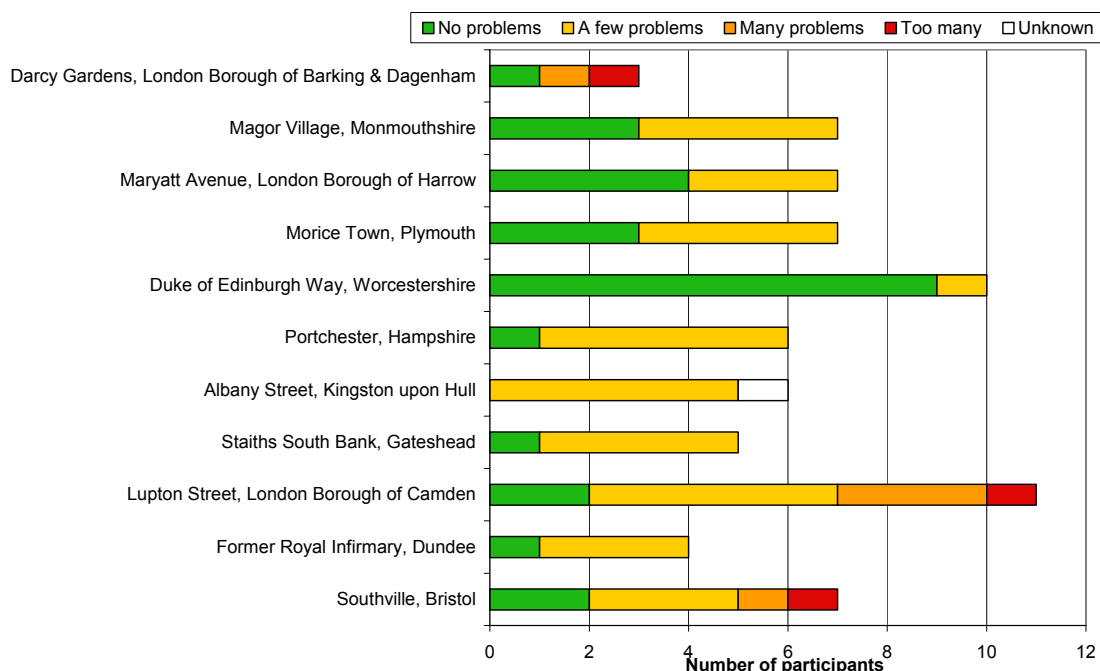
### 7.3.2 Problems Navigating a Route

Participants were asked “Did you have any problems with navigating along the route?” Over a third said that they had no problems navigating a route (see Figure 7.4), while over a half indicated that they experienced a few problems and just over 10% had many problems or too many problems.

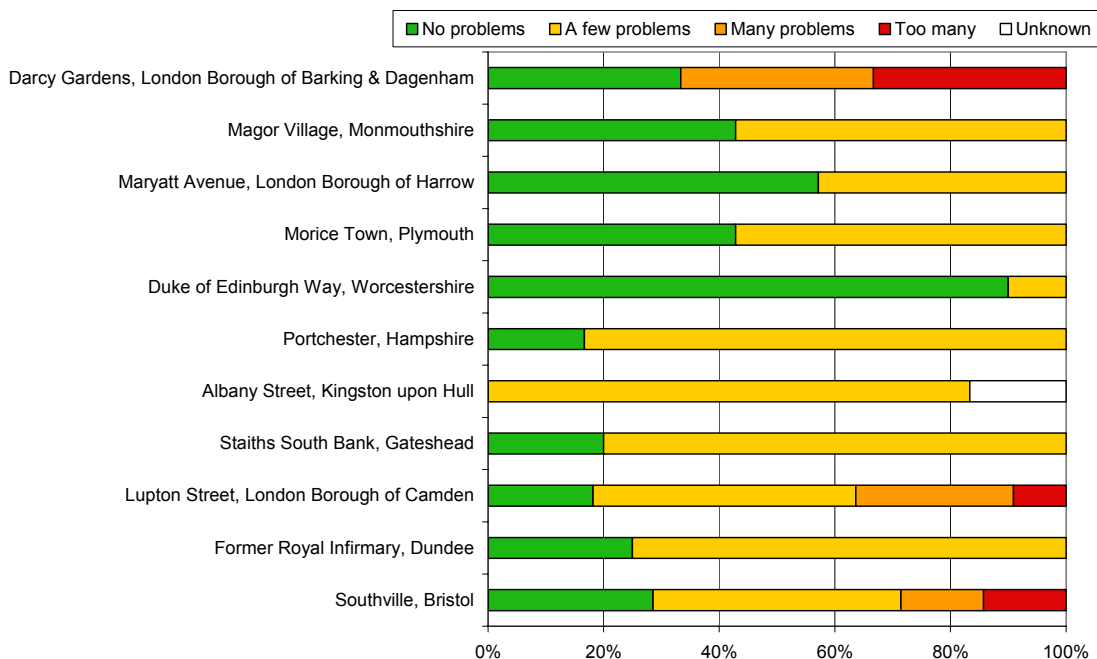
4 people (5%) indicated that they were experiencing problems because they were unfamiliar with the site. 7 (10%) mentioned that the lack of a footway with a kerb was causing them problems navigating the route.



**Figure 7.4: Did you have any problems with navigating along the route?**



**Figure 7.5: Did you have any problems with navigating along the route? - number of participants**



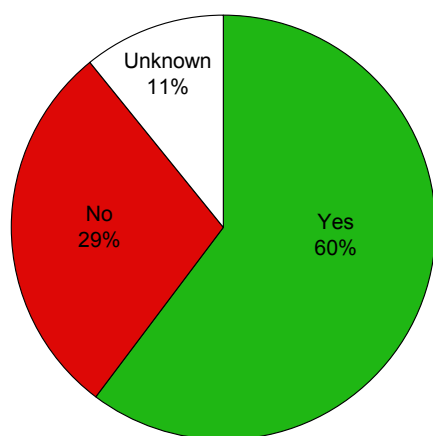
**Figure 7.6: Did you have any problems with navigating along the route? - percentage of participants**

### 7.3.3 Ease of Navigating at Day or Night

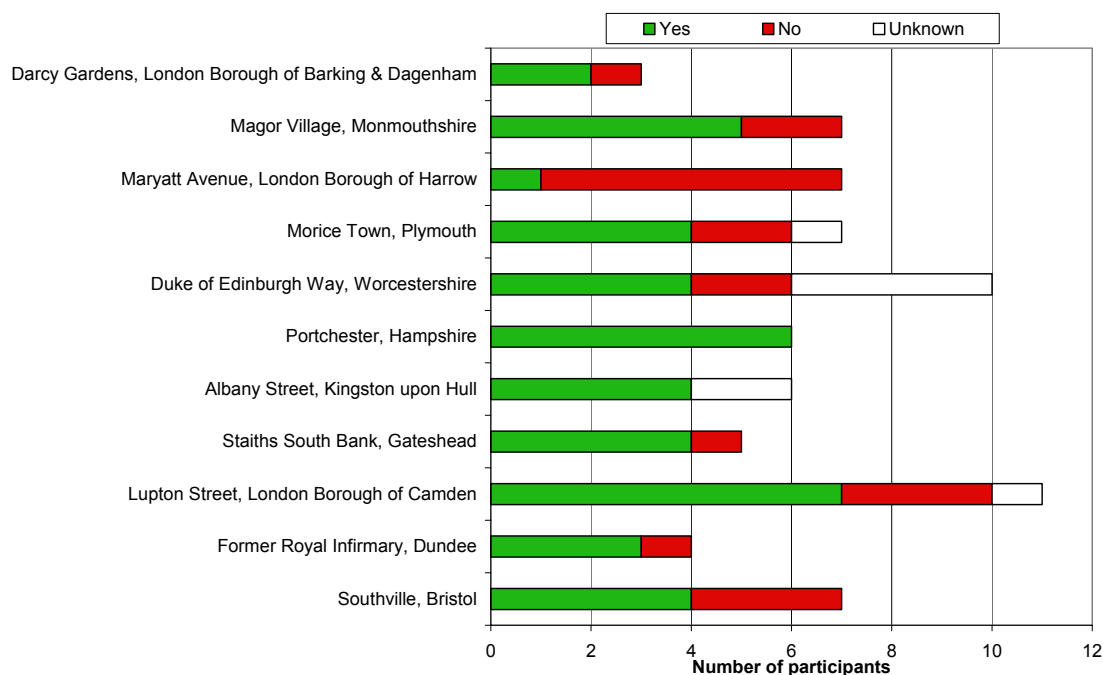
Participants were asked “Do you think you would find any difference in ease of navigation in the day or at night?”. 60% thought there would be a difference in ease

of navigation in the day or at night (see Figure 7.7) while just under 30% thought there would be no difference.

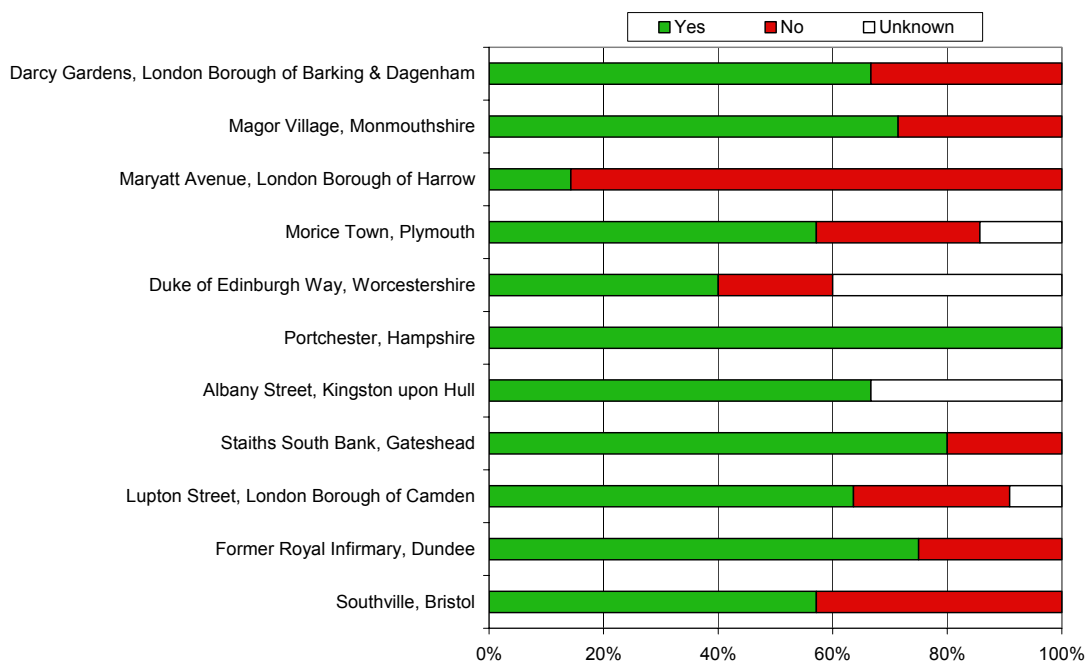
19 people (26%) mentioned that better street lighting was needed to aid nighttime navigation. 3 people (4%) indicated that the reduction in colour contrast at night might reduce their ability to navigate and 12 people (16%) mentioned that they would be concerned about colliding with street furniture such as bollards at night, several participants suggested more illumination was needed.



**Figure 7.7: Do you think you would find any difference in ease of navigation in the day or at night?**



**Figure 7.8: Do you think you would find any difference in ease of navigation in the day or at night? – number of participants**



**Figure 7.9: Do you think you would find any difference in ease of navigation in the day or at night? - percentage of participants**

### 7.3.4 Perceptions of Safety

Participants were asked “How safe do you feel navigating around this area?” Over half of participants indicated that they felt either very safe or safe (see Figure 7.10), while just over a third felt either unsafe or very unsafe navigating around the Home Zones.

3 participants (4%) indicated that the reduced speed of vehicles enhanced their feelings of safety, while 6 participants (8%) mentioned that they felt unsafe because of the speed of vehicles. 9 people (12%) expressed concerns for their safety because of driver behaviour in the Home Zones. 11 (15%) made negative statements about their feelings of safety when using the shared surface and the lack of a footway with a kerb. 11 people (15%) also expressed concerns about avoiding vehicles in the Home Zone environment.

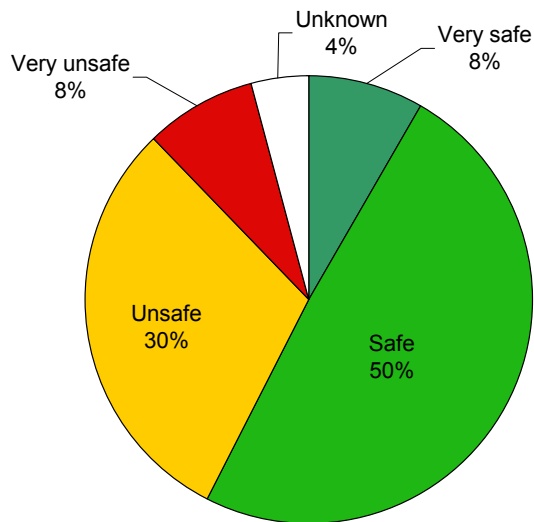


Figure 7.10: How safe do you feel navigating around this area?

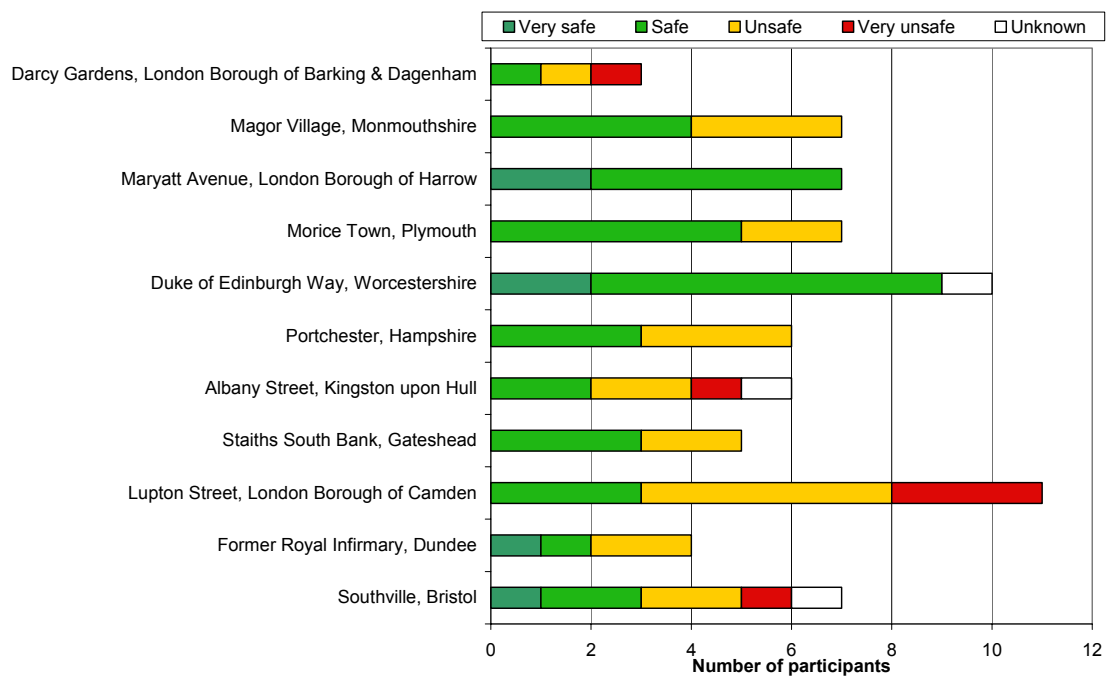
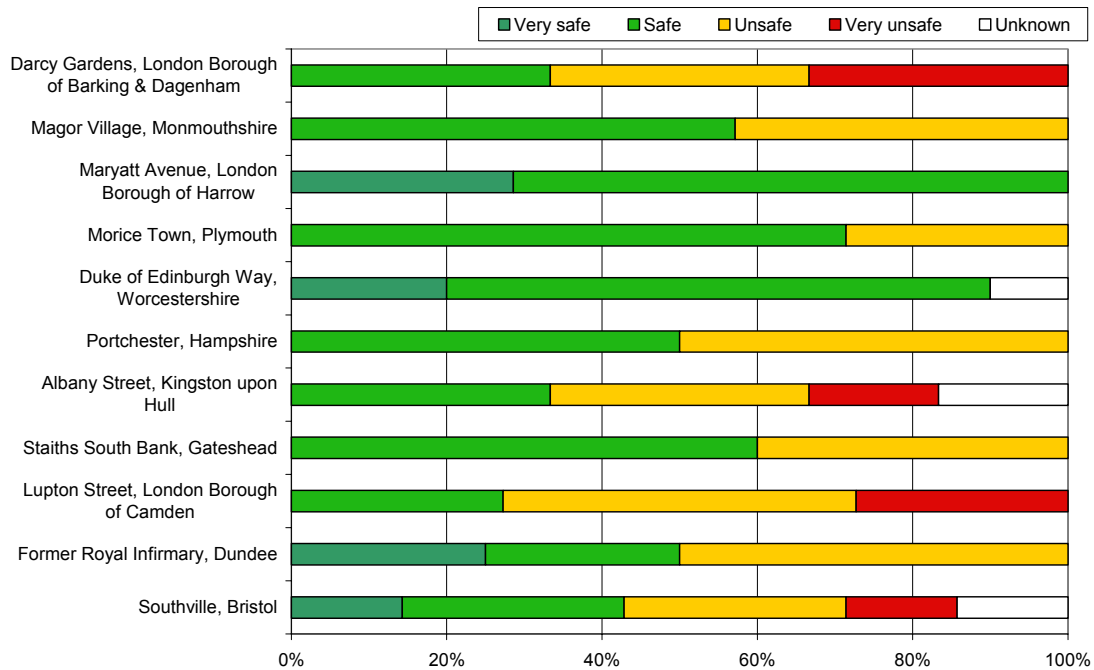


Figure 7.11: How safe do you feel navigating around this area? - number of participants

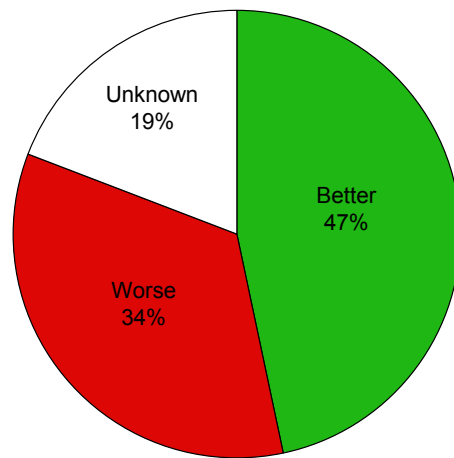


**Figure 7.12: How safe do you feel navigating around this area? - percentage of participants**

### 7.3.5 Comparing Home Zones to Traditional Streets for Navigation

Participants were asked “Do you feel this Home Zone street environment is better or worse than a traditional residential street environment in terms of overall navigation?” Almost half of participants thought that the Home Zone environment was better than a traditional street for navigation (see Figure 7.13), while just over a third thought that it was worse and 19% did not know or refused to answer.

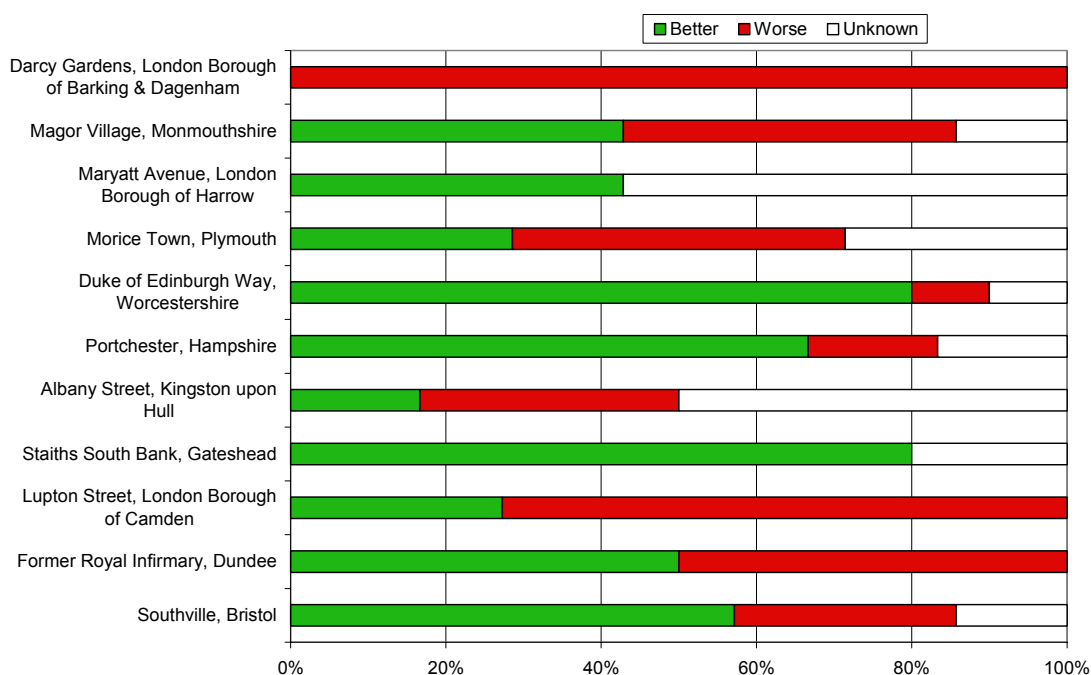
10 people (14%) mentioned that they liked using the shared surface in Home Zones because it improved their freedom of movement and meant that they didn’t have to negotiate kerbs. However 7 people (10%) indicated that they did not like using non-delineated shared surface in Home Zones when compared to the traditional street environment.



**Figure 7.13: Do you feel this Home Zone street environment is better or worse than a traditional residential street environment in terms of overall navigation?**



**Figure 7.14: Do you feel this Home Zone street environment is better or worse than a traditional residential street environment in terms of overall navigation? – number of participants**

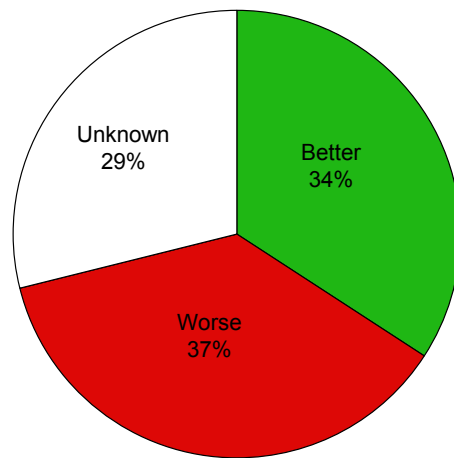


**Figure 7.15: Do you feel this Home Zone street environment is better or worse than a traditional residential street environment in terms of overall navigation? – percentage of participants**

### 7.3.6 Comparing Home Zones to Traditional Streets for Safety

Participants were asked “Do you feel this Home Zone street environment is better or worse than a traditional residential street environment in terms of overall safety?” Just over a third of participants thought that the Home Zone environment was better than a traditional street in terms of safety (see Figure 7.16), slightly more people (37%) thought that it was worse and 29% didn’t know or refused to answer.

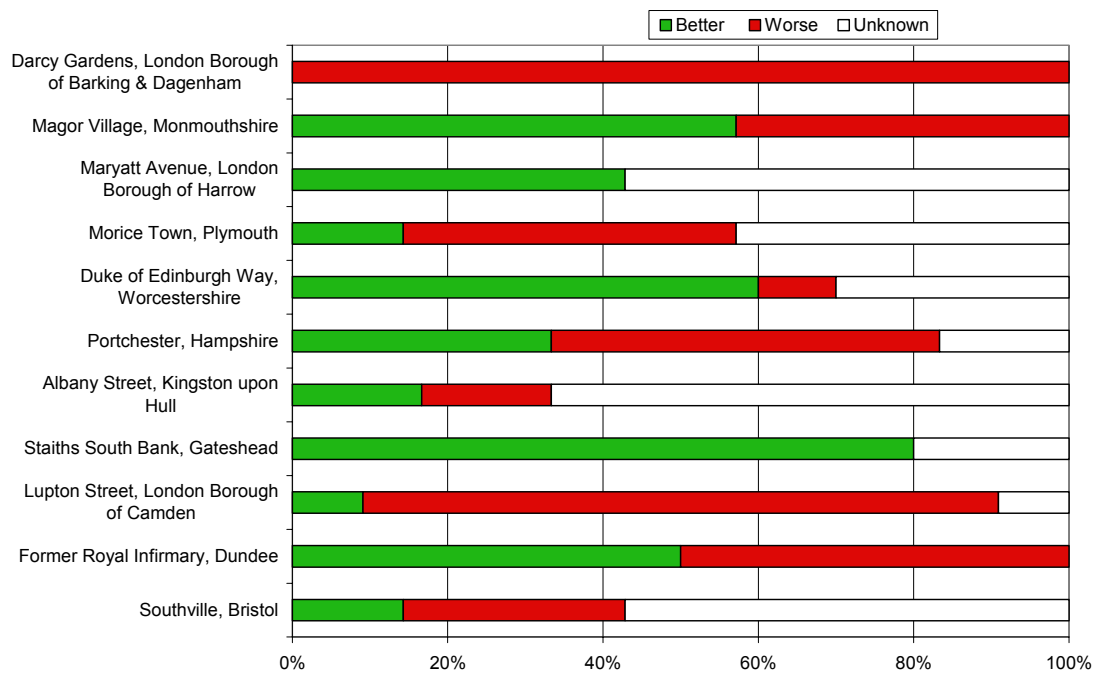
16 people (22%) indicated that they felt safer in Home Zones because of the reduced speed and volume of vehicles. However 5 people (7%) indicated that because of increased vehicle speeds they felt less safe in a Home Zone. 10 people (14%) expressed concerns about interacting with vehicles in the Home Zones and felt that this reduced their safety. 4 people (5%) felt that the lack of delineation meant that Home Zones were less safe than the traditional street environment.



**Figure 7.16: Do you feel this Home Zone street environment is better or worse than a traditional residential street environment in terms of overall safety?**



**Figure 7.17: Do you feel this Home Zone street environment is better or worse than a traditional residential street environment in terms of overall safety? – number of participants**



**Figure 7.18: Do you feel this Home Zone street environment is better or worse than a traditional residential street environment in terms of overall safety? – percentage of participants**

## 8.0 Conclusions

This study utilised three main methods of gathering data from users of Home Zones, namely structured site tests, focus groups and a participant questionnaire. The analysis of the findings has identified issues about the use of Home Zones by disabled people and has added strength of opinion to the often anecdotal information contained in some of the other available guidance.

The project has developed a methodology whereby individual features commonly found within Home Zones can be described in generic terms of how they affect the use of a Zone, and how they can be used to delineate space, create feelings of safety and, at the same time, maximise freedom of movement and appropriate decision making.

However, it is clear that disabled people generally have some very serious concerns and negative experiences of the use of Home Zones. In the study, the design of Home Zones received almost three times as many negative comments about design features as positive ones.

Disabled people do not accept the premise that the concept of the Home Zone will permanently change the behaviour of players such as motorists and cyclists, especially as inappropriate behaviour by these players can have such serious consequences for disabled people.

However, an understanding of the issues experienced by disabled people and careful attention to the design and layout of features used within a Zone can go some way to addressing these concerns. This requires an understanding of the concerns of the users and a willingness to address how the provision of features and facilities within the Zone can impact on people's perceptions of it.

### 8.1 Recommendations for those Promoting the Use of Home Zones

#### 8.1.1 Key Findings and Guidance from the Site Tests, Questionnaires and Focus Groups

This project has identified several key areas that affect the use of Home Zones by disabled people, and the extent to which they feel comfortable and safe when doing so.

**These can be summarised as follows:**

- **Home Zones and similar shared areas can pose problems for disabled people. In general, disabled people prefer to have the option of using a complementary delineated pedestrian area that is clearly defined and unambiguous (7.1.1.4 and 7.1.1.5);**

- **Orientation is aided where there is a continuous building line or where there is a readily identifiable pedestrian pathway or route (7.1.3.4);**
- **Identifying the preferred uses of areas or routes to be used or followed by vehicles and pedestrians can be done by -**
  - **delineating space and activity at surface level (using, for example, visual contrast - although this will not be of benefit blind people with no remaining vision);**
  - **physical features at ground level (using, for example, tactile surface finishes);**
  - **intermittent physical features above surface level (using, for example, bollards, trees, individual planters, lampposts, and individual seats); or,**
  - **continuous physical features above surface level (using, for example, long planters, rows of seating, and railings) (7.1.1.4 and 7.1.2.4);**
- **Any method used to delineate space should not unduly restrict the general freedom of movement of pedestrians (7.1.2.4);**
- **Whilst clearly identifiable pedestrian pathways benefit disabled people, attention is also needed to the siting and provision of appropriate crossing points or routes (7.1.4.4 and 7.2.7.5);**
- **The provision for disabled people to cross the paths of vehicles or to identify the preferred uses of different areas should be clearly identifiable and unambiguous for drivers, disabled pedestrians and cyclists (7.1.2.4 and 7.1.5.3);**
- **Pedestrians are more positive about using a Home Zone if it has identifiable pedestrian pathways and the speed of vehicles is kept below 20mph to aid detection (7.2.2.4, 7.2.3.5, 7.2.5.4 and 7.2.8.4);**
- **Freedom of movement is a positive factor within a Home Zone. However, safety and security are also important factors to be considered;**
- **Gateways to a Home Zone should be readily identifiable to all users. This can be done by the appropriate provision and positioning of signs, and by a tactile indicator incorporating the use of differing surface finishes (7.1.6.4);**
- **At gateways, care should always be taken that the design and extent of any tactile surfaces do not impede access and egress to the Zone by people using mobility aids. (7.1.6.4);**

- **The position of areas allocated for parking and the vehicle routes to those areas should be identifiable and predictable (7.1.7.5);**
- **Informing residents, motorists, cyclists and the wider community of what a Home Zone is and how it should be used will have an important and beneficial effect on how it is used (7.2.8.4, 7.2.9.4, and 7.10.5);**
- **Street furniture can be used to assist in identifying the preferred use of areas, provide protection, and influence the movement and flow of vehicles, pedestrians and cyclists (7.1.8.4);**
- **It is important that street furniture is only provided where it is necessary and it should always act as an integral part of the overall design (7.1.8.4);**
- **The potential for street furniture to present a tripping or collision hazard will be lessened if it:**
  - **is logically placed;**
  - **extends at least one metre above surface level;**
  - **is positioned such that any horizontal elements do not project into circulation routes (i.e. the horizontal section of a seat);**
  - **has its position identified by surface level visual contrast or a tactile area;**
  - **contrasts visually against the background against which it will be viewed in both natural day-light and artificially-lit situations (7.1.2.4 and 7.1.8.4);**
- **Good lighting is essential to enhance a feeling of personal safety, to identify routes and obstacles, and to gather information (for example, from signs and visual contrast) (7.1.10.4);**
- **Lighting should not cause undue or confusing shadows and be designed to deliver a uniformity of illumination within the Zone (7.1.10.2);**
- **The recommended standard maintained illuminance within a Zone should be between 20 and 50 lux (7.1.10.4);**
- **The selection of light sources (bulbs and lamps), should consider their effect (for example, colour rendering performance) on the visual contrast selected to identify features within the Zone. Management practices should be in place to ensure that lighting is appropriately maintained (7.1.2.5 and 7.1.10.3);**

- **Surface finishes should be smooth, level, and slip resistant in all weather conditions. Surfaces should always be appropriately managed to reduce seasonal hazards, such as ice and leaves (7.1.9.5);**
- **Surface gradients should be kept to a minimum but should always be designed to prevent standing water. Adverse cambers should be avoided (7.1.12.4);**
- **Drainage features should be located away from main pedestrian routes and any drainage covers and gratings used should have a maximum size of openings of 13mm (7.1.12.4);**
- **Obstructions overhanging circulation routes caused by projecting features such as seating, signs, trees and other vegetation etc, should be avoided. Where unavoidable, the obstruction should be protected with a barrier at low level and clearly identified using visual contrast (7.1.11.4);**
- **Overhanging trees and shrubs should not extend below 2.1m above surface level (7.1.11.4).**

### **8.1.2 Implementing the Key Findings**

The literature review identified several current good design guidance documents, including the "Home Zones Design Guide" published by IHIE. However, since its publication in 2002, knowledge of the issues relating to the design and use of Home Zones has changed. Other guidance recently published includes the 'Manual for Streets' which, whilst also considering the broader issues related to the concept of shared spaces, also contains some guidance on Home Zones.

By undertaking site tests, interviews and focus group sessions with a representative sample of disabled people, designers and others, the findings from this study enhance and extend current guidance. In that respect, it is suggested that the most appropriate format for the findings of this study to be disseminated is in a manner that extends the guidance already available, rather than as a 'stand-alone' additional guidance document.

We understand that organisations such as the IHIE would be receptive to suggestions of combining and extending the findings in this way.

## **8.2 Further Study**

This study has met its objectives in terms of the scope of the study proposed. However, one issue that was identified as an area where further guidance is needed relates to the provision of visual contrast in external areas such as Home Zones, and especially when they are artificially lit. Whilst not part of this study, it

was noted that some users described difficulties in seeing hazards and delineation where visual contrast had been used to identify its presence. Therefore, further study is recommended into the effects of artificial lighting regimes on the identification of visual contrast in Home Zones, including the influence of illuminance and the colour rendering characteristics of the light sources.

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