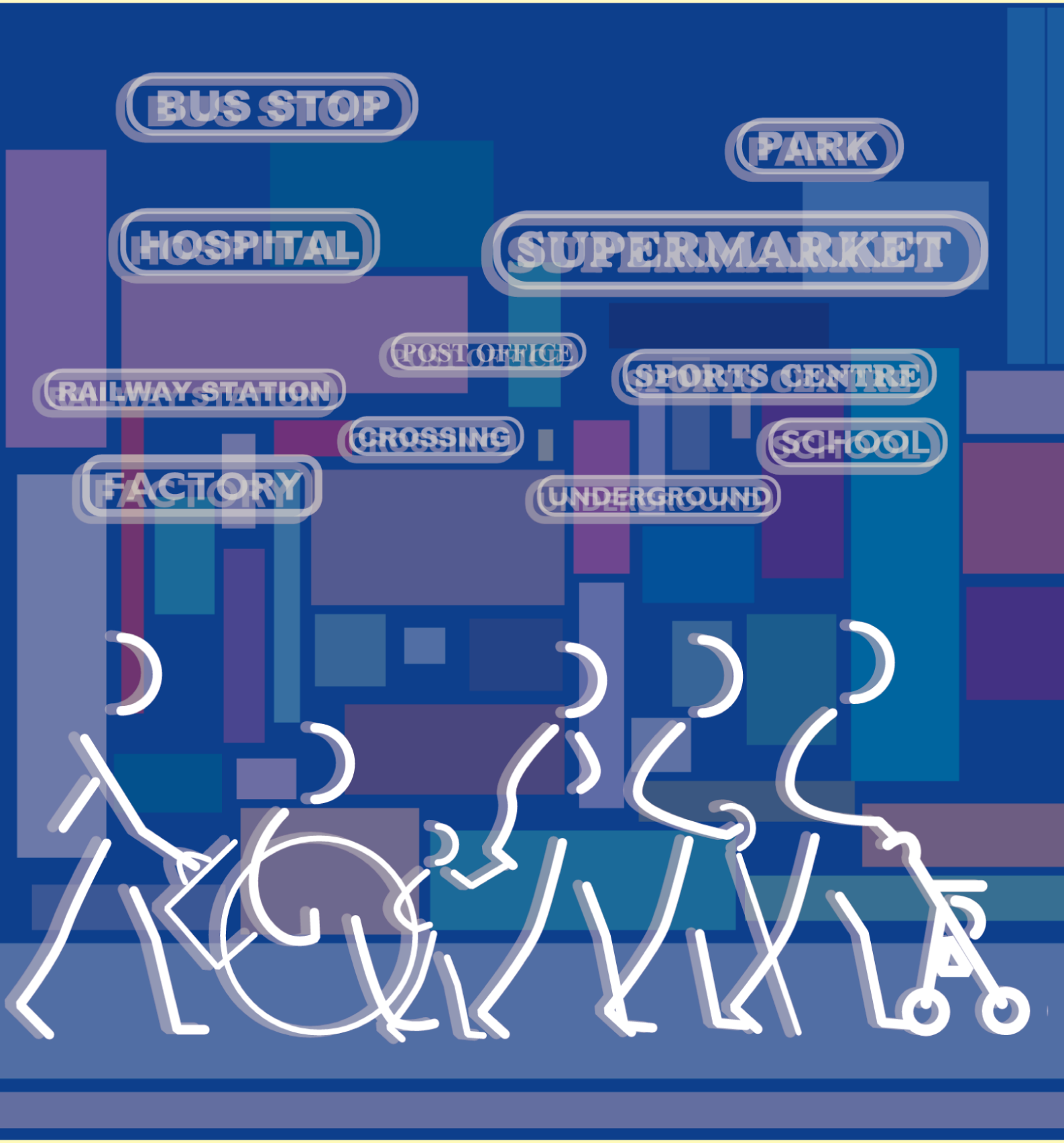
Guidelines for

PROVIDING FOR JOURNEYS ON FOOT



THE INSTITUTION OF HIGHWAYS & TRANSPORTATION

Guidelines for Providing for Journeys on Foot

Message From The President
David Ogden
IHT President 1999–2000

Those people not involved with walking issues might be surprised that the IHT would publish *Guidelines for Providing for Journeys on Foot.* After all, what do pedestrians need other than a reasonable walking surface and somewhere safe to cross the road? Have practitioners not established long ago how to meet these basic requirements?

There is, of course, existing technical guidance on pedestrian facilities. It is only recently, however, that we have begun to see walking as an important means of travel – perhaps the *most* important means of all. It is the "glue" which holds our transport systems together. Without walking (by which I include people using wheelchairs), we cannot use buses, trains or even our cars. This strategic approach requires new technical guidance.

The Government has recently published *Encouraging walking: advice to local authorities.* This builds on the integrated transport strategy set out in the White Paper. Local authorities are already working hard on these issues in the context of their local transport plans. Making walking more convenient, more attractive, more accessible, safer and more secure are all vital aspects of these new local transport objectives. So too is promoting walking, for health, leisure and utility purposes, particularly for journeys to school, to public transport interchanges and other short trips. *Guidelines for Providing for Journeys on Foot* shows the comprehensive and multi–disciplinary nature of the tasks that engineers, planners, road safety officers, marketing experts and other practitioners are asked to undertake to achieve these ends. Walking is such an integral part of life that it is sometimes hard to distinguish the pedestrian from the person, and to distinguish walking from other daily activities. Providing for walking therefore means addressing not only the narrow technical issues of footways and crossings, but also the broader issues of land–use and the quality of our built environment.

I would like to thank all those involved in the production of these Guidelines, particularly the Steering Group members, the authors, photographers and others who contributed material, those who responded to the consultation, and the IHT staff. I must also particularly thank our sponsors.

I commend *Guidelines for Providing for Journeys on Foot* to practitioners in the hope that these Guidelines, in combination with other IHT Guidelines, will provide a valuable references point in their efforts to provide for journeys on foot.

President
1999–2000

Acknowledgements

The Institution of Highways & Transportation would like to thank all those involved in the production of this document. Particular thanks must go to the members of the Steering Group, the local authorities and organisations that provided information, and the associations and institutions consulted on the draft. Furthermore special thanks must be given to the organisations that provided the finance which made it possible to undertake this project.

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A large amount of material was contributed during the lifetime of this project. Inevitably, much had to be left out for practical reasons. Space does not permit all the individual contributors to be listed here but the IHT is most grateful to them all.

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Other Acknowledgements Many local authorities, consultants and individuals have provided materia1 and commented on drafts, in addition to the formal consultation procedures. The sponsoring bodies are most grateful for these valuable contributions.

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GUIDELINES FOR

PROVIDING FOR JOURNEYS ON FOOT

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Executive Summary

Guidelines for Providing for Journeys on Foot is a technical document intended to support the UK Government's recent publication *Encouraging walking: advice to local authorities*. It advises on planning for and providing for pedestrians, maintaining the pedestrian infrastructure and promoting walking. It is aimed at practitioners in local authorities, consultancies and elsewhere who have the task of implementing these measures.

Planners, engineers and others have been providing for pedestrians for a very long time and there is a great deal of existing technical advice. However, seeing walking as a valued travel mode in its own right, and taking a strategic approach to encouraging it, is relatively new. These Guidelines are intended to provide an overview, highlighting key aspects of existing guidance, but without duplicating it unnecessarily. They are illustrated with examples of problems faced by pedestrians and good practice solutions. New or "rediscovered" information and tools are put forward, including those for planning for pedestrians, pedestrian audit and review, marketing walking, local authority pedestrian charters and monitoring levels of walking activity. Other key sources of advice are referenced.

The Guidelines encourage local authorities to take an integrated approach to walking issues. This involves not only the traditional schemes, such as pedestrianisation and crossings, but also more fundamental approaches, such as reducing traffic speeds and reallocating road space, as outlined in the UK Transport White Paper *A New Deal for Transport: Better for Everyone.*

Most towns and large villages in the UK have reasonably comprehensive networks of footways and footpaths. Surveys of public opinion regularly show that clean, safe and well-maintained pavements are high on the list of pedestrians' demands. The Guidelines therefore emphasise the importance of footway maintenance and cleansing, improving personal security and tackling illegal use of the footway. They also provide marketing advice for promoting walking, from transport, health and leisure perspectives.

The vast majority of pedestrian journeys are short – less than one mile. Proximity and good access to local facilities therefore largely determine the viability of walking. These Guidelines summarise planning policy guidance and show how the land use planning system can be used to influence the location of development and accessibility on foot.

Many improvements to the pedestrian infrastructure will be made within the framework of Local Transport Plans. The Guidelines provide advice on how to plan and design for pedestrians, in urban and rural areas. Technical advice on footway widths and surfaces, pedestrian crossings and pedestrian-friendly traffic calming is summarised. Techniques for auditing and reviewing pedestrian conditions are also included. With greater investment in pedestrian facilities, appraisal and monitoring become increasingly important. The Guidelines provide advice on these issues, including how walking can be monitored at local level.

Who Should Read What?

As you might expect, we recommend that those concerned with walking issues try to read as much of the Guidelines as possible. However, some sections are more relevant to some people. The following is a quick guide.

	Chapters							
Readers	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Politicians	✓	✓	✓					
Transport activists		✓	✓					✓
Architects		✓	✓	✓				
Land use planners	✓	✓	✓					
Transport policy planners	✓	✓	✓					✓
Transportation planners	✓		✓					
Public transport planners	✓			✓				
Highway design engineers			✓	✓	✓	✓		✓
Traffic engineers				✓	✓			
Safety auditors				✓	✓			
Urban designers				✓	✓			
Maintenance engineers						✓		
Planning enforcement officers						✓		
Police			✓			✓		
Town centre managers						✓	✓	
Travel awareness officers							✓	✓
Travel plan officers							✓	
Marketing officers							✓	
Health promotion officers							✓	
Tourism development officers							✓	

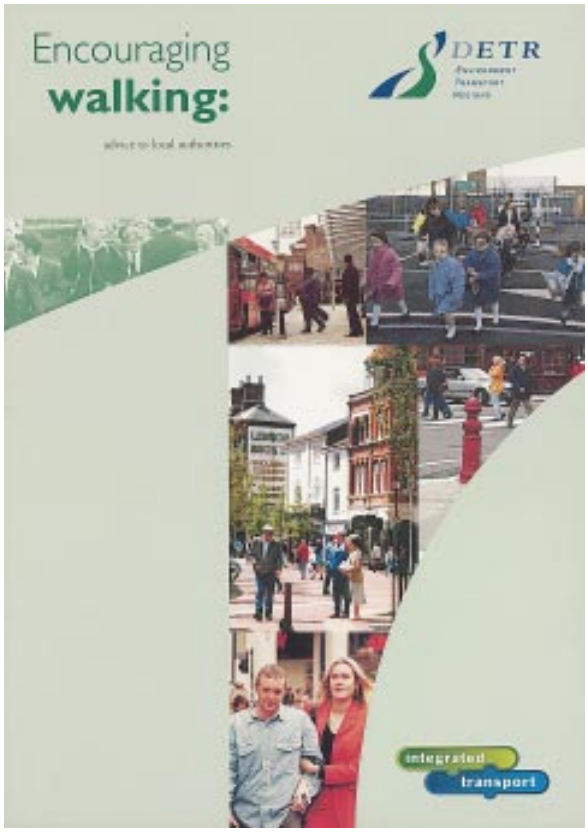
1. Introduction

This chapter explains the scope and purpose of the Guidelines and their relationship to other key documents on walking. It provides some key statistics on walking, the importance of walking and the benefits of walking. The need for professional training and appropriate local government staffing arrangements, in order to implement more pedestrian–friendly polices, are covered.

About the Guidelines

Purpose

1.1. The main purpose of *Guidelines for Providing for Journeys on Foot* is to describe best practice in providing for pedestrians, within the existing UK legislative frameworks. It is a technical document to support the policies contained in the 1998 UK White Paper, *A New Deal for Transport: Better for Everyone* ((DETR) 1998a), the Scottish Transport White Paper *Travel Choices for Scotland* (Scottish Office, 1998), and the transport policy statements for Wales and Northern Ireland *Transporting Wales into the Future* (Welsh Office, 1998) and *Moving Forward* (DOENI, 1998). More specifically, it supports *Encouraging walking: advice to local authorities* (DETR, 2000). The Guidelines advise on how to plan, implement and monitor walking measures as part of a wider, integrated transport strategy.



Encouraging walking: advice to local authorities.
© Crown Copyright 2000. Photograph reproduced by permission of DETR.

1.2. These Guidelines are intended for use mainly by planners, architects, traffic engineers, maintenance engineers and travel awareness officers, in both the public and private sectors. As comprehensive guidance on providing for walking has been somewhat neglected in the past, they highlight measures that can make qualitative improvements in the walking environment. They summarise existing guidance and put forward new advice on a range of issues, including monitoring walking. The Guidelines are also intended to assist Councillors, voluntary groups and others who wish to pursue improvements to the pedestrian environment, such as those with mobility difficulties, parents concerned about the safety of their children, or residents whose community is disrupted by heavy traffic. Finally they are intended to help promote a consensus amongst the authorities, professionals and user groups on the best ways to improve conditions for pedestrians.

Scope

1.3. The Guidelines are mainly concerned with the provision, maintenance and promotion of facilities for walking on the public highway, usually adjacent to the carriageway.

1.4. In these Guidelines, the terms "walking" and "pedestrian" usually include wheelchair users and others with mobility impairment. As far as possible, the needs of specific user groups are incorporated in the general design advice. Facilities that meet the needs of those with mobility difficulties usually provide a high standard for other pedestrians.

Scotland, Wales and Northern Ireland

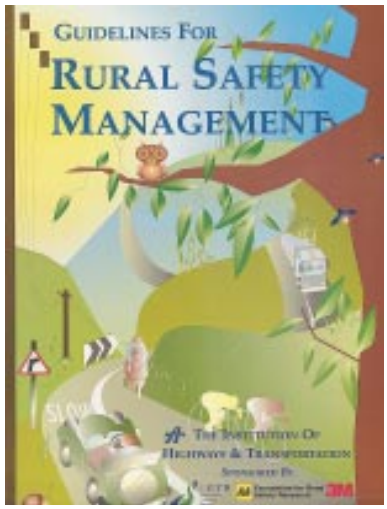
1.5. Most of the advice in these Guidelines applies equally to Scotland, Wales and Northern Ireland. However, there are some important legislative and administrative differences. These are shown in Appendix 1.

Relationship to other guidance

1.6. *Encouraging walking: advice to local authorities* (DETR, 2000) provides the policy context, background information and guidance on strategy. It should be read in conjunction with these Guidelines.

1.7. These Guidelines are intended to be compatible with other official guidance from The Institution of Highways & Transportation (IHT) and the Department of the Environment, Transport and the Regions (DETR). Where appropriate, they summarise or highlight advice contained elsewhere but do not repeat details of other widely available documents, such as DETR Local Transport Notes and Traffic Advisory Leaflets.

1.8. Pedestrian safety issues are dealt with in depth in *Guidelines for Urban Safety Management* (IHT, 1999) and *Guidelines for Rural Safety Management* (IHT, 1998). The IHT will be publishing *Guidelines for Pedestrianised Streets* (IHT), which will cover the planning, design and maintenance of such areas. *Guidelines on Reducing Mobility Handicaps* (IHT, 1991) are due to be updated shortly by comprehensive new advice from the DETR Mobility Unit.



IHT Guidelines on *Reducing Mobility Handicaps,* and *Rural Safety Management.*

1.9. To achieve consistency in practice, local authorities are recommended to use these Guidelines for the design of pedestrian facilities by their own staff, their consultants and developers, adding an addendum, where necessary, to allow for local variations and materials, and for updating.

Guidelines, not standards

1.10. The Guidelines attempt to set out best practice. It is fully recognised that it will not always be possible to achieve ideal results in all situations due to site constraints, costs or other practicalities. Compromises must sometimes, rightly, be made. The Guidelines therefore try to indicate the desirable provision and lower standards that may prove satisfactory in certain circumstances. They also suggest alternative approaches to tackling problems. It is the task of the professional planner or engineer to decide if a lower standard is acceptable in given circumstances or if another approach would be more beneficial.

Development of the Guidelines

1.11. The Guidelines were produced by a group of authors, supported by a steering group with a range of experience in the transportation field. Local authority associations, professional institutions and other road-user groups were consulted on the draft report. (See Acknowledgements.) It is hoped, therefore, that the objective of reasonable consensus has been achieved through this process.

The Importance of Walking

How much walking and what for

1.12. Walking accounts for over a quarter all journeys and four fifths of journeys less than one mile. (A journey is defined in the National Travel Survey as a one-way course of travel with a single main purpose, greater than 50 yards, on the public highway.) Around half of all education journeys, one third of all shopping journeys, a quarter of social/entertainment journeys and one eighth of all commuter journeys are made on foot. The average person walks just under 200 miles per year on public roads.

Walking is a major means of travel for local journeys in the UK. *Courtesy: Derek Palmer.*

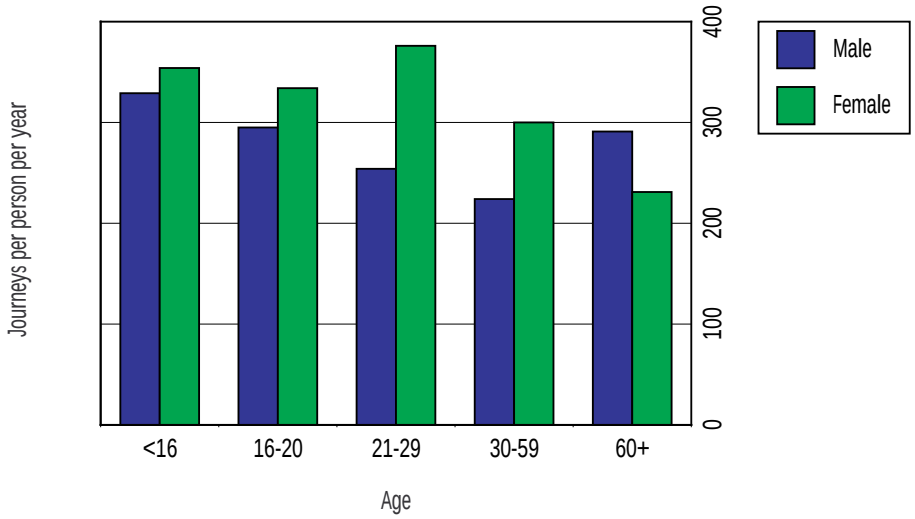


Figure1.1: Walk journeys by age and sex: GB 1996/98. *© Crown Copyright 2000. Reproduced by permission of DETR. Source: National Travel Survey.*

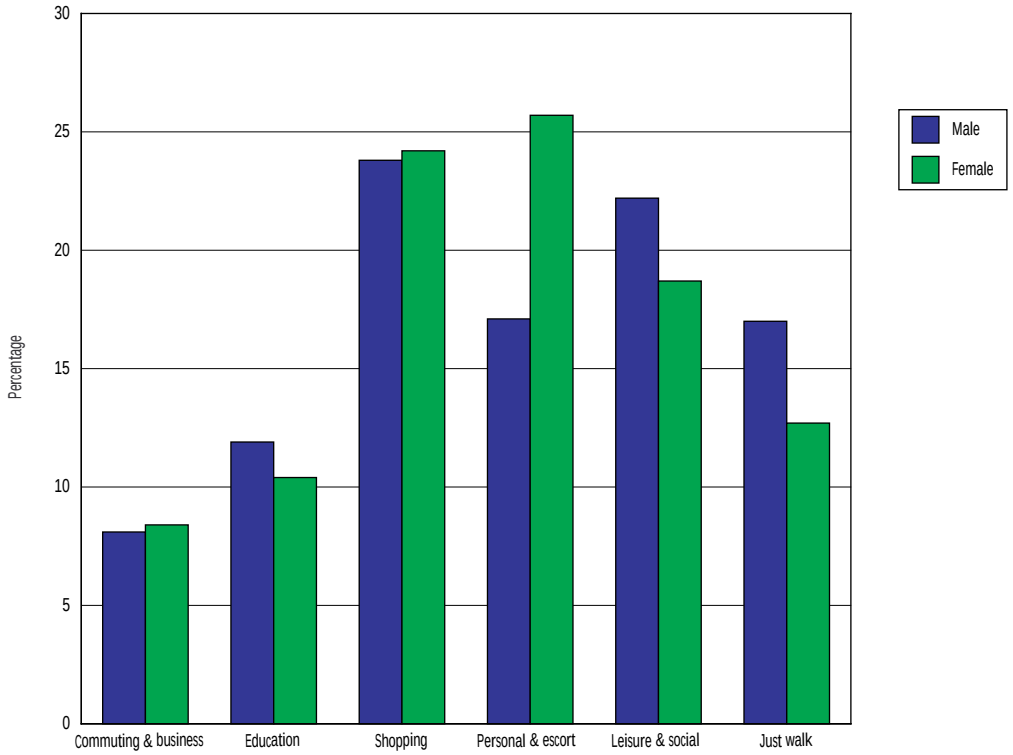


Figure 1.2: Walk journeys by purpose and sex: GB 1996/98. *© Crown Copyright 2000. Reproduced by permission of DETR. Source: National Travel Survey.*

1.13. Walking is also an essential part (a journey stage) of much car and almost all public transport travel. Bus stops are usually accessed on foot, and about 80% of rail travellers arrive at or leave the station on foot. Promoting sustainable, integrated transport involves providing good pedestrian links to public transport facilities.

1.14. Walking is important for internal trips in villages and small towns, normally because people live close to basic amenities, but it is less practical in rural areas, where distances to

services are greater. Walking is even more important in inner cities: for Inner London, 45% of all journeys are on foot. This is partly because vehicle journey speeds are relatively low but mainly because population densities are high and car-use is low.

1.15. Walking is an important mode for the vast majority of people but it is more important for certain groups, particularly children, older people, those without access to a car and those who are not the main driver within a household. Although car ownership continues to rise, approximately half of the population cannot drive or does not have access to a car for much of the day.

1.16. More than 10% of adults have difficulties with walking. These range from severe medical disability to less acute problems such as breathing difficulties when climbing steps. Around 4% of adults are unable to go out on foot alone.

1.17. Comprehensive statistics on walking are available in *Transport Statistics Report – Walking in Great Britain* (DETR, 1998b). These are regularly updated in the National Travel Survey reports. Some further statistical information is provided here in Box 1.1 Facts about Walking.

Walking trends

1.18. Despite the importance of walking, the amount of walking has declined. In the twenty years prior to 1995/97, the number of walk journeys per person fell by 10% whilst the average distance walked fell by 24%. The trend has been steepest over the past ten years. This reduction is despite – or perhaps because of – the fact that the average person's total travel mileage has increased by 38% over this same period. The decline has been particularly notable amongst children.

1.19. Nevertheless, some increases in walking have been recorded. Census returns show that trips on foot to work grew in York by six percent between 1981 and 1991 and by lesser amounts in Norwich and Brighton. The cause of such increases is not certain but it is notable that all three cities have high–density cores and middle income, inner residential neighbourhoods with significant lengths of traffic free pedestrian routes. Many people live within walking distance of work, as shown in Figures 1.3 and 1.4.

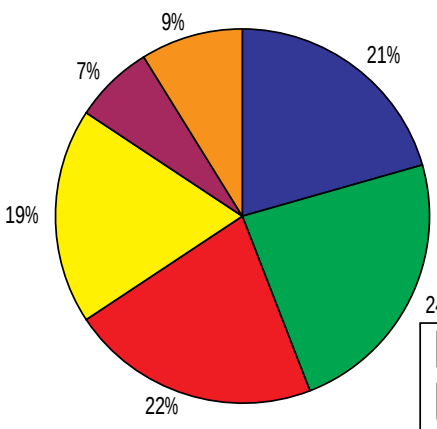


Figure 1.3: GB journey to work distance for men. (1991 Census).

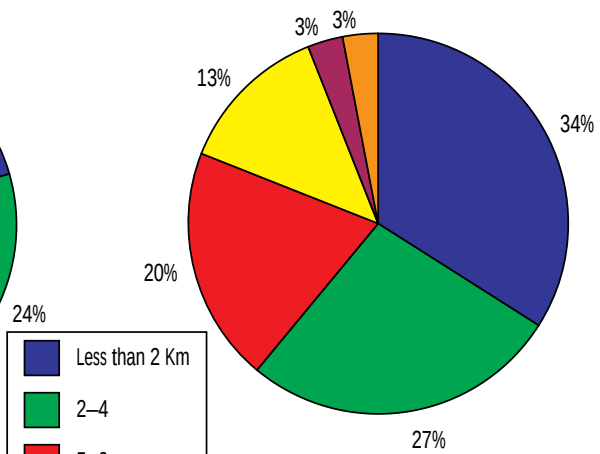


Figure 1.4: GB journey to work distance for women. (1991 Census).

Many people live within walking distance of their workplace. *Source: OPCS.*

Facts about walking

Note: The figures shown are an average of the years 1996-1998 and are derived from the National Travel Survey for Great Britain, unless otherwise stated.

Do we still walk?

❍ Just over a quarter of journeys* (27%) in Great Britain were made entirely on foot. On average, we each made approximately three journeys per day, with one being on foot.

❍ Walking was the second most important travel mode after the car, accounting for 27% and 61% respectively of all journeys made. Public transport accounted for nine percent of journeys, and these also included some walking (to the station or bus or when changing mode).

❍ Nearly half of all journeys (44%) were less than two miles and nearly three–quarters of all journeys (70%) were less than five miles.

❍ Four fifths of short journeys, under one mile, were made on foot. Of all journeys under two miles, almost 60% were walked.

❍ We each spent about a fifth of our total travel time walking (or 72 hours per person per year). The average time spent walking per journey was 15 minutes.

❍ The average person walked nearly 200 miles a year, almost four miles per week. This included the walk part of journeys by public transport.

❍ Journeys on foot have been declining since the mid–1980s, from 350 journeys per person per year to 288 in 1996/98. The distance walked per person per year has also been declining over the same period, from 244 miles to 193 miles. Overall, we are walking about a fifth less since 1985/86.

❍ Although there has been a decrease in the amount walked, the average length of a journey has remained constant at about 0.6 miles; this has not changed in the last 20 years. We are just making fewer trips on foot.

❍ Walking is far more extensive than cycling, with 18 journeys being made on foot for every cycle journey.

What do we do on foot?

❍ Almost a quarter of walking journeys are for shopping purposes, this accounted for about one third of all shopping trips.

❍ Nearly half of all education trips were on foot; this included “escort” journeys to accompany someone else to or from school or college. Education journeys accounted for about one fifth of all walks.

❍ Other purposes each accounting for at least 10% of walks include visiting friends, personal business (such as going to the bank or doctor) and just walking.

❍ In 1996, walking was the most popular physical activity: 45% of adults reported walking at least two miles for leisure in the previous 4 weeks (General Household Survey, 1996).

❍ Seven percent of journeys on foot were for commuting.

❍ Proportions walking to work fell from 22% in 1971, to 17% in 1981 and 13% in 1991, and were still falling in 1998 to 11% (DTI: Labour Force Survey, 1999).

Who walks most, and least?

❍ Children under 17 years made 38% of their journeys on foot, and almost all of the rest as car passengers.

❍ Girls under 17 years walked the most, making 39% of their journeys on foot. Men aged 30–59 walked the least making only about a fifth of their journeys on foot.

❍ In 1996/98, women made more trips on foot than men (in all age groups). Overall, women made 30% of their trips on foot, compared to 25% for men. Walking becomes more important with age.

❍ People in households without access to a car walk more than half of all their journeys (54%), but make 31% less journeys overall than those in car owning households.

❍ 30% of households do not own a car and the proportion varies by region: 40% in the North East of England, 39% in London; 22% in the South West of England; 21% in the Eastern region and 20% in the South East.

Walking and health

❍ 11% of adults had some difficulty with walking, but less than 4% could not go out without help. This varied with age: over two thirds of those over 85 years had difficulties walking.

❍ A National Fitness Survey (Allied Dunbar, 1992) found that 9% of men aged 45-54 and 38% of women of the same age could not walk 1 mile at 3mph without showing signs of unfitness.

Road Danger

❍ In 1998, pedestrians accounted for more than a quarter (26%) of all road deaths; just over 9,500 pedestrians were seriously injured. Approximately 50 % of all pedestrian deaths came from the 20% of the population over 60. (DETR: Road Accidents Great Britain, 1999).

❍ Only 2% of pedestrians killed or seriously injured were hit by HGVs but 28% of these involved a pedestrian death, compared with 8% where cars were involved (DETR: Road Accident Statistics, 1999).

❍ Deaths and injuries also result from pavement falls. In 1995, 76 men and 44 women died in this way.

❍ The National Road Maintenance Condition Survey records “spot” footway conditions that are a danger to pedestrians. During the 1980's and early 1990's the number of such conditions per 100 metres of footway declined steadily, but in recent years it has stabilised. In 1998 there were 1.4 per 100m (DETR: National Road Maintenance Condition Survey, 1999).

***Definition of a journey**

A journey is defined in the NTS as a one–way course of travel having a single main purpose, over 50 yards, on the public highway. For example, a trip to the shops and back is two journeys, one in each direction. A journey may include several journey stages, for example, walking to the bus stop, catching the bus, and then walking to the destination is one journey with three journey stages. Assuming the bus stage was the longest, the journey would be classified as a bus journey.

Sources

Allied Dunbar, *National Fitness Survey,* 1992
DETR: *Walking in Great Britain*, 1998
DETR: *Road Accidents Great Britain,* 1999
DETR: *National Road Maintenance Condition Survey*, 1999
DETR: *National Travel Survey:* 1996/98
General Household Survey, 1996
DTI Labour Force Survey, in *Transport Statistics Great Britain* 1999 (DETR)

Box 1.1.

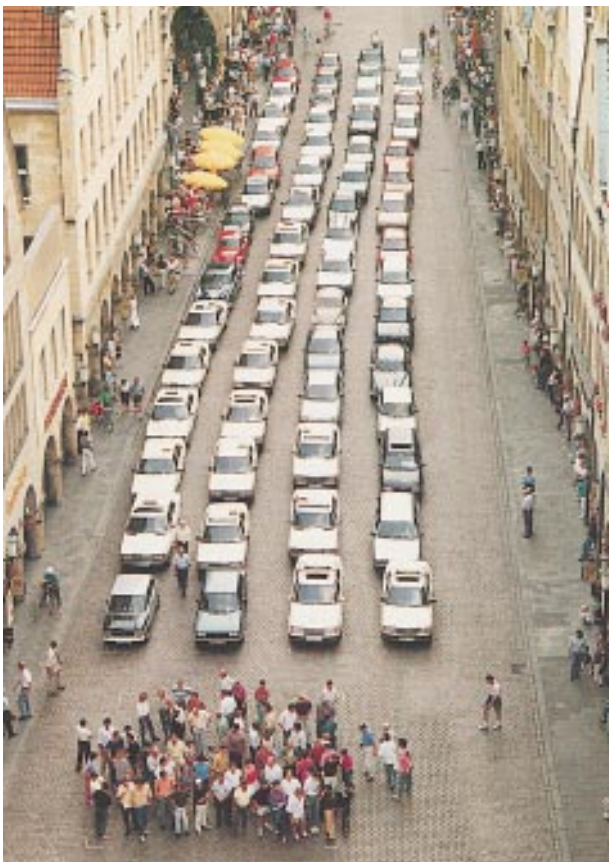
1.20. Leisure is an all–pervading part of life and walking is an important part of it. Of an estimated 5.7 billion day visits per annum in the UK, the main form of travel for nearly one third of them was walking. Public transport is seldom used. Walking – including hill walking and rambling – accounted for 15% of all visits. Day visiting is popular in winter and summer, and seven in ten visits are to a town or city (SCPR, 1997).

Benefits of Walking

Walking is sustainable travel

1.21. Walking is the most sustainable form of travel and provides one way of helping to reduce pressures on the environment. It uses less space per person than any other form of travel. It burns no fossil fuels, involves no harmful emissions, and can accommodate peaks in use more easily and at less cost than any other mode. Indeed, the more that people walk, the more secure everyone feels.

1.22. For the majority of the population, regular walking is practical only for short trips. Measured by distance, only three percent of the average person's travelling was undertaken on foot in 1994/96 (DETR, 1998b). However, measuring travel by distance hides the prominence of walking and its contribution to sustainable living. The number of trips is a better measure of the benefit derived from travel as each journey is a means to an end. Of the journeys where many motorists could choose to walk instead of driving, nearly 25% are less than two miles, a distance that is practicable for walking.



Pedestrians are very efficient users of road space.
Courtest: Beton–Verlag GmbH.

1.23. Increased use of public transport will normally require additional walking. Good quality and direct walking routes can improve access to public transport, assist interchange and encourage modal shift.

Walking is healthy

1.24. For most people, walking is the best overall physical activity for maintaining and improving fitness and health. The major health benefits of walking are:

- reduced risk of heart diseases;
- weight control;
- reduced risk of osteoporosis;
- reduced risk of diabetes;
- reduced risk of high blood pressure;

- reduced risk of cancer of the colon, and
- reduced depression and anxiety.

1.25. Regular physical activity contributes to a sense of well-being and, because it maintains healthy muscles, bones and joints, it helps elderly people to retain the ability to get about. In young people it builds up bone density, thereby reducing the decline that occurs in later life.

1.26. Most people find it difficult to incorporate sufficient regular physical activity into their lives. Walking has the advantage that it is available to virtually everyone on his or her doorstep and, unlike sport, offers exercise while going places.

Walking is part of community life

1.27. Towns and cities are places for meeting, trading, stimulus, innovation and creativity. What happens on the pavements in towns and cities is an important part of civic, social, commercial and political life. In smaller towns and villages and in residential areas where friends and neighbours meet and exchange local gossip, walking helps develop community life and is also part of a surveillance process that aids security.

Walking promotes social inclusion

1.28. Walking is a form of travel available to nearly everybody, regardless of age, gender, education or income. However, it tends to be more important to the socially excluded and those with less transport choice. Providing good conditions for walking and encouraging it throughout the community is important in order to reduce social division and on grounds of equity.

Walking is an important freedom for children

1.29. Streets are an important place for children to find out about life and begin to learn to fend for themselves. At play they acquire sensory, motor, emotional and cognitive skills. As they become independent and begin to roam they develop self-esteem, acquire a sense of identity, learn the creative use of their abilities, and take responsibility for themselves.

1.30. Research into the activities of nine to fourteen year olds (BMA, 1997) shows that "the children themselves perceive that their ability to lead healthy lives is significantly constrained". Many parents now feel obliged to constrain the activities of their children in order to safeguard them from road traffic and fears about abduction or assault.

1.31. Children's needs in terms of transport policy are an area of neglect and their independent mobility and access are often severely restricted by contemporary urban environments. Such limits on children walking to and from school, and on their general freedom to roam, are considered to have a serious effect on their physical health and mental development. However, initiatives such as "Safer Routes to School" and home zones are seeking to address these problems.

Barriers to walking

1.32. Despite the private and public benefits of walking, there are a number of factors, within and outside the control of the individual, which can deter people from walking. The following chapters of these Guidelines describe the barriers to walking in more detail and show practical ways in which they can be reduced and walking promoted.

Staffing and Professional Training

Staffing

1.33. Local authorities have made staffing changes in order to meet the new challenges of delivering sustainable transport policies. Providing for journeys on foot is part of this and will require appropriate allocation of responsibilities, staffing levels, skills and training.

1.34. The encouragement of walking requires the attention of a range of different professions within local authorities – planning, engineering, education, social science and tourism. These professional staff will need to work with other partners; for example disability groups, public transport operators and health authorities. On some occasions staff from the local authority will lead the partnership; on other occasions they will fulfil a more supportive role.

1.35. Some local authorities have nominated Walking Officers to spearhead and co-ordinate walking matters. For this approach to succeed, the role of the Walking Officer must be limited and clearly defined, integrated with other staff whose work affects walking and fully supported by senior management. A Walking Officer should be adequately trained and resourced. If appropriate support and integration is forthcoming, there is a danger that having a Walking Officer will marginalise walking and give the false impression that walking is a matter that a single officer can handle.

Professional Training

1.36. The changed emphasis in transport policy has important implications for professional training: to help produce properly equipped professionals capable of knowing how best to achieve quality provision for the vulnerable, but also most sustainable, transport modes. Local authorities, and other agencies with responsibilities in these areas, must review the adequacy of existing training both for those starting out on related professions like civil or traffic engineering and transport or town planning and also the capabilities of professionals already in the field.

1.37. Until now walking (and cycling) have often been regarded as of minor importance and a similar attitude has tended to prevail in terms of training requirements. Their importance is now being much more readily accepted and in turn the implications that all relevant professionals need to have some basic understanding of how to provide for these modes. Local authorities must make the most of the opportunities for more in-depth training for those wanting to specialise in this kind of work. The National/Scottish Vocational Qualifications (N/SVQs) partially fill this gap. In London, the London Walking Forum has provided a source of technical information and a forum for exchange of ideas and best practice.

1.38. Furthermore professionals need to know about sources of professional guidance and indeed to learn of the latest research findings. This need is particularly important for professionals embarking on walking work for the first time. To help this challenge a consolidated list of relevant references has been developed on the Internet. This site, which is regularly updated and which includes specific sites, both for walking (and cycling), on UK and foreign material, can be accessed at http://omni.ac.uk:8099/lczhmc/bibs/sustrav.

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2. The Policy and Planning Framework

This chapter summarises government policies and planning guidance relevant to walking. It describes the new emphasis on sustainable development in land–use policy and the way in which development plans and the development control system should be used to promote walking. It outlines the requirements and opportunities for including walking–friendly policies in the plans that local authorities are required to produce.

National Policies

The 1998 UK Transport White Paper

2.1. The White Paper *A New Deal for Transport: Better for Everyone* (DETR, 1998a) sets the framework for transport policy in the UK. It provides the context within which the Government's detailed policies will be taken forward. Local authorities and others will be expected to develop local strategies and plans that reflect the objectives of the UK White Paper.

2.2. The White Paper stresses integration of transport:

- within and between different types of transport
- with land-use planning
- with improving the environment
- with policies for education, health, the economy and social inclusion.

2.3. In *A New Deal for Transport: Better for Everyone* walking is seen as a key means of travel, both as a mode in its own right and also as a feeder for journeys by public transport. It has a vital role in providing sustainable alternatives to the car, within an integrated transport system. The White Paper sets out measures that will give more people the opportunity to choose to walk, such as improved conditions for pedestrians, and measures that will discourage them from driving, particularly for short journeys.

> "We are all pedestrians, even if we own a car. Nearly all journeys involve a walk and walking is still the main way of getting about locally. But all too often the things that make walking a more pleasant experience have not been given the proper attention, as can be seen in the way road space and priority is so often biased against pedestrians. Too often pedestrians are treated like trespassers in their own towns. We want streets that are decent and attractive to walk in." (DETR, 1998a, Paragraph 3.1).
>
> Box 2.1.

2.4. "Reflecting our proposals for 'streets for people'...we will expect local authorities to give more priority to waking by:

- reallocating road space to pedestrians, for example through wider pavements and pedestrianisation;
- providing more direct and convenient routes for walking;
- improving footway maintenance and cleanliness;
- providing more pedestrian crossings, where pedestrians want to cross;
- reducing waiting times at traffic signals and giving them priority in the allocation of time at junctions where this supports more walking;
- dealing with those characteristics of traffic that deter people from walking;
- introducing traffic calming measures near schools, in "home zones" and in selected country lanes;
- using their planning powers to ensure that the land use mix, layout and design of development is safe, attractive and convenient for walking."
  (DETR, 1998a, Paragraph 3.4)

2.5. The White Paper makes particular reference to developing safer routes to schools and to introducing "facilities which make it easier and safer for disabled and elderly people to move about". The need to provide high quality pedestrian environments is stressed in sections on living town centres and quality residential environments. This includes reducing crime and the fear of crime.

2.6. The issue of road safety and promoting walking is tackled directly. "We do not want to make roads safer by simply discouraging vulnerable groups from venturing on to roads.' 'We wish particularly to improve the safety of vulnerable road users, including pedestrians (particularly children), cyclists and motorcyclists, in a way that is consistent with encouraging more cycling and walking." (Paragraphs 3.220–1)

2.7. A cornerstone of the Government's strategy at local level is the introduction of Local Transport Plans. These are explained later in this chapter.

Encouraging walking: advice to local authorities

2.8. In March 2000 the DETR published Encouraging walking: advice to local authorities (DETR, 2000a). This is based on the report of an advisory group drawn together from a wide range of organisations with interests in the issues. It develops the policies contained within the UK Transport White Paper with respect to walking. The Scottish Office, the Welsh Office and the Department of the Environment for Northern Ireland were represented on the advisory group. The document should be taken as representing policy in England only but the government commends it to the administrations in Scotland, Wales, and Northern Ireland.

2.9. The UK Government's aim is to have more people make walking their first choice for short journeys, and going longer distances by a combination of walking and public transport. The Government has decided not to adopt national targets for walking but urges local authorities to set measurable local targets in their local transport plans. Targets might relate to the amount of walking, such as the number of pupils walking to school, or to service standards, such as improving pavement conditions. (These aspects are addressed in Chapters 2 and 8 of these IHT Guidelines.)

2.10. The document points out that walking has important benefits, for the individual and for the community. Walking is a major mode of travel but has declined in recent years. It sets out ways in which it can be made easier, more pleasant and safer: if this is successful, more people will choose to walk. These measures will have benefits for everyone but particularly for those who have constraints on their mobility – which includes most of us at one time or another. (These aspects are addressed in Chapter 1 of these IHT Guidelines.)

2.11. Encouraging walking: advice to local authorities emphasises the role of planning and partnerships, particularly:

- Local transport plans
- Land–use planning

The importance of land–use planning

"Land–use planning is the most important long term solution to our transport needs at both strategic and practical levels. Good integrated planing reduces the need to travel and makes jobs and services more easily accessible to all. We cannot emphasise enough this key aim for planners. We need to change the way that we plan, with a greater emphasis on enabling access by walking, as well as cycling and public transport." (para 3.4)

Source: Encouraging walking: advice to local authorities (DETR, 2000a).

Box 2.2.

- Partnerships
- Education and work journeys
- Health Improvement Programmes
- Walking for pleasure.

(These aspects are addressed in Chapter 2 of these IHT Guidelines.)

2.12. It lists a series of practical actions, at both the strategic and tactical level, in the following areas:

- Land–use planning.
- Professional training
- Reallocating road space
- Routes and networks
- Pedestrianisation and Vehicle Restricted Areas
- Transport interchanges
- Road safety
- Crime and the fear of crime
- Walking and cycling
- Improving the environment for walking
- Pavements fit for walking
- Making it easier to cross
- Home zones.

(These aspects are addressed in Chapters 2–6 of these IHT Guidelines.)

2.13. The importance of changing attitudes is also stressed. The DETR's "Are you doing your bit?" campaign is an example of good practice. (These aspects are addressed in Chapter 7 of these IHT Guidelines.)

Royal Commission on Environmental Pollution

2.14. The Royal Commission on Environmental Pollution's Reports on *Transport and the Environment* (RCEP, 1994 and 1997) called for urgent action to reduce the impact of transport on the environment. The Royal Commission drew attention to the importance of short trips – where walking is most feasible – and made many recommendations regarding promoting walking, particularly the creation of safe route to schools. Many of these recommendations are now incorporated in the 1998 Transport White Paper.

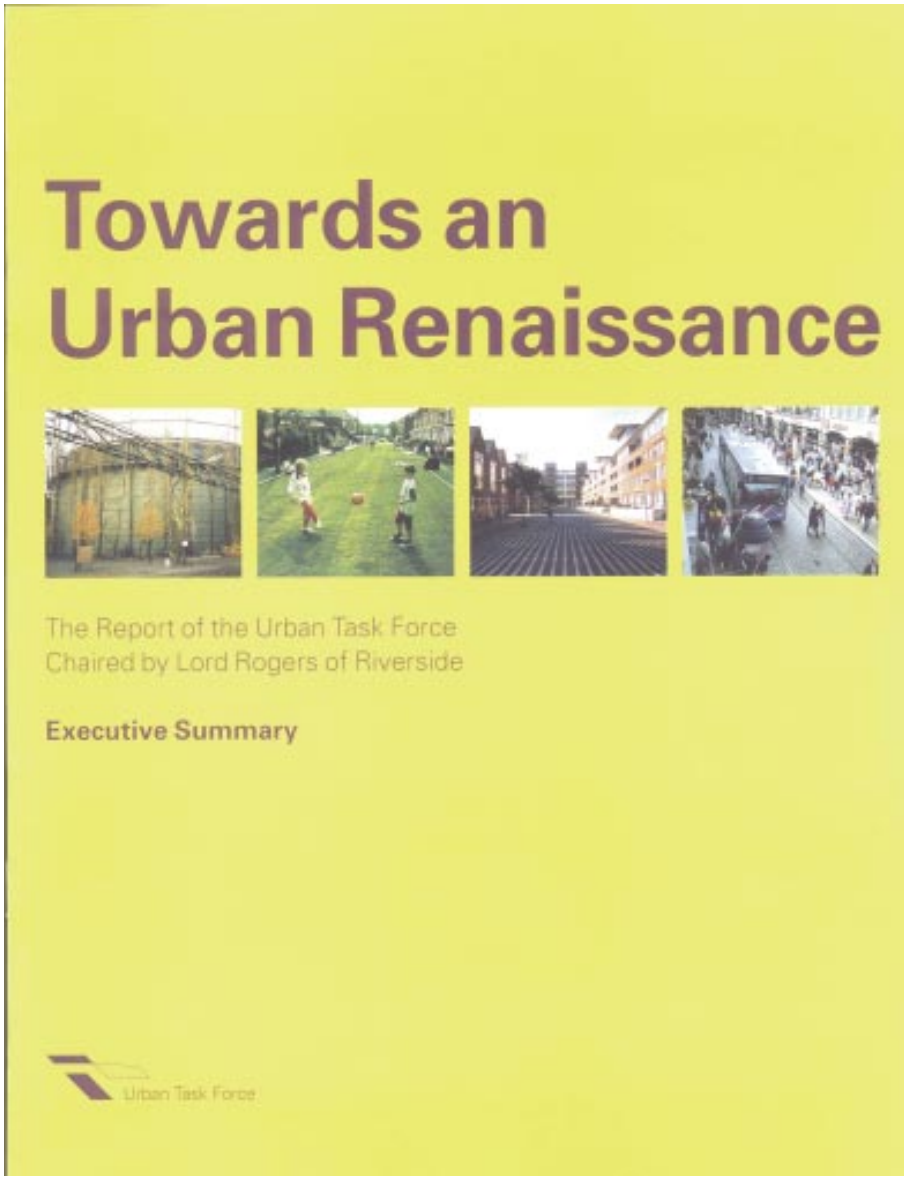
Sustainable Development Strategy

2.15. The Government's strategy for sustainable development is set out in *A Better Quality of Life* (DETR, 1999a). Promoting walking is important in relation to achieving more sustainable travel patterns, compact cities and improving the quality of life.

Urban Task Force Report

2.16. The report of the Urban Task Force (1999) *Towards an Urban Renaissance* is concerned with the challenges of improving the quality of towns and of providing additional homes in urban areas. Making cities pedestrian–friendly is an important part of both the vision and the solution. The report concludes that we need well–designed cities that are compact and connected, with a variety of uses, and well served by public transport.

2.17. The transport chapter (p87–p109) calls for improved walking environments and recommends: restraining car traffic; 20mph speed limits as the norm in residential areas and high streets; introducing home zones; including targets for walking in local transport plans;



Urban Task Force report: *Towards an Urban Renaissance.*

increasing expenditure on walking; making public funding and planning permissions dependent on giving priority to the needs of pedestrians and cyclists; and setting targets for maximum walking distances to bus stops.

Health White Paper

2.18. The Government's White Paper on health, *Our Healthier Nation*, is another important context for promoting walking. This sets a number of quantified targets where the promotion of walking and the improvement of walking conditions are particularly relevant. These include reducing coronary heart disease and strokes, reducing fatal and serious accidents, and reducing mental illness. Economic, social and environmental conditions are acknowledged to have a major influence on people's health. The White Paper stresses the importance of partnership working by the National Health Service, local authorities, citizens and others.

Speed and casualties

"Too many people take a cavalier attitude to speed. Yet speed is a contributory factor in about one third of all collisions. Every year, excessive and inappropriate speed helps to kill around 1,200 people and to injure over 100,000 more. It is by far the biggest single contributor to casualties on our roads." (para 197)

New Directions in Speed Management – A Review of Policy (DETR, 2000b).

Box 2.3.

Speed Policy Review

2.19. In 2000 DETR officials reported to the Minister for Road Safety on a wide–ranging review of speed management. This considered the implications for roads safety, climate change, air pollution, health, urban and rural quality of life, and the economy. *New Directions in Speed Management – A Review of Policy* (DETR, 2000b) analyses the effects of speed in these areas, the problems to be tackled and measures to achieve appropriate speeds.

2.20. The review recommends "a national framework which encourages consistency across British roads whilst allowing local traffic authorities flexibility to:

- make sure that the limit is right for the individual road; and
- to take account of all local considerations which might be affected."

2.21. The review then sets out an action plan which has a number of implications for pedestrians and pedestrian provision. An additional road hierarchy is proposed, categorising roads by their primary function as follows:

- the movement of people and goods by vehicle
- for people to move safely on foot or bicycle
- to cater for both on mixed priority roads.

Road design should clearly indicate to drivers the appropriate speed for the road.

2.22. In urban areas it is not considered appropriate to lower the 30mph limit on all roads. Lower limits should be applied selectively, as appropriate, taking into account the full range of issues above, particularly in residential areas, and in some streets with mixed traffic, such as high streets. On rural roads, 30mph should be considered the norm for villages and lower speed limits would be necessary for some country lanes.

2.23. The recommendations of the review have been considered by Ministers and incorporated into the Government's road safety strategy (below).

Road Safety Strategy

2.24. *Tomorrow's Roads – safer for everyone.* (DETR, 2000c) sets out the national road safety targets and road safety strategy for the ten years 2000–2010. It is endorsed by UK Government, the Scottish Executive and the Welsh Assembly.

2.25. The targets, to be achieved by 2010 and compared to the average for 1994–98, are:

- 40% reduction in the number of people killed or seriously injured in road accidents
- 50% reduction in the number of children killed or seriously injured;
- 10 % reduction in the slight casualty rate (per 100 million vehicle kilometres).

Fewer casualties and more walking

"The proportion of journeys made on foot and by bicycle has fallen in recent years. It will be a challenging task to increase levels at the same time as reducing casualties, but we do not believe it is impossible." (Para 9.3)

Tomorrow's Roads – Safer for Everyone (DETR 2000c).

Box 2.4.

2.26. The strategy outlines an action plan which covers a broad range of approaches and measures. There are 10 main themes. Of particular relevance to pedestrians and pedestrian provision are:

- Safety for vulnerable road users
- Safer Infrastructure
- Safer Speeds.

2.27. The Government is particularly concerned about child pedestrian safety and there is a special focus on this in the strategy. Priority measures include:

- Improved child pedestrian skills training
- More 20mph zones, particularly around schools and in residential areas
- Support for home zones
- Local authorities to undertake child road safety audits.

Land–Use Planning

2.28. Land use is the principal determinant of the feasibility of walking as a mode of travel. If there are no local facilities – shops, schools, parks, pubs, health centres and public transport – within reasonable walking distance, the best footways in the world will not persuade people to walk.

2.29. The government believes land use planning has a central role to play in delivering sustainable development. The government's overall approach to planning is aimed at containing the dispersal of development so reducing the need to travel and improving access to jobs, leisure and services. It is seeking to promote regional strategies for planning that are integrated and sustainable and which provide the context for local transport plans (LTPs) and development plans. It is also seeking to work through the planning system to promote travel by public transport, walking and cycling.

The Planning System

2.30. In England, national policy on planning is set out in Planning Policy Guidance notes (PPGs) while policies and priorities for regions are set out in Regional Planning Guidance notes (RPGs). Local authorities set out their policies and proposals in development plans of two types: Structure Plans and Unitary Development Plans(UDPs) Part I which set out broad policies; and Local Plans and UDPs Part II which offer specific proposals for land use. National planning policies must be taken into account when drawing up regional planning guidance and development plans.

2.31. Local planning authorities have the role of deciding whether to grant planning permission to development proposals. In certain circumstance, for example where a proposal raises issues of more than local importance, the Secretary of State may decide to examine it in detail at an inquiry. Further, the planning system in England is plan–led: planning applications should be determined in line with policies and proposals in development plans, unless there are material considerations which indicate otherwise.

Planning Policy Guidance Notes

2.32. National policy on planning for England is primarily set out in 24 Planning Policy Guidance notes (PPGs). Several contain policies relevant to walking, particularly PPG13 on Transport. National policy can also be set out in Circulars and Ministerial statements while Good Practice Guides provide advice on implementing policy.

2.33. PPG13: Transport (DETR, 1999b). The 1994 edition of PPG13 was a major step forward in integrating land use planning and transport, advising local authorities on how to: reduce growth in the length and number of motorised journeys; encourage alternative means of travel with less environmental impact; and so reduce reliance on the private car.

2.34. The draft consultation PPG13 (October 1999) builds on this approach, forming an integral part of the government's policies to promote sustainable transport choices and encourage urban renaissance. (The final version of PPG13 is due later in 2000). Its overall aim is to get the right development in the right place, so that land uses attracting large numbers of people are much more accessible by a choice of means of transport, including public transport, cycling and walking.

2.35. The main planning policies in PPG13 related to walking are to:

- focus major travel generators of travel demand in city, town and district centres and near to major public transport interchanges;
- locate local and day to day facilities which need to be near their clients in local centres so that they are accessible by walking and cycling, and
- accommodate housing primarily within existing urban areas at locations highly accessible by public transport, walking and cycling.

2.36. PPG13 also requires local authorities to

- give priority to people over traffic in town centres, other areas with a mixture of land uses and local neighbourhoods consider giving more space to pedestrians, cyclists and public transport in these locations;
- use parking policies to promote sustainable transport choices and reduce car dependency, and
- ensure the needs of disabled people are taken into account in implementing planning policies and traffic management schemes (para 5).

2.37. Local authorities are required to use their planning and transport powers to give greater priority to walking and to produce strategies to make it easier and safer to get around by walking. In broad planning terms, they should identify networks of routes and locations where pedestrians will be given priority; ensure the design, location and access arrangements of new developments promotes walking; promote high density, mixed use development in and around town centres and near to major transport interchanges; promote and protect local day to day shops and services which are within easy walking distance of local housing; and create more direct, safe and secure walking routes, particularly in and around town centres and local neighbourhoods (para 53).

2.38. Local authorities should also employ specific measures such as: wider pavements; pedestrian–friendly crossings; traffic calming measures; pedestrianisation schemes; encouraging use of public rights of way; and ensuring pedestrian routes do not encourage crime by isolating people from other activities (para 54).

2.39. PPG13 promotes the widespread use of travel plans by businesses, schools, hospitals and other uses and organisations, in order to reduce car use; increase walking, cycling and public transport; and reduce traffic speed and improve safety, particularly for pedestrians and cyclists (paras 66–69). It also introduces a system of Transport Assessments of development proposals, which will illustrate the modal split of journeys to and from the site and set out proposed measures to improve access by public transport, walking and cycling (para 16).

2.40. PPG1: General Policy and Principles (DoE, 1997a) PPG1 summarises government strategy on planning and key policy objectives. It stresses the need for urban regeneration to create a more sustainable pattern of development. This can be achieved by concentrating in accessible locations, particularly town centres, those forms of development which generate large numbers of vehicle journeys. PPG1 also emphasises the benefits of increasing the density of development and of mixed–use development in reducing the need to travel. As well as making it easier to walk to shops and places of business or recreation, planning authorities must also consider the issue of access into buildings. They should insist on accessible new and converted buildings, and the right of everyone, including people with disabilities, the elderly and those with young children, to have safe and obstacle–free access wherever appropriate.

2.41. PPG3: Housing (DETR, March 2000). The revised PPG provides advice to local planning authorities, developers and others on planning to meet the housing needs of the whole community. Its main objectives are to produce an improvement in the quality of housing development, to provide more sustainable patterns of development, to make better use of previously developed land and existing buildings and to limit greenfield land loss.

2.42. To promote more sustainable residential environments, both within and outside existing urban areas, local planning authorities are required to promote development that is linked to public transport; mixed use development; a greener residential environment; greater emphasis on quality and design places for people; and the most efficient use of land.

A Planning Inspector refused to allow a new housing development in Restormel Borough, Cornwall as the access road did not have continuous footways and required pedestrians to cross from one side to the other. The Inspector described this as "a disincentive to walk from the site to the town centre". (*Planning,* 5 February 1999, p6).

Housing Development Rejected Because of Inadequate Footways.

Box 2.5.

2.43. The PPG expects local planning authorities to adopt policies which create places and spaces with the needs of people in mind, which are attractive and which have their own distinctive identity but respect and enhance local character. They should promote designs and layouts which are safe and take account of public health, crime prevention and community safety considerations. In doing this they should focus on the quality of the places and living environments being created and give priority to the needs of pedestrians rather than the movement and parking of vehicles. They are encouraged to avoid inflexible planning standards and reduce road widths, traffic speeds and promote safer environments for pedestrians.

2.44. PPG6: Town Centres and Retail Development (DOE, 1996). PPG6 advocates taking a strategic approach to developing town centres through the plan–led system. It advises that town and district centres should be the preferred location for major trip generating developments and that local authorities should maintain and improve choice for people to walk.

2.45. The guidance includes a number of indicators for assessing the health of town centres, which include pedestrian flows and accessibility (including the quality of provision for pedestrians). In developing town centre strategies, local authorities are requested to develop a comprehensive traffic management strategy which provides good access to the town centre by foot, reviews the allocation of space for pedestrians and the scope for implementing priority measures, and protects and enhances the pedestrian environment. These suggestions include giving greater priority to the needs of pedestrians, especially at junctions, widening footways, and providing more direct and safer pedestrian routes/networks and crossings which focus on town centres.

2.46. PPG11: Regional Planning (DETR, 1999c) Regional Planning Guidance, setting out policies and priorities, is issued by the DETR for each region in England. The draft consultation PPG11 announced new arrangements for regional planning in England, in particular a broader spatial role informing other strategies and programmes and the incorporation of a regional transport strategy (RTS) providing the regional context for the preparation of LTPs.

2.47. The draft PPG11 provides detailed advice on preparing a regional transport strategy. It will involve liaising with a large number of different organisations in both the private and public sectors, including those interested in promoting walking. As such, an assessment of the walking infrastructure may be undertaken or deemed to be a matter for local action.

2.48. PPG 12 Development Plans (DETR, 1999d). This advises on the content of, and appropriate level of detail in, development plans. This would apply to policies and proposals for walking where these have land use implications. (See also the sections in this chapter on PPG13 and Development Plans.)

The Development Plan System

2.49. The plan–led system was given statutory force by section 54A of the Town and Country Planning Act (TCPA) 1990. Where an adopted or approved development plan contains relevant policies, section 54A requires that an application for planning permission or an appeal shall be determined in accordance with the plan, unless material considerations indicate otherwise. Accordingly, to promote walking, it is important that appropriate policies are included in development plans.

2.50. The development plan for an area will comprise a Structure Plan, usually at county level, and a Local Plan, usually at district level, except in metropolitan and some unitary authority areas where it comprises a Unitary Development Plan (Parts 1 and 2). The TCPA 1990 requires that all development plans include policies for the management of traffic.

Even in established urban areas, the footway network may be incomplete…

…or need widening.

Courtesy: Ove Arup/David Davies.

2.51. PPG12 on Development Plans stresses the importance of considering sustainable development and transport and land–use issues policies when drawing up development plans. It explains the interaction of LTPs and development plans (see below) and stresses that together they should produce consistent transport and land–use strategies.

Structure Plans

2.52. The Structure Plan (or UDP Part 1) is the appropriate one for the transport and land use strategies underpinning a local transport plan and can promote sustainable transport policies, many of which may benefit walking. In relation to promoting walking, the Structure Plan may contain policies which could be used to:

- Encourage sustainability by locating new development close to existing or proposed employment opportunities and other essential services (including public transport) in order to shorten trip lengths and hence encourage walking;
- Help consolidate a more sustainable approach, by not improving provision for peak hour private vehicular travel, where provision can be made for improved access by other more sustainable means, including walking;
- Retain basic services, ie, schools, hospital, shops, etc. in those settlements designated for expansion and in those not well served by public transport, in order to retain the option of walking, and
- Present broad policies in support of improved or new pedestrian facilities and improved pedestrian links to public transport for all new development

Local Plans

2.53. Local Plans (UDPs Part 2) set the detailed planning and development control framework. They are key documents for translating the strategic policies of Structure Plans and local transport plans into pedestrian–friendly policies for specific sites or districts at the local level. The process of producing a Local Plan provides an important opportunity to involve the public in local walking issues.

2.54. Local Plans have several important functions for walking. These may include policies to:

- Ensure that specific and appropriate provision is made for pedestrians in line with the structure plan policy objectives.
- Provide development control guidance by defining sufficiently precise policies on land use. Low density or dispersed development increases walking distances and hence severely discourages walking. The emphasis in the Local Plan therefore needs to be on using planning policies and development control to ensure that most regular and essential journey origins and destinations are close enough together to make walking viable.
- Ensure that new development is linked to a pedestrian network. It is far more effective to show, in the Local Plan, key pedestrian links, segregated from vehicular traffic (including cyclists) and along desire lines as far as possible, than have them fitted in afterwards by the developer. Adjustments to key routes can subsequently be made at the detailed stage if necessary, but only in agreement with the development control officer.
- Ensure that convenient links are provided between walking and public transport stops and other basic amenities and that walking distances to them are acceptable.
- Encourage residential development in town centres in order to retain their vitality at all times and in doing so to develop both the community and security aspects.
- Propose measures to reduce the number and speed of vehicles, including any specific policies and locations where pedestrian–friendly measures, such as pedestrianised streets, 20mph limits, home zones and Safer Routes to Schools, will apply.
- Establish road user hierarchies for all or parts of the plan area. (See below.)

2.55. Additionally, there may be potential in local plans for protecting land for walking routes by safeguarding or allocating/identifying land for such uses where there is a realistic prospect of a project starting within the plan period. Local planning authorities can safeguard land for a future transport scheme through a proposal in a local plan and can also indicate a preferred use for land by identifying or allocating land for a particular use. The White Paper on Transport

Road user hierarchies

In busy urban areas there will be competing demands for road space. It is often not feasible to improve conditions for all groups of road user, no matter how well planned the scheme might be. A number of local authorities have found it helpful to adopt road user hierarchies so that planners and designers have explicit guidance on priorities. This can be applied to, for example, decisions on the reallocation of road space, pedestrianisation schemes and provision of pedestrian crossings. These hierarchies usually apply to central areas although the principle could be extended to other areas, such as local shopping centres, residential areas and the streets around schools. The hierarchies may be set out in the development plan, LTP or other strategy document.

For a variety of reasons, pedestrians are usually placed at the top of the road user. In central areas pedestrians are often more numberous than vehicles; they are the most efficient and environment–friendly users of road space; and a good walking environment is crucial to the functioning of many parts of a town.

Norwich Road User Hierarchy

Pedestrians and people witha mobility handicap
Cyclists
Public Transport
Coach–borne shoppers
Car–borne shoppers
Car–borne commuters
Source: Norfolk County Council (In *Norwich Area Transport Strategy and Norfolk County Structure Plan*).

Hierarchies are expressions of general principles and priorities. They are not intended to dictate the solution or design in all situations. They can be helpful but need to be applied intelligently and not slavishly. There will be situations where the needs of those lower in the hierarchy legitimately prevail. This need not conflict with policy objectives. It is recommended that all local highway authorities draw up road user hierarchies for appropriate areas.

Box 2.6.

makes it clear that development plans should give better protection to sites and routes (existing and potential) which could be critical in developing infrastructure to widen transport choices. Also, alternative uses related to sustainable transport should be considered first for sites now surplus to transport requirements, so local authorities are asked to consider the potential of disused railway trackbeds and routes for possible future transport schemes, including walking, and apply appropriate protective policies where justified.

2.56. "Stepping Out" (Pedestrians Association, 1998) gives examples of how specific some Structure and Local Plan policies can be, to the benefit of the pedestrian.

Development Control

2.57. Development control – the business of determining planning applications – is crucial to creating a walking–friendly environment. This is the stage of the planning process where matters of detailed land use and design in development are usually decided.

2.58. Due to the tight time–scales involved in the planning application process, if Local Plan policies are not sufficiently developed or precise at the time of an application, opportunities for improving "the lot" of the pedestrian will often be lost. It is therefore essential that good communication exists on a day to day basis between those responsible for Local Plan policies, pedestrian provision, and development control (planning and highway) advice. This will facilitate speedier decisions and help ensure that the best provision for the pedestrian can be made at an early stage in the process before the developer has committed resources or finalised the proposals.

2.59. Specific Structure and Local Plan policies on walking assist the development control officer in any negotiations on the details of development schemes. Within this framework development control advice and decisions can then have a vital role at an early stage in the planning and design process to promote walking, as illustrated in the following good practice notes:

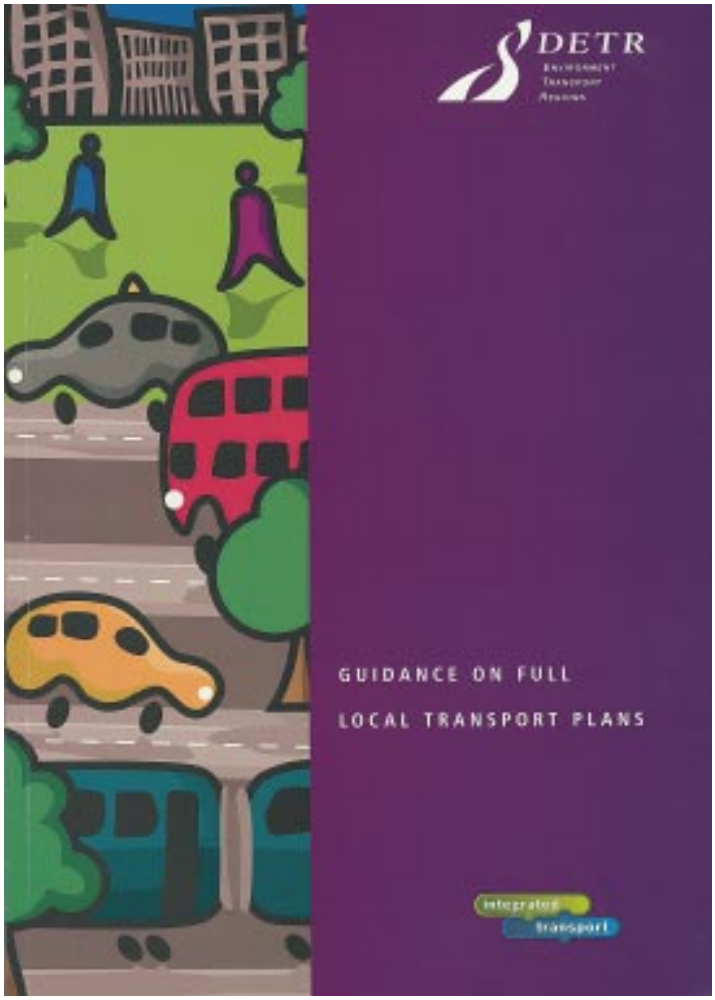
- Since development will often have a life of 50–100 years, except perhaps in respect of some shopping centres, opportunities not taken at the time of development application stage may be lost for generations and therefore every effort should be made to enhance pedestrian facilities at that stage.
- Section 106 Agreements and planning obligations may be used to fund pedestrian facilities or other sustainable transport measures related to but outside the development. (However, these are not substitutes for proper planning conditions.)
- Whilst recognising the difficulties associated with "ransom strips", efforts should be made to achieve pedestrian links across them that satisfy pedestrian desire lines.
- In addition to the use of the Local Plan and the LTP, local authorities can assist developers provide pedestrian improvements through the adoption of suitable design standards for the following:
  - Housing Developments.
  - Industrial/Commercial Developments, including special situations ie, Access to and segregation of vehicles and pedestrians in Schools, Hospitals and Supermarket Car Parks.
  - Highways (not specifically related to commercial development).

Courtesy: The London Borough of Camden.

2.60. Although principally concerned with public transport, the IHT Guidelines, *Planning for Public Transport in Developments* (IHT, 1999) also contains information of help in planning for pedestrians, before and after they use public transport.

Government Design Guidance

2.61. The UK Transport White Paper stresses the need for good design of new development so that the most can be made of opportunities for walking, cycling and public transport in new developments. The Government has published several documents which underline the importance of attention to good design in the planning and development process. Whilst it is not mandatory for local authorities or developers to adhere to this advice in the way that legislation or PPGs must be observed, these documents are likely to be a material factor in relation to planning applications and appeals. With regard to walking and land use planning and development control, the most relevant are below:



Guidance on Local Transport Plans.

Places, Streets and Movement

2.62. Guidance on the overall design of residential areas is provided in *Places, Streets and Movement* (DETR, 1998b). This stresses that a movement strategy for walking, cycling and public transport should be the starting point for designing accessible neighbourhoods. It recommends an approach to the layout of residential areas that is sympathetic to the nature of the local place, rather than the rigid requirements of vehicle movement. Buildings should be arranged to suit the local context, and roads then fitted into the spaces created. *Places, Streets and Movement* is a companion guide to *Design Bulletin 32* (DoE/DOT, 1992) which remains the principal technical source for the subject.

By Design

2.63. *By Design. Urban design in the planning system: towards better practice* (2000g) forms a key part of the Government's strategy for promoting better urban design in the planning and development system. It provides sound, practical advice on how to implement the Government's commitment to good design as set out in Planning Policy Guidance, in particular *PPG1 General Policy and Principles* and *PPG3 Housing.* It also reinforces the call in the Urban Task Force's report *Towards an Urban Renaissance* for earlier, greater and better–informed attention to urban design.

2.64. "By Design" underlines that streets are more than just traffic channels for vehicles, and should offer a safe and attractive environment for all. It underlines the benefits of well–designed streets which encourage people to use them, and make going outside a safe and pleasant experience.

Transport Plans

Local Transport Plans

2.65. The Transport White Paper introduced the system of Local Transport Plans (LTPs) for England and Wales (Local Transport Strategies in Scotland). In order to bid for central government funds for transport investment, local authorities in England (except for London), are required to produce LTPs. Full LTPs are to be submitted by 31 July 2000 and they are intended to last for five years without significant alteration.

2.66. LTPs are fundamental to the new arrangements for planning and co–ordinating local transport investment and policy. Comprehensive guidance on LTPs is provided by the DETR (2000d). This requires local highway authorities to adopt their own local strategy for walking. As the full LTPs will be largely complete by the time of publication of these IHT Guidelines, further details of the LTP process have been omitted here.

2.67. The Mayor of London and Greater London Assembly, together comprising the Greater London Authority, are responsible for producing a London–wide transport strategy. The London boroughs will be required to produce Local Implementation Plans. Meanwhile, the boroughs have produced Interim Transport Plans.

Local Walking Strategies

2.68. The guidance on LTPs (DETR, 2000d) requires local highway authorities to adopt their own local strategy for walking. The main elements of a Local Walking Strategy should be included in the LTP. There is merit in also publishing the Local Walking Strategy as a stand–alone document. (See paragraphs 124–132 of the LTP guidance.) The elements of a suggested Local Walking Strategy are provided in Box 2.7. (See also Chapter 3.) The criteria on which the DETR will assess the quality of a LTP with regard to walking are set out in Annex D, Table 9 of the guidance. Further advice on preparing a local walking strategy is provided by the Pedestrians Association (2000).

Local Targets for Walking

2.69. Local authorities are expected to set local targets relevant to the aim of encouraging more people to walk. Local targets must be measurable and relevant to the area. They might include targets for the number of people walking to key destinations or for service standards. Possible targets might relate to:

- The percentage of journeys to work on foot
- The percentage of school children walking to school (by age group)
- Time taken to repair reported footway defects
- The percentage of traffic signals with pedestrian phases
- Reduction in pedestrian casualties and footway falls
- Traffic reduction (volume and speed)
- User satisfaction.

In setting targets the following principles should be remembered (IHT, 1996):

- They should be measurable: as a means of assessing progress measurement is essential but the implication of target–setting is that a monitoring system, capable of measuring

Possible Scope of a Local Walking Strategy.

1. Relevant National Policies (refer to sections in Guidelines)
   - Transport White Paper
   - *Encouraging walking: advice to local authorities*

2. Broad Local Policy Background
   - Environment
   - Land Use
   - Sustainable travel
   - Economy
   - Healthy living/Public safety
   - Social inclusion – neighbourhoods, disabled
   - Leisure and recreation

3. Local Information and Trends
   - Journeys to work census data
   - Local travel surveys
   - Pedestrian casualty records
   - Local public opinion surveys

4. Objectives
   - Increase the amount of walking
   - Reduce the fear and danger for pedestrians
   - Protect and enhance local facilities
   - Improve accessible for mobility–impaired pedestrians
   - Improve conditions for walking

5. Targets
   - Percentage of people walking to key destinations (eg, schools, rail stations, workplaces, city centre shops)
   - Number of Green Travel Plans (companies, hospitals, schools) adopted
   - Number of 20mph zones introduced
   - Kilometres of pedestrian priority areas/clear zones introduced
   - Reduction in pedestrian casualties relative to the level of pedestrian activity

6. Policies
   - Priorities – local road user hierarchy (see Local Plans above)
   - Facilities – route, crossings, waiting times, signing, speed restraint, planning gain, maintenance, audit
   - Encouragement – general promotion, campaigns

7. Process
   - Public consultation
   - Stakeholder consultation
   - Review process

8. Programme of Measures
   - Priorities
   - Five year period
   - Funding sources

9. Monitoring Systems
   - User satisfaction surveys
   - Mode share surveys at key destinations
   - Footway maintenance, street cleansing and lighting repairs performance
   - Footway falls claims

Box 2.7.

performance in relation to the target, will be established, with consequent resource requirements;

- They should be relevant: they should be pertinent to the objectives being assessed and should flow from the overall strategy;
- They should be time–limited: they should have a definite time–period within which their attainment is sought; and
- They should be realistic: if large changes are being sought then shorter–term or staged targets should be used.

Pedestrian Charters

2.70. Local authorities may find it helpful to produce and publicise a local pedestrian charter. This should communicate succinctly, to the public and to the local authority's staff, the key objectives and service commitments of the authority. The charter should reflect the objectives and targets of the Local Walking Strategy. It should also make clear the procedures for reporting problems, such as the "CLARENCE" system in Lothian and Northamptonshire. Charters are common in other service delivery areas. Public transport operators and authorities often have passenger charters; the Highways Agency has a Road Users Charter. A suggested pedestrian charter is shown below.

Local Authority Pedestrian Charter

1. This Authority *believes* that walking is an important and beneficial means of travel and *supports* the objectives of the *Encouraging walking: advice to local authorities.*

2. This Authority *recognises* the basic rights of people to safe and convenient travel on foot, including people who have a mobility impairment, and their specific rights as pedestrians within the law. This Authority *further recognises* that the rights of pedestrians have effectively been eroded over many years.

3. This Authority will seek to
   - Improve the quality of the pedestrian environment
   - Improve the convenience of the highway network for walking
   - Reduce road traffic danger for pedestrians
   - Promote walking as a means of travel for short trips.

4. With regard to the services for which it is responsible, this Authority undertakes to
   - Consult the public on walking issues
   - Scrutinise planning applications to ensure that pedestrians are fully considered in new development
   - Audit proposals for new highway schemes to ensure that pedestrians are fully considered
   - Carry out regular inspections of all public footways every xx months
   - Promptly investigate reports of footway defects within xx days
   - Comply with the New Roads and Street Works Act 1991 standards of highway maintenance and repair
   - Introduce a "considerate contractor" scheme that recognises the needs of pedestrians
   - Introduce pavement parking bans where pedestrians are being obstructed or endangered
   - Discourage council employees from parking on footways
   - Discourage cycling on footways by improving conditions for cyclists on the carriageway and educating cyclists
   - Reduce waiting times at signalised crossings to a maximum of xx seconds in the off peak and yy seconds in the peak, wherever possible
   - Investigate road accidents involving pedestrians and take action where practicable
   - Regularly publish information on local walking conditions
   - Review this Charter in two years time.

2.71. Additionally, a charter may include the following details of standards:

- Footway maintenance standards that can be expected – related to a footway hierarchy;
- Cleaning frequencies;
- Standards that can be expected by the mobility impaired;
- Fault reporting procedure;
- Response times to repair faults;
- Arrangements for the inspection of footways;
- Procedure for reporting and removing obstructions from the footway;
- Pedestrian signing proposals and practice;
- Pedestrian crossing policy (including signal timing), and
- Proposals for further development of the network.

2.72. Local authorities should try to work with other agencies in order to produce a multi–agency pedestrian charter, involving the Police, health authorities and any other significant agencies with responsibilities of providing for pedestrians or promoting walking.

Road Traffic Reduction Reports

2.73. The Road Traffic Reduction Act 1997 (RTRA) requires each local authority to produce a report containing an assessment of existing levels of traffic on those roads for which it is the highways authority and a forecast of expected growth in those levels. It should consider the setting of targets where appropriate for reducing either existing levels of traffic or their rate of growth. (For the purposes of the Act, traffic is defined as 'mechanically–propelled vehicles'.) The UK Government's guidance to local authorities on the implementation of this Act is contained in Part III of its guidance on LTPs (DETR, 2000d).

2.74. Whilst the RTRA does not make any statutory link between the development of these reports and the funding regime, they will be an integral part of LTPs. Authorities will be expected to explain, in bids for capital funding, how the schemes relate to the targets they have adopted.

2.75. Measures to reduce traffic, such as parking restraint measures, are likely to encourage some increase in walk trips. Similarly, local authorities will want to improve conditions for walking in order to provide alternatives to car use for short trips. Local authorities will need to consider the extent to which promotion of walking can help to achieve RTRA targets and the extent to which targets for walking and for road traffic should be integrated.

The Road Traffic Reduction (National Targets) Act 1998 requires the UK Government (in respect of England), the Scottish Executive and the National Assembly for Wales to set national targets for traffic reduction (or to explain their reasons for not doing so), and to report subsequently on progress in reducing the adverse environmental, social and economic impacts of road traffic and in achieving any targets set. The first report under the Act for England, Tackling Congestion and Pollution (DETR, 2000e), was published in January 2000. The first report under the Act for Wales was published in February 2000.

Other Plans

Local Agenda 21

2.76. Agenda 21 is an action plan for the next century endorsed at the 1992 Rio "Earth Summit". The aim is to achieve sustainable development, so that we can achieve economic and social progress that recognises the needs of everyone while safeguarding the environment for future generations. Agenda 21 challenges local authorities to work with their community to produce a

"Local Agenda 21" (LA21). A distinctive feature of the LA21 approach is empowerment of local communities. The Prime Minister has set a target for all local authorities to have LA 21 strategies in place by the end of the year 2000. The majority of local authorities are well on course to meet this target, either through preparation of free–standing LA 21 plans or through integration of LA 21 within community plans or other corporate strategies.

2.77. LA21 covers local authority sustainability performance, as well as awareness raising and education. Many local authorities have undertaken an environmental audit of their policies and programmes. Community participation and partnership working are core elements in the preparation of LA 21 strategies. Measuring, monitoring and reporting progress are key to the LA 21 process.

2.78. Sustainable transport is a key issue for LA21 and walking is the most sustainable form of transport. As well as measures to reduce the need to travel, discourage unnecessary car use and promote public transport and cycling, many LA21 strategies will aim to increase the proportion of journeys made on foot through activities such as:

- participating in campaigns to raise awareness of the issues and promote behavioural changes, eg, TravelWise and Don't Choke Britain
- giving priority to pedestrians, buses and cyclists in traffic schemes
- promoting school travel plans, including safer routes to school and 'walk to school' campaigns
- creating a cleaner and more pleasant pedestrian environment
- following planning policies that maintain and increase opportunities for access on foot.

2.79. In order to be effective, LA21 strategies need to be properly linked to other strategies and programmes – notably the LTP – and translated into action on the ground. As well as the direct benefit of such measures, raising the profile of walking will reinforce the message to the local community and demonstrate political commitment.

Air Quality Management Area (AQMA) Action Plans

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (DETR *et al*, 2000) sets out health–based objectives for eight main air pollutants to protect health. These pollutants are:

1. benzene
2. 1,3 butadiene
3. carbon monoxide
4. lead
5. nitrogen dioxide
6. ozone
7. particulates
8. sulphur dioxide.

2.80. The air quality objectives for seven of the pollutants (excluding ozone) are prescribed in the Air Quality Regulations 2000 for the purposes of local air quality management (LAQM). Local authorities have to work towards achieving these objectives.

2.81. Under the system of LAQM, local authorities have a duty to review and assess the current, and likely future, air quality in their areas. Where a local authority considers that one or more of the air quality objectives, as prescribed in the Air Quality Regulations 2000, is unlikely to be met by the required date, it must declare an Air Quality Management Area (AQMA), covering the area where the problem is expected. It must then draw up an AQMA Action Plan setting out the measures it intends to take in pursuit of the air quality objectives in the area. The sort of measures authorities are most likely to take include land–use planning and traffic management. The Government issued statutory guidance *Air Quality and Transport LAQM*, G3(00), published in March 2000, which includes a reference to pedestrian/vehicle restricted areas and

encourages local authorities to consider ways of making walking safer and more convenient by ensuring pedestrians' needs are seen as integral to traffic management.

Health Improvement Programmes

2.82. Local health authorities are required to produce Health Improvement Programmes, drawing on the contributions of other NHS bodies, local authorities, local businesses, community groups and individuals. Because of the central role of local authorities with regard to economic, social and environmental measures, local authorities will be key contributors to the health improvement programme.

2.83. Health authorities and local authorities should ensure co–ordination of their strategies with regard to walking. Areas for coordinated action might include

- Health education that stresses the benefits of walking
- Green Transport Plans that include promoting walking to local medical centres
- Improved footway maintenance to reduce accidents from footway falls
- Road safety measures to improve pedestrian safety
- School Travel Plans
- Exchange of information on pedestrian casualties
- Health professionals leading by example.

Crime and Disorder Audits

2.84. The Crime and Disorder Act 1998 imposed a duty on local authorities and police forces to form local Crime and Disorder Partnerships. Under the Act each partnership was required to produce a report by April 1999 outlining the main crime and disorder problems in its area –a crime and disorder audit – and a strategy for dealing with them. The reports must be made available to local residents and organisations for comment. Personal security fears and traffic offences, such as speeding or illegal parking, can deter walking. Crime and disorder audits and associated community safety plans, therefore, provide opportunities to focus attention and resources on issues that affect walking.

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3. Planning For Pedestrians

This chapter covers the barriers to walking, consultation on pedestrian issues, the types of schemes that can improve conditions for pedestrians and how these should be planned. It distinguishes new development from existing built–up areas. It provides information and tools for planning, including level of service assessment and pedestrian review techniques.

Barriers to Walking

Deterrents

3.1. There are many real or perceived deterrents to walking. Most are well known whilst others are less obvious. Amongst the most important are:

- Land use patterns that are unsuited to walking
- Unpleasant pedestrian environments
- Danger from vehicular traffic
- Personal security fears
- Inconvenient pedestrian facilities.

3.2. Surveys have been carried out to rank the deterrents to walking but the results often depend on the type of location surveyed and particular local conditions. Further details of the physical problems faced by pedestrians are provided in Boxes 3.1 and 3.2. Some of these problems can be addressed by planners and engineers, whilst others require partnership action by a much wider collection of agencies.

Unpleasant and inconvenient pedestrian subways are a barrier to walking. (This one has now been replaced by a surface crossing).
Courtesy: TDfL.

Needs of pedestrians

3.3. Apart from the general needs of all pedestrians, many users will also have specific needs and some locations will require specific treatments. The aim of the planner and designer must always be to provide access and mobility for all pedestrians (including those who are visually impaired or wheelchair–users). Some destinations justify extra attention because of the nature and number of the journeys they generate, and/or of the main category of user. Schools generate large numbers of movements by children at certain times of the day; hospitals generate movements by both able–bodied and mobility–impaired people, and others with a medical condition attending out–patient clinics, who may not be experienced in coping with their mobility difficulties.

A Poor Quality Pedestrian Environment

- inadequate footway maintenance/reinstatement and lack of snow–clearance and de–icing
- litter and a general appearance of neglect
- dog fouling
- splashing by drivers
- buildings that turn their backs on the street and present pedestrians with blank walls, ugly street scenes and an absence of reassuring surveillance
- cul–de–sac housing layouts that turn suburban estates into mazes and increase walking distances to shops and other local services
- lack of benches and public lavatories
- the absence of road signs for visitors on foot
- steep gradients and/or steps

Inadequate Pedestrian Safety

- fear of road accidents
- aggressively designed vehicles with fittings such as bull–bars and, at night, high–powered head lights
- obstructions on footways: roadworks, rubbish bins and sacks, poorly sited traffic sign poles, bus shelters, locked bicycles and parked cars
- inadequate or broken street lighting in both residential streets and at pedestrian crossing points on main traffic routes
- lack of or inadequate footways – particularly in and between villages and the narrower streets of old towns and cities
- illegal cycling on pavements and the sharing of some off road paths with cyclists
- inadequate green time at signal controlled crossings

Inadequate Personal Security

- fear of assault, graffiti and the withdrawal of police from local stations and walking beats
- highly publicised child killings and abductions that have made some parents fearful of letting children walk unaccompanied
- dangerous dogs
- the presence of beggars (some of them aggressive) and intimidating drunks

Physical problems faced by Pedestrians.

Source: MORI (1995) and National Consumer Council (1998).

Box 3.1.

Getting Started

3.4. Adopting new policies that place greater emphasis on providing for pedestrians is likely to prompt the question "Where should we start?". Local authorities have many functions which affect pedestrians (Box 3.3). Many activities to assist pedestrians will be ongoing, such as maintenance of footways and crossings. There will inevitably be ideas for new initiatives and schemes from a variety of sources, and new development proposals will throw up new opportunities. A local walking strategy will help here.

3.5. There are at least four basic ways in which local authorities will want to start planning for pedestrians:

- Assembling existing information on walking and pedestrian needs
- Consulting the public and interested parties regarding problems faced by pedestrians, policies and schemes

- In the Bypass Demonstration Project Towns, the presence or absence of seating as well as seating design was a key factor in determining the distance which elderly people were able to walk. Thus if people could rest for a while *en route* especially on a comfortable seat they could walk much further.
- In the Gloucester Safer City Project, local people identified where they wanted crossings to be placed and these often differed from the sites originally planned by the highway engineers.
- In Wolverhampton, attitude studies showed that fears about personal safety when using subways resulted in people not visiting the town centre from the outer ring road estates. As a result the subways were redesigned and at–level crossings installed at some of the most sites perceived as most dangerous.
- In Ipswich town centre, important deterrents to walking included non–road safety aspects such as dog dirt, lack of toilets and begging.
- A five town study of shared use of routes between pedestrians and cyclists showed that although many people tolerated shared use on altruistic grounds, some people with disabilities (especially those with hearing and visual impairment) were felt unable to walk along shared use routes.

Some Less Obvious Problems for Pedestrians.

Source: Social Research Associates (1999, unpublished).

Box 3.2.

- Reviewing existing policies, plans, standards and services that affect pedestrians
- Conducting reviews of conditions for pedestrians in priority locations.

3.6. The classical model of planning is "Survey – Analysis – Plan". Some surveys will be required to investigate specific issues and needs. However, a good deal is known about pedestrian requirements and much can be done without elaborate surveys. Adopting design standards and practices that properly provide for the full range of user needs, such as those recommended in these Guidelines, may also obviate the need for some survey work.

3.7. A planned, strategic approach to providing for pedestrians is recommended, in order to ensure that resources are used effectively and are targeted at policy objectives. Local authorities will need to consider how best to allocate their effort between comprehensive planning and making progress on specific schemes.

3.8. In the case of major new development or redevelopment schemes, comprehensive planning of new networks will be necessary. With the larger schemes, specialist planning staff outside the local authority may be involved, particularly if they are developer–led.

3.9. Providing for pedestrians on the existing network requires a different approach. In urban areas of the UK, most roads already have footways; there are also many miles of footpath, bridleway and other paths used by pedestrians. The problem is mainly one of quality and suitability of the existing network, particularly for children and people with a mobility–impairment, rather than one of providing new networks. It seems likely, therefore, that most authorities will need to concentrate their efforts on raising standards, reviewing priorities, making selective modifications and providing occasional missing links rather than planning completely new networks.

3.10. Most authorities will have begun to develop local walking strategies, in the context of their LTP. Some authorities, such as Oxfordshire, have formally adopted interim measures, pending more detailed consideration of their strategies.

Planning Authority

- Development Plans, Environmental policy, land–use planning, urban design.
- Development Control, Provision of footways, etc, in new development.

Highway Authority

- Transport planning and traffic management, including new development.
- Highway, footway and crossing design, transport policy initiatives.\
- Footways Structural Maintenance
- Footways Routine Maintenance
- Footways Winter Maintenance
- Footways Sweeping
- Street Lighting
- Road Safety: Local Safety Schemes; road safety publicity and training.
- Rights of Way.

Police

- Law and order
- Enforcement of speed limits and responsible driving, parking, and footway cycling.

Local Authority and Police functions relating to provision for pedestrians. Box 3.3.

Public Consultation and Involvement

3.11. Public consultation and involvement is essential in all major stages of providing for walking, from development of strategic policies through to design details, maintenance issues and monitoring. The new approach to local government and to LTPs emphasises involving the public and partnership working (IHT, 1996).

3.12. Consulting the public on walking issues is not significantly different to other areas of local transport consultation, and should not be undertaken in isolation from them. However, some specific aspects are worth noting:

- Because walking is such a commonplace activity, people may not readily identify themselves as "pedestrians".
- Local pedestrian organisations should be consulted where possible but are likely to be too small to cover all local walking issues adequately.
- Relevant stakeholders, such as local retailers, public transport operators, residents groups, health authorities and the police, should be consulted on pedestrian issues and encouraged to see that walking is relevant to their business, and to become involved.

Pedestrians should be consulted on policies as well as schemes.
Courtesy: Nottingham City Council.

- Those who are most dependent on walking and the quality of the pedestrian environment (such as children, older people and those with impaired mobility) may find it difficult to make their views understood. Those undertaking the consultation may fail to understand how to communicate with them. Specific efforts will be needed to ensure that their views are included.
- The concerns of local politicians, professional planners and engineers may not be the same as those of the walking public. The former are often more concerned with new schemes and accidents statistics, the latter are often more worried with more mundane things such as litter and dog dirt.

3.13. The public can be consulted on pedestrian issues by means of conventional consultation and market research techniques, such as public meetings, exhibitions, interviews and focus groups. It is useful to employ more than one method in order to cross–check result. This avoids possible over–representation of minority views and the likelihood of errors going unnoticed.

3.14. Increasingly the standard public opinion survey is being superseded with more interactive forms of participation. They include citizen audits, mystery consumer studies, Delphi panels, Samoan Circles, Future Search exercises, citizens juries, community commissions, developing community indicators, community call–up, planning for real exercises, interactive board games, festivals and travelling road shows. The trick is to choose the most appropriate from a growing menu of options in the light of the purpose and nature of the group being consulted. Further details can be found in *Modern Local Government: Guidance on Enhancing Public Participation* (DETR, 1999).

New Development

3.15. New development, or significant redevelopment, is likely to provide opportunities for comprehensive new provision for pedestrians. The main task will be to consider pedestrian movements within the site, and between the site and its surrounds. A large scheme will need to thoroughly consider:

- The needs of pedestrians
- The policy objectives
- The setting
- The physical site constraints
- The financial constraints.

3.16. Guidance on new residential development is specifically provided in *Places, Streets and Movement* (DETR, 1998a), as described in Chapter 2.

3.17. In a major development there will be many planning decisions to be made with regard to walking. These will include:

- The overall disposition of buildings and spaces
- The location of buildings within sites and local access arrangements
- The alignment of routes to serve pedestrians
- The hierarchy of pedestrian routes
- The design standards and levels of service for pedestrians
- The degree of priority to be given to pedestrians (and other sustainable modes)
- The degree of mixing/segregation of pedestrians and vehicles
- How vehicle speeds will be controlled
- The aesthetic design
- The security.

3.18. Planning for pedestrians should be a specific and positive part of the development planning process. It should not be treated as something that can be fitted in once decisions about road layouts have been made.

3.19. In order to ensure that the alignment and standard of a pedestrian route is satisfactory, the practitioner will need to know, at least at a broad level, the following:

- Principal attractors and generators of pedestrian trips
- Principal pedestrian desire lines
- The level of pedestrian flows, at peak and off–peak times
- The types of pedestrians likely to use the routes.

Attractors and Generators of Pedestrian Trips

3.20. The level of pedestrian traffic can usually be estimated to acceptable levels of accuracy by observing comparable existing developments. Key factors to consider are the proximity of housing to public transport, shops, schools, workplaces and entertainment centres; also land use densities and levels of car ownership and parking provision. Peak periods for walk trips will depend on the land use: for residential areas these will usually be 08.00–09.00 and 15.00–16.00 when school and work trips coincide; for other land uses, particularly retail, midday periods 12.00–14.00 may have higher peaks than the morning or evening period. Nationally, the peak hour for walking is 15.00–16.00 when one in ten walk trips start. This is the main time for collecting children from school and it is also the time when many women working part–time return home (DETR, 1998b).

3.21. For residential areas, walking trip generation rates by household can be derived from the NTS. Table 3.1 shows that a typical household will make two journey stages per day to or from the home on foot. (This excludes walk trips that do not start or finish at home.) Of course, householders will not be the only people using the footways in residential areas. There will also be delivery trips made on foot, for example by post and newspaper deliverers, and movements on foot between houses and vehicles, such as refuse collectors and milkmen. These types of travel are not recorded in NTS.

3.22. Unfortunately, walking trip generation rates for other land uses, such as retail or entertainment areas are not generally available. Information on data bases which include non–car modes is provided in IHT (1999).

Table 3.1: Walk stages to and from home: 1996/98.

	One person household			Two person household			Three+person household			All households		
	Out	**In**	**All**	**Out**	**In**	**All**	**Out**	**In**	**All**	**Out**	**In**	**All**
AM peak 0800–0859	0.05	0.01	0.06	0.09	0.02	0.11	0.46	0.04	0.50	0.21	0.02	0.24
PM peak 1500–1559	0.02	0.04	0.06	0.03	0.07	0.10	0.11	0.41	0.52	0.06	0.19	0.24
All day average (Mon–Fri)	0.41	0.39	0.80	0.62	0.58	1.21	1.38	1.33	2.71	0.84	0.80	1.64
All day average (all days)	0.55	0.53	1.08	0.82	0.78	1.60	1.66	1.61	3.27	1.05	1.01	2.06
Number of households in sample		2,648			3,253			3,383			9,284	
Number of people in sample		2,648			6,506			12,826			21,980	

Source: DETR – National Travel Survey 1996/98 (special tabulation.)

Desire lines

3.23. Pedestrian desire lines (current and post–development) should be identified, between homes and key destinations, such as local shops, bus stops and schools. Existing movement patterns, where applicable, may give a good indication of desire lines but some may be obstructed by barriers. Paths worn across grass are good clues. These should then be translated into routes, whilst minimising walking distances and eliminating or reducing any deterrents. The success of this will vary depending on whether the site is a green field, or already partially developed hence possibly frustrating some desire lines.

3.24. Crossings are a vital part of the pedestrian infrastructure and need to be planned as an integral part of the development.

Practitioners need to take account of pedestrian flows and desire lines.

Courtesy: The Pedestrians Association.

3.25. It is recommended that these key pedestrian routes be assigned a role within a pedestrian route hierarchy, if not already specified in the local plan. The approach adopted can be analogous to that used in highway design:

- Principal routes
- Local distributors
- Access routes

Pedestrian Flow Levels

3.26. Walking is an extremely flexible mode. Provided that a good width standard is initially adopted, pedestrian networks (unlike road networks) can safely and comfortably accommodate considerable fluctuations in flow levels. It is therefore unnecessary to calculate the pedestrian flow levels to the degree of accuracy required for motorised traffic. However, some land uses are likely to attract significant peak pedestrian flows which will require special provision:

- Rail and coach stations
- Schools and colleges
- Entertainment places (theatres, cinemas, night clubs, etc)
- Sports stadia.

Other land uses may attract large numbers of pedestrians but the patterns of movement are more dispersed.

Types of pedestrians

3.27. The types of pedestrian using the route will need to be considered at the planning stage, as this will have implication for layout and design. Significant use by shoppers, tourists, young children, the visually impaired, people using wheelchairs, and other groups with particular needs should be identified where possible. This can usually be worked out from the main land uses and the location.

Transportation Planning Models

3.28. There are various tools available to transportation planners to assist with planning or modifying highway networks for motor vehicles (eg, IHT, 1997, Chapter 8). Models for pedestrian movement are less common. Pedestrian modelling techniques have been developed for those locations where there are large numbers of pedestrians and where virtually all journeys are on foot, for example in large public squares or within passenger terminals. However, they are less well developed for multi–modal situations covering large areas, such as a new settlement or existing town. In these instances conventional origin and destination forecasting techniques/survey results can be used to determine desire lines but modal split assumptions may have to be made on assignment. These assumptions should also take account of the implications of new policies and schemes that will change the current situation.

3.29. The absence of specific pedestrian models for planning new developments is not necessarily a major problem. Most pedestrian networks are planned without models. Observation and experience are probably more important. It is also worth remembering that models can be expensive to construct and are not always sufficiently accurate.

Acceptable walking distances

3.30. Approximately 80% of walk journeys and walk stages in urban areas are less than one mile. The average length of a walk journey is one kilometre (0.6 miles). This differs little by age or sex and has remained constant since 1975/76. However, this varies according to location. Average walking distances are longest in Inner London. The main factors that influence both walking distance and walking time in a city or town centre appear to be the size of the city or town itself, the shape and the quality of the pedestrianised area, the type of shops and number of activities carried out. An average walking speed of approximately 1.4 m/s can be assumed, which equates to approximately 400m in five minutes or three miles per hour. The situation of people with mobility difficulties must be kept in mind in applying any specific figures.

3.31. "Acceptable" walking distances will obviously vary between individuals and circumstances. Acceptable walking distances will depend on various factors including:

- An individual's fitness and physical ability
- Encumbrances, eg shopping, pushchair
- Availability, cost and convenience of alternatives transport modes
- Time savings
- Journey purpose
- Personal motivation
- General deterrents to walking.

3.32. Table 3.2 contains suggested acceptable walking distances, for pedestrians without a mobility impairment for some common facilities. These may be used for planning and evaluation purposes. (See also Table 4.2.)

Table 3.2: Suggested Acceptable Walking Distance.

	Town centres (m)	Commuting/School Sight–seeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred maximum	800	2000	1200

3.33. Planning Policy Guidance Note 6 states that the acceptable distance from a supermarket car park to the town centre is about 200–300m (DOE, 1996). Further sources of information on acceptable walking distances are provide by IHT (1997 and 1999) and DETR (1998).

3.34. For shopping, Carley and Donaldsons (1996) advise that that "acceptable" walking distances depend on the quality of the shops, the size of the shopping centre and the length of stay of the shopper. Specifically, they state that parking time governs the distance walked from parking. See Table 3.3) Higher quality and larger centres generate longer acceptable walking distances with up to 1250m of walking journey to 100,000m^2 of floor space.

Table 3.3: Acceptable walking distances for car–borne shoppers.

Parking time (hours)	Acceptable walking distance (metres)
30 mins	100
1	200
2	400
4	800
8	1000

Source: Carley and Donaldsons (1997)

Individual Sites/Redevelopment

3.35. For smaller areas and individual new developments or redevelopment, usually within an existing urban area, origin /destination surveys and network planning may not be appropriate. It will be important to identify the anticipated desire lines, crossing locations, volume and type of pedestrian activity. The practicality and attractiveness of walking depend not only on the general location but also on the access details. The most important considerations are likely to be:

- the ease of pedestrian access to the site
- the orientation and location of buildings within the site
- the access arrangements within the site
- the architectural style of the development (car or pedestrian oriented).

3.36. Additional walking distances or gradients, can be crucial in determining whether a development is pedestrian friendly. Layouts that require pedestrians to walk through car parks or to follow indirect footpaths should be avoided as far as possible. These are issues that should be addressed jointly by planners and engineers involved in development control.

3.37. If the development is sufficiently large to warrant a Transport Impact Assessment, the local authority should ensure that this thoroughly addresses the issues of pedestrian access, both to the site and within it. Some guidance is provided in IHT *Guidelines for Providing for Public Transport in Developments* (IHT, 1999). Further Guidelines on Transport Assessments are expected from DETR.

3.38. It may be appropriate for the developer to contribute towards new or improved pedestrian facilities, either directly or via commuted payments. A Travel Plan may also be made a condition of planning consent. (See Chapter 7.)

Existing Pedestrian Routes

3.39. On existing urban routes, the main task is likely to be one of improving the quality and suitability of the current walking infrastructure, rather than constructing new routes. The improvements can be categorised into four main headings as below.

Improving the Quality of the Environment

3.40. If people are to choose to walk rather than drive, at least for more short trips, the pedestrian environment must be more than just functionally adequate. It needs to be of high quality, so that the walk is a pleasant experience. This requires not only the specific improvements to facilities described above but also an urban design approach to designing, constructing and managing the pedestrian environment. This will involve multi–disciplinary skills and sustained partnership working. Specific measures will include:

- **Cleaner pavements.** Better and more frequent street sweeping, action to prevent littering and dog fouling, etc.
- **Improved footway surfaces.** Prompt repairs, use of higher quality materials, and accessible footway defect reporting systems.
- **Tackling graffiti.** Prompt removal of graffiti and fly–posters, and working with young people to discourage graffiti artists.
- **Trees and street furniture.** Introducing more greenery, improved quality of street furniture, providing benches and public art.

Improving Road Safety

3.41. Reducing traffic dangers to pedestrians and their fear of accidents is important in order to enable more people to walk, especially children and elderly people. The volume of motorised traffic, the percentage of large vehicles, its noise and its proximity to pedestrian routes, can be intimidating for pedestrians and make them feel uncomfortable. The following are amongst the key measures available to improve safety for pedestrians:

- **Reducing vehicle speeds.** This can be achieved by physical measures and increased enforcement, supported by publicity, education and community involvement. Reducing the speed limit may also be appropriate. Local authorities are encouraged to introduce 20mph zones around schools and in residential areas (DETR, 2000c). They now have powers to introduce 20mph limits without physical measures.

- **Reducing traffic intimidation.** Traffic reduction, traffic management, traffic calming measures can alleviate these problems. Reallocation of road space to increase the physical separation distance will help. So too will positioning physical objects, such as trees, street lighting columns and street furniture, between the footway and the carriageway. However, they should not cause an obstruction to pedestrians or interfere with sight lines.

- **Providing safer crossings.** If the speed and volume of traffic are reduced, as above, crossing the roads should become easier and safer. However, specific crossing facilities may still be needed. There is a range of types of crossing facility and *Local Transport Note 1/95* (DOT, 1995) gives local authorities considerable flexibility in deciding when to install a crossing and the type of crossing to install. The objective should be to provide frequent, safe and convenient crossing opportunities.

- **Reducing footway hazards.** Driving, parking and cycling on the footway is hazardous for pedestrians and can deter travel on foot. These offences should be tackled by appropriate design, education and enforcement.

Improving Personal Security

3.42. Fear of crime, particularly personal assault, is a significant deterrent to walking, especially for women, and after dark. The incidence and the fear of crime can be reduced by a number of physical and management measures.

- **Crime and Disorder Audits.** These audits (See Chapter 2) may have identified specific problems affecting pedestrians, and suggested solutions. Further audits of specific local security issues may be useful.

- **Improved street lighting.** It may be possible to install additional or upgraded street lighting; or to improve the maintenance of existing lighting, taking into account the views of local residents. (In rural areas particularly, street lighting may not be popular.)

- **Increasing visibility and surveillance.** Pedestrian routes and areas may be concealed or isolated from natural surveillance. It may be possible to improve visibility by removing obstructions, such as excessive vegetation, or even to modify the alignment of routes so that pedestrians are more easily seen by residents and other road users.

- **CCTV installation.** In certain areas, notably town centres, CCTV may be appropriate.

- **More effective policing.** Action by the Police, Special Constables or street wardens may be possible. This could include increased officer presence, improved liaison with the local community, and tackling specific problems or known trouble–makers.

- **Increasing local activity.** Increased local activity tends to reduce the fear of crime. Whilst this is not always an easy thing for a local authority to influence, it can be affected by land use and development control policies, and other local authority functions such as education and recreation.

3.43. Detailed examples of projects that have successfully cut crime and increased walking are reported in *Personal Security Issues in Pedestrian Journeys* (Crime Concern and SRA, 1999).

3.44. Guidance is given on the detailed design methods required to create lively and safe streets in Circular 5/94 "Designing Out Crime" (DOE, 1994). Overall, increasing pedestrian activity helps to break the vicious circle of more isolated areas encouraging higher crime rates and greater public fear of crime. Advice should be sought at an early stage from the Police Architectural Liaison Officer/Crime Prevention Officer.

Improving Footway Widths

3.45. Providing a satisfactory width of footway, including separation distance from motor vehicles, is important to enable pedestrians to walk at their chosen speed, to escort children, to walk in groups, and to pass others safely. Existing footway widths may be inadequate, or it may be desirable to increase them in order to improve pedestrian comfort and safety. This can be particularly important at specific locations, such as where pedestrians are waiting to crossing a road. Footway widths can be increased by:

- **Reallocating road space.** Road space can be reallocated from motor vehicles to pedestrians, including pedestrianisation schemes, narrowing the carriageway or providing shared surfaces (although shared surfaces can lead to new problems).

- **Increasing the usable footway width.** The usable width of existing footways can sometimes be increasd by physical measures and by improved management. Measures include repositioning street furniture, preventing pavement parking and cycling, cutting back overhanging vegetation, reducing signboards and similar footway obstructions, and, in limited cases, paving part or all of the verge.

The footways on Camden High Street have been widened to accommodate the very large number of pedestrians. Vehicles are permitted to park on the footway at certain times. *Courtesy: David Davies.*

Assessing the Walking Environment – Pedestrian Reviews

3.46. *Encouraging walking: advice to local authorities* (DETR, 2000a) recommends using "The Five Cs" as a checklist to assess the overall quality of the existing environment for walking. See Box 3.4.

3.47. These criteria, which were developed by the London Planning Advisory Committee, are described more fully in *Encouraging Walking: Advice to Local Authorities.*

Is the local walking environment:
- Connected?
- Comfortable?
- Convenient?
- Convivial?
- Conspicuous?

"The Five Cs". Box 3.4.

3.48. Where it is necessary or desirable to take a comprehensive look at existing conditions for pedestrians, a pedestrian review may be a useful approach. (The term "pedestrian review" is used, in these Guidelines, to describe a systematic examination of existing conditions. This is to distinguish it from the term "pedestrian audit" which refers to the examination of planned schemes. This is analogous to the terminology and procedures set out in the *Guidelines for Cycle Audit and Cycle Review* (IHT, 1998)).

3.49. A pedestrian review can be defined as a systematic process, applied to the transport network, which is designed to identify its positive and negative aspects for walking, and to assess ways in which those networks can be improved in order to encourage walking.

3.50. The purpose of a pedestrian review will include some or all of the following. To:
- Systematically and comprehensively assess walking conditions on a route or network;
- Identify the problems and locations that most require attention;
- Enable the level of service for pedestrian of a route to be assessed;
- Identify those measures that seem most feasible and beneficial;
- Produce a framework for more detailed investigation and action.

3.51. A pedestrian review is likely to be helpful in relation to the following:
- Consultation on local walking issues
- As a factual basis of a detailed Local Walking Strategy or action plan
- A major redevelopment or town centre enhancement.

3.52. The principle of pedestrian review is to assess the existing conditions in relation to the factors that are most important to pedestrians, on the basis of desirable standards of provision. The factors are those listed in section 3 above. The standards are set out in subsequent chapters which cover design and maintenance standards.

3.53. A pedestrian review will involve addressing some or all of the issues in Table 3.4.

3.54. The review should concentrate on objective assessments but some issues, such as personal security, will require "subjective" judgements. Some information will already be available to the local authority, such as street lighting standards, footway condition surveys, traffic flows and casualty data. Other information will require site visits to check, for example, footway widths, and parking problems. As experience is gained, it should become easier to collect standardised, quantifiable information that will enable comparison between areas.

3.55. Public consultation and involvement will be an essential part of the review process. It is likely to pick up the more subjective issues, such as personal security, that are hard to objectively assess. The public is more likely to take the consultation seriously if the local authority provides a framework backed by local surveys and information. Consultation will complement, but is not a substitute for, objective assessment.

3.56. Once conditions have been assessed and problems, if any, identified, it will be helpful to list potential solutions and to test their initial feasibility. Further advice is provided in *Developing Urban Transport Strategies* (IHT, 1999).

Reviews by User Groups

3.57. Local pedestrian groups, residents' organisations, disability groups, and other community groups or individuals are sometimes willing to undertake pedestrian reviews themselves. These can be very valuable as they may supplement the resources of the local authority and provide details from the perspective of certain types of user. An example of a Pedestrian Audit form for use by local pedestrians is provided in Appendix B. Case study examples from the Partnership for a Walkable America can be viewed at www.walkable.org.

3.58. Taking photographs, slides or video can also be valuable audit methods, particularly for presenting at meetings where they can portray conditions more convincingly than a written report.

Level of Service Measurement Methods

3.59. Pedestrians are very efficient users of space. Because they can move in close proximity to one another, a relatively narrow footway can have a very high pedestrian flow capacity. However, although people might be able to make progress, conditions that would be acceptable at a football match would not be considered acceptable on a residential street. Simple capacity is therefore only part of the requirement and must be combined with a concept of the level of service.

3.60. Techniques have been developed in the US and elsewhere to measure the pedestrian level of service – the "pedestrian-friendliness" – provided by a route. (Level of service measurement is commonly used in relation to roads and motorised traffic but less frequently in relation to facilities for non–motorised users.)

3.61. Fruin (1971) developed a method for assessing the pedestrian level of service in terms of the pedestrian's freedom to walk at his/her chosen speed and to pass others – a measure of

Issue	Question	Suggested Criteria
Directness	How direct are principal pedestrian routes between significant journey origins and destinations?	Walking distances relative to crow–flies distance.
Comprehensiveness	Do pedestrian routes serve all significant destinations?	Locations not served.
Width	Are routes wide enough to enable pedestrians to proceed and to pass others comfortably?	Usable footway width. Pedestrian flow/density.
Obstructions/misuse	Are there problems of pavement parking, pavement cycling, illegal signs, or other obstructions?	Negligible/slight/regular/ serious
Surfaces	Are surfaces firm, even, non–slip, clean and well drained?	Footway maintenance survey data. Frequency of inspection and sweeping.
Crossings	Are footways linked by safe and convenient crossings?	Locations on known desire lines where crossing is slow or hazardous.
Personal security	Are pedestrian routes well lit, surveilled and otherwise safe in term of personal security?	Streets with lighting below standard. Footways not overlooked. Presence of vandalism or graffiti.
Pleasant	Are levels of traffic noise and fumes excessive? Is the immediate environment attractive for pedestrians?	Traffic flows and speeds.
Signing	Are street names and destinations clearly signed? Are local map boards provided?	No. missing or damaged.
Suitability	Are the different needs and abilities of users provided for?	Dropped crossings, tactile paving, etc.

Table 3.4: Pedestrian Review: Assessing Existing Conditions.

pedestrian congestion and convenience. It is based on the amount of space available to each pedestrian and converted to pedestrian flow per minute relative to the available width. The method was originally intended for use in relation to walkways in pedestrian–only areas, such as within shopping centres and underground stations, but it is also useful for assessing some aspects of the quality of footways and other pedestrian routes. The method is relatively simple and inexpensive, and has been widely used.

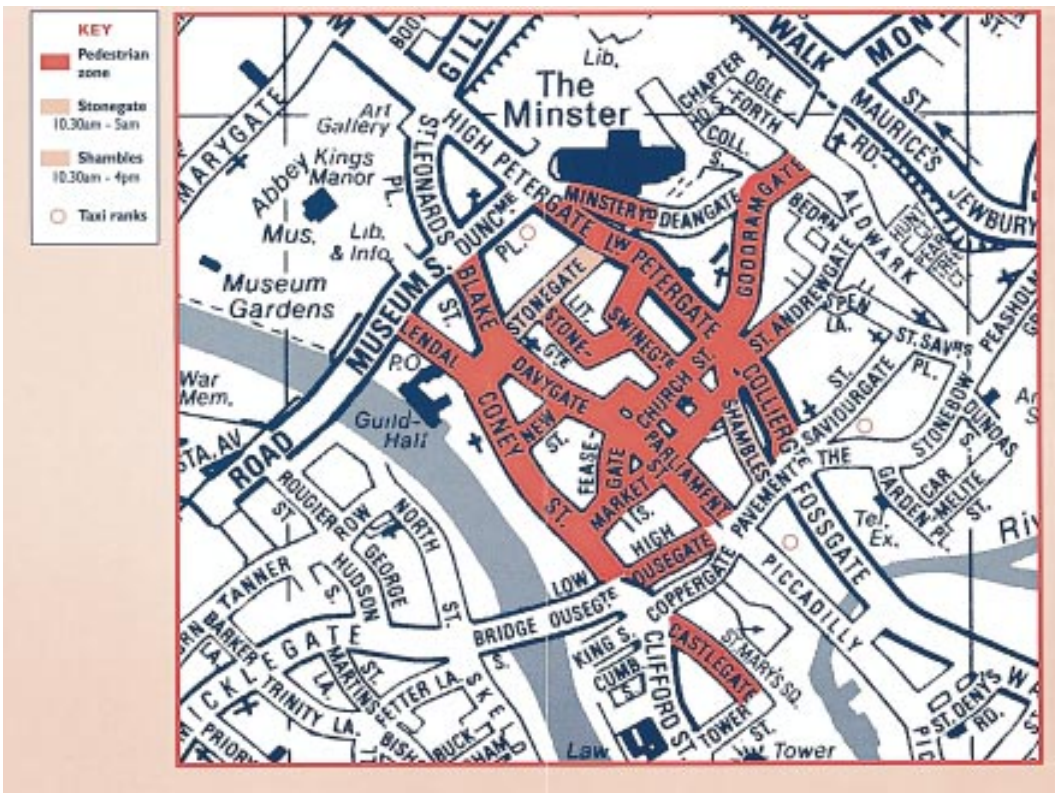
Table 3.5: Footway Level of Service Measurement. *Source: Fruin, 1971.*

Level of Service	Sq Ft per Pedestrian*	Pedestrians per minute per foot width
A	>35	<7
B	25–35	7–10
C	15–25	10–15
D	10–15	15–20
E	5–10	20–25
F	<5	>25

*The measurements in columns two and three are alternative ways of measuring the same thing. Where the flow is bi–directional (normal on public streets) or where shoppers are involved the lower values will apply.

3.62. Fruin classifies six levels of service (A–F). At the highest level of service (A), pedestrians are able to select freely their own walking speed and to pass others. At the lowest level of service (F), the density is such that walking speeds are extremely restricted and akin to queuing. For most footways, level of service A would be normal outside peak periods. Central shopping streets would experience levels B or sometimes C during busy periods. Railway stations, sports stadia, etc might experience levels D or above at very busy peaks. The levels of service are calculated as shown in Table 3.5.

The York pedestrian area – one of the largest in Europe.
Courtesy: City of York.



3.63. Footway conditions in the peak periods are most relevant for assessment. They can be measured either by an observer counting (or videoing) the flow of pedestrians past a given location. Alternatively, pedestrian densities could be calculated from photographs. These may be available from CCTV, or cameras could be set up for the survey.

3.64. Dixon (1996) describes a more comprehensive method that incorporates traffic conflict and other factors. It classifies pedestrian routes into six overall levels of service (A–F) on the basis of awarding points for the following:

- Footway width and continuity
- Conflicts and delays
- Amenities
- Motor vehicle flow and carriageway widths
- Maintenance
- Public transport provision.

3.65. Dixon provides details of how to measure each factor and how to calculate the pedestrian level of service. Some adaptation would be required in order to apply this method to the UK situation.

Planning Pedestrian Priority

3.66. The Government is encouraging local authorities to give greater priority to pedestrians by reallocating road space, and reducing the speed and volume of motorised traffic. (The term "pedestrian priority" is often used, if loosely. It needs to be recognised that although measures such as pedestrianisation and traffic calming do give pedestrians greater effective priority, it is not a priority in the legal sense.) Giving pedestrians more priority in the design of streets involves considering how pedestrians use the street. Pedestrians need not only to be able to walk comfortably along the street, but also they need to spend time in the street, window shopping, talking to others, waiting for buses, sitting and, in some locations, playing. In many streets, non–movement functions may be more important than the movement functions.

3.67. The volume and the speed of motorised traffic are important determinants of safety and attractiveness of a street for pedestrians. They are factors that need to be taken into account when considering the types of measure that can be achieved.

3.68. In developing a local walking strategy for a town or district, local authorities may find it helpful to categorise the roads in a town or area according to their current 'pedestrian friendliness' status and desirable/proposed status. The categories in Box 3.5 are recommended. This would be consistent with the road hierarchy approach recommended in the Review of speed policy (DETR, 2000b).

Pedestrian zone (no motor vehicles)
VRA (limited vehicle access)
Home zone
20mph zone (with physical measures)
20mph speed limit (physical measures optional)
30mph speed limit
40mph speed limit
>40mph speed limit

(More or less detailed categories can be used as appropriate.)

Pedestrian–Friendliness Road Classifications. Box 3.5.

3.69. In the initial stages, such classifications would not be definitive and detailed work would be needed before proposals for schemes could be put forward. However, the technique might be useful for discussing and planning varying levels of pedestrian–friendly measures on an area basis. An example is shown in Table 3.6.

Table 3.6: Existing and Desirable Speed Limits.

Road Name	Existing	Desirable
High Street	30 mph	Pedestrian zone
Foley Avenue	30 mph	20 mph limit
Lawson Terrace	30 mph	Home zone
London Road	40 mph	30 mph

Pedestrian Zones

3.70. This would provide the safest area for pedestrians to move about unrestricted. Typically this would be particularly appropriate to central retail and commercial areas; residential estates, leisure and holiday parks where they are purposely designed as car–free environments and in some instances areas where there is a particular accident problem. However, certain factors have to be considered, in particular the need for:

- Extensive consultation.
- Night time or rear or underground servicing to premises.
- Out of hours street cleansing and maintenance.
- Access arrangements for emergency services.

3.71. *Pedestrian Streets: Guidelines for Planning, Design and Management* (IHT, forthcoming) will provide guidance on this topic.

Nutford Place, London has been closed to vehicles and attractivelly landscaped, with York stone paving, new trees and lighting. *Courtesy: TDfL.*

Vehicle Restricted Areas

3.72. It is often necessary and sometimes desirable to permit limited vehicle access to pedestrian areas. For example, buses, orange badge holders, cycles and delivery vehicles may be exempted. This is currently used extensively throughout the UK in retail and commercial centres where total pedestrianisation is either not practical or desirable. Vehicle restrictions often vary by time of day. Typically deliveries and servicing of premises would be prohibited between the hours of 10:00 and 16:00. In some instances, in areas of evening entertainment, it may be more appropriate to restrict vehicle access in the evenings, say between 20:00 and 02:00. Guidance is provided in *LTN 1/87 Getting the Right Balance* (DOT, 1987).

3.73. The factors that need special consideration include:

- Extensive consultation.
- Strict enforcement required.
- Special access may be needed for emergency services if barriers are used.
- Avoiding providing a false sense of safety to pedestrians
- Access for or proximity of public transport

Home zones are common in Holland.

Home zones

3.74. Home zones, now widespread in many parts of Europe, originated in the Netherlands. The continental examples tend to comprise residential streets in which the road space is shared between motor vehicles and other road users, with the needs of pedestrians, including children, and cyclists in some countries coming first. Speed limits are set very low – usually 15kph or below – and the layout of the street is altered to indicate the new priorities and to enforce low speeds. The aim of home zones is to change the way the street is used in order to achieve a

wider range of benefits to communities than are typically achieved in conventional residential streets. To fully adopt the continental model in the UK would require changes in legislation.

3.75. The UK Government's Transport White Paper recognises the value of home zones in improving the places where people live and children play, and states that with good design many of the objectives of home zones could be achieved in the UK within existing legislation. It provides a commitment to work with local authorities who wish to pilot the idea.

3.76. In England and Wales a number of local authorities are developing plans to introduce home zones and the DETR is investigating the extent to which the home zone concept can be implemented within existing legislation. To that end, nine local authority home zone schemes have been selected by the DETR for inclusion in a three year research project (1999–2002) to monitor their impact.

3.77. Home zones enhance streets so that they are not just traffic routes but urban spaces, physically changing them to provide for local activities rather than through movement alone. The street designs should emphasise this change in status. The priorities and desires of the local community will be very important in determining the character and design of a home zone. Typically designs will encourage more social and recreational activities than in traditional streets. Home zones will involve blending traffic calming techniques with urban design and community planning. Examples of good practice are provided in *Living Streets* (Transport 2000, 1999a).

3.78. Factors that need particular attention when developing home zone proposals include:–

- Extensive consultation and local "ownership" of the scheme.
- Speed enforcement – very low speeds can be difficult to achieve without engineering measures.
- Speed reduction – this is essential in order to reduce the risk and severity of accidents to pedestrians.

Enhanced Pedestrian Safety – Vehicle Speed Reduction Measures

20mph Speed Limits

3.79. The severity of a pedestrian injury sustained in a road traffic accident is closely linked to the speed of the approaching vehicle. The extent of the benefits that can be achieved through reduced speeds has been clearly demonstrated by the success of 20mph zones in substantially reducing pedestrian and cyclist casualty rates amongst both adults and children.

3.80. In 20mph zones, average speeds are kept below 20mph by self–enforcing physical measures, such as traffic calming, or the layout of the streets. These zones have been very successful at reducing casualties and shifting the priorities in streets more in favour of shoppers, residents, school children and pedestrians. However, the high cost of the works, and objections to some of the physical measures, have inevitably limited the application of 20mph zones.

3.81. Since July 1999, local authorities have also been permitted to set 20mph limits without self–enforcing measures. 20mph limits are likely to be useful where average speeds are already below 30mph. This is likely to enable much wider use of lower speed limits, particularly in residential streets, near schools, shopping streets and town centres. Traffic calming measures can be used in 20mph limits but (unlike in 20mph zones) must be individually signed. Further advice is provided in *Traffic Advisory Leaflet 9/99 20mph Speed Limits and Zones* (DETR, 1999). The use of 30kph (19mph) limits, with and without self–enforcing measures, is increasingly common in parts of mainland Europe. However, the use of signs alone, without enforcement or physical measures, has only a slight impact on actual speeds.

Quiet Lanes

3.82. The rural equivalent to home zones are Quiet Lanes. These are a Countryside Agency initiative aimed at making networks of country lanes more attractive for walking, cycling and horse riding in the interests of a more tranquil and attractive rural environment. (See the UK Transport White Paper, para. 3.121.) It is believed that much can be achieved under existing legislation to improve conditions for pedestrians, cyclists and horse riders within such networks. Studies are being undertaken in the three demonstration areas established in Norfolk, Kent and Devon. The Norfolk quiet lane network was installed in March 2000, Kent's scheme should be installed in summer 2000 and Devon's scheme is expected at the end of 2000. Information on these projects can be viewed at the Countryside Agency's website www.quiet–roads.gov.uk.

School Travel Plans

3.83. A good example of when and how to cater for a special pedestrian need lies in the concept of school travel plans which incorporate the safer routes to school projects pioneered by Sustrans and various local authorities.

3.84. Despite a decline in the percentage of children who walk to school, walking is still by far the main mode of travel to school and is likely to remain so. The best scope for increasing walking to school is generally with children below 10 years of age.

3.85. There are four main driving forces behind school travel plans:

- Improving safety and security for school children
- Promoting the health benefits of walking and cycling
- Reducing the use of cars with the attendant problems of traffic congestion and air pollution
- Minimising demands on local education authority transport budgets.

3.86. The successful development of school travel plans depends critically on participation and partnership. The school children, their parents and teachers are involved in the process from the beginning.

3.87. The perceived barriers to walking to school usually include the following:

- Safety (traffic danger)
- Personal security (stranger danger and bullying)
- Effort (too far, too lazy, too much to carry, Easier by car/ bus/bike)
- Environment (bad weather, traffic pollution, poor quality of route)
- Other (no one to travel with, not allowed)

3.88. The reasons and priorities of school children differ to some extent from those of adults. They also differ according to the school and locality ands local surveys will be necessary. However these barriers do give the practitioner guidance on actions to take in designing for and promoting walking to school.

3.89. School travel plans can address the twin fears of traffic and strangers: when the proportion of non–car journeys is increased there is a sense that "more people are about". For this reason other local measures which promote bus use and cycling will assist pedestrians in the majority of cases.

Good Practice

3.90. There are now several guides specifically about school travel plans. *School Travel* –

Strategies and Plans (DETR, 1999) is a best practice guide for local authorities. *A Safer Journey to School* (Transport 2000, 1999b) is a guide for parents, teachers and governors. Further advice on walking aspects is provided in *The Walking Class* (Pedestrians Association, 1999). Key elements in the development of safer routes to schools include the following.

3.91. Participation/Survey. This involves establishing existing routes, identifying actual and perceived hazards and areas of risk and seeking views on options for change. The essential feature of the process is that it is carried out with the participation of the children themselves, with parents, local residents and school staff. Children are then more likely to use the preferred routes. The costs of consultation and participation can be a substantial part of the total.

3.92. Development of Proposals. As far as practical, safer routes should start with the situation immediately within and outside the school and follow those routes generally used by the majority of pupils. Consideration needs to be given to footway / cycleway widths, opportunities for reducing and calming traffic volumes (such as speed cushions, humps and tables, road narrowing, gateways, use of variable or lower speed limits, stricter parking restrictions outside schools and other traffic management measures), and nature of pedestrian crossing points. Layouts within school grounds should be designed in close consultation with the school, along with further measures such as cycle parking and locker provision. Changes to school policies should also be investigated.

3.93. Implementation. Implementation of safer routes takes time and many involve substantial staff and financial resources. It is therefore worth stressing the importance of a holistic approach to costs and benefits for the various funding partners. There is also an emphasis on school travel plans in LTP guidance, but it is essential to examine all possible sources of funding including opportunities for planning gain from developers and, particularly for measures within school grounds, sponsorship from local companies.

3.94. Maintaining Contact/Media Coverage. Ensuring adequate public participation takes time as does development of detailed designs and complying with any necessary statutory procedures (such as those associated with the promotion of traffic regulation orders). A three–year period is typical of the timescale associated with the development and implementation of a comprehensive network of safer routes for any new school. This makes it the more essential that children and parents are kept fully informed of progress. The media also have a vital role to play in terms of raising general awareness, helping to achieve public support and in encouraging a more considerate attitude in car owners to the journeys that they make and to where and how they park.

3.95. Promotion. Fundamental to the success of the scheme is the role of the school in promoting walking. These aspects are covered in Chapter 7.

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4. Design Principles

This chapter covers the different types of pedestrian and their needs, the "5 C's" of good pedestrian infrastructure, the basics of good urban design and integration with other modes. It explains the pedestrian–friendly approach and provides a hierarchy for considering improvements for pedestrians. Techniques for pedestrian audits of new transport schemes are provided.

The "Design" Pedestrian

4.1. Pedestrians have a wide range of needs and abilities; they a not a homogenous group. Commuters require wide pavements for peak times, blind and partially-sighted pedestrians require uncluttered streets and tactile surfaces, people in wheelchairs and with buggies require ramps, not steps, and tourists need space to stop while they take photographs or consult maps. It will not always be possible to meet all these specific needs. However, the designer should have an idea of the main types of user – the "design" pedestrians – and endeavour to meet these needs. Fortunately it is usually possible to accommodate the needs of most pedestrians by providing for those with a mobility handicap: footway widths, gradients and surfaces suitable for wheelchair users will also be satisfactory for other pedestrians. Meeting the needs of people with disabilities should therefore be a fundamental part of the design process, and not an "add–on". Indeed, this is a requirement of the Disability Discrimination Act 1998.

People vary considerably in their needs and abilities as pedestrians. *Courtesy: TDfL.*

4.2. The features of the walking environment that cause difficulties for people are shown in Table 4.1. The problems are clearly greater for people with a mobility impairment. Registered disabled people have a particular problem with steps and crowds. It is also noticeable that a significant minority of those classified as "no difficulty walking" still reported experiencing problems with many of the same features. Designers, traffic engineers and maintenance engineers need to be aware of the extent to which these features can cause problems.

4.3. To be effective, the designer must be able to understand the environment from a pedestrian's perspective. A desktop design exercise is unlikely to result in a satisfactory outcome for those on foot. Periods spent on site, at all times of the day, will give a valuable insight into current activities and opportunities for improvement. Some locations, such as entertainment areas, may be busiest at night. Designing for pedestrians should involve putting their needs first.

Table 4.1: Percentage of people reporting difficulties in the pedestrian environment.

	High <		Degree of disability		> Low
Aspect of pedestrian environment	**Registered disabled**	**Elderly, difficulties with walking**	**Non–elderly, difficulties with walking**	**Elderly, no difficulty with walking**	**Non–elderly, no difficulty with walking**
Kerbs	12	5	4	4	2
Steps	58				
Hills/ramps	59	45	30	19	12
Uneven/ narrow pavements	21	19	13	14	8
Crowds	50	4	0	5	2
Traffic/ crossing roads	35	31	22	16	17
No difficulty	2	23	43	54	67

(Source: Hitchcock and Mitchell, 1984).

4.4. It is estimated that some two million people in the UK are unable to walk more than 400m. The limited mobility of some groups of disabled pedestrians and wheelchair users is shown in Table 4.2. This illustrates the importance of minimising walking distances when designing pedestrian facilities, such as the location of crossings, the need for good walking surfaces to assist mobility and the importance of facilities such as benches and toilets.

Table 4.2: Cumulative percentage of disabled people observed to be unable to move more than the stated distance in city centres without a rest.

	18m	**68m**	**137m**	**180m**	**360m**
With assistance: Wheelchair users	0	5	5	60	85
Visually impaired	0	0	5	50	75
Stick users	10	25	40	80	95
Ambulatory unaided	5	15	25	70	80

(Source: Leake *et al*, 1991).

Functional Criteria For Good Design

4.5. "The Five Cs" were recommended in Chapter 3 as a useful set of criteria for assessing the existing environment for walking. They should also be used in the design process for assessing the functional quality of new pedestrian schemes.

4.6. A whole life–cycle approach to design is to be encouraged, from conception through to construction and eventual decommissioning. A good design will consider construction and maintenance issues, including how pedestrians are to be accommodated when works are underway.

Urban Design

4.7. The pedestrian environment is much more than simply a collection of footways and crossings. It includes the buildings that face onto streets, spaces between the buildings, views, trees, street furniture and, of course, the carriageway and traffic. High quality urban design is very important to creating an attractive environment where people feel that walking is a pleasure and not merely a necessity.

4.8. Urban design is an art, not a science: it is complex and, to some extent, subjective. However, the main principles of good urban design for the pedestrian environment are generally agreed and include the following:

- Permeability. Pedestrians should be able to move conveniently through the area; buildings should not present unacceptable barriers to movement.
- Legibility. The environment should be easy for pedestrians to "read" so that they can find the way easily.
- Human Scale. The buildings, spaces and streets should be of an appropriate scale that invites walking.
- Functionality. The buildings, spaces and streets should function in the way that they are intended.
- Sense of Place. The design should differentiate between areas, creating a memorable impression and a sense of place.

4.9. An urban design approach involves multi–disciplinary working, drawing on the skills of planners, architects, engineers and others. Responding to local needs and opportunities with innovation and creativity are important elements. Compromises and deviations from routine "design standards" will often be necessary.

The Strand – improvements for pedestrians that achieve a high quality of urban design.
Courtesy Colin Philp, and WS Atkins (designer).

4.10. The importance of urban design and its links with walking are emphasised in the report of the Urban Task Force (1999) *Towards an Urban Renaissance.* This provides further guidance on the principles of good urban design and gives examples of good practice. Advice on urban design and traffic schemes is also available from the Civic Trust and the English Historic Towns Forum (Davis, 1993 and 1994).

Birmingham City Centre was redeveloped in the 1960s and 1970s with the needs of car drivers foremost. The result was an environment where conflict between pedestrians and vehicles tended to be resolved by channelling pedestrians down into subways and over footbridges.

The City Council now has a policy of according the maximum practicable priority to pedestrians. Subways and footbridges are not now employed where at–grade crossings can be implemented safely. Several subways in the City Centre are being replaced by at–grade crossings.

High quality pedestrian facilities linking New Street Station and the International Convention Centre are the product of several major, co–ordinated schemes to create an enhanced urban environment in the City Centre. The Inner Ring Road was lowered and a traffic–free pedestrian route linking a series of improved public squares was created.

Comprehensive Redevelopment. Box 4.1.

Integration with other modes

Designing for all modes

4.11. For every three journeys made entirely on foot, one journey is made partly on foot, usually a combination of bus and walk (DETR, 1998). It is vital, therefore, that walking is seen as an integral part of the total transport system and that walking and other modes are planned and designed in an integrated way. Whilst total pedestrianisation may seem the ideal option for pedestrians, links to public transport, car parks, taxis and cycle parking will often be vital. Good penetration by public transport, especially buses, combined with a good pedestrian environment, will enable more people to avoid dependence on the car. Vehicle restricted areas may, therefore, be a beneficial compromise in some circumstances. If car–free areas continue to expand in city centres, it will become increasingly important to provide areas with varying degrees of pedestrian priority in which access to other modes is also possible.

4.12. Care must be taken not to inadvertently disadvantage or endanger other transport users, particularly those sustainable modes which the local authority is also seeking to promote, or those groups with special needs. For example, provision for “disabled parking” should be considered in vehicle restricted areas and the design of pedestrian refuges should not endanger cyclists.

Public Transport

4.13. Public transport operators and local highway authorities should jointly consider how to improve pedestrian links to railway stations, bus stops, tram stops and other public transport points. It may also be necessary to change the location of bus stops to reduce walk distances or improve accessibility. Investment in pedestrian facilities may be easier to achieve and justify if the benefits to both public transport and pedestrians are considered jointly. Significant transport interchanges, such as main rail stations, should be considered as important hubs for walking trips and pedestrian routes planned accordingly. This will involve paying attention to crossings, direction signs, personal security and other factors. Facilities, such as seats, shelters, left luggage, toilets and shops will make walking a more viable mode. Further guidance is provided in *Planning for Public Transport in Developments* (IHT, 1999).

Car Parks

4.14. Pedestrian access to large car parks should be carefully considered, jointly by the local authority, the car park operator, and the institutions whose customers use the car parks, such as town centre retailers. By improving the attractiveness, convenience and safety of routes from car parks, more destinations can be served from a wider range of parking locations. Improvements to pedestrian routes from peripheral car parks may enable reductions in car parking in more sensitive areas.

Footway and bus stop improvements have been made at the Seven Sisters interchange, London. *Courtesy: TDfL.*

Pedestrians and Cyclists – "Shared use"

4.15. "Shared use" refers to facilities in which pedestrians and cyclists are in close proximity, usually separated from motorised traffic. Shared use facilities may be segregated, where cyclists and pedestrians are clearly separated from each other; or unsegregated, where the full space is used by both groups. Segregation can range from a physical kerb or verge to a tactile or painted line.

4.16. Shared use routes can provide useful facilities for both cyclists and pedestrians. However, there are genuine concerns about shared use, particularly the conversion of existing footways. The speed, quietness and proximity of some cyclists can cause anxiety and danger to pedestrians, particularly where there is no physical segregation between the two groups. Cyclists also can find shared use routes inconvenient and dangerous to use, particularly where they are inappropriate or poorly designed. Despite the common interests of pedestrians and cyclists with regard to motorised traffic, their differing needs should be taken into account in the design and selection of shared use routes.

4.17. Advice on providing for cyclists (IHT, 1996) recommends use of a hierarchy of design solutions to consider when providing cycle infrastructure, starting with on–road solutions that reallocate space from motor vehicles to cyclists. Shared use routes should be considered only where all other options have been rejected. This principle is emphasised in recent guidance on LTPs (DETR, 2000).

4.18. There is an important distinction between shared use routes that involve the conversion of existing footways or paths, and those that offer new facilities for both pedestrians and cyclists. Situations where pedestrians surrender space to cyclists are much more contentious than where both user groups stand to gain a new facility. It is usually more difficult to achieve a good standard of design when converting pedestrian routes to shared use. Pedestrian routes and their uses are so varied that each situation must be considered on its merits, taking full account of the local circumstances, including the level and type of use.

4.19. There are three stages involved in the possible development of a shared use route.

- The decision making process: Is an on–road option for cyclists available? If not,
- The design process: How best to arrange the space for the level and type of use expected
- Final decision: Is the design acceptable or should shared use also be rejected?

4.20. Guidance on these issues is given in *Local Transport Note* 2/86 (DOT, 1986), with more detailed advice on the needs of visually impaired pedestrians in *Guidance on the Use of Tactile Paving Surfaces 1998.* The advice on shared use will be updated by DETR with two new Local Transport Notes to be published in 2000, covering the decision–making process and design.

4.21. Early consultation with residents, cycling, pedestrian and disability access groups is often essential to ensure that proper account is taken of their concerns and that attention is paid to the details necessary for a successful route. Once a route has been converted to shared use its operation should be monitored and modifications made if necessary.

4.22. Good design of shared use routes will take into account the particular requirements of different user groups, and each situation must be considered with regard to the expected usage and local conditions. Design should address appropriate segregation, widths, access controls, sight lines, signing, lighting and surfacing. Advice on design details is contained in Chapter 5.

Pedestrian–Friendly Approach

4.23. Providing for pedestrians and improving the attractiveness of walking is not just about providing and maintaining pedestrian facilities. It is also about reducing the unpleasantness, inconvenience and danger caused by motor vehicles and by land uses and highway designs that are unsympathetic to pedestrians. Measures that reduce the volume and speed of traffic may therefore be as important to pedestrians as the provision of specific facilities for pedestrians. Parking management, green travel plans, traffic calming and 20mph limits are examples of pedestrian–friendly measures.

4.24. Just as a non–pedestrian scheme may benefit pedestrians, so too a pedestrian facility, if poorly planned or designed, may not actually benefit pedestrians. The objective is to improve the level of service for pedestrians, not merely to provide pedestrian facilities. Pedestrian crossings with lengthy detours and long stretches of pedestrian guard rail are not examples of pedestrian–friendly measures.

4.25. The designer should clearly understand the purpose of any scheme. Simply installing facilities in accordance with standard details may deliver little benefit in a particular local environment. Each facility should be carefully developed to ensure local needs are met.

Traffic reduction schemes have brought major improvements to the pedestrian environment in Cambridge.

4.26. A pedestrian–friendly approach to design is essential in all transport schemes. This means that design should comply with pedestrian–friendly criteria – the "Five Cs" – wherever possible, unless there are good reasons why this is impractical or undesirable. Pedestrian–friendly design should be the norm.

The historic centre of Cambridge has been a vehicle restricted area for more than ten years. In 1992 the Traffic Regulation Orders were tightened to prohibit all motor vehicles between 1000 and 1600 hours, Monday to Saturday, except those allocated a permit.

Smart Card Permits were issued to emergency services, University and College vehicles deemed essential for daily operations and those disabled badge holders with severe mobility problems. The number of cars and vans entering the zone has been reduced from 1000 during the six hours to 50.

The smart cards allow a permit holder to lower a series of hydraulically operated bollards, which then rise when the entering vehicle passes over an inductive loop thus closing vehicular access.

The main shopping and commercial area of the town centre, including a daily market, is included within the pedestrian priority zone. A free bus shuttle has been provided through the zone to address concerns about the longer walking distances from the pedestrian zone to bus stops. The buses provide a 10 minute service, and are fuelled by natural gas to reflect the high amenity quality within the zone.

Structured perception surveys revealed that 75% of users supported the severe measures to resist motor vehicular access.

Traffic Reduction Through Effective Access Control. Box 4.2.

Hierarchy of Measures

4.27. Measures to improve conditions for walking will have to be integrated with other sustainable transport measures. When considering how best to improve walking conditions, in an area or at a specific location, it is recommended that options be considered in accordance with the following hierarchy:

1. Reduction of speed and volume of motorised traffic
2. Reallocation of road space to pedestrians
3. Where crossing is the main problem: Provision of at–grade crossings
4. Where pedestrian routes are inadequate: Improved routes on existing desire lines
5. New alignment for pedestrian routes/grade separation.

4.28. The appropriate solution will depend on the site conditions and the local transport strategy. The advantage of using a hierarchical approach, such as this, is that all types of potential solution will be properly considered, including the more difficult or contentious. It also encourages a more fundamental, integrated approach to solving pedestrian problems, linking pedestrian schemes more closely to wider objectives such as improving the quality of the local environment and reducing vehicle emissions.

Stiffkey is a village on the north coast of Norfolk. The main coast road (A149) winds through its centre. Because of the very restricted distances between buildings there are no footways in some places. In 1999 a 20 mph limit was introduced throughout the village. The main road was resurfaced with a light brown coloured material and green "imprint footways", without kerbs, were provided where no footways previously existed. Signing and road markings have been kept to a minimum. The scheme is being assessed by TRL as part of the Countryside Traffic Management Group project.

Stiffkey Pedestrian Improvements. Box 4.3.

Before…

…and after.

New footway and 20mph limit in Stiffkey, Norfolk. *Courtesy TRL.*

Pedestrian Audit

4.29. Pedestrian audit (also called mobility checklist) is a procedure to help ensure that designs for new schemes are pedestrian–friendly. A number of local authorities already carry out routine checks of proposed developments and highway schemes to ensure that pedestrian needs, and particularly the needs of mobility–impaired people, are properly considered. Pedestrian audit procedures formalise the process to ensure greater consistency and allow non–specialist staff to undertake the process more easily. At best pedestrian audit procedures will examine all possibilities to improve walking conditions; as a minimum, it should avoid making conditions worse for pedestrians.

4.30. Pedestrians have a wide range of needs and abilities. The auditor will need to consider whether all reasonable user needs have been addressed. Site visits, walking the route (where feasible) and trying to visualise how it will be used, from the perspectives of different types of user, will be important, if not essential, parts of the audit. Evidence of consultation with user groups at the design stage will be helpful to the auditor.

4.31. Depending on the scale of the scheme, a pedestrian audit may be required at more than one stage of the design process. Opportunities and problems identified at the feasibility or preliminary design stages will be easier to tackle than those identified later, once the detailed design or implementation has occurred. Pedestrian audit should precede the safety audit.

4.32. Pedestrian audit procedures would usually involve the following broad questions:

- Are pedestrian desire lines provided for?
- Are footway widths adequate?
- Are pedestrians able to cross at convenient locations?
- Are pedestrians able to cross without undue delay?
- Are footway surfaces suitable?
- Are social safety considerations addressed?
- Does the scheme provide a sufficiently high–quality pedestrian environment?
- Is it feasible (physically and financially) to properly maintain the facility?
- Are the full ranges of pedestrian needs and abilities provided for?
- Are the local authorities policies with regard to pedestrians reflected in the scheme? (For example, policies on promoting walking, road user hierarchies, etc).

4.33. More detailed checklists can be developed. An example, from a local highway authority, is shown in Appendix C.

4.34. These Guidelines use the term "pedestrian audit" to refer to audits of planned schemes and the term "pedestrian review" to refer to examination of existing pedestrian infrastructure. Details of pedestrian review are provided in Chapter 3.

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5. Design Details

This chapter brings together the key elements of current design standards and guidance for footways, crossings and other infrastructure items that have a bearing on walking. This includes surface treatments, drainage, street lighting and street furniture. It provides best practice examples and guidance.

The Importance of Design

5.1. The detailed design process is vital to the successful delivery of facilities for walking. A poor design can undermine the efforts of all those involved to this stage and may actually weaken the intended impacts and benefits of a scheme. Designs should facilitate and accommodate pedestrian activities and, ideally, encourage further walking activity.

Footway Design

General

5.2. Footway design and maintenance issues are addressed in the *Footways Design and Maintenance Guide* (Transport Research Laboratory, 1997). It details appropriate footway constructions for different surfaces and identifies common problems, including vehicle overrun and reinstatement problems. It is important that footway design receives as much attention as the carriageway as, although loading characteristics may be different, the footway may carry many more travellers.

Footway Design Widths

5.3. Footway capacity and pedestrian level of service issues have been addressed in Chapter 3.

Pedestrians need adequate width to walk comfortably and safely.
Courtesy: Derek Palmer.

5.4. Footways should be designed with sufficient usable width for all anticipated pedestrian activity. As public open spaces in urban areas, footways may have an important role in defining the character and attraction of streetscapes. Designs may be undertaken by multi–disciplinary teams to ensure a variety of objectives are met (many describe a need for a holistic approach to design). The urban design concept may influence the footway width as much as the anticipated pedestrian flow or usage. However, care should be exercised to ensure the footway continues to operate as intended for pedestrians.

5.5. Footway design will be directly related to the predominant character of the surrounding area, such as:

- Residential street;
- Shopping street (local or in a town or city centre); or,
- Rural link.

5.6. In calculating the footway width available for pedestrians, unless physical features make it impossible, subtract the space occupied by street furniture, street traders, bus queues and people waiting to cross roads. This will leave an "effective" width of footway, which will be a more accurate representation of the usable space. Further and more comprehensive detail on basic dimensions to cater for those with mobility difficulties is given in the section 2.2 in *Revised Guidelines for Reducing Mobility Handicaps* (IHT, 1991).

5.7. It would be wrong to be over–prescriptive about footway widths. Each location needs to be assessed to determine the width requirement for pedestrians. In general, physical space requirements are dictated by the needs of specific user groups. *Footways Design & Maintenance Guide* (TRL, 1997) suggests an absolute minimum footway width of 1.3m is permissible. However, designers should be aware that, based on the established standard of providing sufficient width for wheelchairs or double buggies to pass, pedestrians require an absolute minimum obstacle–free width of 1.8m and a desirable minimum width of two metres. On high speed roads and those with a regular or high flow of HGV's it is preferable to allow an additional minimum of 0.6m to allow for vehicle overhangs and pedestrian "kerb shyness". Street furniture will normally be in this area. There may also be a "dead" area of approximately 0.25–0.5m at the back of the footway if the footway is bounded, for example by a wall.

5.8. The following effective design widths are recommended:

- Absolute minimum width 1.8m
- Desirable minimum width 2.0m
- Preferred width 2.6m

5.9. It is not suggested that footways with widths less than 1.8m should never be provided as it is clear that existing narrow footways do provide a level of pedestrian amenity. A 1.5m wide footway (kerb to back of footway) is better than no footway at all. However, there is a lower limit where the footway width is insufficient to accommodate normal walking activity in safety. This minimum will be dictated by site specific criteria, including:

- Pedestrian flow and composition; and,
- Vehicle flow and speed.

5.10. Where possible, designers should consider widening of footways where pinch points would normally be created. For example, kerb build–outs at pedestrian crossings or at bus stops can help prevent obstructions caused by waiting pedestrians.

5.11. Maximum footway widths are not generally specified in design guidance. In normal circumstances, a width exceeding five metres would be difficult to justify. If pedestrian activity is such that a greater width is deemed necessary, alternatives such as partial or total pedestrianisation may be appropriate. Surfaces shared by vehicles and pedestrians are another option but these can present problems for blind people. The creation of home zones and similar initiatives intended to make streets more pedestrian friendly may result in greater use of shared surfaces. Alternatively, wide footway surfaces may be necessary if large areas are to be used for environmental treatments.

Ramps and Steps

5.12. Pedestrian areas and routes can never be absolutely level because surface water drainage must be possible. Changes in level are sometimes dictated by the natural topography and can add interest but are usually simply a reflection of changes in carriageway profile. Pedestrians do not like changes in level or grade. However, if footways and carriageways are separated vertically, crossing opportunities will be heavily constrained and new problems may result. Unnecessary ramps and steps should be resisted, particularly if they are for aesthetic impact.

5.13. On any pedestrian route, longitudinal gradients should not exceed 1 in 20 (5%) generally. In exceptional circumstances ramps can be as steep as 1 in 12 (8%), but this gradient will cause an evident nuisance to people with a mobility impairment. Handrails should be provided on both sides if an even steeper ramp cannot be avoided. Handrails should be round in section (diameter between 45mm and 50mm) and with a gap of at least 50mm between the rail and any wall. Handrails should be set 900mm above a ramp (and 850mm above the nose of any step). Treads should generally be 370mm standard with an absolute minimum of 250mm and maximum of 600mm. Risers can vary between 75mm and 165mm but all risers in a flight of steps should be the same dimension. As a general rule of thumb, the tread length (going) plus twice the riser height should equal 600mm. Landings should be provided at every 1.2m vertical rise. The pitch of steps should not exceed 45° nor be less than 25°. A maximum of 35° is recommended for well used pedestrian routes. If changes in level necessitate the use of steps the top and bottom of each flight should be marked by "corduroy" paving. Bottom and top step risers should be painted white or another contrasting colour.

Carriageway Edge and Kerbs

5.14. Footways require an edge–restraint in order to ensure long term structural integrity. If the footway is not adjacent to a wall, then the edge restraint can be either a kerb or similar edging normally of pre–cast concrete but increasingly in granite or other local stone for improved visual appearance. Kerbs are an important structural component of the whole carriageway construction.

Fully flush kerbs are desirable, so long as drainage is adequate. *Courtesy: Tony Russell.*

5.15. Delineation of footway and carriageway is important and should be considered from the pedestrian's perspective. Where a dropped kerb is introduced to assist wheelchair users and people with walking difficulties, the loss of kerb upstand can result in problems for the visually impaired, who use a kerb for guidance. Tactile paving is used as a warning device where dropped kerbs are required for accessibility purposes. Dropped kerbs should be flush with the carriageway as far as possible. Some designers leave a small kerb upstand, to prevent "ponding" created by standing water, others may tilt the flush kerb to create a "V" shaped profile. A +6mm tolerance is often specified but even this small kerb "lip" can be a problem for wheelchair users. Drainage problems should be tackled through clear specification and careful site supervision.

5.16. It is also possible to use planting or bollards to ensure footways and carriageways are clearly separated. If this is the case, the design should be focussed towards meeting the needs of pedestrians and not, as in many instances, simply used as a device to limit opportunities for pedestrians to cross the road. Well detailed bollards are ideal, as they are not as limiting as guard rail in preventing access to and from footways. They have the advantage of defining footway limits, as well as preventing parking and loading activity from intruding on pedestrian space, but can be expensive to maintain. Delineation using different surface treatments, with changes in colour or texture, is increasingly common where shared use of an area is intended for all or part of the day or for environmental reasons.

5.17. The introduction of low floor buses and street–running trams is leading to the installation of special kerbs, normally higher than normal, to assist those trying to reach the bus. Special care is needed during design to ensure new problems for footway users are not introduced. Build–outs can be a useful design approach.

Crossfall

5.18. Crossfall is the term given to the slope across a footway, normally from the building line towards the kerb, to assist drainage. Severe crossfall can cause problems for pedestrians who may lose their footing in wet or icy conditions. Extreme limits are a minimum of 1.5% and a maximum of 7% (at crossings) but preferred limits are 2% (1 in 50) to 3.3% (1 in 30).

Shared Surfaces

5.19. Shared surfaces may be appropriate, or unavoidable, in some circumstances. However, they can be particularly difficult for those with a visual impairment to negotiate. The key to successful shared areas is to ensure that surfacing does not look like normal carriageway. Block paving can be used or reinforced paving slabs provided at intervals along the length of the shared access way.

5.20. Speed restraint is important if vehicles are likely to encounter pedestrians. This may take the form of horizontal curves or other traffic calming devices (see Table 5.1). The table below suggests measures likely to limit speeds. The entry to a shared area should be demarcated by a ramp, constructed of a different material to the adjacent carriageway to be conspicuous. A suitable design would be to use granite setts (i.e. blocks of 100mm x 100mm x 100mm) for a ramp at least 1.8m long and with a gradient of 1 in 15 (6.7%). The upstand at the base of the ramp should be not more than six millimetres and the granite setts pointed flush with cement mortar to provide a comfortable surface for pedestrians and cyclists. Designers should take care to comply with traffic calming regulations where appropriate.

Table 5.1: Summary of Traffic Speed Control Measures in Shared Areas.

Device	Feature	Length (metres)
Speed attenuation curves	Maximum radius	15
	Minimum forward visibility	25
	Length of straight between curves	12
Traffic Calming	Maximum distance between traffic calming devices	40
Culs de sac*	Maximum distance from end of speed attenuation curve	40
	Maximum distance from end of traffic calming device	20

*In 20mph zones, culs de sac less than 80m long do not need additional traffic calming measures.

5.21. Some footways have been converted to shared use by pedestrians and cyclists. See Chapter 4 for further details.

General Footway Features

Build–outs

5.22. A build–out is a local footway widening which has many attractions for designers of pedestrian facilities. In reducing carriageway width, traffic speed can be lowered and the crossing distance for pedestrians reduced. Pedestrians stand in a position where they can see traffic and drivers can see them. Build–outs can also provide useful standing space for waiting pedestrians or a location for street furniture which would otherwise cause an obstruction. A good example of this is a bus stop build–out, which can accommodate the bus shelter, sign post, litter bin and all the usual furniture. Some will have special kerbs (higher than normal) to help passengers when boarding or alighting. Care must be taken to ensure bus passengers are not obstructed by street furniture. It is also essential to consider drainage requirements which can increase costs substantially.

5.23. It is essential that a build–out is designed to be conspicuous day and night, to prevent a vehicle colliding with it. Protection using bollards with some form of illumination or reflective strip is common. Build–outs can also create problems for cyclists and care is needed to ensure new hazards are not created.

Excessinve and unnecessary amounts of pedestrian guard rail should be avoided.
Courtesy: David Davies.

Guard rail

5.24. Guard rail (also referred to as barrier rail or pedestrian barrier) should only be used where there are clear safety benefits and where alternatives are not feasible ie, to protect children, whose perception of risk is not fully developed. Guard rail restricts available footway and is visually unattractive. In most cases, guard rail is used by scheme designers to prevent people from following their desire line and chanelling them to a specific location. However, there are some situations in which guard rails may be appropriate, if no other solution is available:

- where pedestrians need to be protected from a significant difference in level;
- at specific locations where pedestrians attempting to cross would be at high risk, or where a known accident problem exists and other countermeasures have been exhausted;
- where there are high pedestrian flows on the footway or on narrow central refuges that may cause individuals to step into the carriageway. The preferred solution, where feasible, should be to widen the footway or refuge to eliminate and not contain the problem.

5.25. Guard rail on central refuges is often used to form a "sheep pen" arrangement, staggering the crossing movement. This type of crossing is unpopular with pedestrians, as they are generally delayed twice when attempting to cross. The capacity of such a facility can be an issue where large pedestrian flows are encountered.

5.26. Where guard rail is to be installed, the visual impact of a specific design should be considered carefully. Most guard rail is fabricated in galvanised steel and left unpainted. More costly options include the use of timber (possibly with steel bars or tubes for the horizontal members), aluminium, cast iron or painted mild steel, often with some form of civic crest or local feature, to match other forms of street furniture. Whilst this final option allows local identity to be emphasised, regular re–painting will be necessary and maintenance costs must be considered.

5.27. At pedestrian crossings, visibility between drivers and pedestrians can be improved by using a panel design (aligning vertical elements at right angles to a driver's view) that does not hide those waiting to cross. This is particularly important for children and people in wheelchairs.

5.28. Among the factors to be considered when designing barriers are:
- whether there is a longitudinal slope;
- whether the remaining effective footway width is reduced to below minimum standards;
- ease of replacement when damaged by vehicles and,
- servicing adjacent premises from the kerbside.

5.29. Gates are feasible in guard railing but are not advised. Their proper use for servicing only is difficult to control. Alternative solutions should be sought, within the carriageway space.

5.30. Many crossings do not have guard rail. Where it is installed, detailing is important. At controlled crossing points the rail can help to guide visually impaired pedestrians to a push button or demand unit. Gaps between barrier and signal pole should be eliminated by angling the final section of railing to the signal pole position, preventing pedestrians from colliding with the pole or wandering through a gap between the end of the barrier and the signal pole.

Pedestrian Signing

5.31. Pedestrian signing is important in town centres and should always be considered by designers. Pedestrian signs will be focussed on key areas or buildings as destinations for those on foot and should be designed as part of a whole walking route or area walking strategy. Directing people via inappropriate, unsafe or poor quality routes will do little to encourage walking activity. However, pedestrians will not accept long detours so improvements to routes may also be required.

5.32. Pedestrian signs are most useful if they carry additional information related to walking distances which should be in imperial, not metric, units (see Chapter 7 of the *Traffic Signs Manual*). There is no provision in the current Regulations for including journey times on signs.

Journey times may be unhelpful as pedestrians vary considerably in their walking speeds. Signing should be frequent and continuous if the information shown is to be useful. A range of materials and designs is available to complement architectural features or other forms of street furniture. The most common type of pedestrian sign is the "fingerpost" sign.

5.33. An attractive alternative to above ground signing is to incorporate directional indications into the footway itself, using special paving slabs or plaques to identify particular walking routes. This can also help guide the visually impaired. This is generally only appropriate where it is used by a large number of pedestrians, such as the link between Euston Square underground and Euston Station in London.

Good pedestrian signing is important in city centres (York). *Courtesy: IHT.*

5.34. Pedestrian signing should generally be aimed at the stranger to the area and should indicate the locations of the following common destinations:

- The nearest rail and/or tube station;
- The nearest bus station or (possibly) key bus stops;
- The tourist or information office;
- Major shopping centres;
- The main tourist attractions;
- Parks and open spaces;
- Key public buildings such as the town hall, library, leisure centre;
- Named walking routes (eg, Thames Path);
- Any sports stadia attracting significant numbers of visiting participants;
- Places of entertainment, and
- Public Lavatories.

5.35. Street name plates are valuable navigational aids for strangers. They should generally be located at or below 2.5m rather than at first floor level, although it is recognised that is not always practical. They should be provided at both ends of every street (except culs de sac). On long streets (where pedestrians are likely to join the street mid–block) they should also be provided at junctions with side roads; and building numbers should be included on name plate. On wide streets, name plates on both sides would be desirable.

5.36. Location maps should be provided at places where significant numbers of travellers, unfamiliar with the area, arrive, including those listed above.

Tactile Surfaces

5.37. Tactile surfaces are misunderstood and poorly used in some designs. It is worth emphasising the purpose and benefit of this special paving.

5.38. Tactile surfaces can be used to warn or to guide those with limited vision. There are standard patterns on paving slabs and standard layouts of such slabs, which the visually impaired can recognise. *Guidance on the Use of Tactile Paving Surfaces* (DETR Mobility Unit,1998) sets out current advice. The most common type, blister paving at crossings, is to warn of the edge of carriageway where normal kerbs have been replaced by dropped kerbs. Secondary benefits are that the paving gives a tactile indication of the crossing location. Not all highway authorities in the UK follow the guidance in its entirety and have developed local practice.

5.39. At all crossing points with dropped kerbs, tactile paving should be laid across the full width of the dropped kerbs. Controlled crossing points should have tactile paving installed from kerb edge to the back of the footway, with a minimum width of 1.2m in the direction of travel.

5.40. For uncontrolled crossing places, a buff colour paving slab is recommended, with red paving used at zebra crossings and other types of controlled crossings. At signal controlled crossings, the tactile paving commencing at the back edge of the footway should be laid to a line just to one side of the signal pole with the pedestrian actuation button. Where possible the "blister" studs should be laid in a straight line directly towards the crossing place on the opposite side of the carriageway.

5.41. The DETR guidance on tactile paving explains the use of an extended range of approved surfaces (seven in number) and the situations where these can or should be used. They include a corduroy surface to warn of the presence of steps, level crossings, and the approach to light rapid transit or tram platforms. Raised rib paving is also used on surfaces shared with cyclists (DOT, 1990). Other tactile surfaces are used as amenity surfaces. Paving with parallel, raised, flat–topped bars gives directional guidance for visually impaired people where traditional cues such as building lines and kerb edges are not available. These surfaces are intended to help people to locate amenities such as phone boxes, hole in the wall cash dispensers and ticket offices. Uniquely among the range of surfaces, this one has no raised profile but is detected by feeling softer underfoot through the use of neoprene rubber or similar elastomeric component.

Pedestrian Crossing Facilities

Introduction

5.42. Crossings are critical to walking activity and can help overcome the severance created by many busy roads, particularly in urban areas. Clearly, a balance will need to be struck between the legitimate needs of all road users. From the pedestrian perspective, an ideal crossing facility would have the following characteristics:

- Safety – those using a crossing should feel safe and should not feel intimidated by vehicles. Designs must take account of the speed of approaching vehicles.
- Location – crossing points should coincide with pedestrian desire lines.
- Direction/Directness – there should be adequate opportunity to cross quickly and efficiently in all directions. Designers should take care not to divide crossings excessively as this can result in unacceptable pedestrian delay and promote abuse of controlled crossing facilities.

- Minimal use of pedestrian barriers (see above).
- Capacity – crossings should be wide enough to accommodate peak pedestrian demand.
- Opportunity – crossings should respond quickly and safely to a demand from a pedestrian.

5.43. Crossing facilities for pedestrians can be either:
- Grade separated; or,
- At–grade.

Grade Separation

5.44. Grade separated crossings (subways, pedestrian overbridges, etc) physically separate pedestrians and vehicles by level. For high speed roads, this may be the only safe type of crossing facility. Depending on the location, it may be feasible to provide a grade separated crossing that is safe and convenient for pedestrians. This is easier to achieve in new construction and where levels lend themselves to "natural" separation.

5.45. However, grade separation often forces pedestrians to take torturous routes or place their personal security at risk. Within many urban areas (levels permitting) these facilities are now being removed in favour of at–grade crossings. Even in new highway schemes, grade separation is not desirable unless very high standards of amenity and personal security can be built in.

5.46. The decision to implement a grade separated crossing is not based upon numerical criteria but a range of factors. It is important that needs and aspirations of local users needs are fully met and their views can be canvassed via public consultation. A number of factors will influence the selection of this form of crossing ranging from:
- Pedestrian flows and composition;
- Type and width of infrastructure to cross;
- Levels and gradients;
- Pedestrian exposure to hazards, eg, high winds, water, traffic, noise;
- Construction and maintenance costs; and,
- Scope for joint cycle and pedestrian crossing.

5.47. Each location needs to be assessed on its individual merits and based on local experience of pedestrian behaviour and option acceptability. The range of options could include:
- Overbridge;
- Subway; or
- Elevated walkway.

5.48. Successful grade separation can be achieved if a facility gives the pedestrian the feeling of remaining on the level and on their natural desire line, whilst vehicles undergo the changes in grade and level, on flyovers or through cuttings. An example of this is where a new walkway has been introduced along the south bank of the River Thames and passes underneath existing road bridges (at Southwark and Westminster for example), keeping pedestrians at a constant level. An elevated walkway can be better than a footbridge if pedestrians can be kept at a single level. There are examples of high level links between rail stations and adjacent commercial premises which are extremely popular with pedestrians. However, some facilities have associated social problems, making them very unattractive for users. Grade separation is an extremely high cost option and tends to be limited to new, major road construction projects.

At–Grade Crossing Facilities

5.49. At–grade crossings may be split into two groups, namely:
- Uncontrolled crossings: and,
- Controlled crossings.

5.50. *Local Transport Note 1/95 The Assessment of Pedestrian Crossings* (DOT, 1995a) sets out types of pedestrian crossing facility and how to determine where they are justified. The detailed design issues for crossings are contained in *Local Transport Note 2/95 The Design of Pedestrian Crossings* (DOT, 1995b).

Uncontrolled Crossings

Dropped Kerbs

5.51. The simplest form of crossing facility is a dropped kerb, normally introduced at junctions and other locations where pedestrians are likely to need to cross a road. Dropped kerbs must be installed as a pair (as a minimum) to ensure those who have left a footway are able to regain access. If footway works are to be undertaken in stages, completion of dropped crossings on one side of a road several months in advance of similar facilities on the far side is to be avoided.

5.52. A minimum width of crossing of 1.8m (ie, two standard kerb lengths) is recommended but should be related to pedestrian usage. The dropped kerb should be flush with the carriageway and may involve the use of channel blocks. Where it is formed using bullnose kerbs (125mm x 150mm) a vertical face of between zero and six millimetres must be achieved, to facilitate easy movement of pushchairs and wheelchairs. The gradient of the ramp approaching the dropped kerb should not be greater than 1 in 12 (8%) but a gradient of 1 in 20 (5%) is preferred.

Refuges

5.53. There are no regulations defining the width or depth of a refuge island, although current advice recommends a minimum of 1.2m depth (in the direction of travel for the pedestrian). At least 2.0m is required to afford protection for a wheelchair user and pusher (a combined length of 1.75m), and those pushing pushchairs or cycles.

5.54. Designers should be aware that narrowing of the carriageway, particularly on fast or heavily trafficked roads, to allow for a refuge can cause problems for cyclists. Refuges that leave a gap less than four metres wide should be avoided. (DOT, 1/97) Measures to alleviate this should be considered, perhaps by reducing the speed of traffic or providing a cycle by–pass, rather than abandoning the refuge proposal. Alternatively, another form of pedestrian crossing facility may be appropriate.

5.55. The width of a refuge (in the direction of the crossing) should be related to the pedestrian flow and composition, sufficient to accommodate more than occasional pedestrian use. For example, a two metre width will be sufficient to allow two wheelchairs to pass each other. If the refuge is used by a high number of pedestrians (over 600/hour), the minimum width should ideally be 4 metres. There is no upper limit but, sensibly, if pedestrian flows are such that wide

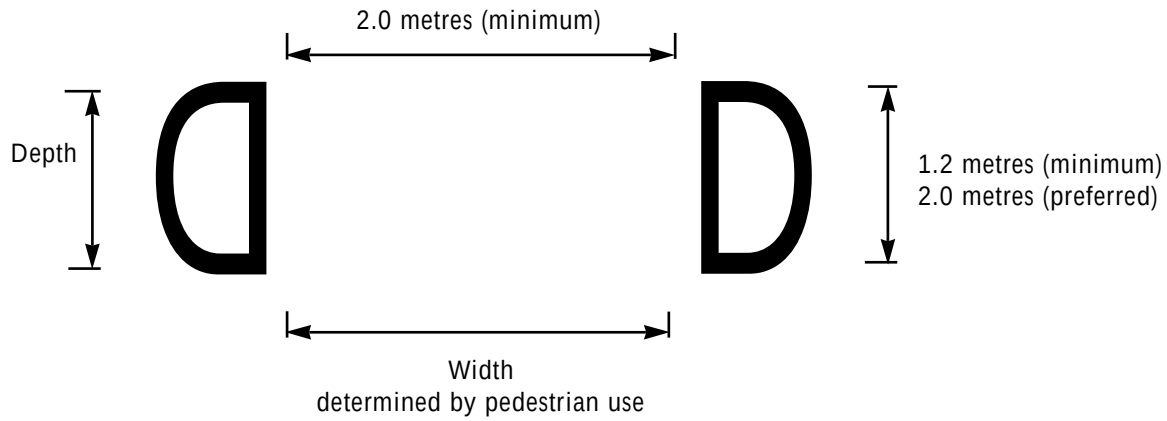

Figure 5.1: Pedestrian Refuge Dimensions.

crossings are needed, a controlled crossing solution would be more desirable. Details are shown in Figure 5.1.

Side Road Crossings

5.56. Dropping kerbs on the radius (curved) section at a junction creates difficulties for visually impaired people and wheelchair users and should be avoided. However, it should keep close to the pedestrian desire line as possible. A flush radius kerb may lead visually impaired pedestrians to cross at an acute angle into the path of traffic and may bring other vulnerable pedestrians, particularly wheelchair users, too close to passing traffic.

5.57. Where possible, crossings at side roads should be inset into the side road approximately one metre beyond the radius kerb. A tactile surface should be installed across the full length of the dropped kerb to a depth of 400mm

5.58. There are advantages when indenting a dropped kerb into a side road. The normal radius kerb remains, assisting the visually impaired and providing positive guidance for drivers turning through the junction, so minimising the risk of vehicles overrunning the footway. A straight section of kerb, approximately 1m long, provided immediately before the tapered dropped kerb, enables visually impaired people to align themselves properly in order to cross the side road. This is not ideal from an amenity point of view, as pedestrians would prefer to continue on a desire line along the footway, but appears to be sensible compromise.

5.59. It is recognised that it is not always possible or desirable to provide inset crossing points. The main limitations occur where:

- There is insufficient footway width in the side street to provide the manoeuvring space needed for a ramped approach to a dropped kerb;
- Pedestrians crossing at such points would not be visible to approaching drivers;
- The dropped kerb is likely to be blocked by parked cars; or where,
- The inset crossing is too remote from the pedestrian desire line.

5.60. An increasingly popular solution to the problem of side road crossings is to raise the carriageway to footway level on entry to the side road, a type of "side road entry treatment" (DOT, 1994). This creates a ramped entry to the side road that reduces vehicle speed and encourages drivers to yield to crossing pedestrians. This constitutes a road hump and must comply with appropriate regulations.

5.61. The Traffic Director for London produced a good practice guide, *Justification and Design of Entry Treatments,* which has been used along the Priority (Red) Route Network in London. This contains an assessment procedure based upon:

- Land use;
- Pedestrian/Vehicle conflict, and,
- Speed.

5.62. Types of treatment include change in carriageway colour or texture, narrowing the carriageway, raised entry treatments or combined narrowing and raising.

Entry treatments are common on roads joining Red Routes in London. *Courtesy: TDfL.*

Vehicle Crossovers and Accesses

5.63. Crossovers are points at which vehicles may cross a footway. From a pedestrian's perspective they should be kept to the absolute minimum and their provision and construction controlled carefully. The creation of vehicle crossovers is governed by Section 184 of the Highways Act 1980. *The Highway Code* (Rule 182) says "Drive carefully and slowly when needing to cross a pavement, for example to reach a driveway".

5.64. Vehicle access is facilitated by lowering the kerb and, perhaps, strengthening the existing construction. A minimum width of 3.8m is recommended. Bullnose kerbs (125mm x 150mm) should be laid to show a 25mm face above the finished carriageway channel level, to ensure that people with sight difficulties do not mistake it for a designated pedestrian crossing point and to ensure surface water remains on the carriageway. The exception is an access to a cycle track, where a flush kerb should be provided and guarded using tactile paving. The 25mm upstand should ensure that visually impaired people do not venture into the carriageway unknowingly. There should be no upstand along the footway at the crossover, as this can become a tripping hazard for pedestrians. At each side of the dropped kerbs, pre–cast taper kerbs are used.

5.65. Generally, the ramp should extend as a uniform gradient from the back of the footway to the dropped kerb, but if there is a verge of sufficient width the ramp should extend to the width of the verge only. Construction details can be found in *Footway Design & Maintenance Guide* (TRL, 1997). Adjacent vehicle crossovers should either be at least three ordinary kerbs apart or constructed as one continuous crossing.

5.66. Where the vehicle crossover surface is being replaced with another surface, it is helpful if the replacement surface provides a contrast in colour and tone. For example, replacing light coloured paving slabs with darker block paviors. This will help partially–sighted people to distinguish between the crossover and the untrafficked footway.

5.67. The tactile surface should not be applied on vehicle crossovers. Vehicle crossovers should not be combined with pedestrian crossing points.

Vehicle Crossovers with High Traffic Flows

5.68. The highway authority must decide what form of access should be permitted and, having regard to its obligation in terms of safe access and egress, whether a particular access should become a new junction. Where the authority believes the traffic flow is sufficiently high, a vehicle crossover or vehicle access should be treated as an uncontrolled crossing at a side road and the tactile warning surface should be installed appropriately. Vehicle crossovers or accesses to the following facilities are examples where the tactile surface may be justified.

- Petrol station or commercial garage;
- Small shopping parade, supermarket, etc.
- Medical centre, and,
- Public car park.

5.69. In practice, most highway authorities would require the creation of priority junctions for the busier locations.

Speed tables/junction plateau

5.70. Junction plateau and speed tables are traffic calming devices but they also make it easier for those with mobility difficulties to cross. Under UK regulations, they are forms of road hump. They are a useful amenity for pedestrians, facilitating crossing movements in all directions and reducing vehicle speed in the conflict area. They may need to be accompanied by dropped kerbs because road humps are a maximum of 100mm high whilst kerbs are typically 125mm.

5.71. Raised junctions can create confusion if pedestrians assume they have right of way. However, if traffic speeds are low, this is unlikely to generate accidents.

5.72. The problem of confused priority may also occur where flat–top humps are used in traffic calmed areas. These features will tend to attract crossing activity and their use by pedestrians should therefore be considered during the design process. In Boreham Wood and St Stephens Street, Norwich, where there are series of flat–top road humps and high pedestrian flows, drivers normally give way to pedestrians.

Controlled Crossings

Zebra Crossings

5.73. Zebra crossings are relatively low cost and are becoming more popular. They are useful facilities as they offer immediate response to pedestrian demand (when the pedestrian steps on the crossing) and protect the pedestrian for the whole crossing width at every walking speed. Zebra crossings are suitable for widespread use in urban areas, although their use will be limited to roads with lower traffic speeds and volume. *Local Transport Note* 2/95 (DOT, 1995b) details design characteristics.

Putting People First In Gloucester – *The Safer City Project*

Pedestrian safety is a high priority in the Safer City project in Gloucester. A study of pedestrian accidents showed that they tended to be scattered across the City and not at cluster sites.

Specific **targets** to safeguard the safety of pedestrians have been adopted:
- improve the safety of pedestrians crossing main roads
- improve the safety of pedestrians on identifiable routes between attractions, such as shops
- improve the safety of children and young people aged under 16.

In partnership with the Police, Magistrates and DETR, a **speed management plan** has been developed to tackle the main cause of accidents, inappropriate and excessive speed. This includes:
- using fixed and mobile speed detection equipment
- reducing the threshold for prosecutions
- reporting back to drivers about the success of the speed enforcement campaign
- implementing speed reducing measures

Gloucester City Council has **improved signal timings** to help pedestrians at 19 pedestrian crossings and at 12 traffic signal junctions across the City. A hierarchical approach has guided this improvement. At traffic signals, the vehicle maximum phase has been reduced by three seconds on each approach for main roads, more for roads defined as mixed use. The green man time was extended by an average of 3 seconds. This is being monitored and even better priority for pedestrians may be achieved. The response times at pedestrian crossings are now set at seven seconds, with an average maximum of 20 seconds. Consistent timings are set at crossings on the same route.

All **new facilities** in Gloucester are a Zebra, Puffin or Toucan crossing. These are introduced at sites to aid walking across busy roads, and to form links with other physical measures elsewhere along identifiable routes between known attractions. In some cases straight–over Toucans have been installed on 14m wide single carriageways and at a dual carriageway with no “sheep pen” facility. This approach takes advantage of new technology, enabling an extended “green man” time as required. Waiting times are reduced and this lessens the community severance impact of the wide roads. New street lighting uses high pressure sodium lanterns, to help drivers and to improve the personal safety of pedestrians at night.

Box 5.1.

5.74. Care should be taken when installing a Zebra crossing to ensure that the Pedestrian Crossing Regulations are followed precisely. Mistakes often occur when detailing the controlled zone, using zig–zag markings.

5.75. Recent testing and design modifications have led to the development of high intensity flashing globes (belisha beacons) and the use of internally illuminated posts to carry them, to make the crossing more conspicuous.

Local authorities are installing new Zebra crossings to improve pedestrian access in towns. *Courtesy: Derek Palmer.*

Pelican Crossings

5.76. Pelican crossings are used mid block ie away from junctions and are traffic signal controlled. Pelican crossing design is also largely prescribed by the Regulations, with little scope for variation of basic principles. The designer should concentrate on the correct location of the crossing and, in particular, the associated street furniture and traffic signal poles.

5.77. Pelican crossings should be as responsive as possible, to minimise pedestrian delay. Precedence allowed to vehicles should be minimised by limiting the maximum period in the signal controller. Designers should aim to keep to the guidance given in *Local Transport Note 2/95* (DOT 1995b), which states that green time for traffic "will normally be set to 40 seconds or less". The same applies for Toucan crossings. The timing arrangements for signal controlled crossings are more complex. They include vehicle detectors, to help end vehicle stages safely.

5.78. The addition of tactile indicators and audible signals can be particularly beneficial for visually impaired pedestrians.

Puffin Crossings

5.79. Puffin crossings are the new generation of signal controlled crossings. They vary from Pelican crossings in a number of ways:

- They use near–side pedestrian signals only, showing a steady red or green figure;
- The signal sequence with a flashing amber signal to drivers is replaced by the standard red/red and amber/green sequence;
- Kerbside detectors can show when a pedestrian has crossed or moved away after pushing the demand button, and the demand is cancelled; and,
- Detectors can "see" pedestrians on the crossing and delay traffic until they have safely crossed.

5.80. The Puffin will replace the Pelican over the coming years. Maximum values for vehicle green times "will normally be set between 10 and 30 seconds" (DOT, 1995b).

Toucan Crossings

5.81. Toucan crossings permit cyclists and pedestrians to use the same crossing. They are normally linked to adjacent cycle routes and designers should ensure that the paths to be taken by cyclists are clearly identified and that potential conflicts with pedestrians are minimised.

A good surface and plenty of width to cross at this Pelican crossing in Edinburgh.

Courtesy: Derek Palmer.

5.82. Toucan crossings have been installed based upon both the standard operation of a pedestrian phase at a signal controlled junction and the Puffin crossing–control strategy. The Puffin strategy will be permitted within the revised Traffic Signs Regulations and General Directions.

5.83. Another variant in crossing type is the equestrian crossing –a signal–controlled crossing that can also be used by those riding horses. Modifications to a standard installation include the provision of push button units at a high level, within reach of a rider on horseback.

Pedestrian Stages at Traffic Signals

5.84. Traffic signal designers should always consider pedestrian need as an integral part of the traffic and provide for them accordingly. The aim should be to incorporate pedestrian stages into all signal–controlled junctions where pedestrians regularly need to cross. Increasingly, signal design should assume in favour of controlled crossing facilities for pedestrians, unless there are overriding problems. This type of initiative will help promote walking activity in the future. Cycle times should be kept short, to minimise waiting time. If longer cycle times are inevitable, consideration should be given to multiple pedestrian stages within the cycle.

5.85. Pedestrian crossing facilities may be "walk with traffic" (when pedestrians cross while non–conflicting traffic streams are running), or "all red" facilities (where all traffic movements are stopped while pedestrians cross). It appears that many pedestrians are not sensitive to the differences between mid–block crossings (Pelican and Puffin crossings) and controlled crossings at junctions and some were confused by the use of flashing green man indications at some locations and blackout periods at others. The change to consistent near–side signalling, which uses a green man followed by an all red, at all forms of crossing should help to reduce this confusion.

5.86. Pedestrian stages are particularly helpful at junctions with complex signal stages, where turning sight lines are restricted, where there are no central refuges and where children or elderly people regularly cross.

5.87. Crossing facilities which are "offset" from the junction (ie, away from the pedestrian desire line) are not helpful in promoting walking. Pedestrians may be required to divert up to 50m along a side road before being allowed to cross. Crossings should be close to desire lines, even where this may be at the expense of some traffic capacity. Adequate sight lines and protection from turning vehicles must be considered.

5.88. Standard layouts and further design advice for traffic signals and associated crossing facilities can be found in *Local Transport Note 2/95* (DOT, 1995b) and *Transport in the Urban Environment* (IHT, 1998). These list relevant sections of *Design Manual for Roads and Bridges.*

Hyde Park Corner – Before: a pedestrian take his life in his hands. *Courtesy: TDfL.*

Hyde Park Corner – After: new at–grade crossing for pedestrians. *Courtesy: TDfL.*

Refuges at Controlled Crossings

5.89. Refuges may be introduced to deliberately divide pedestrian crossing movements, However, they are sometimes introduced to locate equipment such as traffic signals in a more visible location. The impact of this on pedestrian safety and convenience should be carefully considered.

5.90. Staggered or divided crossing facilities are not liked by pedestrians, who will be delayed in the centre of the carriageway. Designs should seek to limit pedestrian delay as this will improve observance of pedestrian red and green man signals. However, there comes a point when the use of a non–staggered controlled crossing cannot be justified, as the time taken to cross the whole carriageway introduces unacceptable risk to the pedestrian, particularly during clearance periods. If the road width is greater than 11m a staggered layout should be considered. Where the road is more than 15m wide a staggered layout should be provided. For more detail on layout considerations see *Local Transport Note 2/95* (DOT, 1995b).

School Crossing Patrols

5.91. Finally, a school crossing patrol is a controlled crossing by virtue of the "STOP CHILDREN" sign used by the warden. Patrols are normally located at well–established crossing locations. Warning signs with or without amber warning lights are useful safety additions where visibility may compromise safety (see Chapter 4 of the *Traffic Signs Manual* "Warning Signs").

Pedestrian Crossings and Urban Traffic Control Systems

5.92. In urban areas where traffic signals are controlled and co–ordinated by Urban Traffic Control (UTC) Systems, standard practice is to incorporate stand alone crossings within UTC. Minimising delays for traffic can lead to delays and frustration for pedestrians. Designers should consider removal of crossings from UTC, allowing them to react to pedestrian demand in stand alone, or vehicle actuation, mode. This will have limited impact on traffic in many situations. An alternative is to link pedestrian crossings within UTC only during the peak traffic periods.

5.93. If it is necessary to link pedestrian crossings with UTC operation, designers should consider cycle times for nearby junctions that will allow the crossing to cycle twice.

5.94. UTC systems are increasing in sophistication and incorporating various priority strategies, such as green waves for emergency vehicles. In such cases, it may be desirable to link pedestrian crossings to the UTC systems for these demands.

Innovation

5.95. There are many examples of innovative practice around the country which seeks to assist pedestrians. At traffic signals they include:

- Signal coordination for pedestrians, allowing pedestrians to travel from one crossing to the next and receive a "green man" on arrival;
- Multiple pedestrian stages at signalled junctions, with a pedestrian stage following each traffic stage, for instance;
- Reduced vehicle precedence periods at crossings, to ensure crossings are responsive to pedestrian demand;
- Use of cranked posts for signals to minimise space taken from footways;
- Permanent demands for pedestrian stages, where pedestrian presence is constant for much of the day and,
- "Revert to Red", where traffic signals wait for demands (from pedestrian or vehicle) showing red to all approaches. This should reduce vehicle speed and make crossing stages more responsive to pedestrians. Some authorities, such as Leeds City Council, have used this technique successfully for several years.

As with all innovation, care should be taken to ensure the consequences of introducing a particular measure have been fully considered prior to construction or are carefully monitored after implementation.

5.96. New techniques are being developed and tested, to ascertain benefits and disbenefits and identify any problems. They include:

- diagonal crossing facilities at junctions;
- the use of pedestrian volume detectors, to cause traffic signals to give a green man indication if there are large numbers waiting to cross; and
- an increase in the distance between the crossing and the stop line for vehicles, to enhance safety and reduce intimidation by drivers.

Surface Treatments

Choice of Surface

5.97. Choice of materials and construction specifications are critical to the long–term integrity and aesthetic appeal of pedestrian areas. The nature and number of vehicles likely to travel on the surface has also to be considered. This may be to access adjacent premises or for refuse collection, street cleansing, the maintenance of street lighting and of the surface itself (including seasonal treatment of snow and ice conditions). Above all, the surface has to be pedestrian

friendly and, for those who are visually impaired, this requires pedestrian layouts that are logical, consistent and take account of their needs (including tactile paving). In attempting to meet urban design (visual or other aesthetic) requirements, care must be taken to ensure new hazards such as trips are not introduced and that the footway is maintained as a comfortable, convenient walking surface.

5.98. The choice of surfacing material is critical to the fitness, durability, attractiveness and cost of any scheme. Its primary purpose is to support loads and to keep water out of the subgrade. Surfacing has a number of secondary functions including drainage; demarcation; perhaps even management of users. Although hard surfacing is appropriate in many locations, the designer should also seek to use grass or soft landscaping whenever practicable. There is a temptation to consider only the initial cost of surfacing during the design. However, all forms of paving progressively deteriorate from the day they are laid and a reasonable design life of 40 years should be considered, using whole life costing.

5.99. The presence of pavement lights, drainage channels and manholes introduces difficulties when laying paving. However, careful detailing can make an attractive feature of such apparent obstructions.

5.100. The following issues should be considered when choosing appropriate surface treatment:

- type of use: traffic (volume and mix), pedestrians, movement patterns;
- initial and on–going maintenance cost;
- strength and durability, for the anticipated loading;
- construction: whether rigid or flexible and ease of construction;
- pre–formed or in situ;
- maintenance, including ease of cleaning and repair, potential inconvenience to users, patching and colour matching;
- visual appearance: colour, widths, joints and bonds;
- protection of tree roots;
- appropriateness: vernacular/regional style, style of adjacent buildings, availability; and,
- sustainability: sourcing of materials, effects of extraction and transport to site.

5.101. In selecting paving, its overall effect should be considered. Careful choice and co–ordination of surface materials can provide contrasts, unique character and enhance the sense of place. The surface treatment could be used either as a neutral base such that other features and building forms attract the eye or can be more ornate so as to become a feature in its own right.

5.102. Paving texture impacts on human behaviour. Smooth surfaces suggest walking and movement, whilst coarser textures are more suitable in areas where people congregate and sit. The use of loose cobbles to prevent people from walking over an area is not advisable due to the risk of injury. Appropriate landscaping should be used for such locations.

In Situ Paving

5.103. In situ paving tends to be the lowest cost and most easily laid surfacing material. Whilst there are a variety of materials available, the most common are close graded bitumen macadam or concrete. The basic black colour of macadam does not tend to give an aesthetically pleasing effect, especially when adjacent to red brick buildings.

5.104. Bituminous materials can have coloured aggregates or pigment added to the binder, but the effect may be very difficult to reproduce in any future repairs. Thin surfacing materials with distinctive colour pigment and an epoxy–bitumen binder are now used quite widely as a traffic management aid, eg, red or green for bus lanes but are more likely to wear. Concrete laid in situ must have a sufficiently high cement content to be durable especially against frost damage.

Concrete is not suitable where underground services are located since it is impossible to repair without unsightly and permanent evidence.

Block Paving

5.105. Unit paving of pre–cast concrete or stone (natural or artificial) or bricks can form an attractive and durable surface. Cement pigments can produce concrete blocks in red, buff, yellow, green, blue, brown, black or grey. However, all tend to age to a grey colour. Although a reserve stock of blocks should be retained for maintenance purposes, replacement of old by new concrete blocks will normally show the colour difference. Large concrete slabs should not be used if likely to be overrun by traffic. Bricks should be specific to the particular application. They must be non–absorbent and frost resistant.

Good attention to detail is important for pedestrians.

Courtesy: TDfL.

Natural Material

5.106. Historic footways were surfaced with stone from the most convenient local source. Continuation of the use of such local materials, whenever possible, will confirm and add to the character and uniqueness of the place. In the 19th century many urban areas were paved with granite setts (small blocks) and Yorkstone paving (Portland and other stones were also used.) These materials are exceptionally durable and attractive in appearance. However, they are more expensive than other forms of surfacing and their weight may require the use of machines to lay them. Natural stone can be particularly effective if laid in combinations of materials, e.g. granite kerb and Yorkstone paving, or if laid in patterns. Traditional granite sett patterns include curves and fantails. Setts can be used to emphasise features in the street scene, e.g. circular surrounds to tree pits. Whilst acknowledging that natural materials are the most expensive to install, they are normally the most durable and, with care, can be relaid elsewhere if required. Unfortunately, the irregular nature of the completed surface can create problems for the elderly or infirm.

Loose Materials

5.107. On lightly used footways and on rural footpaths where surfacing is necessary, loose materials can be used. These include pea–shingle, gravel, hoggin, shale, chippings or other local material. In order to prevent dispersal of these kinds of surfacing, suitable edge restraint should be used. This could be concrete edging, suitably treated timber or large stones.

Manholes and service boxes

5.108. Access to underground ducts and sewers is necessary but manhole covers can be unsightly. If possible, manhole covers should be integrated into the pavement design. Their alignment should accord with that of any block or slab paving so as to avoid the need to cut paving materials to angles. In order to avoid a visual break to the paving pattern, recessed manhole covers are available to allow block paving to be inserted. However, the resultant weight will require sturdy lifting bosses and may require mechanical assistance. Alternatively, paving blocks can be set round the manhole to "feature" the cover. Manholes in areas subject to traffic over–run will be either medium or heavy duty. In pedestrian only locations, light duty frames and covers may be sufficient. Care should be taken to ensure both frame and cover are perfectly flush with the surrounding paving.

Surface Drainage

Drainage System Design

5.109. Good drainage of water from the footway surface is essential to the comfort and safety of users. For water to flow across pavement surfaces and along the channel, the following minimum falls are necessary:

- footway crossfall — 1 in 50 (2%)
- surface channels — 1 in 200 (0.5%)
- undersurface channels — 1 in 1000 (0.1%)

Drainage Channels

5.110. If the footway is adjacent to the carriageway, then the footway should generally slope towards the channel of the carriageway. Sloping the footway, and hence drainage, towards buildings should be avoided. Discharging water into adjacent ground not owned by the highway authority is not permitted. Ponding of water can make footways uninviting and difficult to negotiate and designs should avoid this, without making the footway too steep for normal pedestrian use.

5.111. Where the construction of a channel within an area of footway is necessary, it should be designed to ensure that there are no small upstands, creating a danger of pedestrians tripping. Surface water channels can be made from granite setts, brick or pre–cast concrete (either dished or recessed) taking care to avoid problems for wheelchair users or those with pushchairs or trolleys. The choice of materials used should be in keeping with all adjacent materials. They can be incorporated into the paving so as to form an integral part of the overall design.

5.112. Typical construction details can be found in *Footways Design and Maintenance Guide* (TRL, 1997).

Gratings

5.113. Gratings or covers should be chosen and installed with care. The alignment of the grating bars should be at right angles to the usual direction of passage of wheelchair, pram or cycle wheels. Designers should be aware of the problems posed to those who wear narrow heeled shoes. Special gratings should be used for gradients of greater than 1 in 50 (2%).

Trees and Landscaping

Planting

5.114. Planting adds life to any streetscape, but vegetation needs to be planted in appropriate locations and in the right manner. Trees are not appropriate for all locations and trees or other vegetation should not obstruct the footway. Trees and planting (or street furniture) can provide a valuable barrier between pedestrians and vehicles, enhancing pedestrian safety and comfort.

They may also have a calming effect on drivers, visually narrowing the road and creating a safer environment. Inappropriate planting can introduce new hazards, as trees become established, and the following should be considered:

- proximity to the carriageway edge; and
- the risk of vehicles leaving the carriageway, when an established tree becomes an obstruction hazard.

5.115. Groups of trees or shrubs are often more effective than single specimens. Landscaping should be considered as an element of a pedestrian improvement scheme, to develop an integrated whole. Wherever possible, planting should be as dense as practicable, for visual impact. Care must be taken, however, to ensure that visibility at crossing places and junctions is not interrupted and pedestrians are not hidden from drivers, as this can lead to danger and personal security fears.

5.116. Essential to the design of landscaping and tree planting is maintenance. For the first two years regular attention will be necessary. It is standard practice to include maintenance and replacement clauses within contracts to plant vegetation.

Trees

5.117. There are several guides to tree planting which contain specific advice regarding species choice and subsequent maintenance. The primary problem for footway designers is that, even for large trees, most roots are in the upper 1m of soil and spread out in every direction for a distance approximately equal to the height of the tree. Any excavation within the area of root spread can damage the tree.

5.118. Tree roots may be damaged if underground works are undertaken. Minor damage can affect growth while major severance of the root system can lead to instability. If trees are to thrive, great care should be taken not to disturb roots. The type of tree should be related to local ground conditions and be hardy enough to survive normal maintenance activities such as the spreading of salt in the winter. Tree growth can result in heave of a footway and careful maintenance may be required to avoid a tripping hazard. The use of tree pits and membranes can help to contain root growth.

Planters

5.119. Where trees and other plants cannot be planted directly into the ground, containers (or "planters") can be used. Larger containers will be more appropriate in pedestrian areas. The positioning of planters should be an integral part of the design of the open space. Their size, position and colour must also take into account the needs of the visually impaired.

Street Furniture

General Principles

5.120. The term "street furniture" covers a range of elements that contribute much to the nature and quality of the area and some that do not. Design objectives are not merely architectural. Street furniture can help create character and a sense of place.

5.121. It is important that street furniture does not proliferate and does not become an obstruction to those who are blind or partially sighted, or at times of heavy pedestrian use. All street furniture serves a purpose but, unless co–ordinated, the effect will be one of confusion and clutter.

5.122. An innovative approach to minimising the obstruction of footways by signs is to use "cranked posts". These permit poles to be installed close to the kerb or at the back of footway with the sign cranked to the optimum position above the footway, with sufficient pedestrian headroom. Consistency is key. If street lighting columns and guard rail are already located close

to the kerb, installing new furniture at the back of footway will simply create "pinch points". Access to the street furniture, including signal controllers, will be important. Vehicle overhang must be considered when locating furniture close to the kerb.

5.123. The guiding principles for street furniture design should be to:

- Co–ordinate the various elements;
- Be consistent in style and colour;
- Integrate all elements;
- Avoid clutter and locate furniture in a consistent manner;
- Consider its function during the day and at night (and how it may be abused); and,
- Ensure historic and conservation areas receive special treatment.

5.124. Regardless of the location, quality of equipment is important, both in use and in respect of ongoing maintenance. Poor quality street furniture, which may be cheaper to install, will be less durable and more vulnerable to misuse and will, eventually, detract from the appearance of the area.

5.125. Whilst the choice of equipment is important, siting is of equal significance. Street furniture is viewed from various angles and distances and should offer a pleasing appearance from a variety of angles. Repetitive or "themed" elements, such as "badged" litter bins or road nameplates, add both a cohesive effect and identity to an area. With few planned exceptions, it should be simple, not fussy and obtrusive, appearing to be a natural part of the scene.

5.126. The choice and location of street furniture will vary and there are no definitive solutions. The following specific suggestions may help:

- Avoid service boxes and cabinets, which should be recessed into walls where possible (if they cannot be installed underground);
- The same materials should normally be used throughout. Timber, for example, can be used for bollards and sign poles (though splitting can occur);
- where permission can be obtained, lighting could be wall mounted in streets where buildings form the edge of the public highway, maximising available footway space;
- siting should not obstruct walking routes, with particular reference to the needs of the visually impaired and those in wheelchairs;
- consider the use of planting to soften the impact of street furniture or to replace it, as an alternative to barriers perhaps;
- design of the furniture should take into account the needs of the visually impaired, perhaps incorporating reflective strips;
- minimise the impact of waiting restriction markings and associated signs; and,
- where vandalism of street furniture is a problem, siting may be determined by the field of view of CCTV.

Key issues

5.127. Street furniture can be considered under four headings:

- Key features
- Seating
- Amenities
- Signing and information.

5.128. Key Features are especially important in open areas and intended to create a focal point. These include fountains, sculpture, statues and other examples of public art but also kiosks and decorative advertising features. The sound of fountains and water features can also give directional guidance to those who are visually impaired;

5.129. Seating should be an integral part of any pedestrian area, providing a resting place and a focus for social activity. The requirement will be dictated by local need. In busy pedestrian

areas, resting places should be provided at intervals (no greater than 100m). Seating, preferably covered, should be provided at all bus stops. While seating can be used to demarcate areas, its location should not hinder circulation or form an obstruction to movement.

Benches, public toilets and fountains help to make journeys on foot easier and more relaxed.
Courtesy: TDfL.

5.130. Seating should preferably allow for street activities to be viewed and can be laid out in various ways:

- inward looking, to encourage conversation;
- outward looking, to see the views;
- in the centre of activities, for rest and chance meetings;
- at bus stops, for waiting;
- in secluded corners, integral with planting.

5.131. Materials should reflect the theme for other street furniture, but should allow for comfort, stability, maintenance, potential vandalism and the effects of adverse weather.

5.132. Amenities, include such items as litter bins, bicycle racks, planters, bollards, post boxes, telephone kiosks, public lavatories and drinking fountains. Shelters and cycle racks can be quite dominant features and particular care should be exercised in their design. All need to be located where they will not cause an obstruction to movement.

5.133. Litter bins should be identifiable (not so obscure that their purpose is unclear) and located where they are likely to be used. They should have sufficient capacity for their expected use and emptying frequency. Telephone kiosks should normally be in full view (except in conservation areas) to minimise vandalism but in a relatively quiet location, if that is possible.

5.134. Signing and information may be for directional guidance or regulatory purposes. Whilst separate sign poles are rarely mandatory, the requirement for illumination may complicate the design.

5.135. To reduce clutter and costs, minimise the number of additional poles by seeking sensible rationalisation of signs by grouping, co–ordinating, fixing to other street furniture wherever possible or wall mounting where feasible. The location of poles should again avoid obstruction to movement. Some signs, such as 'no waiting' plates, can be successfully mounted on bollards.

Street Lighting

5.136. Street lighting should be designed with the needs of all road users in mind. Generally, the driver would expect to see a pedestrian in silhouette against a uniformly lit background, together with good vision of the kerb and other highway features. Poor lighting design can lead to:

- Bland and functional illumination, with little dramatic effect;
- A failure to make use of the urban fabric, which can be achieved by illuminate vertical surfaces, such as facades, walls and trees (the features that people want to recognise and appreciate at night);
- Mounting of lanterns at the highest possible level for maximum coverage and efficiency, causing glare, and
- Cheap but efficient low pressure sodium lamps, which offer poor colour appearance and rendering, so people can't appreciate the natural tones of skin or clothes or food.

5.137. Lighting which encourages pedestrians to feel safe and comfortable after dark is different in design principle from highway lighting. Lighting of areas for pedestrians should provide an attractive and well–lit environment to promote personal security. The intention should be maintain walking activity in town and village centres after dark, (although it is true that some villagers dislike street lighting because of the “urban” image). Of course, lighting of the carriageway must not be ignored. Solutions include:

- street lighting equipment on a human scale (say 4–5 metres in height rather than 8–10m);
- varied and interesting light levels, particularly on walls, trees and buildings;
- “white” light sources, which offer good colour rendering (including high pressure sodium lamps); and,
- secondary, low level lighting, to add visual interest. Secondary lighting may also come from illumination of prominent or interesting features, such as churches, public buildings or monuments.

5.138. Street lighting can be a feature in itself and may help to enhance visual appearance. In Peckham, a series of “light art” projects have been installed as part of the improved pedestrian environment in the main shopping street.

5.139. Street lighting should be designed to direct light to achieve a specific function and to minimise light pollution particularly into adjacent residential properties. Guidance on road lighting is available in the British Standard Code of Practice for Road Lighting (BS 5489: 1992). Some manufacturers of street lighting equipment also produce guidance and design advice that can be useful, particularly if new or innovative products are to be used.

References

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6. Footway Maintenance

This chapter summarises the legal requirements and best practice in managing and maintaining footways. It outlines the importance of these functions and the opportunities for improving walking conditions through a pro–active and holistic approach. Enforcement issues are covered, including problems of footway obstructions and misuse.

The Importance of Maintenance

6.1. Maintenance is a set of activities designed to preserve rather than to improve the footway. It has three specific purposes:

- to preserve the asset value;
- to provide for safe and convenient movement, including that by people with a mobility handicap, and
- to retain the visual amenity.

6.2. It is estimated that there is around 250,000km of footways in the UK with a minimum replacement value of £5,000m. These footways are estimated to facilitate some 31 million kilometres of walking activity daily. The national annual maintenance expenditure on footways is around £250m and has been estimated by the Insurance Association that the economic cost of personal injury accidents on the footway is currently around £500m per annum.

6.3. The maintenance of footways, crossing points, lighting, markings, signing and the removal of obstructions are crucial elements of the challenge to persuade more people to walk more often than they presently do. The attractiveness of pedestrian facilities, including the feeling of security which they create particularly at night time, influence the degree to which people are prepared to make journeys on foot.

6.4. Many local authorities undertake regular attitude surveys of road users. The consultation process associated with Local Transport Plans, the preparation of local walking strategies and service reviews as part of the Best Value initiative (DETR, 1999a), have stimulated interest in such surveys. The local information that these surveys reveal can indicate the extent to which users feel satisfied with the quality of the pedestrian environment. Such information can help determine the priority with which scarce resources are allocated.

Improving the footway with high quality surfaces – laying York stone paving in London.

Courtesy: TDfL.

6.5. Unfortunately, attitude surveys often reveal that substantial proportions of pedestrians are unhappy about the standard of footway maintenance that prevails. This is hardly surprising. *The National Road Maintenance Condition Survey* (DETR, 1999b) showed that the condition of

footways deteriorated again in 1999, continuing the trend established since the mid–1990's. On average, there are 1.6 "trips" – defined as a spot condition constituting a specific danger to pedestrians – for every 100m of footway.

Footway Hierarchy and Inspection Frequencies

6.6. When maintenance resources are limited it is useful to have a hierarchy of the relative importance of particular footways so that investment decisions can be taken on the basis of the seriousness of the footway condition and the perceived importance of that section of footway. Local highway authorities are encouraged to identify key pedestrian routes as part of the development of their local walking strategy. These routes often related to the function of the land uses that they connect, and the potential of those land uses to attract pedestrian activity. An example of a hierarchy of pedestrian routes would be footway routes:

- within or close to the town centre;
- leading to the railway station or bus station;
- between large residential areas and local shops, schools, hospital, employment area;
- between smaller residential areas and the above locations;
- within residential areas
- between nearby villages, and
- in the countryside.

6.7. In the absence of a specific review of the function and hierarchy of footways, general guidance is available in the Local Authorities Association (LAA) *Code of Good Maintenance Practice* (1989) and the *Highway Maintenance Handbook* (Atkinson, 1997). The latter reference is more detailed and has six footway categories which are described in Table 6.1. The LAA Code has four broad categories of footway – main shopping areas, busy urban areas, less used urban/busy rural and little used rural. The hierarchy should be based on actual and potential pedestrian usage. Particular consideration should be given to the location of various high–risk locations, for example schools and residential homes.

6.8. The inspection of footways, as part of the highway network, is fundamental to the planning of maintenance works and is required as part of a highway authority's statutory duty to demonstrate that the needs of the highway user are being approached in a "reasonable" manner.

6.9. Data can be collected and recorded manually or by using hand held computer collection devices, or more sophisticated electro–mechanical profiling devices.

6.10. The inspection regimes for footways may be different from the carriageway of the roads on which they are situated, because their importance to users could be different. A pedestrian–priority, central shopping street would be an obvious example. The inspections must always include adopted footways away from carriageways. There are several systems of inspection but those most frequently used are documented in the MARCH (1983) and CHART (DOT, 1986) protocols.

6.11. An inspector on foot should undertake the inspection on footways. This is normally held to be necessary in litigation. There are two types of inspection – safety (sometimes called routine or non–feasance inspections) and detailed inspections. The purpose of the latter is to gather specific information to help evaluate and design planned maintenance work at a problem site that may have been identified during a safety inspection.

6.12. The work identified by the safety inspection is allocated to one of three categories namely:

Safety Where a dangerous defect exists which should be repaired within a very short period. The cost of the work is usually limited and the objective is to remove

danger in a defined response period, which is associated with the importance of that section within the overall hierarchy. The work is essentially responsive.

Routine The work is essentially of relatively lower unit cost and in many cases can be based on a defined return period to achieve a consistent level of service. Sweeping, the removal of weed growth and non–safety patching are examples of routine maintenance. The work is undertaken as part of a larger rolling programme.

Structural The work is usually of relatively higher unit cost with defects, which require more fundamental repairs than the two previous categories. This may include reconstruction, retread works and slurry sealing which forms part of a larger rolling programme.

No.	Location	Frequency
1	❍ Extremely heavily used footways ❍ City centre shopping streets ❍ Main central access ways ❍ Pedestrian precincts	Weekly
2	Very heavily used footways ❍ Other local business areas ❍ Local shopping area	Every two weeks
3	Heavily used footways ❍ Near schools, hospitals, libraries, community centres, shopping locations not covered in 2, residential accessways	Monthly
4	Frequently used footways ❍ Footways in residential streets	Every three months
5	Little used footways ❍ Footways in residential areas ❍ Rural areas	Annually
6	Little used industrial or rural footways	Annually

Table 6.1: Recommended frequencies of safety inspections.

6.13. The schedules of footways to be inspected at a particular frequency should be periodically updated (preferably annually) in the light of changes to land–use and pedestrian flow patterns.

Footway Defects and Response Times

6.14. Defects in the footway are identified from the inspections and from comments made by the public. An assessment needs to be made about the appropriate action to take in relation to a particular defect. Two parameters – warning level and intervention level – are used to make consistent judgements about remedial action.

6.15. The ***warning level*** is that level of deterioration where good management requires that an action should be included in a works programme to remedy the defect or defective area and, if necessary, to rectify the underlying cause.

Group to which applicable	Limitation or Severity	% of area	Treatment
1. Main shopping area	Coarse cracking of the surface. Coarse crazing. Depressions more than 25mm deep in 500mm. Upstands greater than 6mm but less than 10mm	10	Restore surface
2a. Busy urban/ Shopping (flexible)	Coarse cracking of the surface. Coarse crazing. Depressions more than 25mm deep in 500mm. Upstands greater than 13mm but less than 20 mm	20	Restore surface
2b. Busy urban/shopping (rigid)	Upstands more than 13mm but less than 20mm. Cracks or gaps more than 20mm wide and more than 6mm deep. Rocking flags Depressions more than 25mm deep in 500mm.	20	Restore surface
3a. Less used urban and busy rural (flexible)	As for busy urban (flexible)	30	Restore surface
3b. Less used urban and busy rural (rigid)	As for busy urban (rigid)	30	Restore surface
4. Less used rural	When potentially dangerous (upstands greater than 20mm)		Patch or restore surface

Table 6.2: Warning levels for footway maintenance.

Note: The choice of treatment will depend on the failure mode, type of construction and importance of the footway. Generally less used footways would require only surface treatment and heavily used ones reconstruction of the surface.

6.16. The ***intervention level*** is that level of deterioration where a defect requires urgent attention in order to ensure that the highway authority has taken reasonable care that the highway is safe for the public to use.

6.17. The use of warning levels for future remedial action is useful when establishing a planned maintenance programme for the footway network. Table 6.2 shows the warning levels for different types of footway defect, and is drawn from the LAA Code (1989).

6.18. Safety defects, by their very nature, cannot be included within a planned programme of maintenance work because the safety of the public is being placed at unreasonable risk by the continued existence of the defect. The rectification of such problems is unplanned, and needs to be undertaken within the response standard adopted by the particular highway authority.

6.19. Unplanned maintenance works are of an individual nature and the unit cost of the work is higher than with planned works. Unplanned work leads to a much lower rate of return in an economic sense. Ideally, unplanned maintenance work should be limited to about 10% of the overall maintenance spend.

6.20. Recommended intervention levels for safety defects, drawn from the LAA Code (1989) and the Kindred Associations (KA) (1998), are summarised in Table 6.3.

Defect and intervention level	Comment
Dangerously rocking flags	No precise definition given in LAA Code (1989). KA (1998) suggests 20mm faulting. Research, Leake (1991), indicates that all rocking flags are categorised as dangerous by the user.
Projections greater than 20mm high (including manhole frames and boxes)	The 20mm upstand ('trip') height results from case law. If the upstand is less than 20mm a successful claim is unlikely. Leake (1991) found that users had difficulties when upstands exceeded 10mm.
Cracks and gaps between flags greater than 20mm wide and more than 6mm deep	Leake (1991) found that users had difficulties when *gaps exceeded 10mm wide.*
Isolated potholes – *none*	Usually occurs in a bituminous surface and is an indicator of the onset of wearing course failure. In a modular or paved surface this may be a missing element or paving. No precise definition given in LAA Code (1989). All potholes are unacceptable regardless of depth
Depressions and bumps more than *25mm deep or high in a length of 500mm*	Leake (1991) suspected that transverse depressions were more difficult to the user than longitudinal ones. This has subsequently been confirmed by further work undertaken by TRL. Spong *et al* (1995)
Loose surface – *none*	No precise definition given in LAA Code (1989). No loose surface is safe.
Standing water – *none*	No precise definition given in LAA Code (1989). No standing water is acceptable
Utility reinstatements – a 10mm upstand or depression indicates the reinstatement to be unacceptable under the New Roads and Streetworks Act 1991.	DOT *et al* (1992) The requirements are more discriminating than has normally been applied to a "safety" upstand on the footway.

Table 6.3: Intervention levels for safety purposes.

Response Time

6.21. The ***response time*** is the period between the identification by the inspector of a defect as being of concern to public safety, and the start of the remedial work; or of the placing of temporary warning signs to protect the public from the obvious danger.

6.22. The LAA Code (1989) suggests that the speed of response should be related to the intensity of use, which is a key factor in the footway hierarchy, and the degree of danger. The response time is the time between the defect being identified and the remedial work being started. Local authorities should publish the response times for dealing with safety maintenance footway defects that they consider to be appropriate. The performance of the authority in achieving this response time is a measure of one aspect of the quality of the maintenance service provided.

6.23. A national best value performance indicator of the damage to roads and footways requires local highway authorities to measure the total number of reported incidents of dangerous damage to roads and footways, repaired or made safe within 24 hours from the time that the authority first became aware of the damage, as a percentage of such incidents.

6.24. The system recommended in the *Highway Maintenance Handbook* (1997) relates to the four location categories of footway set out in the LAA Code (1989). It is shown in Table 6.4 and

Defect	**Location**							
	a		**b**		**c**		**d**	
	Intervention level	**Response time**	**Intervention level**	**Response time**	**Intervention level**	**Response time**	**Intervention level**	**Response time**
Rocking flags	All	1	All	2	All	2	All	3
Upstand (mm)	>20 13–20 6–13	1 2 3	>20 13–20	2 3	>20 13–20	2 3	>20 13–20	2 3
Horizontal gaps (mm)	>20	2	>20	2	>20	3	>20	3
Isolated potholes	All	2	All	3	All	3	All3	
Depressions (mm)	>20	2	>25	3	>25	3	>25	3
Puddle			>1sq m > 6mm	2	> 1 sq m > 10mm	3		
Loose surface	All	2	All	2	All	3	All	3
Loose kerb	All	2	All	2	All	3	All	3
Missing kerb	All	2	All	2	All	3	All	3

Response time codes: **1** within 24 hours, **2** within 2 weeks, **3** within 3 months.
Location categories: **a** main shopping area, **b** busy urban area, **c** less used urban or busy rural area, **d** little used rural footway.

Table 6.4: Safety maintenance intervention levels and response times.

indicates how a progressive system may be structured. It is for each highway authority, however, to define and publicise its own policy.

6.25. The disclosure list set out in the new Civil Procedure Rules (1999) make it imperative for Highway Authorities to have a clearly defined policy for safety intervention levels and response times, together with appropriate records of inspections and repair data.

Prioritisation of Planned Work Identified by Inspections

6.26. Inspection data identifies a range of required work from the essential to the desirable. Computerised data collection packages will provide recommendations on work priorities. Manual data collection systems require an assessment of priorities to be determined and entered on a record sheet.

6.27. Inspection data will also be supplemented by work requirements arising from problems reported by the public and by organisations and should be integrated with the inspection reports, in order to give a comprehensive work programme requirement.

6.28. It is likely that the cost of identified work requirements on footways will exceed the budget available for the maintenance work. Prioritisation of work is therefore essential.

6.29. A prioritisation process for footway maintenance work should reflect:

- an awareness that footway maintenance can make a significant contribution to encouraging walking as a sustainable and healthy method of transport and recreation;
- an awareness that footway maintenance can make a significant contribution to the environment, especially in urban areas;
- a move towards greater user consultation as part of the development of best value;
- a need to be able to demonstrate a transparent process;
- a need to demonstrate economic efficiency by the use of whole life cost principles, and
- a need to become part of the broader United Kingdom Pavement Management System (UKPMS) as it comes on stream.

6.30. Traditional maintenance programmes have tended to give higher priority to the needs of the carriageway rather than the footway. To encourage safe walking it is essential that proper consideration is given to the needs of footways and their associated lighting, signing and removal of obstructions. Inadequate maintenance is often a deterrent to walking, and certainly results in increased compensation claims and accident costs to the walking public.

6.31. It would not be appropriate to recommend a division of funds between footway and carriageway maintenance, since each authority's needs are different. Accidents due to poor condition of the footway, however, usually result in personal and painful experiences for the walker and this may lead to absence from work with associated financial and overall economic consequences.

6.32. Preventative maintenance works are more cost effective in the longer term than reactive, remedial maintenance. The ability to demonstrate the level of need by rational inspection and intervention regimes, and the use of economic arguments, will help to address the issue of priorities. The allocation of a specified proportion of footway maintenance funds to remedial works such as slurry sealing, footway dressing, crack sealing, light patching, slab replacement will help to achieve the required balance between reactive and remedial/preventative maintenance expenditure. The effect of such decisions must be closely monitored and appropriate adjustments made in the light of experience. Such action is recommended where required remedial treatment can be slightly delayed without endangering public safety.

Routine Maintenance Work

6.33. Routine maintenance activities affecting footways include the essential tasks of sweeping, cleaning, gully emptying, removing obstructions, repairing street lights, painting steel street lighting columns, refreshing any markings on the footway, tree maintenance, grass verge cutting, amenity maintenance of landscaped areas, "siding" to rural footways (trimming back verges). Routine potholing and patching and slab renewals to prevent further major deterioration occurring are also cost effective measures that increase the quality of the footway.

6.34. A significant deterrent to walking is the poor condition of footways, perhaps with dangerous potholes and paving, tree root damage, overhanging branches and poor standard of street cleaning together with unsightly amenity areas. For this reason, routine maintenance operations are important and require proper planning.

Footway obstructions – legal and illegal.
Courtesy: Ove Arup/David Davies.

Well–positioned street furniture maximises the usable space for pedestrians. *Courtesy: Ove Arup/David Davies.*

6.35. The frequencies of routine maintenance will depend on the nature and extent of the pedestrian network. The following is recommended:

Street and footway lighting

6.36. The inspection system for footway lighting will be part of that for carriageway lighting, except where footways are remote from the carriageway (perhaps jointly with cycleways). The LAA Code (1989) recommends a scouting frequency of two weekly in winter and four weekly in

summer. Reported outages should be repaired before the next inspection cycle. The proportion of street lights (including those which illuminate the footway) not working as planned is a national best value performance indicator. Local highway authorities keep and publish records of this aspect of the maintenance service.

Routine potholing and paving repairs

6.37. Based on programmes resulting from the safety inspection regime outlined in Table 6.1 and the warning levels for remedial treatment described in Table 6.2. The information given in these tables is illustrative of good practice – individual authorities will have their own inspection and reaction parameters. Wherever possible repairs should be carried out in similar materials to the surroundings materials to enhance the visual impact of the footway scene.

Damaged footways are a major source of injury.
Courtesy: The Pedestrians Association.

Drainage

6.38. Standing water at the edge of the carriageway presents a real threat to pedestrians of drenching spray from passing vehicles. Gullies should be cleaned when they become blocked and fail to discharge highway water effectively. Many authorities clean gullies routinely once a year as part of the planned maintenance programme. This should be supplemented by additional cleaning of those gullies that become blocked. Kerb offlets and connections should be cleaned as often as is necessary to ensure efficient working.

Sweeping/cleansing

6.39. This programme should be tied into sweeping frequencies required under the Environmental Protection Act 1990 and associated Code of Practice on litter and refuse (DETR, 1999c). The Code describes an outcome specification for the degree of cleanliness for different types of land (including highways) within different areas. Appropriate cleansing authorities (Unitary Councils, and District Councils in England where a two–tier system of local government prevails) set sweeping, cleansing and inspection standards to achieve the desired standards. An example of the specification would be a town centre pedestrian street where there was widespread litter and refuse should be cleaned to the extent that there was no litter or refuse within three hours.

6.40. A particularly annoying feature encountered on footways is “dog dirt”. This is regarded as refuse, and so its removal comes within the scope of the Code of Practice on litter and refuse.

6.41. Fallen leaves can be problematic for pedestrians, especially in wet weather when they “mulch” and create a slippery surface. In areas where this is known to create difficulties, the leaves should be swept and removed.

Removal of obstructions

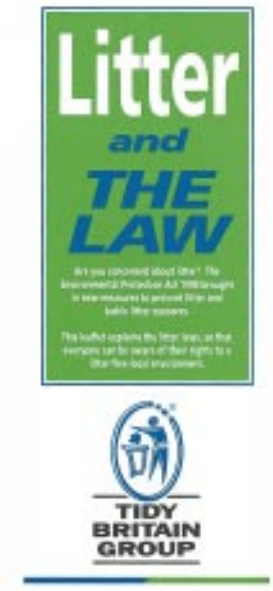
6.42. Shops, garages and other retail outlets sometimes find it advantageous to advertise their products by placing signs and goods on the footway, usually in urban areas. This reduces the

effective width of the footway – which may not be generous from the outset, having regard to the groups of pedestrians who seek to use it in reasonable comfort.

6.43. The footway is part of the highway. It is valuable space for the movement and interaction between people. The footway is not a place where unauthorised advertising and trading should occur. Such activities contravene the Highway Act 1980.

6.44. Illegal advertising material (often in the shape of "A" boards) and trading activities on the footway should be removed where this interferes with the safe or convenient movement of pedestrians. This action should be part of the footway inspection process, and should also respond to justified complaints.

6.45. It is difficult for local authorities to be seen to act consistently, comprehensively and fairly when removing obstructions from the highway. But if walking is to be encouraged as a means of travel and of recreation, then pedestrians need and deserve good facilities. These will rely heavily on the existing network of footways. Much of this network is not of a high quality and the service level should not be eroded further by illegal use of footways where this appreciably inconveniences pedestrian movement.



Tidy Britain.

Footway Repair

6.46. A comprehensive description of the most common types of footway defects associated with different construction materials can be found in *Footways Design and Maintenance Guide* (Transport Research Laboratory, 1997). The guide outlines the likely causes of the defects, alternative treatment techniques and materials. Interested readers are recommended to familiarise themselves with the report.


Hedges and trees make walks more enjoyable but should not be allowed to obstruct the footway. *Courtesy: David Davies.*

6.47. The treatments dealt with in the TRL report are:

Bituminous footways

surface patching,
inlaid patching,
surface dressing,
slurry surfacing,
basecourse replacement,
recycling.

Modular footways

lifting and relaying flags and pavers,
relaying setts and decorative surfaces,
joint repair,
retexturing.

Concrete footways

ramping, grinding and scabbing,
joint repair,
retexturing.

6.48. The *Highway Maintenance Handbook* (Atkinson, 1997) is also a valuable source of detailed information on the defects associated with different types of footway construction, and the specification of remedial works.

Winter Maintenance

6.49. Winter maintenance is one of the more difficult areas of footway maintenance to consider due to the large areas involved, the variation of use by pedestrians, the cost of treatment, and extensive manual resource or special machinery required.

6.50. If walking is to be encouraged, however, proper attention must be given to providing safe footways and a higher priority given to footway winter maintenance. With the move towards user consultation and the attempt to provide continuous service improvement, highway authorities may wish to give further consideration to the inclusion, or extension, of footways in their pre–icing preventative treatment plans.

6.51. Consideration within winter maintenance plans should be given to the following aspects of footway treatments:

- using the footway hierarchy to specify a priory network for treatment;
- availability of resources (both manual and mechanical);
- pans for pre–icing treatment, post–icing treatment and snow clearing, and
- response times.

6.52. Pre–salting and/or post–salting is the most widely used preventative treatment in icy conditions, but requires "trafficking" to activate the salt action. Concentrating such treatment at pedestrian complexes, shopping areas adjacent to hospitals, safe routes to school, steeper gradients, will give best value. Pre–salting work can damage areas of soft landscaping, and the use of proprietary de–icing materials and equipment might be applicable in certain circumstances, despite the considerable cost.

6.53. Mechanical spreading of the salt will give better more uniform results and reduce salt usage and is therefore recommended in high risk critical areas.

6.54. Grit can also be used to provide a better anti–slip surface. Its use is recommended in high priority areas. Small size grit (3mm dust) is recommended to give less discomfort to pedestrians. Attention must be paid to after–care sweeping, when the grit is no longer required, to reduce nuisance and improve cleanliness, although this can be costly. Attention must also be paid to possible silting of gullies.

6.55. In times of prolonged snow coverage, footway snow clearance becomes essential and winter maintenance plans should recognise and include such treatment.

Utilities work – NRSWA

6.56. Work undertaken by utilities (gas, telecommunications, electricity, cable, water and drainage companies) fall within the legislative requirements of the New Roads and Street Works Act (NRSWA) 1991. There remains some concern that the Act itself and its operation do not fully take account of pedestrian and footway issues. For example, the categorisation of roads based on traffic usage does not necessarily reflect the relative (perhaps different) priorities of use of the footways on those roads.

6.57. The engineer responsible for road works should therefore take account of pedestrian usage and influence their categorisation accordingly – enabling working requirements and responses to be controlled relative to footway usage importance. In some areas local Highway Authority and Utility Companies (HAUC) groups have agreed to promote a 'Considerate Contractor' policy where special attention is given to works carried out within the walking surface.

6.58. Good signing and protection of works is of paramount importance. This requires:

- adequate advance warning;
- allowance for the use of footway facilities by visually impaired pedestrians and protection accordingly;
- if footways are to be closed or suffer major disruption, alternative routes must be provided, clearly marked and maintained during the duration of the works;
- the *Code of Practice for Signing at Road and Street Works* requirements should be followed at all times (DOT, 1991);
- remedial work to reinstate the footway to its original state should be undertaken as soon as possible, and
- all signs and works equipment must be removed as soon as possible.

6.59. The co–ordination of New Roads and Street Works Act activities during planning meetings and programme agreement should take account of the need for minimum disruption to pedestrian movements and the provision of safe pedestrian routes. Similarly, supervision/inspection by both the contractor and the authority representatives should always place safe pedestrian passage as a high priority.

6.60. Regular liaison meetings should have a separate item dealing with pedestrian requirements to emphasise the constant consideration of pedestrian needs. Additionally, each major item of work should consider all associated pedestrian requirements.

6.61. The highway authority engineer responsible for the road and footway has the power and the duty to ensure safe use for all road–users. If dangerous, notified works are not remedied quickly by the Utility involved, the engineer has the power to make the site safe and charge costs accordingly. Such action should not be required if proper co–operation and co–ordination between parties is developed.

Personal Injury Accidents

6.62. Accurate and detailed statistics are difficult to get hold of because of the confidential information surrounding the problem of pedestrians tripping or falling on the footway and causing injury to themselves. Footway falls are not recorded by the police and therefore do not appear in conventional (STATS19) road accident statistics. A survey covering 158 Highway Authorities found that between 1994 and 1995 there were some 25,000 recorded claims. Previous work by the National Consumers Council (1987) found that there might well be around 250,000 accidents – not all of which include personal injuries – caused by tripping/falling incidents on the walking surface.

6.63. The available information can, however, be set against an estimate by the British Insurance Association that the total (economic) cost of personal injury accident claims on the footway is of the order of £500m per year. When this is viewed against the typical annual spend on footway maintenance of £250m, it adds to the case for making more funding available for footway maintenance.

6.64. When a user has fallen on the walking surface there can be a series of reasons/factors, some of which are:

- random occurrence;
- ambulatory capabilities;
- surface type;
- pedestrian flow, and
- surface condition.

6.65. Claims for damages from incidents arising from alleged footway neglect, are increasing for reasons which include the progressive deterioration of footway conditions and an increasing resort to litigation by the public.

6.66. It is essential that the highway engineer works closely with the insurance company (if used by the authority) when responding to claims. Inspections and actions in dealing with such claims should be fully agreed with the insurance company and advice taken in all dealings. Additionally the engineer should be sympathetic and helpful to the claimant; keeping them up to date with progress in assessing the claim.

6.67. When investigating a claim for personal injury, the following factors are relevant:

- inspection frequency and dates of inspections;
- appropriate standards adopted by the authority;
- records of inspections, decisions and actions taken;
- seek agreement of all parties about the site of the incident and factual conditions (photograph records are useful);
- establish the likely reasons for the incident and explain how that judgement has been determined – specialist advice might be needed;
- establish liability for the incident;
- keep good records; and
- monitor the incidence, location and settlement of claims.

6.68. In some cases accidents may occur on a footway which are the result of defective or ill aligned utility apparatus. In such cases it is normal for the highway authority to refer the claim to the relevant statutory undertaker.

Documents from the Highway Authority for a period of 12 months prior to the accident to be provided:
1. Records of inspection for the relevant stretch of highway.
2. Maintenance records including records of independent contractors working in the relevant area.
3. Records of the minutes of Highway Authority meetings where maintenance or repair policy has been discussed or decided.
4. Records of complaints about the state of the highways.
5. Records of other accidents, which have occurred on the relevant stretch of highway.

Table 6.5: Possible disclosure list for pedestrian falls claims.

6.69. As a result of the Woolf Report, Civil Procedure Rules governing all litigation came into force in April 1999. These have a significant impact on highway authorities since there is now a requirement to have clear robust systems, which are capable of producing the defined data within the defined time–scale.

6.70. The provisions of the new rules are as follows:

1. Claim lodged with Highway Authority.
2. Highway Authority (or Insurer) must acknowledge receipt within 21 days, otherwise the claimant can issue proceedings.
3. Highway Authority (or Insurer) must accept or reject the claim within 90 days of acknowledging receipt of the claim.
4. If the claim is rejected a copy of all the relevant documents / records must be supplied with the rejection notice.

6.71. The typical list of information to be supplied in the event of a claim being rejected is shown in table 6.5:

6.72. The two most important aspects to focus upon for highway authority engineers attempting to provide a safer pedestrian infrastructure and to mitigate risk to themselves or their employers, are:

- conformity to clear standards and good working practices which have been determined locally or nationally; important aspects of which should have been approved by elected members. In a best value environment, there may well have been public involvement in the determination of local standards. Where these differ from any pertinent national standards or guidance then the reasons for the difference should be clear.
- provision of records detailing inspection regimes, remedial measures and claim handling.

Footway parking should be tackled through a combination of education, enforcement and physical measures. *Courtesy: David Davies.*

How to Make a Complaint and Obtain Advice

6.73. This section examines some common problems experienced by pedestrians and recommends how members of the public might complain and obtain information and advice. Many local authorities have well documented complaint procedures and publish standards that the public can expect to receive when making a complaint.

6.74. As part of a package of comprehensive measures to provide customer care, highway authorities should consider using well–publicised freephone telephone lines for reporting highway (not just footway) defects. The "Clarence" hotline in Edinburgh and Northamptonshire is an example. Typically the telephone number would be displayed in the highway, perhaps on street lighting columns and traffic sign–posts. The number would also be publicised widely in specific literature and on letterheads. The small number of Authorities who use this approach with highways related problems suggest that it is successful.

Clarence card. *Courtesy: Northamtonshire County Council.*

Chevron parking tends to lead to vehicles overhanging the footway. *Courtesy: Ove Arup/David Davies.*

Problem or Feature	Legislation	Remedy
Complaint about maintenance standard	Highways Act 1980 s.56	User initially complains to highway authority (HA) but can pursue case to Magistrates Court. Magistrate must consider overall issues.
Driving on footway	Highways Act 1980 s.72	Complain to Police. Ask HA to install street furniture to discourage it.
Obstruction on footway	Highways Act 1980 s. 137, 169, 171, 172, 175	Complain to HA. A range of provisions under the Highways Act deal with obstructions.
New or wider footways	Highways Act 1980 s.66	Apply to HA. Ultimate decision rests with the HA
Dog Fouling Act 1996	Dogs (Fouling of land)	Complain to HA, who have powers to issue fines. Becoming more widely regarded as anti–social behaviour and easier to pursue the owners as being irresponsible
Street Cleaning	Environmental Protection Act 1990	Complain to Cleansing Department
Abandoned cars	Control of Pollution Act 1974	Notify Police
Cycling on footways	Highways Act 1835 s.72	Complain to Police, powers exist to fine anybody over 16 years of age
Parking on footway	Various including Highways Act 1835 s.72, Road Traffic Act 1988 s 191.	Complain to Police. Ask HA to install street furniture to discourage it.

Table 6.6: Some common problems and how to pursue them.

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7. Promoting Walking

This chapter explains the main principles of marketing theory as it applies to travel behaviour. It outlines the opportunities to promote walking for specific journey purposes, notably as part of work and school Travel Plans and health and leisure initiatives.

The Principles of Marketing

7.1. There are various ways in which walking can be actively promoted, in addition to making physical changes to walking infrastructure and ensuring that walking is appropriately prioritised in transport policy formulation. "Softer" measures, like advertising campaigns, can play a critical role in making people think about why they might choose to walk more, and encouraging them to do so. They can also be relatively quick and cost–effective to introduce.

7.2. To promote or "market" walking via softer measures, it is usually necessary to develop both specific initiatives, and a general strategy to provide an overall framework for activities. Promotion is usually most effective when:

- It occurs in conjunction with real changes to people's travel options, which improve the walking environment, reduce the dominance of traffic or reduce the attractiveness of travelling in other ways.
- It involves a dialogue with those it aims to affect, who are encouraged to take ownership of any new initiatives.
- It is treated as a long–term process.

7.3. Sustainable transport marketing has a relatively short history in the UK, although there are now more than 80 local authorities, who work together under the "TravelWise" banner. Local authorities who join TravelWise have access to shared resources and information, and a "TravelWise" logo is used to provide standardised branding during campaigns. Information on successful transport marketing campaigns from across Europe is also now available from two European research projects (Hamer, 1998; and Papaioannou, 1999).

7.4. When developing successful social marketing strategies, there are various principles from commercial marketing that can be usefully applied. In brief, developing a marketing strategy can be considered as a six–stage process, which is described below.

Stage 1: Be clear about what you want to achieve

7.5. Any attempt to promote walking needs to start with a clear rationale. This will involve defining overall aims (the general things to be achieved) and some clear objectives (specific, realistic, measurable, date–specific targets that make it possible to judge whether the aims are being met). Objectives may relate to both desirable changes in behaviour (eg. the proportion of trips to be made on foot in a certain area by a certain date) and desirable improvements in the quality of walking infrastructure that is provided (eg, the length of high quality walking route to be in place by a certain time).

Stage2: Be clear about who you are communicating with

7.6. To be effective, any marketing campaign needs to be clear who it aims to influence. This will involve defining "market segments", who share similar characteristics – pedestrians are not homogenous. Finer categorisations are usually more useful. For example, it will be more effective to design a strategy aimed at 7–11 year old girls living within two miles of a school, as opposed to one which tries to influence all school children. As much information on each segment as possible should be obtained. Characteristics such as age, sex, occupation, access to

To market Britain as a walking destination abroad, the British Tourist Authority has developed a database called PROFIT, which is used to identify specific international market segments. Each of these segments is defined by a range of characteristics relevant to the leisure market, including, for example:

household type; purpose of visit; average length of stay; average spend per visit; main season(s) of travel; attitude to Britain; knowledge of English; average size of group; media preferences; inbound and outbound transport used; modes of internal transport used; average prices paid for accommodation; accommodation type used; preferred art/music/culture; preferred heritage attractions; preferred sporting attractions; preferred eating options; preferred leisure attractions.

Specific marketing strategies are then developed which are tailored for different groups.

The Use of Market Segmentation by the British Tourist Authority. Box 7.1.

a car, household type, home location, activity location, journey purpose, ethnicity and physical fitness might be used as the primary characteristics for defining appropriate segments. Box 7.1 gives an example of the use of market segmentation methodology.

Stage 3: Decide on priorities and refine objectives

7.7. Having identified the different potential market segments (eg, non–working female shoppers over 50, with poor health etc.), the next stage is to decide on priorities. Priorities are determined by:

- the importance of encouraging walking amongst a particular group for a particular activity, and
- the ease of doing so.

What counts as "important" will depend on the aims and objectives of the strategy. An initial assessment of the 'ease' of encouraging walking can usually be made on journey length. (Chapter 1 provides more information on which journeys are likely to be the shortest). Once priorities are defined, it will usually be necessary to set some additional objectives that relate specifically to desirable changes in the behaviour of the target group.

Stage 4: Research values, perceptions and expectations

7.8. For each market segment, it will be important to identify what they perceive to be important in their travel choices, the advantages of other modes, and the deterrents to walking. This will help when designing materials. For example, in Devon, research suggested that many tourists were unwilling to walk because they were scared of confrontation with a farmer, being bitten by an animal and felt they lacked the appropriate footwear, rucksacks, etc. Consequently, information leaflets now include pictures of a smiling farmer, someone patting a horse and walkers with minimalist gear. Alternatively, work on the PACE project (Promoting Access in Croydon for Everyone) has examined strategies for encouraging walking amongst different ethnic groups, and highlighted, for example, that older Southern Asian women, Muslim women of all ages and older Muslim men would welcome the opportunity to participate in single–sex group walks, led by someone of the same gender, which would need to be advertised in appropriate languages.

Stage 5: Develop a strategy for each market segment

7.9. A strategy should be designed to target each market segment. There are two things to consider.

7.10. Firstly, people will be at different stages of awareness, information and behaviour regarding walking. These can be classified as the Five As:

- Awareness of a problem, leading to
- Acceptance of the need for change, leading to new
- Attitudes towards alternative modes, leading to
- Action, and then
- Assimilation, as new behaviours become habits.

Groups at different stages of the process require different kinds of information. For example, the London Walking Forum, which aims to promote walking in London, is targeting people at these different stages of the communications lifecycle. Some of their activities, including leaflets, a video and a website, are aimed at initial awareness raising of traffic problems and the benefits of walking. For those people who are already persuaded of the value of walking, and who are moving towards "action" the Forum is promoting walks for "beginners". These are well–signed routes with high quality surfacing and bright user–friendly guides that contain detailed information about the location of telephones, toilets, pubs etc. Meanwhile, for more "assimilated" walkers, who may not require such detailed information, simpler guides to less "user–friendly" routes are available, which extend the range of walking options available to them. (Some groups, like the disabled, obviously have particular information needs.)

7.11. Secondly, any product has to be sellable and offered in an appropriate way. (In marketing it is common to refer to the Four Ps – **Price, Product, Place, Promotion,** and the Five Ws – **Who says What to Whom, When and through What channel,** to define the various elements that are important in a campaign). Detailed information on the likes and dislikes of the target market segment should help to identify the best medium and design to be used to "sell" a particular walking offer. For example, distributing leaflets to libraries and sports centres will be ineffective if the market segment is not great readers or sporty people. Box 7.2 gives an example of an effective design used to encourage school bus travel by teenagers. In general, the more times and ways a market segment is exposed to appropriate information and advertising, the better. Materials designed to be retained in the home or workplace (eg, mugs, computer mouse–mats, tea–towels etc) can sometimes provide useful reinforcement of a message.

Box 7.2 Different designs appeal to different market segments.

With permission from 20th Century Fox, Hertfordshire County Council recently repackaged a bus timetable and map in a leaflet designed in the style of the X files, using slogans like "the bus is out there". The number of leaflets that were picked up was far higher than in previous years.

7.12. In some situations, it may be appropriate to target a particular group through some aspect of their lifestyle. For example, the Health Education Authority ran adverts featuring a small dog, and the slogan "personal trainer" to encourage dog walkers to take more exercise. Local authorities could market particular routes (with appropriate facilities) at target groups with high dog ownership, which could encourage them to walk more, as well as reducing the amount of dog fouling on the pavements – a key factor deterring others from walking.

7.13. There has also been some success with personalised marketing campaigns, such as "travel blending", where individuals who are interested in changing their travel behaviour are given specific information about their travel options. This could include information on the walking possibilities in their locality.

Stage 6: Monitor for effectiveness and to determine future priorities

7.14. Finally, any marketing strategy should be monitored for effectiveness and to inform future planning. This issue is discussed further in Chapter 8.

7.15. Overall, the process for developing a strategy for promoting walking is summarised in Box 7.3.

Box 7.3.

The Elements of Marketing

Positive messages

7.16. In general, as well as being carefully tailored to the particular target group, messages promoting walking need to be simple and easy to understand. They need to be credible. For example, most people would simply dismiss a reference to "a short five mile walk to work". Campaigns are also most effective when they are positive and fun. Memorable branding and catchy slogans help to raise the profile of an initiative. The images used to accompany a campaign also need to be positive, and it is important to avoid overloading campaigns with road safety messages or giving the impression that walking requires specialist equipment or experience.

7.17. Research suggests there are various perceived benefits from walking which local authorities may wish to structure their campaigns around, stressing the elements most appropriate to the intended audience. These include:

- It is free (unlike other forms of transport) and does not contribute to environmental problems;
- It can provide a relaxing break "in the fresh air";
- It is healthy, and provides exercise;
- It can be a chance to meet and spend time with other people;
- It can provide a way of seeing interesting things in the neighbourhood;
- It is a way of getting somewhere, and
- It can provide an alternative to the stress and hassle of traffic jams and parking problems.

7.18. Promoting walking on health grounds has received increasing attention in recent years, with GPs starting to "prescribe" health walks, networks of walks being developed which focus around GP surgeries etc. Guidelines on promoting walking for health are now available (British Heart Foundation and Countryside Agency, 1999).

7.19. There is some evidence that encouraging people to attend health walks makes them walk more in their daily lives. Moreover, health messages can be used as a way of motivating people to walk for more utilitarian journey purposes. Campaigns can highlight that walking is one of the easiest forms of exercise to fit into a daily routine, and does not require any special equipment. Experience in the health context also suggests that campaigns are more successful if they clearly promote walking as a way of "getting fit" or "being healthy", rather than the more didactic "because it is good for you". Box 7.4 provides some specific benefits that can be quoted. As a general rule, the "healthiest" walking is defined as that which makes you breathe a little faster but doesn't stop you from talking.

The Health Benefits of Walking.

Cardiovascular gains

Regular walking can

- halve the risk of coronary heart disease
- cut the risk of having a stroke by two–thirds
- reduce high blood pressure by as much as 10mmHg

Weight control

- walking one mile can burn up at least 100kcal
- walking two miles a day, three times a week can reduce weight by one pound every three weeks, and the same amount of uphill walking can reduce weight by 14 pounds in three to four months

Benefits for older people

Regular walking has been shown to

- halve mortality in retired men who walk more than two miles every day
- reduce hip fractures in over 45s by up to 50%
- help prevent falls and alleviate the pain of osteoarthritis of the knee
- lessen the chances of developing Alzheimer's disease and Type II diabetes

Other health benefits from walking

- reduced risk of colon or bowel cancer
- reduced anxiety and depression
- increased confidence, stamina and energy levels.

Source: British Heart Foundation and Countryside Agency, 1999.

Box 7.4.

7.20. Work on health walks has also highlighted that one of the strongest motivations for walking may be the opportunity to meet and socialise with other people. Hence, for example, guided walks often attract more people when they include a "coffee stop" at the end, for people to spend time with those they have met on the walk. Matching up walking partners, who can then make their own, informal arrangements, can also be successful. Specific opportunities to encourage "shared" walking for utilitarian purposes are discussed in relation to journey purpose in the next section.

7.21. Walking as a way of getting to know the neighbourhood may also be a highly valued benefit. The car industry has clearly demonstrated the importance of *en–route* entertainment for the most mundane of journey purposes, and as far as possible, local authorities should aim to develop routes which are interesting and attractive. (However, there is also a need to ensure that routes serve a purpose, since attractive routes that do not take people where they want to go are unlikely to be well used.)

7.22. Finally, walking may be valued when it provides the most convenient means to getting somewhere else, including a public transport stop. For example, work by the Lee Valley Regional Park Authority is looking at ways of linking the Lee Valley Walk with nearby train stations, as described below.

The Lee Valley Regional Park Authority has been working with Railtrack and the local train operators to link the 50 mile Lee Valley Walk with 14 nearby train stations. Activities include:

- marking the walk on local maps in the stations
- posters and leaflets in the stations
- signs to the walk in the stations
- route–markers set in the pavements
- "way–marker" signposts.

The pavement route markers and the way–marker signs have been distinctively designed, using stainless steel and a form of vandal–proof reconstituted stone. It is hoped that the steel will reflect the ambient colours and the stone will blend in with the surrounding landscape. The Lea Valley swan will provide standardised branding throughout the route.

Linking Walking and Public Transport.
Courtesy: Lee Valley Regional Park Authority.

Incentives

7.23. There are various incentives that can be used to encourage people to walk more. They include:

- Individual health checks, or gadgets which enable people to monitor their own health (see British Heart Foundation and Countryside Agency 1999);
- Free T–shirts, trainers, prizes, shop discounts, certificates etc, for those who walk a certain distance or for a certain number of journeys, and
- Specific financial incentives, such as walking expenses or an extra day off. Examples of companies offering staff money to walk are illustrated in Box 7.5.

7.24. All marketing should aim to involve the target group in the campaign development, so that, as far as possible, "opinion leaders" feel the scheme is their personal responsibility and have a personal stake in its success.

- The Belgian company Ecover pays expenses of 15 francs/km for those who travel to work by walking and cycling compared to 5 francs for those who commute by car.
- At a business complex owned by Bellevue City Hall in Washington State, US, staff who drive alone pay $35 to park, those who car–share at least 60% of the time park free, and those who use alternatives to the car at least 80% of the time receive a subsidy of $15 a month. Consequently, 40% of staff use alternative transport.
- At the Mercy San Juan Hospital in California, employees receive a point for every day they use an alternative travel mode to driving in alone. Points then become numbers in a monthly draw for prizes of up to $200 in cash. Car use dropped by six percent in the first year.

Financial incentives to encourage walking to work. Box 7.5.

Overcoming perceived barriers

7.25. As well as emphasising the benefits of walking and providing incentives, local authorities may also need to overcome many perceived barriers. This will often involve trying to replace negative thoughts eg, "I'll take the car – it's quicker" with positive thoughts "I'll walk – it will make me fitter". Table 7.1 provides some common "anti–walking" arguments from both the public and those responsible for transport within organisations, and some potential counter–arguments that can be used. Some practical measures are also listed, whose introduction can be used as a focus point for promoting walking more generally.

7.26. A complementary approach is to concentrate on promoting a strongly positive image of walking. The London Walking Forum video is an example of trying to make people feel good about walking, using an enjoyable, non–didactic approach. See box 7.6.

"Walking: that's what we do"

With European LIFE funding, the London Walking Forum produced a video to promote walking in London. The "Walking: that's what we do" video relies on strong positive visual images, music and lyrics to project a "feel good" message about walking. It has no narrative and avoids direct transport or environmental messages. The video has won an International Visual Communications award. It was shown on all United Airlines flights into the UK in June 1998.

Box 7.6.

Argument	*Counter argument/measure*
It is unsafe	Statistics on the degree of risk may provide some reassurance. Specifically, in the last ten years: – there has been no increase in the risks to children from strangers. – there has been a 10% reduction in pedestrian casualties per kilometre walked Better street lighting, more security cameras, warden patrols and schemes which encourage people to walk together can help to practically overcome safety concerns.
It is unpleasant in bad weather	Even if people only walked in dry conditions, it would still make a difference to traffic levels and their personal health. For example, on average, in London, it is dry for over 60% of the time, and only 95 days a year see enough rain to be officially classified as "wet days"'. For children, occasional walks in bad weather may be fun, and an important part of their personal development, helping them to understand the world around them. Covered walkways can be introduced to provide shelter on short, busy routes.
It is too far/takes too long	People do not always know the most direct routes to their destination, or make realistic assessments about how far a walk is, or how long it will take. Information on signs can help, and marketing can be based around the development of more direct or "short–cut" routes onto a site. Improving the quality of routes has been shown to increase people's tolerance of distance by up to 50%. Walking can replace other fitness activities, leaving more time for other things. Walking ensures a reliable journey time, and "reserve" time does not have to be built in to cope with unexpected transport conditions. The provision of seating to allow people to "break up" the walk into shorter sections can be important, particularly for older people.
It is difficult to carry things	Schemes to free people from carrying things are discussed in relation to particular journey purposes in the next section.

Table 7.1: Overcoming perceived barriers to walking.

Walking and Schools

7.27. There are various measures which are particularly appropriate for those working to influence specific trip purposes. These will still need to be refined to suit particular market segments – as mentioned before, campaigns aimed at "all workers" or "all children" will be less effective than more focused initiatives. However, the next sections provide checklists of measures that could be considered and tailored for schemes aimed at more specific target groups.

7.28. Guidelines on promoting walking to school are available from the Pedestrians Association (1999). As part of working with schools, local authorities may wish to:

Encourage participation in Walk–to–School week and/or Walk–a–day–a–week schemes.

7.29. Information about Walk–to–School week can be obtained from Pedestrians Association and TravelWise. It takes place in June. Box 7.7 provides an example of some typical messages used to encourage parents to walk with their children.

Messages to parents.

Walking to school provides...

- Healthy exercise in the fresh air, helping your child to start school bright and alert.
- A chance to teach your child vital road safety skills;
- An opportunity to talk to your child and to your neighbours;
- A way of reducing air pollution and traffic;
- A way of saving money;
- A release from the hassle of driving and parking, and
- A chance to learn about the neighbourhood together, as you see and hear far more than in a car.

Box 7.7.

7.30. Walk–to–School week can be accompanied by classroom lessons on transport, and children who participate may be given badges, certificates, bookmarks, stickers etc. In particular, a five–day diary has been developed for younger children, which gives them an activity to do with their parent each day on the way to school. To monitor the progress of the whole school, displays can be effective. For example, in Kent, pupils are given a brown leaf if they come to school as a single passenger in a car, and a green leaf if they arrive by other means. These are stuck onto a symbolic tree to monitor school travel. To launch campaigns, some schools have encouraged children to wear fancy dress or traffic–light colours for the day.

7.31. These ideas can also be used in conjunction with other initiatives that aim to encourage walking by concentrating promotional efforts at particular times. For example, some schools nominate one day a week as "walking day", with associated activities.

7.32. All such initiatives can have significant short–term impact on raising the profile of walking. However, they need to form part of an overall strategy to promote walking throughout the year, with reinforcement from other activities, in order to have a longer–term effect.

Encourage classroom activities on transport issues

7.33. Numerous education materials for use in schools have been developed, and local authorities may wish to buy in to existing materials, rather than developing their own. Materials range from photocopy worksheets to CD Roms. Packs for younger children tend to focus on a general

discussion of the pros and cons of different forms of transport, the sensuous experience of walking (eg, what can you see/smell etc.) and the opportunities for learning about the neighbourhood. For older children, most materials have been aimed at geography lessons for 10–14 year olds, and often involve activities of a "planning for real" type nature. (See also Box 7.8.).

The use of theatre workshop.

The play "Something Beautiful", and a follow–up workshop, have been commissioned from the Box Clever Theatre Company by Hertfordshire County Council to raise awareness of transport issues amongst 13–14 year olds. The play focuses on the relationship between a (single) father and son, and the emotional issues involved in lift giving, the independence for the child offered by alternative modes etc. It has been highly rated by teachers and pupils.

Box 7.8.

Introduce pedestrian/traffic training

7.34. Teaching children to negotiate the streets may help to allay parental concerns about safety, although unaccompanied walking should only be promoted amongst children who are sufficiently competent. Equally, road safety training needs to avoid de–motivating children to walk by excessive focus on danger and responsibilities, and instead concentrate on the skills and expertise they are developing.

7.35. Pedestrian training is most effective when carried out on street. The primary responsibility to teach children safe road–craft lies with parents, but it can be supplemented by the school. Pedestrian training schemes can also be staffed by volunteers. The Kerbcraft project provides useful guidelines (Thomson 1996/7). Alternatively, local authorities may choose to send material directly to parents, as, for example, in Essex.

At Wheatfields Junior school in Hertfordshire, "The Wheatie "walking bus picks up 16 children over a ¾ mile route, supervised by a rota of four parents. Children are collected from five stops, including one lay–by where children from an out–lying village are dropped off by car. One volunteer parent walks at each end of the bus, and the children push a shopping trolley which carries their school bags. All involved wear fluorescent yellow bibs. Parents who "drive" the Walking Bus undergo a criminal record check, to reassure others in the scheme. Children involved get rewarded with "loyalty stickers" which are exchangeable for books.

The Walking Bus.

Box 7.9.

7.36. In general, local authorities should consider involving grandparents and members of the wider community, as well as parents and older siblings. Testing can help children feel they have achieved something, and their achievement can be recognised with some kind of 'Streetwise' certificate or pass.

7.37. As well as training children, drivers also need to be encouraged to have a positive view of pedestrians. They also need to be made more aware of their responsibilities, given that younger children are often unable to make realistic and comprehensive assessments of risks and danger.

Include transport issues in home–school contracts

7.38. Schools are required to have home–school contracts, agreed between parents and the school. They are an opportunity to include agreements about school travel, particularly that parents will aim not to drive their children to school, and that they will encourage them to walk more.

Encourage schools to have a "clearing time"

7.39. A 10–minute clearing time can be introduced, to allow children to leave the site on foot or by bicycle, before cars are allowed to enter to collect other children.

Develop one (or more) walking buses

7.40. Walking buses have been successful abroad and are now being introduced in the UK. Box 7.9 provides details of one such initiative. In other countries, developments like the Walking Bus have been facilitated by special infrastructure. For example, in Denmark, traffic lights can be held on "green" for longer than usual, by those who have keys to control boxes on the side.

Introduce "stranger–danger" training and encourage monitoring of danger spots

7.41. 'Stranger–danger' is often an important perceived barrier to walking to school. In response, training courses can be introduced for adults and children which teach personal safety and which involve the community in identifying particularly dangerous sections of the routes where action is needed. Parents can also be encouraged to set up informal rotas for monitoring bus stops and other danger spots. Such activities are currently being undertaken in Oxfordshire. Other areas, like Reading, have established safe bases along school routes, like libraries or shops, which are vetted to be places that children can go to if they feel threatened. Obviously, it is vital that safe havens and their occupants are vetted, trained and monitored appropriately.

Encourage parents to walk more

7.42. As part of a scheme organised by Wokingham District Council Countryside Service, morning health walks for parents have been introduced, which start from the school gates after parents have dropped their children at school. Participants have said that they value the experience to meet other parents, to become more confident and knowledgeable about the local neighbourhood, and that it will encourage them to walk to school more with their children in the future.

Encourage suggestions on route improvements from children and parents

7.43. Where funding and time is available to make improvements to walking routes, children and parents can be asked to suggest desirable changes. Participation can be encouraged via competitions (as in Surrey), questionnaires plus maps sent home from school and direct consultation exercises.

Facts about Walking and Shopping.

- A review of more than 20 years of pedestrianisation in Germany and the UK showed that, although there can be some problems during a transitional period of 1–2 years, well designed pedestrian schemes, coupled with improvements to public transport, increase retail turnover.
- In consumer preference surveys, respondents consider the overall quality of a shopping environment to be more important than car access or parking provision.
- Increases in pedestrian flows have been linked with increases in retail turnover.

Source: Carley and Donaldsons (1996).

Box 7.10.

Use S106 agreements and conditions of planning consent to encourage walking

7.44. The development control process can be used to ensure the school is designed with pedestrian priority, that lockers are provided for school equipment, and that the school takes a pro–active role in encouraging parents, children and staff to walk to the school. The effectiveness of using such measures is shown by the Royal School in Camden, where planning permission to increase the school roll was granted, on the condition that the school introduced measures to reduce traffic. By the second year, a 23% reduction in car trips had been achieved, (Pedestrians Association, 1999).

Walking and Shopping

7.45. When promoting walking for shopping, local authorities will need to sell the idea to both the public and the shopkeepers. Box 7.10 provides some facts which may prove useful when negotiating with commercial interests.

7.46. Guidelines on acceptable walking distances for shoppers are provided in Chapter 3 and urban design principles which encourage people to walk through, and linger in, city centre spaces are provided in Chapter 4.

7.47. To promote walking for shopping to the public, local authorities may also choose to use conditions of planning consent and Section 106 agreements to ensure that any new developments are located within their site to minimise walking distance from the likely access points; that good quality pedestrian routes are provided; and that retail interests take responsibility for the way that shoppers arrive at the development, setting targets for walking.

7.48. Shopkeepers should be encouraged to keep pavements free of clutter. The City of Worcester has a "Street Trading Display" policy which regulates what shops are allowed to display outside their premises, and enables the removal of any unacceptable obstructions.

7.49. Local authorities and retailers should provide information about any facilities for shopping storage or delivery, and work to develop new services. For example, Lakeside shopping centre now provides lockers where people can leave purchases for later collection, and some of the supermarkets are starting to provide services where you shop as normal and then the goods "follow you home". In German cities, the bus companies have collaborated to double up as transporters of luggage from a central "shoppers base" where people can leave all the goods purchased in a town centre for later delivery to their homes.

7.50. Local authorities, town centre managers and the local Chamber(s) of Commerce should cooperate to develop special events to attract people to walk into, and around a city. These

❍ In Southwark, a "Footpaths to Life" project has developed a walking route through Peckham town centre. As part of the project, a series of "public art events" have been created along the route, to encourage visitors to walk the entire length of the shopping centre. New light columns with banners designed by local school children also provide features (and lighting) along the route. "Gateway" features have been used to highlight entrances to the walk.

❍ To stimulate interest in walking, Croydon has started holding an annual Festival of Walking, which combines events promoting long distance walking with guided strolls for the less serious walker. In 1998, it was attended by over 300 people. A questionnaire survey suggested that the event had improved participants' perceptions of Croydon.

Encouraging Walking in a Town Centre.

Box 7.11.

could include the development of group health walks, which terminate in the town centre, or a guided tour around the shopping centre itself. In some instances, it may be appropriate to appoint a city centre representative or warden, to provide advice on walking routes, and to give people a greater sense of security. Two innovative approaches to attracting walkers are given in Box 7.11

Walking and Work

7.51. Travel Plan is the umbrella term for the numerous programmes which aim to influence staff travel to work, staff travel during the course of work, and visitor travel to the workplace. Following the recent White Paper on Integrated Transport, local authorities are recommended to lead by example in introducing their own travel plan and to set targets on travel plans in their local transport plans. They should also aim to encourage the widespread voluntary take–up of travel plans through partnership with business and the wider community.

7.52. Information and advice for businesses on how to introduce a travel plan and the advantages of doing are provided by Transport 2000 (1998). They point out that, in particular, healthier staff are likely to have less days of absenteeism and be more productive. Specific guidelines on the financial benefits for organisations, following the tax incentives for travel plans announced in the 1999 budget, are explained in DETR (1999).

7.53. Walking should receive significant attention in such plans. Walking will partly be encouraged by general measures introduced to discourage car–use, such as limiting parking provision and providing access to pool or hire cars for those who need to travel by car in the

course of work. Discussion of walking promotion in the for a which provide support and advice for those implementing travel plans should be encouraged. Other specific initiatives are given below and describe measures that local authorities may choose to adopt in their own plans, or that they may wish to encourage private industry to adopt. Clearly, their relevance will depend on the nature and location of the employer.

Use planning conditions and Section 106 agreements

7.54. New developments or extensions to existing developments should be built with good quality pedestrian facilities, and applications can be used as an opportunity to discuss travel plans more generally. Many local authorities have now successfully used Section 106 agreements to require travel plans as part of planning permission, often including improvements to pedestrian facilities. However, it is important that the promise of a travel plan is not used as a substitute for good design, and that measures are in place to ensure the developer fulfils the obligations of the agreement.

Carry out a site audit

7.55. The employer or local authority should carry out a site audit to identify changes required to signing and entrances, aimed at promoting the most direct routes. On large sites, good quality, conspicuous signs and large–scale maps identifying "you are here" are valuable to visitors. These need to be conveniently located for those arriving at the site on foot, as well as for those arriving by other means. It is important to provide information about the shortest routes. As part of an audit of staff travel to, and around, the site, it may be possible to identify new entrances which could provide shorter routes, or "unofficial" entrances which could be upgraded.

Adopt modal split targets

7.56. Walking should be explicitly identified in travel plan objectives and it may be appropriate to set modal split targets for walking. Walking targets can contribute to an overall objective. The Government's Advisory Committee on Business and the Environment recommends that, as a primary target, companies should aim for a 10% reduction in the total number of people commuting to and from work by car, alone.

Provide Publicity and Incentives

7.57. Walking should be included in any publicity aiming to encourage companies or employees to adopt new patterns of travel. Incentives may also be cost effective. Advertising a travel plan is important to its success, and needs to be carried out on an ongoing basis. Flyers with payslips, leaflets, posters on notice boards and in lifts, articles in staff newsletters, commuter breakfasts, and exhibition stands in the entrance hall and canteen areas can all help to inform people. Special events such as car–free days can also help to focus on walking, and publicity can link with national initiatives like Don't Choke Britain, Car Free Day and Green Transport Week in June. Moreover, incentives, particularly financial ones, can provide a powerful way of motivating staff (as discussed in Box 7.6).

Target new employees

7.58. New recruits and job applicants need to be made aware of the employers' views on non–motorised modes of transport. They should not get the impression that they need bring their car to work to "create the right impression". Relocation packages can also be altered to encourage employees to move closer to work. Organisations like Pfizer and Nottingham City Council have recently done so.

Promoting walking in conjunction with public transport.

In two areas of Nottingham, a package of measures was put in place to try and boost bus patronage. One part of the project aimed to reduce concerns about walking to bus stops. Measures included moving stops away from areas people feared, improving street lighting (particularly around shelters), and installing phones in shelters, to give people confidence that they could get help if needed. Each stop was also given a name chosen by the local community, to try and increase local ownership of the project. As a result of these measures (and others), there was a six to eight percent increase in bus patronage, with associated increases in walking.

Source: Crime Concern & Social Research Associates 1999.

Box 7.12.

Provide information for visitors

7.59. Information being sent to visitors, and information provided to employees when they travel in the course of business needs to include information on walking routes. This applies both to short local journeys and to the "ends" of longer journeys, to and from bus stops, train stations, taxi ranks, and cycle stands. It can be useful to provide clear maps with appropriate features marked, plus an indication of the distances involved.

7.60. Partnerships with public transport operators should also be sought, to improve walking routes to and from public transport stops. An example of good practice is given in Box 7.12.

Provide lockers and showers

7.61. Staff who walk to work may find lockers and sometimes showers useful, particularly where they are likely to encounter wet or muddy conditions. Joggers and cyclists, and staff taking exercise at lunchtimes will also make use of these facilities. Providing facilities for walkers indicates that the organisation values them and helps raise their status.

Set up "walk–share" schemes

7.62. Computer databases are often used to match up people who want to car share, whereby people fill in a questionnaire to indicate whether they are interested and the type of person they would choose to share with. Postcodes are then used, together with the questionnaire information, to identify suitable partners. Such schemes may also be appropriate to link up those who walk in, increasing the sociability of the journey, and providing security for those who feel concerned about walking home on dark evenings.

Extend "guaranteed ride home" schemes

7.63. Many organisations now provide a 'guaranteed ride home' for those who car–share, to allay fears of being stranded at work if there is an emergency at home or because of working late. It is also appropriate to provide such services to those who walk, who may experience similar problems.

Provide alternative transport for equipment

7.64. The need to carry work–related equipment can be one of the factors preventing employees from walking. In some circumstances, companies may be able to provide alternative transport for goods. For example, Danka UK now advocate that their central London service engineers use alternative means to the car. Engineers carry their own tool kit. If spare parts for machines are needed, they are biked direct to the client's premises from a central depot in Holborn. Similarly, at Portsmouth hospital, a minibus travels the four miles between two sites, and carries patient records and laboratory samples as well as staff. For some courier services, it may even be viable

to walk, and indeed, DHL in Dublin has recently replaced its delivery van fleet with a mobile office and a group of walking couriers.

Encourage walking to work as part of health initiatives

7.65. The Health Education Authority is running an initiative called "Health at Work in the NHS", and is promoting cycling and walking as part of this. They may be able to provide practical assistance to those encouraging walking to work at NHS facilities. Box 7.13 gives an example of other organisations who have promoted commuter walking in conjunction with health issues.

Healthy Commuting Schemes.

- The City of Worcester has worked with local health professionals on a programme called "Walk for Life". This aims to encourage people to recognise that fitness equals activity like walking, not merely sport. It has included the development and promotion of routes designed for people getting to work, with milepost markers showing distances covered, and encouragement for people to aim for daily/weekly distance/speed targets. The City is also encouraging people to "park–&–walk" from more distant car parks, highlighting that "good parking spots" are the readily available spaces further away, which give you a bit of exercise before getting into work.
- WH Smith & Sons (Tools) Ltd encourages walking at lunchtimes as part of a healthy lifestyles initiative run with advice from the City of Birmingham's "Well–being At Work" project. The company has created a riverside pathway on its Birmingham site and employees can check their fitness after taking a two kilometre walking test.
- Similar projects in Scandinavia have increased numbers walking to work.

Source: Transport 2000 (1998).

Box 7.13.

Walking for Pleasure

7.66. Walking is an important and increasingly popular leisure activity, particularly for ABC1 social groups, (Beioley, 1997). It is by far the most popular outdoor recreation pursuit, with over 40% of adults regularly taking part. Around 37% of outdoor day visit walks take place in urban areas, and most people walk close to home. Tourism and leisure policies at the national, regional and local level are increasingly seeking to encourage walking as an activity itself and as a sustainable means of accessing leisure facilities and tourist attractions.

7.67. Footpaths can serve both leisure and utilitarian markets and pedestrian networks in built environments should not be separated by function. Different types and levels of treatment which might be required for certain leisure routes (eg additional signage) should ideally form part of the overall walking strategy for an area. It may be possible to gain additional funding for footpath works through leisure and tourism sources. A range of guidance to help those providing and promoting leisure walks is available (London Walking Forum, 1999). In Scotland, the "Paths for All Partnership" provides an advice and support network for those interested in promoting all types of walking.

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8. Appraisal and Monitoring

This chapter advises on techniques to appraise walking schemes, which may be required for bidding, scheme selection or other purposes. It provides new advice on methods to monitor local walking activity, the quality of the walking infrastructure and the hallmarks of a pedestrian–friendly local authority. It takes account of Local Transport Plan requirements and public consultation.

The Need for Appraisal and Monitoring

8.1. Providing for walking is now a priority of transport policy. An increasing proportion of local transport funds is likely to be directed towards pedestrian-friendly schemes. This brings with it a greater need to ensure that the schemes (physical schemes and policy measures) are effective and properly prioritised. This chapter outlines the main requirements for appraisal and monitoring, and some of the methods available to local authorities and others. It also provides guidance on monitoring walking activity, the condition of the pedestrian environment and the overall performance of a local authority regarding walking.

8.2. Appraisal refers to various types of assessment undertaken prior to scheme implementation. The main reasons for appraisal are as follows:

- To demonstrate that schemes have been selected rationally and in accordance with the objectives
- To compare and prioritise scheme design options
- To compare and prioritise competing pedestrian schemes
- To compare pedestrian schemes with other local transport schemes
- To demonstrate that schemes represent value for money
- To comply with the requirements of the funding regime, in particular the local transport plan guidance.

8.3. It is probably not possible to find a single appraisal method which satisfies all these requirements and which is cheap and easy to operate. The level of sophistication of appraisal will depend on the value of the scheme: a low budget scheme will warrant only a simple assessment. Whatever method or methods are used, it is essential that they treat pedestrian schemes fairly and did not allow policy objectives to be obscured.

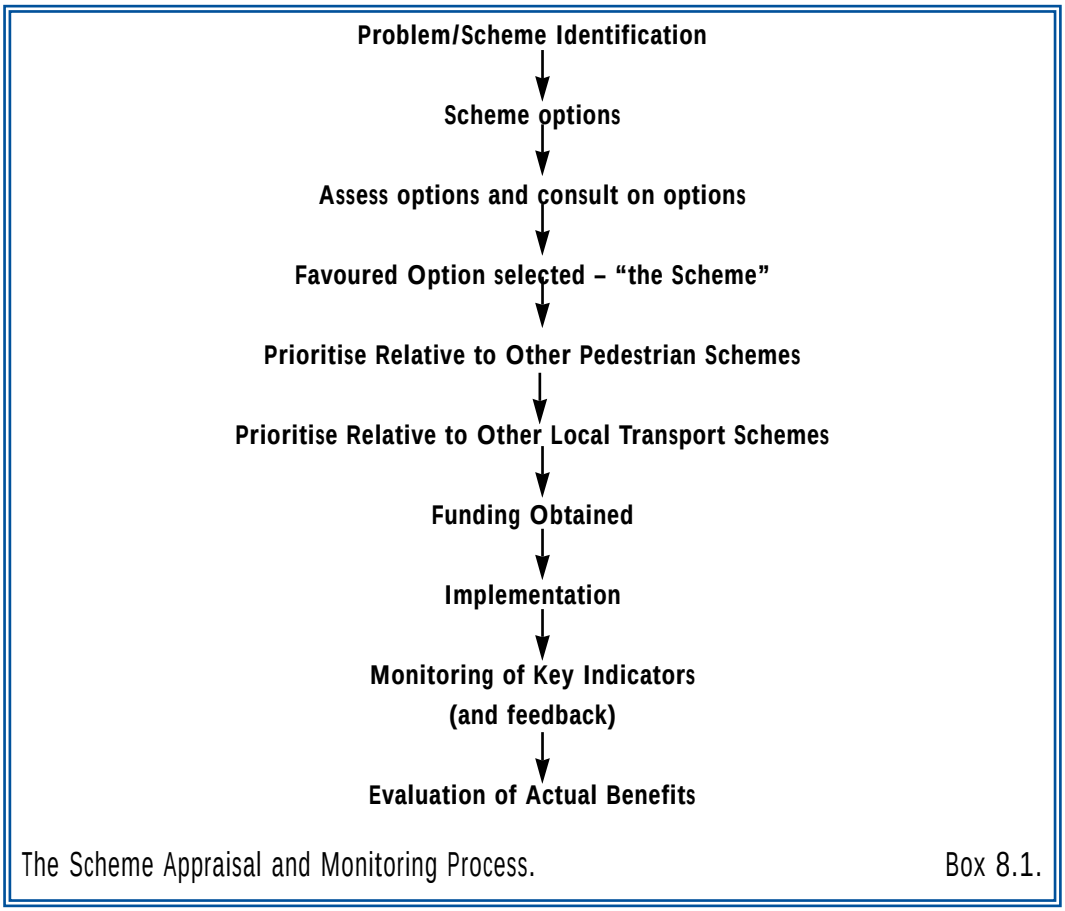
8.4. Monitoring refers to tracking and possibly evaluating events following scheme implementation. The main reasons for monitoring of schemes are:

- To measure the impacts of schemes
- To demonstrate, where appropriate, the effectiveness of schemes
- To enable adjustments to policies, strategies and designs
- To assess progress towards targets

8.5. Monitoring implies regular surveys undertaken on a consistent basis over a medium to long-term period. This contrasts with one-off snapshot surveys. In order to monitor the effects of schemes it is necessary to also monitor background trends at control sites, or to obtain these data from other (national) sources.

8.6. Appraisal and monitoring are important features of the local transport plan process and local authorities will want to ensure that their procedures are consistent with those recommended in *Guidance of Full Local Transport Plans* (DETR, 2000).

8.7. The stages of the appraisal and monitoring process are summarised in Box 8.1.



The Scheme Appraisal and Monitoring Process. Box 8.1.

Appraisal of Strategies and Schemes

Local Transport Plan Appraisal

8.8. Advice on a range of appraisal matters is provided by DETR in relation to local transport plans (DETR, 2000). Whilst most of this relates to the overall LTP and to major schemes (those costing over five million pounds), it is a useful starting point for appraisal of component strategies and schemes, including walking. It incorporates the Guidance on the Methodology for Multi–Modal Studies. There is new advice on how to appraise major public transport and highway schemes.

8.9. LTPs are required to include Appraisal Summary Tables which describe the major impacts of the overall LTP (and of any major scheme) against a list of specified criteria. The five main headings are:

- Environment
- Safety
- Economy
- Accessibility
- Integration.

8.10. Appraisal of individual schemes costing less than five million pounds is not required. There is no official guidance on how local authorities should appraise or prioritise "minor" schemes, which will include the majority of pedestrian schemes.

Public Consultation

8.11. Involving the public in developing the local transport plan is likely to result in schemes being suggested and possibly prioritised by the local community. The local authority will need to consider how to incorporate the views of the public into its procedures for appraisal of options and schemes. Increasingly, the standard public opinion survey is being superseded with more interactive forms of participation. See Chapter 3 for further details.

Elected Members

8.12. The relevant council committee will usually be asked to approve the method of scheme appraisal, the programme of schemes submitted in the LTP and the programme of schemes to be implemented once the funding has been obtained.

Priority Ranking System

8.13. Many local authorities have traditionally used some form of priority ranking systems to prioritise pedestrian schemes and other local transport schemes. Typically, these award points to schemes under a number of assessment criteria, often including factors such as the level of traffic, the number of pedestrians, number accidents, location (proximity to schools etc.) and the degree of benefit to the user that is likely to result. In some priority ranking systems, points are weighted according to policy priorities; in others the weighting is implicit in the points system. The total points awarded to each scheme can be divided by the cost of the scheme, producing an indication of the benefits to cost ratio.

8.14. Priority ranking systems are easier to devise, and produce more meaningful results, when they are used to compare similar types of scheme. When diverse types of schemes are assessed it is necessary to include criteria which may not be applicable to all schemes and this can produce nonsensical results. Objective assessment criteria, that can be readily quantified, such as pedestrian delays or flows, tend to be easier to incorporate into priority ranking systems. The number of assessment criteria should not be too large and the method should not be data hungry or the system will be unwieldy.

8.15. Assessment criteria are often a combination of

- severity of the problem
- degree of benefit predicted
- ease of implementation
- policy priority
- cost.

8.16. Under integrated transport priorities, it may be necessary to modify some of these assessment criteria to reflect new objectives, such as health, air quality, social inclusion, etc. Target beneficiaries may also be considered when determining priorities, such as school children or people with a mobility handicap. The real benefit of a priority ranking system may be that it can stimulate objective debate about the merits and effectiveness of schemes. The City of York Council has for some years operated a Priority Assessment Framework to prioritise its pedestrian schemes.

Cost–Benefit Analysis

8.17. It may be necessary to show that a proposal offers value for money. This will be particularly important for large schemes, such as pedestrianisation, a new bridge or improved transport interchange (see Box 8.2). Cost–benefit analysis can fulfil this function. Additionally, it has the advantage over priority ranking methods that, in principle, all types of scheme can be compared within one framework because many quantifiable costs and benefits are converted to a common unit, ie, money. Public transport bodies, such as London Transport, regularly use sophisticated cost–benefit analysis to appraise major investments and the value of pedestrian time savings is frequently crucial to justifying the investment. Cost–benefit analysis can also be

used to demonstrate the differences in value for money of different options. This issue is developed further in Value Engineering procedures (Highways Agency, 1996).

8.18. Where cost–benefit analysis is used the following standard values will be helpful:

- Working time for all modes (including pedestrians) is valued at £12.77 per hour at 1994 prices (inflated to £14.66 for 1999) (DOT, 1995).
- Non–working time spent walking, cycling or waiting is valued at £6.30 per hour at 1994 prices (inflated to £7.23 for 1999) (DOT, 1995). (This is double the value of non–work time for other modes.)
- The average cost per pedestrian road casualty was £53,190 at June 1998 prices (DETR, 1999a).

Stratford Station
The case for major improvements to Stratford Station in London, including relocating the entrance, was supported by the economic appraisal which showed substantial economic benefits from time savings to pedestrians as they walked to and from the station.

Costing the Benefits – Oxford Transport Package Appraisal
The original bid for the Oxford Transport Package was appraised using comprehensive cost –benefit analysis. Amongst the major benefits were an estimated £815,000 for reduced pedestrian delay, £3.8m for increased retail spend due to improved pedestrian access, and £17.7m for improved amenity (reduced pollution, noise, pedestrian intimidation, etc). (All figures per annum at 1992 prices.) The Oxford package has been funded by the DETR since 1994. Cornmarket has been fully pedestrianised and through traffic has been excluded from High Street.

Cost–Benefit Analysis and Walking. Box 8.2.

8.19. For large pedestrianisation schemes a comprehensive cost–benefit analysis may be appropriate. The economic effects of changes in levels of pedestrian activity should be considered. Increased footfall (the volume of pedestrians) can bring considerable benefits to traders and contribute to the regeneration of an area.

8.20. A drawback with cost–benefit analysis is that it can be difficult to quantify some items (notably indirect costs and some benefits, such as the health benefits from walking) and even more difficult to give them a monetary value. Those benefits that cannot be easily quantified should be included in the assessment framework as distinct items. A further problem is that it can be expensive to undertake properly. On the whole, cost–benefit analysis will not be appropriate for small pedestrian schemes.

Local Safety Scheme Appraisal

8.21. Local safety schemes are now integrated within the local transport plan and local safety scheme funding is no longer ring–fenced. The requirements for appraisal and monitoring of local safety schemes are set out in the guidance (DETR 1999). These concentrate on the number and type of casualties expected to be saved, and the costs of measures for each scheme. In drawing up its list of local safety schemes, a local authority is likely to want to include consideration of wider benefits, such as the impact on sustainable transport modes and quality of the local environment.

Goals Achievement Matrices

8.22. Goals achievement matrices are an established method for assessing strategies, schemes and options against multiple criteria, particularly policy goals. They can be applied with varying degrees of sophistication, with or without quantification. This makes them a more flexible tool

than priority ranking systems or cost–benefit analysis. However, they do not provide the same degree of (apparent) precision as these other methods. They are useful in helping to select schemes that meet policy objectives. They may also help to prioritise pedestrian schemes relative to other pedestrian schemes, and to comparing them with other types of local transport scheme. An example is provided in Appendix D. The Appraisal Summary Table required for LTPs (see above) is an example of a goals achievement matrix.

Monitoring Schemes

Monitoring schemes

8.23. Local authorities will need to monitor and evaluate the effects of at least some of the pedestrian schemes that they implement. They will wish to identify the actual effects and to see if they were similar to those predicted. Schemes most likely to be monitored and evaluated are large schemes, innovative schemes, or a sample of typical smaller schemes where it is infeasible to evaluate all of them.

8.24. Many of the criteria for monitoring will be similar to those used in the appraisal of the scheme prior to implementation, the difference being that actual values can now be used instead of predictions. Where feasible, monitoring should also include a survey of users' views. Do pedestrians like the scheme? Do they feel it is safe and convenient to use?

8.25. When monitoring physical measures, such as the provision of a new pedestrian route, the level of service criteria suggested in Chapter 3 may be helpful.

Monitoring of signs and trees in London using bar codes. *Courtesy: TDfL.*

8.26. Some schemes, such as the provision of a new pedestrian route or a green commuter plan, may require more than a single "after" survey in order to properly identify the outcomes. Regular monitoring over a period of several years or more may be required. In such cases, it will be necessary to establish surveys that can be repeated cost–effectively, under the same conditions and with sample sizes that are statistically robust. It is usually

not practical to monitor a large range of factors so it will be necessary to concentrate on one or two key indicators. These may also be the same indicators used in local transport plan targets. It will also be necessary to have one or more "control" sites to provide data on background trends.

Monitoring Walking

8.27. Until recently, local authorities have not monitored walking in a regular or comprehensive way. A study for the DETR by TRL has reviewed techniques currently available and produced preliminary guidance, summarised below.

General principles

- Use national or regional sources of data wherever possible. Principle sources are the National Travel Surveys, the Population Census and the Labour Force Survey.
- When local surveys are undertaken, try to make the methods and definitions consistent with national surveys for comparison purposes.
- Accurately monitoring the **overall** level of pedestrian activity at local level is difficult and expensive. It will be better to undertake **selective** monitoring of key destinations and journeys, particularly those involved in schemes to promote walking, such as safer routes to schools.
- Origin/destinations surveys, in town centres, rail stations, workplaces, schools, hospitals or shops, may be the most cost–effective and useful monitoring method. Schools, employers, etc could be requested to undertake simple surveys and to report the results back to the local authority. This later approach will work best where the organisation is involved in some form of green travel initiative.
- Establish a limited number of surveys and indicators that can be repeated reliably at least annually. (Large and complex surveys may provide useful snapshots but prove too expensive to repeat regularly.)
- Because pedestrian journeys are usually very short, the choice of any screen line or cordon is more critical than it would be for surveys of motor vehicles. The cordons used to monitor vehicles may be inappropriate for surveying pedestrians.
- Pedestrian flows at any one location are likely to show more variety from day to day than flows of motor vehicles. One–day counts may provide a useful impression but are unlikely to form a statistically reliable basis for regular monitoring.

Monitoring techniques will depend on the objectives and local conditions.

Courtesy: Dr P Câmara (Maunsell Ltd).

- Manual counts are fairly simple to undertake and can record additional details such as sex, adult/child, encumbrances and obvious difficulties with walking.
- Some automatic counting equipment is available, including video cameras, infra–red and piezzo–electric sensors.
- Daily pedestrian flows are affected by the weather. The size of the effect appears to be greater than that for motor vehicles but less than that for cyclists.

8.28. A good deal of monitoring of walking will already be an integral part of general travel and traffic monitoring. It should not be seen in isolation. For example, some local authorities are developing local travel diaries to monitor local travel patterns, including walking; and public transport surveys will normally include questions on arrival/departure modes which are often on foot. General principles of market research and traffic/travel surveys apply to monitoring walking. However, there are some specific points to note, as described below.

Characteristics of walk journeys

8.29. The characteristics of walk journeys are different to those made by vehicle. Walk journeys are:

- Short (average journey distance on foot is one kilometre)
- Likely to be part of a longer journey involving another mode of travel
- Less concentrated on main routes than motor vehicles
- Highly dependent on local facilities and services (which may change over time), such as the local shops and bus services.

8.30. Two other factors need to be considered:

- Someone travelling by car is clearly a car user; but someone on foot may have just stepped off a bus or out of a car.
- Pedestrians use the street in various ways – for travel, for play, meeting, window shopping etc. Walking "activity" does not always correspond well with pedestrian journeys or flows. Pedestrian dwell time or density may be more relevant measures in some cases than flows or distance travelled.

These factors mean that walking cannot always be monitored in the same way as vehicles.

Planning a monitoring programme

8.31. Methods for monitoring walking (counts, interviews, etc) are available and need not be complicated. However, it is important to define the aspects of pedestrian activity that are relevant. A school that introduces a school travel plan will want to know the modal shares, including walk, for its pupils and staff. On the other hand, a local authority concerned with the vitality of its central retail area will be more interested in monitoring the flow (footfall) or density of pedestrians in the High Street.

8.32. Establishing a monitoring programme that will provide meaningful data on a regular basis, that can be sustained, requires careful planning (see Box 8.3).

Survey Methods

Origin/Destination Interviews

8.33. Origin /destination interviews are particularly appropriate for monitoring walking activity and mode share. They can provide information about the distance travelled and the modes used for each journey stage. Typically they will record

- Journey origin
- Journey destination
- Mode(s) used
- Journey purpose

- Demographic factors (sex, age, etc)
- Other, eg luggage, mobility difficulty, accompanied/alone

Basic method	**Method**	**Survey Location**
Interviews/Questionnaires	O/D interview Household survey Travel diary	Cordon/ Screenline Destination Random points
		Principal routes Home interview
Counts (flow or density)	Manual Semi–automatic Fully automatic	Cordon/creenline Destination Random points Principal routes

The Main Methods to Monitor Walking Activity. Box 8.3.

8.34. Standard classifications and definitions for these factors can be found in the National Travel Survey and it is recommend that they be used for consistency. For regular monitoring, it is recommended that the interview is kept short, with "tick–box" answers as far as possible.

8.35. It may be possible to get organisations participating in commuter plans, school travel plans etc, to etc to undertake surveys and pass the result so the local authority. Nottingham City Council has made monitoring a requirement of travel plans covered by S.106 Agreements.

Household Surveys and Travel Diaries

8.36. Household surveys, which may include some form of travel diary, can be very useful for obtaining general information about walking (and other modes). However, they are complex to undertake. It may be difficult to justify the expense of a sufficiently large sample that would be required to produce statistically robust data. The DETR has provided information to help local authorities make an informed choice (DETR, 1999b). DETR recommends that they concentrate on surveys designed to collect specific data relevant to LTP objectives. Where questions about walking are included in household surveys, they should be kept simple and concentrate on common, easily–defined journeys, particularly education and work journeys.

Manual counts

8.37. Manual counts are the traditional method for counting pedestrians. Other information can also be recorded, such as sex, approximate age, walking impairment and luggage. The cost of the survey is related directly to survey staff time. If data are required for one day only, manual counts are relatively inexpensive.

8.38. Manual counts are useful for monitoring the level of activity in a given area. However, in terms of monitoring modal share and distance walked they are less useful as they do not distinguish between people who have walked for the whole journey and those who have also used other modes (see Box 8.4).

Automatic Count methods

8.39. The use of automatic methods for monitoring pedestrian activity is currently very limited amongst local authorities. There are, however, several technologies in use, particularly for commercial purposes.

Manual counts – Essex and Nottingham
Essex County Council has undertaken comprehensive manual counts of pedestrians (and cyclists) in principal towns in Essex as part of their Road Traffic Reduction Act work. Pedestrians were counted 7.00–19.00 on principal routes leading from housing areas to the town centre. Although not a full census, the surveys were designed to capture a high proportion of walk trips to and from the centre. Age and sex were also recorded. These surveys were undertaken to provide a baseline; they are not repeated each year.

Nottingham City Council counted pedestrian flows on key streets in the City Centre, on a Saturday in June 10.00–17.00, in 1995 and again in 1997. The results are presented graphically in the Council's 1999 *Walking and Cycling Strategy.*

Box 8.4.

Video Imaging

8.40. Walking activity can be captured by video camera and the data (eg pedestrian flows) obtained automatically by a microprocessor and appropriate software. The costs will depend on the scale of the survey and its complexity. It may be cost effective where prolonged monitoring is required.

Video imaging – Bluewater Shopping Centre
At the Bluewater shopping centre in Kent, video is used to monitor the number of people in the shopping centre. The data is used by the marketing department. It is regularly calibrated to determine the number of people in each shopping aisle. The video system is also used to monitor shopper activity, particular judging which shoppers use which parts of the centre based upon the bags they are carrying and also to determine food court use.

Box 8.5.

8.41. Video imaging technology is extensively used in large shopping centres to automatically monitor visitor flows. The more sophisticated systems also monitor shoppers' movements and shopping patterns. Specialist survey companies supply the equipment (see Box 8.5).

Infra–red sensors

8.42. Infra–red sensors can be used to count pedestrians. When a pedestrian crosses a line the beam is broken and this is logged. Infra–red equipment is generally cheaper than video imaging but it is less flexible. It usually requires a bottleneck so that people walk in single file, otherwise the beam may not re–form before the next person walks through. As such, this approach is unsuitable in town centres or on busy streets.

Infra–red sensors – Docklands Light Railway
The Docklands Light Railway needs detailed passenger counts in order to split the revenue between the various transport operators and funding sources in London. In order to do this they automatically monitor pedestrians leaving the stations. An infra–red beam is placed at a bottleneck point and pedestrians are counted as they break the beam. Typically this is on a stairway.

Box 8.6.

8.43. Infra–red sensors are used to monitor flows of people in public transport systems, shops and elsewhere (see Box 8.6).

Piezoelectric pressure mats

8.44. Piezoelectric pressure mats have been used to count pedestrians and cyclists on off road paths. These are understood to have worked satisfactorily but they do not distinguish pedestrians from cyclists. Manual counts could be undertaken to determine the split and calibrate the automatic data. Piezoelectric counters have been used on the Trans–Pennine trail.

Survey Sites

Choosing suitable sites

8.45. Because walk trips are short and levels of walking can vary considerably from one street to another in the same town, the choice of survey site is important. The count sites should be in areas of high walking activity, such as the approaches to town centres, stations and points where residential feeder roads join the main highway network.

8.46. Counts from sites with high walking activity have lower coefficients of variation and can therefore more readily be compared to counts in other places and at other times. However, if sites have very high pedestrian flows, it may be difficult of for enumerators to cope and other methods, such as video, may be required, or other sites selected. It was noted that, in London, manual counting methods failed at flows above 2000 pedestrians per hour.

Monitoring overall walking activity

8.47. Monitoring overall walking activity would require counts at a large number of sites or a large sample of comprehensive household travel diaries. This would be costly and out of scale with the LTP. It is probably best to rely on national sources of data for overall background trends.

8.48. The results of individual local monitoring sites or surveys can be brought together to provide a general picture of trends in overall walking activity.

Destination surveys

8.49. Surveys at key destinations like schools, offices and factories can provide valuable data on walking and may allow long term monitoring to be undertaken which can be compared to a baseline at these destinations. Those organisations with an interest in travel plans are most likely to be willing to undertake such surveys. With the addition of survey at control destinations, it is possible to measure the changes due to travel plans, not only against the particular organisations' baseline, but also against the control.

Cordons and screenlines

8.50. A number of local authorities undertake cordon or screenline traffic counts on a regular basis. If these are manual counts it might be useful to include pedestrians (see Box 8.7). This would also enable a fuller estimate of modal split to be determined. Alternatively, a cordon or screenline count may be set up just to monitor walking.

Cordon Surveys – Norwich and Worcester

Norfolk County Council has included counts of pedestrians in its Norwich Inner Ring Road counts. This has necessitated counting at a number of additional sites, such as subways and footbridges.

Worcester City Council has conducted counts of pedestrians and vehicles crossing the River Severn before and during Car–Free Day.

Box 8.7.

8.51. If pedestrians are to be counted, the cordon or screenline must be suitable for walking trips. This will not always be the case, because:

- Walk journeys are short and may not cross the cordon or screenline selected, especially if it is relatively far from the main destination (usually the town centre).
- As for all modes, there must be no "leaks" in the cordon or screenline. However, with walking there may be footpaths not adjacent to the highway that will still need to be counted.
- There may be pedestrians moving across the cordon or screenline to access buses or car parks, etc.

8.52. Screenlines are very similar to cordons, but they typically follow a natural or built barrier such as a river or rail line. Such barriers have clear crossing points and it should be easy to count pedestrians past these points. Like cordons, screenlines should split land–use into homogenous groups and should also avoid double counting. Unlike cordons, screenlines can be used to count both radial or orbital movements.

8.53. Aggregate counts along a cordon or screenline will be more reliable than the counts at each survey site. As a result of this, a shorter count period would be required to observe a change in activity across a cordon or screenline than at a single site. This assumes that people still desire to cross the cordon or screenline but their path across it may change. One can envisage many people taking a scenic walk through a park on nice summer days but may not do so on wet days.

8.54. In summary, cordon and screenline counts (pedestrian–only or all modes) may be useful depending on local conditions although the cordon or screenline may need to be modified to be suitable for monitoring walk trips. Screenlines are generally more suitable for walk trips as they can cover radial and orbital trips. The aggregate count across a screenline is more reliable than the individual counts.

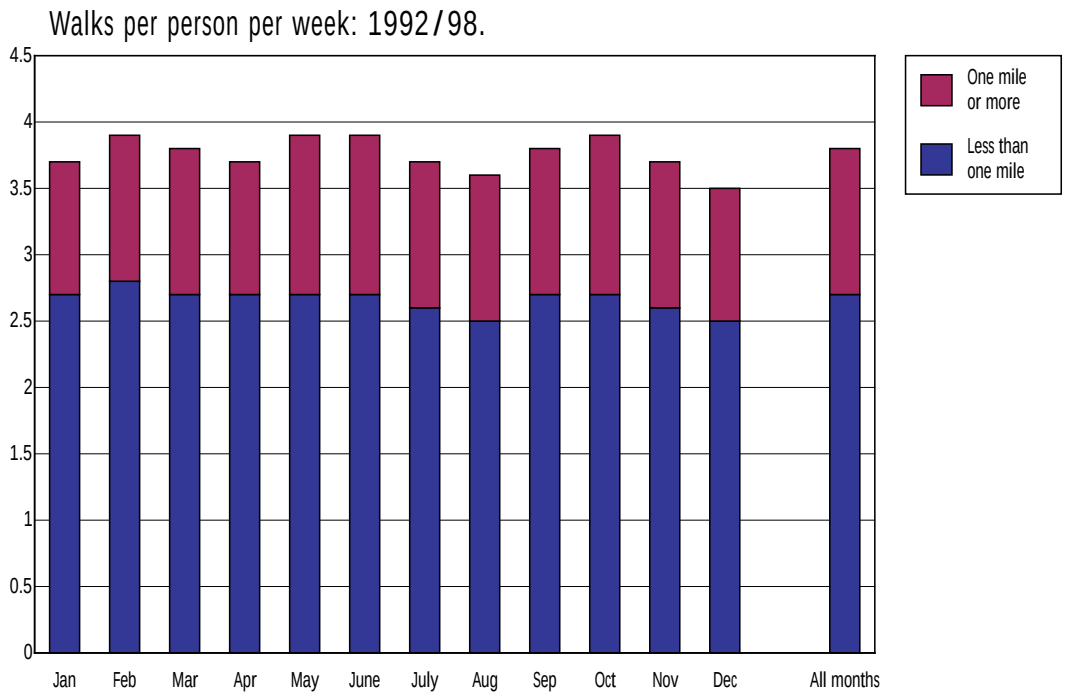


Figure 8.1: Fluctuations in walking by month of year.

Source: DETR: National Travel Survey (Special tabulation).

When to Undertake Surveys

8.55. The best time for monitoring walking activity is when flows are highest – in June. Good weather and longer hours of daylight are also practical advantages. However, because most walk journeys are for utility reasons, the number of walk journeys per month does not vary greatly – unlike cycling. (See Figure 8.1). School holidays will influence walking patterns and the purpose of the trip is often time dependent.

8.56. Day to day variation in walking activity, due to the influence of the weather, is uncertain. Leisure walking is very much weather dependant but utility walking is probably much less variable. The effect of weather on cycling has been calculated: daily cycle flows increase by about three percent for a one degree Centigrade rise in maximum temperature and fall by about 11–15% if it rains (Emmerson *et al*, 1998). This is probably an upper limit for the variation in daily pedestrian flows.

Monitoring safety schemes

8.57. When monitoring the effects of safety schemes on pedestrians, the following factors should be considered in addition to changes in the number and severity of casualties:

- Changes in the level of use
- Changes in use by vulnerable road users
- Accident migration to nearby streets
- Regression to mean effects.

Monitoring the quality of the pedestrian environment

8.58. In addition to monitoring the level of walk trips, local authorities will want to monitor key aspects of the pedestrian environment. Indeed, some monitoring functions, such as inspecting footways on a regular basis (Chapter 6), are a legal requirement, or are required for Best Value (see Box 8.8). Others will be identified in the objectives and targets of the LTP or, if one exists, local pedestrian charter. The costs and practicalities of monitoring must be kept in mind. Monitoring should support objectives and not distort priorities.

The following Best Value indicators are relevant to walking:

- Public rights of way signposted and easy to use (ACPI P6).
- Pedestrian crossings with facilities for disabled people (ACPI P5).
- Damage to roads and pavements (BVPI 105).
- Street lights not working as planned (BVPI 98).
- Street cleansing surveys (ACPI J1).

Best Value Indicators and Walking. Box 8.8.

8.59. Data is likely to be readily available without additional surveys for the following aspects of the pedestrian environment:

- Footway conditions
- Street lighting defects
- Pedestrian casualties
- Street crime – statistics available from the local police

8.60. Other indicators of the quality of the pedestrian environment that could be usefully monitored at reasonable cost are:

- Number of schools with school travel plans
- Length of streets with 20mph limits
- Number of complaints received about pedestrian conditions.
- Delays at signal–controlled pedestrian crossings
- Response times to repair footway, crossing and lighting defects.

8.61. The public should be consulted on the indicators to be monitored and kept informed of the results.

8.62. The views of the public concerning the quality of the pedestrian environment should be monitored. This can be achieved via a combination of market research techniques and consultation with the public, local pedestrian groups or others representing a pedestrian perspective. (See Chapter 3.) The view of minority groups should be actively sought.

Monitoring the performance of a local authority.
8.63. Local authorities will want to monitor their overall performance with regard to walking issues. Some suggested "hallmarks" of a pedestrian–friendly local authority are shown in Box 8.9.

Has produced, and keeps under review, a Pedestrian Strategy within the integrated context of the Local Transport Plan, which includes:

- Monitoring local targets to encourage walking,
- Establishing and signing a network of high quality pedestrian routes to key destinations,
- Giving priority to measures which improve conditions for walking, perhaps through a road user hierarchy,
- Recognising the contribution which walking can make to other policy initiatives.

Publishes a Pedestrians' Charter which sets out what pedestrians can expect from the Authority, and makes public the degree to which these expectations are met each year.

Does the simple things consistently well – introducing dropped kerbs and tactile markings, removing illegal obstructions, preventing parking on pavements, trimming overhanging vegetation, siting street furniture sensibly.

Reviews the timings of signalised crossings to reduce the unnecessary kerbside waiting.

Sets and delivers high maintenance standards for footways and pedestrianised areas.

Introduces and supervises a Considerate Contractor Scheme for all works within the highway, not least for those undertaken by statutory undertakers, which gives priority to minimising the impact on pedestrians.

Works effectively in partnership with other organisations, including voluntary groups.

Produces guidance to developers describing the contribution expected towards the provision of good pedestrian facilities within new developments, and improved links leading to the development.

Introduces measures as a matter of routine which **help mobility and sensory impaired highway users.**

Tackles issues of personal security through good planning, good design, lighting and the use of cameras.

Audits proposals to change the highway to ensure that the needs of pedestrians are treated proactively.

Provides safe facilities for cyclists within the carriageway, and uses segregated shared use facilities only as a matter of last resort when justified fully through Cycle Review procedures.

Promotes walking through local and national campaigns.

Hallmarks of a pedestrian–friendly local highway authority. Box 8.9.

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APPENDIX A

SCOTLAND, WALES AND NORTHERN IRELAND

Scotland

Government

Throughout the Guidelines, references to the "Government" should be taken to mean the UK Government or the Scottish Executive as appropriate.

Road

Where the term "highway" is used in these Guidelines this should be taken to mean "road" in Scotland.

Transport White Papers

In 1998 the Secretary of State for Scotland published a White Paper *Travel Choices for Scotland* on integrated transport policy in Scotland, consistent with the principles of the UK Transport White Paper. Certain topics that appear in the UK White Paper are not included in the Scottish White Paper. Regarding walking, these include home zones and Disruption Caused by Utilities.

Encouraging walking: advice to local authorities

The Scottish Office was represented on the advisory group. However, the document should be taken as representing policy in England only.

Walking data

Additional information on walking patterns in Scotland is contained in Research on Walking published by the Scottish Office Central Research Unit, 1998.

Health White Paper

The White Paper *Towards a Healthier Scotland,* published in February 1999 and endorsed by the Scottish Parliament, promotes greater uptake of physical activity and sets out the intention to develop a National Physical Activity Strategy for Scotland.

Land–Use Planning

Land–use planning matters are devolved to the Scottish Parliament.

Land–use planning guidance for Scotland is set out in National Planning Policy Guidelines (NPPGs), Circulars and Planning Advice Notes (PANs).

NPPG 17 on Transport and Planning (1999) sets out policy on using the land–use planning system to assist in reducing the need to travel, especially by car, and in facilitating travel by public transport, cycle and on foot. It sets out a general approach to locating significant travel generating developments, including applying maximum parking standards and seeking transport assessments from developers. Paras 46–47 encourages local authorities to adopt walking strategies, with clear policies for walking and a programme for action in the Local Transport Strategy, for example for safer and more attractive conditions linked with location policy to encourage local activity. It also advocates pedestrian studies, pedestrian priority in certain circumstances, detailed design and pedestrian routes which are not segregated or isolated.

PAN 57 on T ransport and Planning (1999) sets out advice on good practice and other relevant information. It outlines how land use planning can encourage walking, through arranging land uses, urban design and making areas and developments safer and more attractive to people on foot. It stresses that promoting walking facilities needs to be combined with discouraging the dominance of the car; encourages the development of networks of paths, trails and green spaces for walking, cycling and horse riding in and around settlements, linked to rail and bus stations, bus stops and existing car parks and providing countryside access; and highlights the potential of towpaths for walking and cycling, as long as they are safe and sustainable ("People on Foot", paras 16–19).

In terms of limited mobility, it recommends considering people with prams, shopping or luggage or elderly people alongside the physically disabled; and suggests consulting disabled groups about changes in access, noting that effective measures can include better town centre management, left-luggage facilities and home delivery, as well as physical measures ("Access for Disabled People", para 20).

The PAN requires a high degree of accessibility by foot from residential developments to services and employment and good links with walking routes from non-residential developments ("Transport Assessment", para 2–7).

Local Transport Strategies

In Scotland, local authorities are invited to submit Local Transport Strategies, setting out their plans and priorities for the development of an integrated transport policy within it area. It is not compulsory for local authorities to submit Strategies and, unlike Local Transport Plans in England, they are not used directly as bid documents for central government funding. However, they are material considerations in decisions on awards from the Scottish Public Transport Fund. They are expected to be in place for three years before requiring to be updated. All 32 Scottish local authorities, together with Strathclyde Passenger Transport, submitted interim Strategies.

Following analysis of the interim Strategies, final guidance (*Guidance on Local Transport Strategies and Road Traffic Reduction Reports*) was issued by the Scottish Executive in February 2000. Final Strategies are due by the end of October 2000.

Safer Routes to School

In 1999 the Scottish Executive published guidance on *How to run Safer Routes to School,* a toolkit of measures for everyone involved in the journey to school.

Wales

Government

Throughout the Guidelines, references to the "Government" should be taken to mean the UK Government or the National Assembly for Wales as appropriate.

In 1998 the Secretary of State for Wales published the Welsh transport policy statement "Transporting Wales into the Future". This describes how the principles set out inthe UK Government's Transport White Paper will be taken forward in Wales.

Encouraging walking: advice to local authorities

The Welsh Office was represented on the advisory group. However, the document should be taken as representing policy in England only.

Land–Use Planning

Land–use planning matters are devolved to the National Assembly for Wales.
In Wales, Planning Guidance (Wales) Planning Policy First Revision (1999) includes a chapter on transport; while Technical Advice Note (Wales) 18 *Transport* (1998) sets out detailed advice. They should be read together.

Planning Guidance (Wales) *Planning Policy First Revision* (1999) sets out a broad policy framework (paras 8.1.1–8.6.1). It encourages travel by walking as an alternative to the car (8.1.1). Development plans should encourage the implementation of specific measures to help pedestrians including safe and convenient routes; and policies should address the need for traffic calming and other measures to make areas safer for pedestrians and to address the needs of less mobile people (8.1.7-8.1.8). Local authorities should adopt policies to locate major generators of travel demand in existing centres or other locations highly accessible by walking (8.3.2). When determining planning applications for development which has transport implications, local planning authorities should take into account: accessibility by a choice of means of travel; and the willingness of a developer to provide infrastructure or measures to manage traffic or promote travel by walking (8.5.1)

Technical Advice Note (Wales) 18 *Transport* (1998), to help change travel choices, advocates better walking conditions and location of a wide range of facilities such as schools and services at the local level, accessible by foot. It encourages making areas and developments safer and more attractive for pedestrians, drawing on studies of pedestrian movements and using policies and proposals in development plans. Routes should not generally be segregated from the roadway or other activity. Other suggested measures include: traffic calming; pedestrianisation; environmental improvements; improved lighting; wider pavements/narrower carriageways; pedestrian-friendly road crossings avoiding long detours or waits and underpasses and designed for the less mobile (paras 12–13) and traffic management (para 18).

Local Transport Plans

In Wales local transport plans will be required from all local authorities in August 2000. The plans will be used to support bids for major road schemes, integrated transport packages and safe routes to school projects funded through Transport Grant.

Safer Routes to School

Last year the National Assembly for Wales funded safer routes to schoolschemes in 14 local authority areas at a cost of £800,000. The Assembly has recently announced that it is allocating a further £1.4m towards this initiative for 2000–01.

Northern Ireland

Government

Throughout the Guidelines, references to the "Government" should be taken to mean the UK Government or the Northern Ireland Executive as appropriate.

The Northern Ireland Transport Policy Statement

The 1998 Northern Ireland Transport Policy Statement *Moving Forward* published by the Department of the Environment (Northern Ireland), outlines a strategy for implementing the objectives of the UK Government's Transport White Paper in a way that acknowledges the particular circumstances of Northern Ireland. The approach recognises that public transport, walking and cycling provide many benefits, including road use efficiency and local area economic development.

—*The National Travel Survey, Road Accidents Great Britain* and *Transport Statistics Great Britain* do not cover Northern Ireland. Separate statistics are, however, available for Northern Ireland.

Encouraging walking: advice to local authorities

The Department of the Environment (Northern Ireland) was represented on the advisory group. While the document should not be taken as representing policy in Northern Ireland, it may be used as best practice guidance.

Road

Where the term "highway" is used in these Guidelines this should be taken to mean "road" in Northern Ireland.

Land–Use Planning and Transportation

Land–use planning matters are devolved to the Northern Ireland Legislative Assembly.

Government Departments in Northern Ireland

In Northern Ireland, responsibilities that fall on local authorities in Great Britain for roads, transport, land use planning and the environment rest with two Government Departments, the Department for Regional Development and the Department of the Environment. References to local authorities in these guidelines should therefore be read accordingly.

Department for Regional Development

The Department for Regional Development is responsible for strategic planning in Northern Ireland and is currently developing a development strategy for the region. It will also in due course provide policy guidance relating to this regional development strategy.

In December 1998 the Draft Regional Strategic Framework for Northern Ireland *Shaping Our Future* was published. This includes Strategic Planning Guidelines whose aim is to provide long term direction for the public sector, the private sector and the whole community. One of these is "to change the regional travel culture and contribute to healthier lifestyles". This advocates the promotion of walking and cycling, particularly for shorter journeys to work, school, shops and for leisure; providing more space for pedestrians by improvements to the walking environment, particularly in urban centres and traditional shopping streets; the introduction of traffic calming measures, including pilot home zones projects; and opening up new walking and cycling routes and long distance trails and linkages with tourism activities. Following wide public consultation and a recent Public Examination it is anticipated that the final regional development strategy will be published by the end of 2000.

The Department for Regional Development is also responsible for the preparation of a 10 year regional transportation strategy.

Roads Service, an agency within the Department for Regional Development, is the sole road authority for Northern Ireland. Roads Service is responsible for the implementation of a range of transportation measures aimed at promoting more sustainable movement patterns, including those related to walking and cycling.

Department of the Environment

The Department of the Environment is responsible for planning control in Northern Ireland. The Planning Service, an agency within the Department, administers its planning functions.

The Department has a statutory duty to consult with the relevant district council on all planning applications and on the preparation of development plans. In dealing with planning applications the Department must have regard to the development plan and other material considerations, but Northern Ireland does not currently have a "Plan Led" system.

Land–Use Planning Policy and Guidance

Land–use planning policy and guidance for Northern Ireland is set out in a series of Planning Policy Statements and a range of supplementary planning guidance documents. Those most relevant to walking are:

PPS1 General Principles (1998) sets out key themes to be observed in formulating planning policies, development plans and development control. These include sustainable development, mixed use and quality development and design in its widest sense.

PPS3 Development Control: Roads Consideration (1996) refers to reducing the need to travel, encouraging alternatives to the private car, providing better transport choice and the need for greater sustainability in housing development.

PPS5 Retailing and Town Centres (1996) seeks to promote the vitality of town centres. It encourages improvements of pedestrian environments. In determining applications for major retail developments, the Department will place emphasis on public transport provision and good access for pedestrians.

Public Consultation Draft PPS7 Quality Residential Environments (2000) seeks to promote quality and sustainability in the design and layout of new residential developments. It encourages more sustainable patterns of movement and highlights the need to reduce reliance on the private car. New residential developments will be required to incorporate traffic calming measures to keep traffic speeds low, improve safety and to help create a better environment. Designs should support movement by pedestrians and cyclists and convenient access to public transport. It encourages safe and attractive routes for pedestrians.

Public Consultation Draft PPS8 Open Space, Sport and Recreation (1999) highlights the importance of open space for physical activity, including walking and the associated health benefits of regular exercise. It underlines the need to provide well-designed open space in new residential developments which is easily and safely accessible from all the dwellings it is designed to serve.

Creating Places – Achieving Quality in New Residential Developments (2000) contains advice and guidance for all those involved in the design of new housing areas. It asserts the need to create places which serve the needs of all people who use them and advises that new developments should provide for travel by foot, cycle and public transport just as they should for travel by car. It seeks the reduction of car use through the provision of local neighbourhood facilities and public transport within walking distance of housing and promotes the detailed design of roads, footpaths and cycle routes to avoid dominance by the car.

Appendix B

Pedestrian Review Form

To the Strollers Lane Group: Carrying Out a Pedestrian Review

Don't try to do too much in one go and try to form a group with a range of different people, for example old, young, different disabilities including a wheelchair user, someone with a buggy or shopper on wheels, someone with a child. Different people spot different things. Some people may only have time to do their own road.

Although we will make suggestions to the Council about what we would like them to do, this first exercise is mainly to list the problems. We can then discuss these problems and decide what we suggest should be done with an indication of priorities.

When making your comments, try to be realistic and emphasise the most pressing issues. You can photocopy these sheets and give them out to other people.

GOOD LUCK AND GOOD WALKING

Are the pavements wide enough?

- We think the minimum is that two people should be able to walk abreast in comfort. This still means that they have to go into single file when passing other people so it is a minimum.
- This width relates to clear pavement – it should not include space taken by shop displays, planters, bus stops, etc.

Convenience

- Are there any new pedestrian routes which are needed in the area?
- Are there pedestrian barriers (guard rails) which force you to walk too far out of your way?
- Are there ramps (dropped kerbs) where needed?

Crossings

- Are they where people want to cross?
- Are there any places which need extra crossings?
- Is crossing a problem because of visual obstacles, as such as parked cars ?
- Are there places where refuges (islands) would help with crossing?
- At "green man" crossings, is the waiting time for the green man signal reasonable?
- At green man crossings, is the time allowed to cross on the green man phase reasonable?

Road Safety

- Is there a problem with vehicles parking on the pavement?
- Is there a problem with cyclists riding on the pavement?
- Are traffic speeds a too high?

Personal Safety

- Do local people feel safe walking in the area in the day and night? If not what is the nature of the problem?
- Are there any subways that feel unsafe or particularly inconvenient to use?
- Are there alleys which feel unsafe?
- Is the lighting adequate for pedestrians?

General Environment

- Are the bus stops, taxi ranks, public toilets, phone boxes and letter boxes where people want them and are there enough?
- Is litter a problem? Are there enough litter bins?
- Are the pavements well maintained?
- Could the area be made nicer with plants, seats, etc.
- Are there good pedestrian signs with distances marked on them?
- Are the signs pointing the right way?
- Are street name signs on important corners and easy to see?

Names of roads checked out:

Return to: A Walker, 1 The Street, Yourtown
Meeting to report back – 11 am April 10th at the community centre

(Adapted from a form produced by SRA for use in Leicester.)

Appendix C

Local Highway Authority Mobility Checklist

Numbers in brackets refer to relevant paragraphs in 1991 IHT *Revised Guidelines for Reducing Mobility Handicaps – Towards a Barrier–Free Environment.* This checklist **complements** the Safety Audit procedures but this checklist applies to **all** highway schemes and planning applications. The checklist is to be used as a prompting tool to ensure that all access issues have been addressed.

1. PROJECT BRIEF	**YES**	**NO**
Attention drawn to local authority policies?		
Attention drawn to appropriate Guidance/Circulars?		
Attention drawn to local needs?		
Appropriate contact person/groups identified?		

Comments:

2. PEDESTRIAN ROUTES/SURFACES	**YES**	**NO**
Widths generally above minimum requirements? (2.1)		
All gradients less than 5%? (2.3)		
All crossfalls less than 2.5%? (2.3)		
Alternative ramped way available where steps incorporated? (3.6)		
Dimensions of steps meet Guideline recommendations? (2.6)		
Change in colour/texture at top/bottom of steps/ramps? (2.6)		
Resting places/seating at strategic points? (3.2)		
Change in texture/colour where change in priority/nature of use? (3.6)		
Overhanging structures protected by low level railing? (2.8.1)		
Adequate protection of steep slopes and obstacles? (2.9, 3.6)		
All surfaces non–slip whether wet or dry? (3.8)		
All surface joints closed and flush? (3.8)		
Drainage system not likely to trap wheels or sticks? (2.3)		
Footways/footpaths safe, direct and suitable for natural surveillance? (2.3)		

Comments:

3. CROSSING FACILITIES

	YES	NO
Crossings on desire lines for pedestrian movement?		
Avoidance of unnecessary ups and downs?		
Kerbs dropped and flush? (2.4)		
Use of textured paving where appropriate? (5.4)		
Drainage gullies clear of pedestrian route?		
Refuge islands long and wide enough to accommodate pram/wheelchair? (5.1)		
Appropriate form of control at crossings? (5.2)		
Special facilities provided at light controlled crossings? (5.3)		
Use of special signposting justified? (5.2)		

Comments:

4. LIGHTING

	YES	NO
Attention paid to lighting at crossing points?		
Attention paid to lighting changes in gradient/step? (2.12)		
Wall mounted units or siting of columns in verges used where practical? (2.13)		

Comments:

5. STREET FURNITURE

	YES	NO
Main pedestrian routes clear of unnecessary clutter?		
Obstacles/landscaping/seating marked by change in texture?		
Poles and columns at rear of footways where practical?		
Adequate clearance between poles/columns/barrier rails etc?		
Specific signposting provision (tactile maps) for blind and partially sighted people? (2.8, 3.6)		
Consideration given to minimum mounting heights?		

Comments:

Source: Avon County Council (1995), Pedestrian Policy for the Avon Area, Appendix VI.

Glossary of Terms and Abbreviations

DETR	Department of the Environment, Transport and the Regions. UK Government department responsible for transport and land use planning in England.
DOE	Department of the Environment (now part of Department of the Environment, Transport and the Regions).
DOT	Department of Transport (now part of Department of the Environment, Transport and the Regions).
Home zone	Residential street designed for very low speeds where pedestrians and vehicles share road space.
IHT	The Institution of Highways & Transportation.
Local Plan	Statutory local development plan prepared by the local planning authority.
LTN	Local Transport Note. Technical advice note issued by the DETR.
LTP	Local Transport Plan. Prepared by local authorities in England and Wales. (Local Transport Strategy in Scotland.)
MOVA	Micro–processor Optimised Vehicle Actuation. A sophisticated traffic signal control system for isolated junctions or crossings, developed by TRL on behalf of the DOT, that adjusts signal timings in response to demands.
Pelican	PEdestrian LIght CONtrolled crossing. A mid-block signal-controlled crossing for pedestrians.
Puffin	Pedestrian User Friendly INtelligent crossing. A mid-block signal-controlled crossing for pedestrians, that adjusts waiting and crossing times in response to demands. The replacement for the Pelican.
STATS 19	Form used by Police to record road traffic accidents.
Structure Plan	Statutory strategic development plan prepared by strategic planning local authorities.
TAL	Traffic Advisory Leaflet. Issued free by DETR.
TDfL	Traffic Director for London.
TRL	Transport Research Laboratory. Principal UK transport research centre, previously part of DOT but now independent.
Toucan	Two Can Cross. A signal–controlled crossing for shared use by cyclists and pedestrians.
Traffic Regulation Order (TRO).	Legal procedure whereby local highway authorities introduce specific traffic controls, such as No Entry or One-Way restrictions.
Travel Plan	Travel Plan is an umbrella term for Green Transport Plans, Commuter Plans, School Travel Plans and similar plans which seek to improve the efficiency and reduce the environmental impact of travel associated with a business organisation.
UDP	Unitary Development Plan. Statutory development plan prepared by unitary local authorities.
UTC	Urban Traffic Control.
VA	Vehicle Actuation. In systems with VA, traffic signals detect and respond to approaching traffic. (In fixed-time systems, traffic signals are not responsive to traffic flow.)

VSPD	Volume Sensitive Pedestrian Detection. A system that can detect and quantify the presence of pedestrians (at signal-controlled pedestrian crossings).
Zebra	Pedestrian crossing without signal control, indicated by black and white bands on the surface of the carriageway. Motor vehicles must give way to pedestrians who have established precedence on the crossing.

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APPENDIX D

EXAMPLE OF AN ASSESSMENT FRAMEWORK

Example 1. Use of an Assessment Framework to evaluate the extent to which 4 different investment options achieve 5 stated Goals.

The starting point for assessing options is the definition of the Goals. These might be taken from the Development Plan or in the Local Transport Plan. In this example, the five Goals determined for the bid are::

Goal 1: To improve accessibility within the study corridor by increasing use of non–car modes of transport.
Goal 2: To improve environmental quality and health.
Goal 3: To improve safety and security.
Goal 4: To promote economic activity and vitality.
Goal 5: To promote efficient expenditure of resources.

Secondly the Goals can then be translated into a set of more specific objectives. The resultant 15 objectives derived from the Goals are shown in Table D1 below:

TABLE D1 GOALS AND OBJECTIVES

GOAL	OBJECTIVES
G1. To improve accessibility within the study corridor by increasing use of non–car modes	O1. To promote travel by public transport. O2. To encourage cycling and walking O3. To reduce non–essential motor vehicle use O4. To manage the existing parking stock
G2. To improve environmental quality and health	O5. To keep non–essential traffic out of environmentally sensitive areas O6. To maintain environmentally sensitive areas O7. To reduce noise and air pollution impacts O8. To improve the amenity of Town Centres
G3. To improve safety and security	O9. To improve road safety O10. To in improve perceptions of safety
G4. To promote economic activity and vitality	O11. To increase accessibility to areas of unemployment and business O12. To avoid increases in traffic congestion O13. To encourage full and convenient access to PT for people with disabilities. O14. To provide long term sustainability
G5. To promote efficient expenditure of resources	O15. To provide a cost effective transport system

The third part of the process is for competing schemes to be tested against an Assessment Framework, to ensure that the contribution each makes to the achievement of objectives provides reasonable value for money and to demonstrate how the package of schemes contributes to the overall Goals. The Goals Achievement Matrix should meet the essential requirement of being able to support the funding bid. Table D2 shows how each of four schemes, A to D, contributes to the achievement of the fifteen objectives.

TABLE D2 ASSESSMENT FRAMEWORK: EVALUATION OF SCHEMES AGAINST OBJECTIVES

GOALS	SCHEME COST (£) OBJECTIVES	Scheme A 100,000	Scheme B 100,000	Scheme C 50,000	Scheme D 30,000
G1. Accessibility	O1	✔	✔	✔	✔
	O2	✔	0	✔	✔
	O3	✔	0	0	✔
	O4	0	0	0	0
G2. Environment	O5	✔	✔	0	✔
	O6	✔	✔	0	✔
	O7	✔	0	0	✔
	O8	✔	✔	✔	✔
G3. Safety	O9	0	0	✔	✔
	O10	0	0	✔	0
G4. Economy	O11	✔	✔	✔	0
	O12	✔	0	✔	✔
	O13	0	✔	✔	0
	O14	✔	✔	✔	✔
G5. Cost Effectiveness	O15	✔	✔	✔	0

Example 2. Assessment of Schemes with the goal of improving Pedestrian Amenity and Safety in a City Centre, especially for those walking between a main line rail station and an entertainment's complex

In this example it is expected that the selected scheme(s) will be subject to public consultation, leading to the incorporation of the preferred scheme in a funding bid.

Basic Strategy
A number of basic options would lead to the generation of a specific scheme. To choose between the options, a basic strategy, or Goal, was developed, from which a series of objectives was identified. This permitted options to be tested against the achievement of the objectives.

Some objectives would conflict, meaning that a balance would have to be established. For example, objectives would relate to accessibility for different travel modes, to safety, environmental benefits, etc. A Goals Achievement Matrix lists all the factors to be considered. See Table D3.

Three basic Options were selected for public consultation:

Option 1 – Traffic Calming, envisaged treating local roads with speed cushions, humps and raised junctions to limit vehicle speeds. Some footway widening, with environmental enhancement, would improve conditions for pedestrians but would be unlikely to prevent 'rat running'.

Option 2 – Shuttle Working, involved reducing carriageway width so that only a single lane of motor traffic could be accommodated. This offered considerable benefit to those on foot, with shorter crossing distances and wider footways. The shuttle length could incorporate signals with selective vehicle detection to permit only authorised buses to pass.

Option 3 – Full Highway Closure, provided the most amenable environmental conditions and optimum pedestrian amenity and safety. Access for cyclists through the closed highway could be maintained.

TABLE D3 GOALS ACHIEVEMENT MATRIX.

OPTIONS	1 Traffic Calming	2 Shuttle Working	3 Full Closure
CRITERIA			
ACCESSIBILITY			
General Traffic	✔✔✔	✔✔	
EFFECTS ON BUSES	✔✔	✔✔✔	
EFFECTS ON CYCLISTS		✔	✔✔✔
EFFECTS ON FRONTAGES	✔	✔	✔
PEDESTRIAN AMENITY	✔	✔	✔✔✔
SAFETY	✔	✔✔	✔✔✔
REGENERATION IMPACTS	✔	✔✔	✔
ENVIRONMENTAL BENEFIT	✔	✔✔✔	✔✔✔
COST	✔	✔✔	✔✔✔

KEY
✔✔✔ Considerable benefit ✔✔Some benefit ✔Limited benefit

Assessment
In Example 2 the assessment was that Option 2 should be recommended, as it permitted controlled bus access but removed extraneous traffic from environmentally sensitive areas, and changed the existing balance of provision along the highway. Traffic flows would be considerably reduced, contributing to a substantial improvement in pedestrian amenity and environment.

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