

Local Transport Note 1/11

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Shared Space



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1. Introduction

- This Local Transport Note (LTN) focuses on shared space in high street environments but many of its principles will apply in other settings.
- It places particular emphasis on stakeholder engagement and inclusive design.

- 1.1 Shared space is a design approach that seeks to change the way streets operate by reducing the dominance of motor vehicles, primarily through lower speeds and encouraging drivers to behave more accommodatingly towards pedestrians.
- 1.2 different and the way a street performs will depend on its individual characteristics, the features included and how these features work in combination.
- 1.3 On the Continent, shared space is often used to smooth traffic flow and reduce delays at major junctions. In the UK, it is usually applied to links and minor junctions with the aim of allowing pedestrians to move more freely within the space.
- 1.4 This Local Transport Note (LTN) is mainly concerned with the use of shared space on links. While it focuses on High Street environments, many of its principles will apply to other types of shared space. It is intended to assist those designing and preparing street improvement and management schemes. It explains how the scheme development process introduced in LTN 1/08 *Traffic Management and Streetscape* (DfT, 2008a) can be applied to shared space projects, and presents a series of design considerations and recommendations to inform that process.
- 1.5 Particular emphasis is placed on stakeholder engagement and inclusive design, where the needs of a diverse range of people are properly considered at all stages of the development process. It also stresses the importance of sustainable design, where long-term maintenance needs are considered as part of the design process.
- 1.6 In a conventional street, motorist behaviour is largely governed by the highway infrastructure. Although pedestrians and motorists are equally entitled to occupy the carriageway, pedestrians generally exercise little control over vehicular traffic, other than at controlled crossings such as Zebra and Pelican crossings.
- 1.7 In shared space the messages are more subtle – the environment

provides less formal indication as to how drivers are expected to behave, thus making their progress within the street increasingly dependent on interpreting the behaviour of pedestrians, cyclists and other motorists.

- 1.8 Every street represents a balance between **movement** (the capacity to accommodate through traffic) and a sense of **place** (the quality which makes a street somewhere to visit and spend time in, rather than to pass through). Shared space is a way of enhancing a street's sense of place while maintaining its ability to accommodate vehicular movement.
- 1.9 Some streets operate naturally as shared spaces – they have never been designed as such. However, the purpose of this LTN is to assist those considering new schemes. Within the scope of this LTN, therefore, shared space is defined thus:

Shared space: *A street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling all users to share the space rather than follow the clearly defined rules implied by more conventional designs.*

- 1.10 Streets that encourage sharing of the space are not new. Many historic streets operate as shared spaces, particularly narrow streets in historic core zones and residential mews. There are many other long-established examples throughout the country, ranging from functional streets such as Chertsey Road in Woking, Surrey (see Figure 1.1) to the more relaxed environment of Seven Dials in Covent Garden, London. Shared space has also been applied to some arterial routes, restoring their traditional place functions. Home Zones and some country lanes, particularly those with a Quiet Lanes designation, tend to operate as shared spaces.



Figure 1.1 Chertsey Road in Woking

1.11 Sharing in the context of this LTN is a measure of how well pedestrians are able to use the space as they wish without having to defer to vehicle users, including cyclists (cycles are vehicles). A key indication of the amount of sharing taking place is how well pedestrians mix with vehicle users in the main body of the street. Sharing may be facilitated by, for example:

- introducing physical and psychological features that encourage lower vehicle speeds;
- removing any implied priority of vehicles over pedestrians in the carriageway;
- reducing demarcation between pedestrians and vehicular traffic; and
- introducing features not necessarily limited to the sides of the street, such as seating, public art and cafes, which encourage pedestrians to use the space.

1.12 Sharing is defined thus:

Sharing: *The ability and willingness of pedestrians, facilitated by the sympathetic behaviour of motorists and others, to move freely around the street and use parts of it that, in a more conventional layout, would be considered largely dedicated to vehicular use.*

1.13 In general, sharing between vehicle users and pedestrians should take place in the street's carriageway area, not the sides of the street which should mainly be the preserve of pedestrians.

1.14 For the purpose of this LTN, references to drivers or motorists generally include motorcyclists. In addition, references to the carriageway and the footway include the notional carriageways/footways in level surface schemes.

1.15 Tangible indicators of sharing include:

- pedestrians occupying the carriageway;
- increased levels of social interaction and leisure activity;
- people spending longer in the street (evidence of an enhanced sense of place);
- drivers and cyclists giving way to pedestrians;
- pedestrians crossing the street at locations, angles and times of their choosing; and
- drivers and cyclists giving way to one another.

1.16 Some shared space streets omit conventional kerbs – these are often

called shared surface streets. However, the term is not necessarily an accurate description of the way the space operates – not all such surfaces will be truly shared. In this LTN, therefore, the term ‘level surface’ is used to describe this feature. A level surface is defined thus:

Level surface: *A street surface with no level difference to segregate pedestrians from vehicular traffic.*

- 1.17 A level surface is often intended to remove a physical and psychological barrier to pedestrian movement. It can also indicate to drivers that pedestrians are not confined to the footway and that they can expect to encounter them in the whole of the street.
- 1.18 While shared space appears to work well for most people, some disabled and older people can feel apprehensive about using the space, particularly where a level surface is used. In order to address this, this LTN adopts the concept of ‘comfort space’. Comfort space is defined thus:

Comfort space: *An area of the street predominantly for pedestrian use where motor vehicles are unlikely to be present.*

- 1.19 In general, comfort space only needs to be considered when designing streets with a level surface.

The Equality Act 2010

- 1.20 Shared space can provide benefits for many disabled people but, if it is poorly designed, it can be problematic for some, particularly blind and partially sighted people. Consideration of the needs of disabled people (among other groups) is an important part of shared space design. The duties under the Equality Act 2010 are particularly relevant.
- 1.21 The Equality Act 2010 introduced a public sector Equality Duty which came into force on 5th April 2011. The Duty requires public bodies to play their part in making society fairer by tackling discrimination and providing equality of opportunity for all. Authorities will need to consider how different people are likely to be affected by new scheme proposals and due regard should be given to the effect they might have on those protected by the Duty.
- 1.22 The Equality Duty replaces three earlier public sector equality duties – race, disability and gender – and covers additional protected characteristics such as age and religion, etc. Further information is given in *Equality Act 2010: Public Sector Equality Duty What Do I Need To Know? A Quick Start Guide for Public Sector Organisations* (GEO, 2011).

Evidence base

1.23 The advice in this LTN is evidence-based. It draws on a programme of research carried out specifically to inform the preparation of this LTN. An early output from this work was a report entitled *Stage 1: Appraisal of Shared Space* (MVA, 2009). The appraisal report came to two key conclusions on the relative safety and the amenity value of shared space, including those with level surfaces. The research programme continued, building on the appraisal stage. The additional research outputs were:

- *Shared Space: Operational Assessment* (MVA, 2011b);
- *Shared Space: Qualitative Research* (MVA, 2011c).

1.24 Where research is mentioned in the text but unreferenced, it relates to the above research. Other resources are referenced.

Risk and liability

1.25 Chapter 2 of the *Manual for Streets* (DfT, 2007) provides useful advice on the issues of risk and liability. The subject is covered in greater detail in *Highway Risk and Liability Claims* (UKHLJTG, 2009).

2. Understanding shared space

- Shared space enhances a street's sense of place.
- As the level of demarcation between pedestrians and drivers is reduced, the amount of sharing increases.
- In shared space, a design speed of no more than 20 mph is desirable.

2.1 Most public space in urban areas is provided by streets. Well designed streets can offer opportunities for recreation, social interaction and physical activity. Poorly designed streets can be indifferent or unwelcoming, contributing to community severance, reducing social cohesion as well as suppressing levels of walking and cycling. They can also have a negative impact on local economic performance.

2.2 If a street does not perform well for people wishing to spend time in it, it is an indication that its place function is too low. The relationship between place and movement is best understood by considering the **place/movement matrix**, a concept introduced in the *Manual for Streets* (DfT, 2007) – see Figure 2.1. The matrix shows how the ratio of the place function to the movement function can vary depending on the type of route in question.



Figure 2.1 Place/movement matrix (from the *Manual for Streets* (DfT, 2007))

- 2.3 Shared space streets are essentially areas where the balance has been redressed in favour of the place function, although not necessarily at the expense of movement. Indeed, it is important that the movement function is retained if the street is to be truly shared. The movement function could even be enhanced if the implementation of shared space results in less delay to drivers. *Manual for Streets 2 – Wider Application of the Principles* (CIHT, 2010) develops the place/movement concept and emphasises how context influences the balance to be achieved.
- 2.4 Shared space does not represent a particular type of street. It is more a broad set of design approaches aimed at encouraging sharing as a way of improving the street's place function. It can achieve this, in part, through minimal use of traffic signs and other traffic management related street furniture. Traffic signals are often removed, with indications of priority at minor junctions omitted. These changes modify the way the street operates by creating an environment that encourages drivers, pedestrians and cyclists to behave in a more co-operative manner.
- 2.5 Shared space challenges the assumption that segregating pedestrians and vehicles by high levels of demarcation improves safety. Available evidence indicates a comparable number of casualties in shared space streets and conventional streets. This is despite the fact that some of the schemes studied experienced increased use by pedestrians and cyclists after conversion to shared space. At its simplest, reducing demarcation might mean removing guardrailing. At the other end of the scale would be the implementation of a level surface, where conventional kerbs are omitted and pedestrians share an undifferentiated surface with vehicles.
- 2.6 Shared space is often applicable where the buildings fronting the street have a strong heritage or cultural significance. It is particularly suitable where the quantity and type of surrounding land-use generates a high level of pedestrian demand for uses other than simply movement through the space. Shared space can also be appropriate at junctions or squares, where pedestrian desire lines are more diverse. Such settings, where streets come together, can provide good opportunities for creating distinct focal points.
- 2.7 Shared space should not be pursued for its own sake. Improving pedestrian movement and comfort, as well as creating vibrant spaces, for example, are likely to be primary objectives, and a high level of sharing should only be considered an objective in its own right if it contributes to these higher-order ones.

Demarcation and sharing

- 2.8 Research shows that, as the level of demarcation between pedestrians and drivers is reduced, the amount of interaction taking place between these modes increases. Reducing demarcation indicates that the street

is meant to be shared equally by all users of the street. Implied priority for vehicles is reduced, as are physical and psychological barriers to pedestrians using the street.

- 2.9 From the driver's perspective, the behaviour of other users in shared space tends to determine how they drive. By making it easier for pedestrians to move around the street in ways that best suit them, shared spaces present drivers with an environment that is different each time, requiring greater awareness and more cautious behaviour on their part.
- 2.10 A high level of interaction might be indicated by, for example, a pedestrian beginning to cross the street without waiting for an approaching car to pass, with the expectation that it will slow down. From the driver's point of view, it could be the level of acceptance of a pedestrian doing this combined with a willingness to slow down. The other end of the interaction scale could be represented by a pedestrian waiting at a signal controlled crossing. In this case, there is no interaction, because both pedestrian and driver are responding to the traffic signals, not to each other. Sharing is synonymous with interaction in the above sense so, as demarcation reduces, sharing tends to increase. This relationship is illustrated in Figure 2.2.
- 2.11 Demarcation and other physical features alone do not dictate the level of sharing that takes place, but they can give a broad indication of what might be expected. Table 2.1 shows the general effect of particular features on sharing. A combination of features is generally more influential on user behaviour than the sum of the effects of individual features. As the degree of 'sharedness' (i.e. the physical aspects of a street that encourage sharing) increases, vehicle speeds tend to reduce.

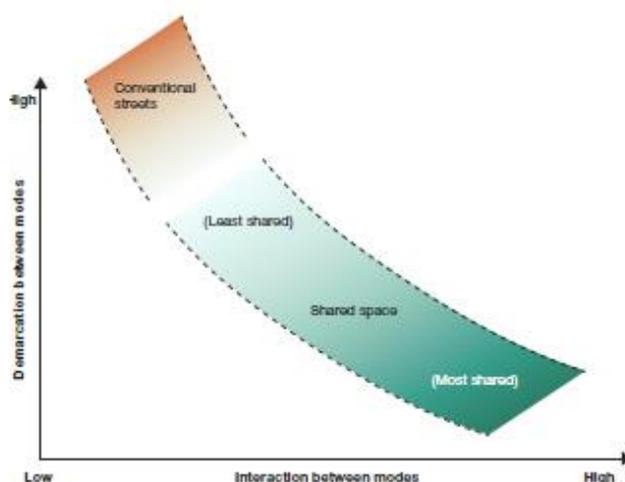


Figure 2.2 Demarcation and sharing

- 2.12 Incorporating features from Table 2.1 into a design does not necessarily mean that a particular level of sharing will be achieved. Other factors have an influence such as street layout, frontage activity, pedestrian

composition (e.g. shoppers, tourists etc.) and pedestrian activity (e.g. sitting and chatting, using street cafes, etc.).

Table 2.1 Influence of typical features on sharing

Less shared design ←————→ More shared design		
Kerbs	Low kerbs, chamfered kerbs	No kerbs
Pedestrian barriers		No pedestrian barriers
Vehicles restricted to parts of street, e.g. by bollards, street trees, etc.	Implied vehicle paths using surface materials, for example	No barriers to vehicle movement
Poor quality or unwelcoming public space characteristics	A few places where people can rest and chat	Presence of features such as cafes, markets, abundant seating, planting, public art, etc.
Conventional road markings	Limited road markings	No road markings
Traffic signals		No traffic signals
Signal controlled crossings	Zebra crossings	Courtesy crossings or no crossings

Traffic flow and speed

- 2.13 Sharing is also a function of reduced traffic flow and speed. In general, shared space schemes achieve their maximum benefits when pedestrians use the space in the street that would be dedicated primarily to vehicular use in a conventional setting. For pedestrians to fully share the space, relatively low motor traffic flows and speeds are usually necessary.
- 2.14 The *Manual for Streets* (DfT, 2007) suggested that, above 100 motor vehicles per hour, pedestrians treat the general path taken by motor vehicles in a shared space as a road to be crossed rather than a space to occupy. However, this figure is not an upper limit for shared space. Shared space streets with substantially larger flows have been reported to operate successfully, albeit with reduced willingness of pedestrians to use all of the street space.
- 2.15 Vehicle speed has a significant influence on pedestrians' willingness to

share the space and drivers' willingness to give way to pedestrians (and others). As vehicle speeds decrease, the proportion of drivers giving way increases, so the street becomes more shared. This is where the **design speed** becomes important. The design speed is a target speed that designers intend most vehicles not to exceed and is dictated primarily by the geometry of tracked vehicle paths within the street. For shared space, a design speed of no more than 20 mph is desirable, and preferably less than 15 mph (see Chapter 6).

- 2.16 The design speed need not be the same as the speed limit. It is worth noting that the speed limit in any given situation is not an indication of a safe speed to travel at – it is simply the speed that a driver cannot legally exceed. There are many roads where it would be unwise to travel at the speed limit, and it is perfectly acceptable to adopt a design speed below the posted speed limit. For example, a street with a speed limit of 30 mph could be designed to create an environment where vehicles tend not to exceed 12 mph. Ten shared space sites were studied during the research for this Local Transport Note (LTN). All had speed limits of 30 mph but achieved average speeds of around 20 mph.
- 2.17 Although evidence indicates that vehicle flow and speed are important design considerations, the flow and speed figures given above are not meant to be treated as absolute or critical thresholds, or pre-conditions for effective design. As with other considerations, they are design inputs that need to be taken into account.

Design flexibility

- 2.18 A key benefit of shared space, particularly where there is a level surface, is that it can allow the street to be used in different ways. For example, street cafes and the like may be present during the day, while at night the area occupied by daytime activities could be given over to people visiting night-time entertainment venues. A street could also host regular street markets or occasional events such as street theatre.
- 2.19 The aim should be to design to allow for this variety of use as appropriate, while maintaining the self-calming effect of the overall design, particularly during the daytime when it is likely to be most necessary. Note that A-boards, tables and chairs from cafes, pubs and other businesses occupying the street space may require licensing from the local authority. In addition, a Traffic Regulation Order will usually be required to close streets for events.
- 2.20 The design of a shared space is not necessarily complete on implementation. The nature of the scheme might initially have a significant effect on improving driver behaviour, but sufficient time is necessary to review schemes in operation, allow longer-term responses to settle into place, and make further changes if necessary.

Eye contact

- 2.21 It has often been suggested that, when crossing a shared space, it is essential for pedestrians to make eye contact with drivers. However, during research into user interaction in shared space, no instances of negotiation by eye contact were observed – indeed, there appeared to be very little overtly demonstrative communication of any sort between pedestrians and drivers. Instead, people tend to communicate through more subtle signals, and this communication can often be one-way. For example, drivers tend to slow down for people who appear as if they are about to cross, even though they may not have expressed any intention of doing so (or even have been aware of the driver). A pedestrian wishing to cross a shared space might initially look for approaching vehicles, but there is nothing to suggest that this is any different from what takes place when people cross a conventional street.
- 2.22 Eye contact cannot be relied upon, given the difficulty in establishing it with a driver through a vehicle windscreen, especially at a distance. It is important that this is understood to avoid undermining the confidence of blind and partially sighted people using shared space.

3. User needs and behaviour

- Pedestrians should be in a position to choose whether they interact with vehicles in shared space.
- The availability of comfort space and adequate seating is of benefit to all disabled people.
- The reduced impact of motor vehicles often found in a shared space environment is attractive to cyclists.
- There is a notable improvement in drivers giving way to pedestrians when vehicle speeds fall to around 15 mph.

3.1 Designing shared space, like any street improvement scheme, involves addressing certain key requirements, including that:

- the scheme should meet the needs of all users by embodying the principles of inclusive design;
- routes should form a coherent network at a scale appropriate to the users;
- infrastructure must be acceptable in terms of road safety and personal security;
- the scheme should be comfortable to use and accessible to disabled people; and
- the environment should be interesting and aesthetically pleasing.

3.2 In a de-cluttered environment, the physical arrangement of the street assumes an enhanced role in influencing user behaviour.

Pedestrians

3.3 Pedestrians' needs are broadly defined in *Manual for Streets* (DfT, 2007). The key factors affecting pedestrian comfort in shared space appear to be the volume, type and speed of traffic. Pedestrians generally prefer wide footways and narrow carriageways.

3.4 Pedestrians tend to move differently within different spaces, and will not necessarily use all of the street area available to them. Their willingness to occupy the space depends largely on the behaviour of drivers and cyclists. There is a tendency for making increased use of the available space as vehicle flows reduce. For example, at Seven Dials in London (see Figure 3.1), while the perimeter footways provide comfort space,

around two in three people pass through the junction using the shared area.

- 3.5 Reducing the definition between carriageway and footway can encourage this behaviour. When a street is shared, people move more freely and are more likely to follow their desire lines within the street including when crossing. The more pedestrians using the street, the more slowly vehicles tend to travel. Pedestrians should be in a position to choose whether they interact with vehicles. Where a level surface is used, the provision of clearly identifiable comfort space where vehicular encroachment is unlikely can be beneficial.

Disabled people

- 3.6 There are over 10 million disabled people in the UK. The term disability covers a wide range of conditions and includes people with physical, sensory or learning impairment. Four broad categories of disability are described below. They are not mutually exclusive – many disabled people, particularly older people, have more than one impairment, the extent of which may vary from day to day. Some impairment conditions may not be evident to other people.
- 3.7 *Inclusive Mobility – a Guide to Best Practice on Access to Pedestrian and Transport Infrastructure* (DfT, 2002) provides advice on accommodating the needs of disabled people in the built environment. Although it does not specifically cover shared space, much of its guidance and design principles are valid in these settings.
- 3.8 The availability of comfort space and plentiful seating is of benefit to all disabled people.



Figure 3.1 Seven Dials, London

Photo: Ben Hamilton-Baillie

Mobility impairment

- 3.9 This type of impairment includes people who walk with some form of aid such as a stick or walking frame and those who use wheelchairs. Around 70% of disabled people have mobility difficulties, and wheelchair users comprise approximately one-tenth of this.
- 3.10 Well maintained, even surfaces free from clutter and obstructions significantly influence the comfort levels of people with impaired mobility. Ambulatory people with impaired mobility often need regular opportunities to rest.
- 3.11 Mobility impaired people often find using a surface with a pronounced crossfall difficult. Along pedestrian desire lines, a crossfall of between 1 and 2% is preferred and 2.5% should be regarded as the maximum in most cases.

Visual impairment

- 3.12 About 2 million people in the UK have some form of visual impairment. Of these, around 95% have a degree of residual vision. This highlights the importance of tonal contrast in aiding navigation. Blind and partially sighted people may use one or more mobility aids, including indicator canes, long canes and guide dogs. Most do not use any mobility aid.
- 3.13 Evidence suggests that the most important navigation feature for blind and partially sighted people is the building line, and this is best kept uncluttered by temporary obstructions such as A-boards. Temporary obstructions present a particular problem, as their locations cannot be 'learned'. An outer shore-line is conventionally provided by the kerb. If the context and objectives of a shared space scheme proposal indicate that a kerb-free design is desirable, mitigating measures may be required.
- 3.14 For many partially sighted people, tonal contrast is especially useful in enabling them to perceive boundaries such as the edge of the carriageway or the comfort space. However, complicated surface patterns can be confusing and disorientating, and this needs to be taken into account when incorporating them into street designs.

Hearing impairment

- 3.15 Hearing loss ranges from mild to profound deafness. Around 10% of people with hearing problems are profoundly deaf. Deaf people can have balance problems, which may create difficulties for them on surfaces with a pronounced crossfall.

Cognitive impairment

- 3.16 This condition includes people with learning difficulties, people who have acquired cognitive impairment with age, and people with mental health problems, all of whom may find street environments challenging. Some may experience difficulties in recognising where they are, even in their local environment. Legibility of the street is therefore an important

component of design, and reducing clutter can help in this respect.

- 3.17 The use of easily identifiable features such as trees, pieces of street sculpture, or the facades of landmark buildings can complement street legibility and may be especially useful in helping people with cognitive impairment orientate themselves in the space.

Cyclists

- 3.18 Detailed guidance on general design for cyclists is provided in Local Transport Note (LTN) 2/08 *Cycle Infrastructure Design* (DfT, 2008b).
- 3.19 The reduced impact of motor vehicles can be attractive to cyclists and it may encourage them to divert from other, less attractive cycling routes. However, pedestrian movements in the street are also likely to increase, creating potential for greater interaction with cyclists. In mitigation, research suggests that cyclists have a high awareness of pedestrians in shared space and tend to ride around them or give way. Cyclists were found to be more likely to avoid or give way to pedestrians than vice versa.
- 3.20 An important advantage for cyclists that shared space has over pedestrianised areas is that they are not subject to prohibitions. Many pedestrianised areas prohibit cycling or restrict it to certain times of day.
- 3.21 Cyclists prefer smooth, well maintained surfaces. Substantial surface texture (e.g. cobbled-effect setts) can be hazardous for cyclists, particularly when turning. The ability to securely park cycles close to the destination is important for cyclists.

Drivers

- 3.22 Research found that drivers tend to prefer conventional streets because they provide clearly defined areas for pedestrians and vehicles. In shared space, they perceive an increased need to be aware of other users, particularly as pedestrians are more likely to occupy the carriageway and their behaviour may be less predictable.
- 3.23 Where road signing is simplified and uncertainty in priority is introduced in built-up areas, drivers tend to become more attentive and engaged with their surroundings, moving with greater care and at a lower speed.
- 3.24 When the behaviour of pedestrians becomes more difficult to predict, drivers tend to be more cautious. Drivers are more likely to behave courteously to pedestrians where they appear to be the dominant user group – the presence of pedestrians in the carriageway significantly increases the likelihood of drivers giving way.
- 3.25 As speeds reduce, drivers increasingly give way to pedestrians. There is a notable improvement in drivers giving way when vehicle speeds fall

to around 15 mph.

- 3.26 Reducing the level of demarcation of the pedestrian area (see Figure 2.2) and the amount of formal traffic management features both tend to lead to reduced speeds and, hence, more sharing.

4. Scheme development

- A well planned development process is essential to the success of a scheme.
- Stakeholder engagement plays a pivotal role.
- A quality audit should be considered for all shared space projects.
- Post-scheme monitoring is important.

- 4.1 Scheme development is divided into a number of stages. Each stage requires careful consideration if the scheme is to meet its intended purpose, satisfy the needs of all its users and continue to operate over time as designed. Following a collaborative, well planned development process from the outset will help ensure the scheme's success.
- 4.2 The development process recommended in this Local Transport Note (LTN) is derived from LTN 1/08 *Traffic Management and Streetscape* (DfT, 2008a). Before the process can begin in earnest, it is necessary to establish what is required, why it is required and how the scheme will deliver it. LTN 1/08 categorises these elements as Vision, Purpose and Action – Figure 4.1 illustrates how they might apply to a shared space proposal.
- 4.3 The conceptual stage is led by the overarching **Vision** and aspirations for the site (whether it is a High Street, public square or town centre) and the area in which the site is located. Providing an inclusive, vibrant and convivial environment is an example of a vision that could lead to a scheme being developed as shared space.

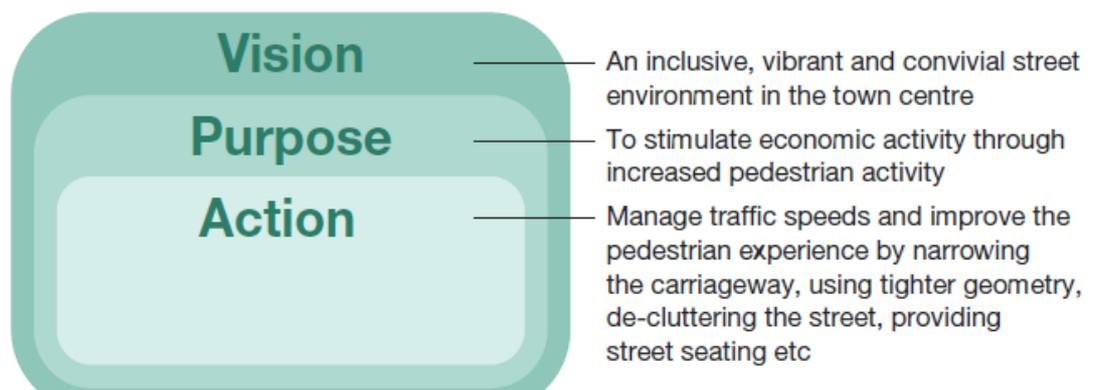


Figure 4.1 An example of Vision, Purpose and Action (based on LTN 1/08 *Traffic Management and Streetscape* (DfT, 2008a))

- 4.4 The **Purpose** describes the reasoning behind the overarching vision – in this example, it is to stimulate economic activity. Defining the purpose provides both a design brief and a baseline against which outcomes can be measured. The vision and associated purposes of a scheme are best documented at an early stage in the design process. This documentation will provide the basis for subsequent quality audit and evaluation.
- 4.5 **Action** describes the individual measures required to enable the scheme to realise its purpose. It is only at this stage that decisions are made as to whether implementing shared space (possibly with a level surface) would be an appropriate action. Other actions might then include measures such as narrowing the carriageway, etc.
- 4.6 A scheme development process is shown in Figure 4.2. Stakeholder engagement is a particularly important aspect of shared space development. For simplification, Figure 4.2 shows the input from stakeholder engagement as a discrete part of the design process. In practice, engaging stakeholders is a continuous process that can start at the conceptual stage before the initial design is prepared and be followed by additional engagement exercises at various stages of scheme development.

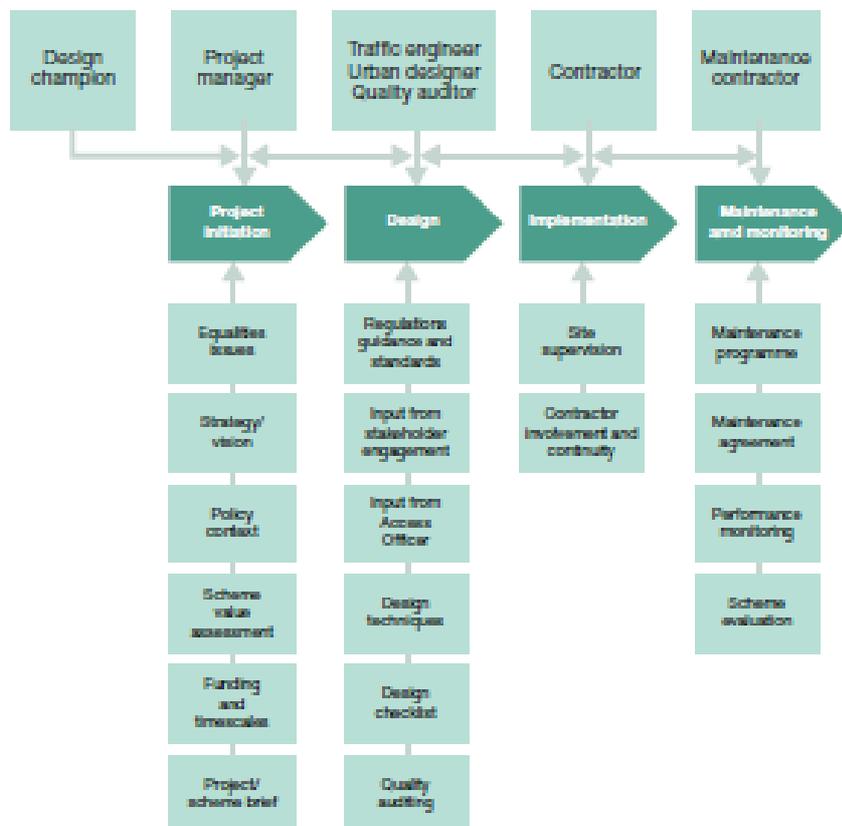


Figure 4.2 The scheme development process (based on LTN 1/08 *Traffic Management and Streetscape* (DfT, 2008a))

The design team

- 4.7 Shared space schemes tend to have wide-ranging objectives beyond more traditional single-issue (e.g. road safety) traffic management schemes – objectives such as inclusiveness, street vibrancy and regeneration. It is therefore beneficial to assemble a multi-disciplinary project team which, in addition to the project sponsors, could include the following, for example:
- highway/traffic engineers;
 - urban designers;
 - town planners/conservation officers;
 - landscape architects;
 - accessibility/mobility specialists;
 - maintenance team managers;
 - lighting engineers; and
 - contractors.
- 4.8 The concept of pedestrians safely sharing the street with vehicles is, at first, likely to appear counter-intuitive to people unfamiliar with shared space. However, shared space is a way of redressing the gradual loss of place function that has arisen over the years with increasing volumes of motor traffic. It can also bring about wider social, economic and amenity benefits. Explaining how shared space can achieve this by encouraging appropriate driver behaviour can be a particular challenge. Designating a **design champion** to communicate the vision, design intentions and desired outcomes can therefore be beneficial.
- 4.9 The design champion, usually from the project sponsors, will need to be involved at all stages of the project to ensure that design integrity is maintained and the vision is delivered. He or she needs to be willing to listen to concerns people may have about the scheme and explain how the design is intended to address them. LTN 1/08 *Traffic Management and Streetscape* (DfT, 2008a) provides more advice on the role of the design champion.
- 4.10 To deliver a project to the required standard within specified timescales and to budget, it is important that there is both an understanding of the vision, purpose and actions by all the parties involved, and agreement to deliver them. This requires early engagement with all the project team members, even if some are not scheduled to play a major role until the latter stages of the project.

Stakeholder engagement

- 4.11 Stakeholder engagement plays a pivotal role in the development of shared space. Schemes are more likely to be successful if engagement is inclusive, involving a wide cross-section of the community. The Parliamentary Advisory Council for Transport Safety report, *Kerb Your Enthusiasm* (PACTS, 2010) discusses the importance of the engagement process and its influence on developing the design to meet the needs of its users.
- 4.12 The engagement process can contribute to the vision and purpose, as well as to the design process itself. It also provides a mechanism for checking from time to time that the vision of the scheme is being adhered to. Apart from groups or individuals representing the interests of motorists, cyclists and pedestrians, stakeholders could include, for example:
- local access groups representing disabled people;
 - community associations;
 - local retailers; and
 - local business groups.
- 4.13 Organisations such as Living Streets have experience of supporting community engagement throughout the cycle of planning and implementation.
- 4.14 The views of local access groups are especially important. They represent the views of disabled people who are most likely to use the street and their input is particularly useful in this respect. Where mobility officers are employed in an area, it might be worthwhile approaching them with a view to their providing familiarisation training for blind and partially sighted people when the scheme opens. Such training can be particularly helpful to those who may be initially concerned about using the street in its new form.
- 4.15 There will be different models of engagement, depending on the scale and complexity of the project. For many projects, stakeholder engagement can be co-ordinated through a steering group (which could be chaired by the design champion, where nominated). Apart from the above stakeholders, the steering group might also include project sponsors and professional transport/design bodies.
- 4.16 Careful consideration needs to be given to the means by which designs are communicated to stakeholders, some of whom will be unable to use purely visual presentation methods. The use of more inclusive and imaginative engagement techniques will help to secure ownership from the community and other stakeholders. It will also help designers to understand their requirements. This is important for the long-term

success of the project.

4.17 As it will be necessary to express the objectives and design ideas to a wide audience, it is useful to consider a range of communication techniques such as:

- site walkabout with stakeholders;
- site visits to other shared space environments;
- 3-D computer visualisation techniques;
- physical models;
- community street design events (e.g. temporary street mock-ups); and
- web-based communication.

4.18 The proposal might be challenged by some stakeholders, so it is important that design decisions agreed at the concept stage are properly documented for later reference. Challenges to shared space often revolve around a case for implementing more conventional street design features. However, such features can compromise the original vision and purpose of the scheme, so designers need to give this careful consideration. It might be preferable to address any concerns through the use of mitigating measures that are more sympathetic to the ethos of shared space.

Checking the design

4.19 It is recommended that a quality audit is considered for all shared space projects. The audit needs to be informed by the scheme vision and purpose. *Manual for Streets* (DfT, 2007) and *Manual for Streets 2* (CIHT, 2010) provide some useful information about quality audit as well as when and how each stage should be undertaken. Further advice on quality audit is in preparation by the Chartered Institution of Highways & Transportation and the Department for Transport.

4.20 Quality audits might include the following:

- street character review;
- road safety audit;
- cycle audit/review;
- access audit (including emergency services and deliveries);
- parking audit;
- walking audit;

- non-motorised user audit (DMRB HD42/04);
 - community street audit;
 - equality impact assessment;
 - visual quality audit;
 - functionality audit;
 - place check; and
 - materials audit.
- 4.21 The above will help to form the evidence upon which design decisions can be based and against which outcomes can be measured. It is not necessarily exhaustive. For example, if the scheme is likely to have a significant effect on the surrounding network, a traffic management audit may be required to understand its implications for movement patterns and journey times.
- 4.22 For any street improvement scheme to continue fulfilling its objectives over time, it is important that maintenance requirements are considered from the outset and budgeted for. A maintenance assessment will help ensure these requirements have been properly considered.
- 4.23 In following contemporary practice on clutter reduction, designers of shared space may wish to take a minimalist approach to design, only introducing features when they are deemed necessary to achieve the desired functionality. Those undertaking reviews as part of the quality audit will need to be mindful of this approach so that any improvements they suggest are sympathetic to it.
- 4.24 It may be appropriate to test the design using traditional traffic management tools, such as junction modelling or micro-simulation, but these have their limitations. While they can help in assessing the potential effects on traffic patterns, they are not designed to specifically model interaction between pedestrians and vehicles. Implementing shared space may increase traffic flow on alternative routes and, while this may be outweighed by the benefits of a new scheme, it needs to be taken into account.
- 4.25 Scheme proposals can be tested to a certain extent through temporary interventions, such as switching off traffic signals, installing temporary street furniture etc.

Monitoring

- 4.26 Post-scheme monitoring is important for recording user behaviour and assessing whether a scheme is operating as planned. It is also helpful for checking if the original vision is being realised.

- 4.27 Monitoring shared space schemes over time can show how they perform against a range of indicators – such as improved pedestrian dwell times, commercial uplift, etc. Monitoring could also include social factors such as people’s perceptions of the new arrangement. Continuing dialogue with stakeholders will provide feedback and help to identify any operational problems that need to be addressed. Such monitoring can also inform future shared space designs.
- 4.28 For any analysis of post-scheme data to be meaningful, pre-scheme records of the various performance indicators are necessary to provide the baseline data. In the case of operational safety analysis, three years of pre-scheme personal injury accident data are required.
- 4.29 It is important to ensure that funding will be available for any proposed monitoring strategy. Funding will also be required to cover modifications to the scheme after implementation, should any become necessary.

5. General design considerations

- Changing the way a street operates requires an understanding of how people currently use the space.
- Shared space can make it easier for the available area to be used flexibly.
- Maintenance requirements need to be considered from the outset.
- Successful shared space streets do not have to use costly materials.
- Extra care is needed in sensitive areas such as historic streets.

- 5.1 Recent guidance on street design includes the *Manual for Streets* (DfT, 2007), Local Transport Note (LTN) 1/08 *Traffic Management and Streetscape* (DfT, 2008a) and *Manual for Streets 2 – Wider Application of the Principles* (CIHT, 2010). These documents emphasise the importance of designing streets as places instead of simply corridors for movement. Traffic Advisory Leaflet (TAL) 1/11 *Vehicle Security Barriers within the Streetscape* (CPNI/DfT, 2011) provides guidance on protecting the public and key infrastructure from vehicle-borne attack.
- 5.2 Introducing shared space is likely to result in a substantial change in street character and the way it operates. Some issues therefore require careful consideration in the early stages of design, such as respecting local architecture, conserving historic features, accessibility, construction constraints and utilities. The design team will need to be able to explain what the changes mean to the street's users and other stakeholders.
- 5.3 In determining whether shared space is an appropriate response, it is important to understand:
- the context of planned and potential improvements, land use, landscape, conservation, frontage and street activity;
 - how the street is intended to fit in the place/movement matrix, and how this can be achieved through the implementation of shared space; and
 - the architectural context and vernacular style, especially in historic settings.

- 5.4 There is likely to be a significant variation in pedestrian and vehicle movement patterns over a 24-hour day. The designer will need to take these changes into account to allow for flexibility of use.
- 5.5 As a general rule, a good design will avoid isolated pockets of the space being hidden from the rest of the street.
- 5.6 Design considerations generally fall into three categories:
- physical and operational;
 - behavioural; and
 - materials, implementation and maintenance.

Data collection

- 5.7 Changing the way a street operates to bring about an increase in the level of sharing requires an understanding of how people currently use the space. It is therefore useful to collect a certain amount of baseline data to inform the design while recognising that planned patterns and levels of use might be quite different from those being recorded.
- 5.8 Useful baseline data include the following:
- traffic speed;
 - classified vehicle counts including cycles;
 - pedestrian crossing movements (at crossings and other desire lines);
 - pedestrian flows along the street;
 - pedestrian composition;
 - collision data;
 - night time traffic and pedestrian activity;
 - location within the traffic and pedestrian networks;
 - identification of desire lines;
 - existence of trip generators such as hospitals, schools, retail outlets, and leisure centres;
 - attitudinal surveys of drivers, cyclists and pedestrians, including disabled people;
 - views from residents, retailers, town centre managers, community safety officers, local access groups, mobility officers, etc.;
 - assessment of the quality of the pedestrian environment;

- assessment of land use and frontage activity;
- analysis of context, e.g. existing street patterns, architecture;
- records (in historic areas) of existing materials and street furniture;
- user audit, e.g. community street audit, access audit; and
- observation of how people use the existing space, e.g. sitting, waiting, socialising, etc.

5.9 Useful lessons can be drawn from observing how other shared space streets operate. However, differing street contexts and the range of behavioural variables means that wholesale comparisons are unlikely to be helpful. It is the way that particular elements work, either individually or in combination, that is important. Studying these aspects will help the designer decide which might be transferable.

Space allocation

5.10 Shared space schemes provide an opportunity to review the allocation of space within the whole of the street. The concept of space allocation may seem at odds with the idea of shared space but, in practice, most shared spaces contain some structuring elements. For example, pedestrians travelling along a shared space street will generally walk alongside the building line (much as they would in a conventional street). In addition, the preference of drivers is to move along the central part of the street, away from building frontages – this preference can be reinforced through the placement of street furniture, tonal contrast and other features in order to enable the edges of the street to operate as comfort space.

5.11 One of the advantages of shared space, and a level surface in particular, is that it makes it easier for the available area to be used flexibly. This is especially useful when room is limited. Figure 5.1 shows a level surface street deemed too narrow to include kerbed footways wide enough to accommodate the desired pedestrian activity and still allow vehicle access.



Figure 5.1 New Road, Brighton

Photo: Wayne Duerden

- 5.12 An important design consideration is a fundamental review of how space is to be used. If width is limited, it is recommended that designers identify the minimum space required for vehicle movement and parking, then allocate the remainder to various pedestrian activities. If this reduces pedestrian space below an acceptable level, it might not be possible to retain parking.
- 5.13 Street space might be required to accommodate some or all of the following key activities or uses:
- pedestrian movement along and across the street;
 - places to socialise in;
 - pedestrian comfort space;
 - events (e.g. regular markets);
 - vehicular movement (including cycles);
 - parking and loading; and
 - bus stops.
- 5.14 In general, making specific provision for comfort space for pedestrians as an operational requirement is only likely to be necessary where a level surface is used. However, the inclusion of a level surface does not mean that comfort space will always need to be actively provided. For example, if motor vehicle flows are such that the space tends to be dominated by pedestrians, the whole street might satisfy the requirements of comfort space. Comfort space is covered in more detail in Chapter 6.

Designing to maintain

- 5.15 For any street improvement scheme to continue fulfilling its objectives over time, it is important that maintenance requirements, including a regular cleaning schedule, are considered from the outset and budgeted for. This is essential if the scheme is to remain a valuable asset and continue to meet its objectives in the future.
- 5.16 The street should be easy to clean – designing it so that as much of the space as practicable can be accessed by cleaning vehicles or manually operated machines can help reduce cleaning costs. Awkward areas where litter and debris can collect and which can only be hand-swept need to be minimised.
- 5.17 Designers should allow for street works taking place in the future. If bespoke materials are used, the authority might wish to keep spare materials in storage to cover later reinstatements. It is also useful for local authorities to keep a copy of the original construction specification on record. This will help ensure future reinstatements match the original

construction quality.

5.18 As the condition of the street surface is often key to a successful shared space, it is particularly important that steps are taken to minimise future disruption by utility companies. Highway authorities can use powers set out in section 58 of the New Roads and Street Works Act 1991 to ensure that any street works known to be required by the owners are carried out before the new surface is laid, and to prohibit subsequent street works for a period of time after scheme completion.

5.19 Future disruption can be minimised by, for example:

- giving utility companies three months' notice that a road is to be resurfaced and that they should complete all known outstanding works before construction starts;
- installing spare underground cable ducts in anticipation of future demand; and
- re-routing services into a common utilities trench, where practicable.

Materials

5.20 During implementation of shared space, the street is likely to undergo large-scale reconstruction, including a change in surface materials. This presents an opportunity to check, and restore where necessary, the structural integrity of the lower layers, thus helping ensure that the new surfacing will last.



Figure 5.2 High Street, Stonehouse, Gloucestershire

Photo: Ben Hamilton-Baillie

5.21 Successful shared space streets need not involve the use of costly or bespoke materials. Careful and sensitive design is more likely to contribute to successful operation. There are many examples of shared space schemes that work well using inexpensive materials. Figure 5.2

shows such an example. Avoiding bespoke materials can also help to reduce maintenance costs, especially as it may otherwise be necessary to hold stocks of these materials for future reinstatements.

- 5.22 Many shared space schemes use concrete or stone setts as a surfacing material. As well as their inherent speed-reducing effect (see *The Manual for Streets: Evidence and Research* (York *et al.*, 2007)), the use of such surfacing helps to differentiate the spaces from surrounding streets. However, such surfaces are relatively expensive and, depending on texture roughness, may not be suitable for disabled people, cyclists and motorcyclists. Care will therefore be required in their selection and location. If resources are scarce, it might be worthwhile limiting setts to certain areas where their effects are most needed (e.g. scheme entry points, vehicle approaches to courtesy crossings, etc.), and use asphalt elsewhere.
- 5.23 Setts tend to generate more road noise from passing traffic, although this can be a particular advantage for blind and partially sighted people, as it can provide an audible reference for navigation purposes.
- 5.24 Tonal contrast in the surfacing can form an important part of a street's legibility. It is often used to help delineate zones within the street, such as the notional carriageway in a level surface scheme, courtesy crossing points, areas where vehicles are not expected, rest areas, and loading or parking bays. To aid street legibility, tonal contrast can be used in conjunction with other features such as level differences, tactile paving, street furniture and planters.
- 5.25 Care should be exercised in choosing the range of colours and tones to avoid overly elaborate designs and potentially greater maintenance costs. It is also important they do not cause confusion with regard to guidance paths/delineator strips, where provided.
- 5.26 Surfacing materials should be resistant to undue colour loss and easy to clean. Tonal contrast can be affected by lighting conditions, and this needs to be taken into consideration.

Historic streets

- 5.27 Extra care is needed in historic streets, including those with asphalt surfaces.
- 5.28 Well designed shared space can bring about many improvements, particularly the reduction of modern day street clutter. However, it is important that creating shared space is appropriate to the street's context.
- 5.29 Features of historic interest should be identified and retained in the new design. Even ordinary streets can show evidence of earlier designs that could be retained for sustainability as well as heritage reasons. Features for retention include:

- historic paving, such as Yorkstone;
- granite setts;
- historic lamp posts;
- street furniture such as statues, fountains, seating and old-fashioned phone boxes;
- historic ironwork such as railings and manhole covers; and
- strengthened paving areas around cellar entrances.

5.30 Changes to the street can affect the setting of historic assets, including older buildings and structures such as statues, fountains and telephone boxes (all of which might be listed). However, changes can be beneficial where, for example, they remove street clutter and allow for unobstructed views of the street and points of interest within it.

5.31 In some cases the form of a street can be an important part of its character. For example, kerbed footways and their alignment might be a defining feature of the street, and their removal can be detrimental to the settings of listed buildings. It may therefore be appropriate to retain kerbs for aesthetic reasons. If there is a strong justification for a level surface, contrasting materials can be used to retain the visual line of the original kerbs.

6. Detailed design

- A relatively uncluttered environment is often a key feature of shared space.
- Low vehicle speeds can be encouraged by a street's appearance, its ambiguity and making it difficult to drive through quickly.
- Courtesy crossings can be very effective in encouraging drivers to give way to pedestrians.
- A level surface should not be a design objective in its own right.
- Comfort space is of particular benefit to disabled people and older people.
- A ladder-grid movement pattern minimises the need for pedestrians to interact with vehicles.
- Parking and loading areas in shared space streets require careful consideration.
- Early consultation with bus operators during the planning stages can be important.
- Shared space streets present an opportunity to provide generous amounts of seating.
- Lighting is an important feature in shared space schemes.

De-cluttering

- 6.1 A relatively uncluttered environment is often a key feature of shared space. De-cluttering is not simply a matter of reducing the use of signs, markings and street furniture associated with traffic management. Many of the traditional features that demarcate space, such as kerbs and material differences, can change or disappear entirely. *Manual for Streets* (DfT, 2007) and Local Transport Note (LTN) 1/08 *Traffic Management and Streetscape* (DfT, 2008a) provide advice on reducing clutter in the streetscape.
- 6.2 Each item of street furniture needs to be justified, and it is good practice to aim for each item to serve more than one purpose. For example, cycle stands, planters, seating and litter bins could be used to define the general carriageway area or act as barriers to protect pedestrian comfort spaces. In addition, litter bins and signing could be attached to street lighting columns. Using items of furniture in this way can reduce

the requirement for single-purpose items and minimise the need for sign posts. Bin design and placement should be carefully considered in order to promote a well-managed and litter-free street.

- 6.3 *Inclusive Mobility – A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure* (DfT, 2002) provides advice on the design and positioning of street furniture.

Designing for low speed

- 6.4 A natural consequence of the change in the place/movement balance brought about by the introduction of shared space is the need to influence the way users move within the area. Changes in behaviour need to act at individual and group levels, and the design of the layout can have a significant influence here.
- 6.5 As a general principle, shared space should present a series of features and events to drivers that require them to increase their awareness and make conscious decisions on how they should negotiate each feature. These could be static, e.g. measures that reduce forward visibility or provide deflection of the vehicle path, or they might be dynamic, e.g. pedestrian activity, possibly catalysed by seating, street cafes etc.
- 6.6 A key check within the design process is to consider how the street presents itself to drivers passing through it, including the nature and frequency of features that encourage drivers to adopt the appropriate behaviour.
- 6.7 Aspects of street design that encourage low vehicle speeds have more influence on encouraging sharing than any other. For high levels of sharing, a design speed of no more than 20 mph, and preferably 15 mph or less, is necessary.
- 6.8 Low vehicle speeds can be encouraged by:
- making the street look and feel different;
 - creating ambiguity for drivers; and
 - making it physically difficult to drive through quickly.
- 6.9 Making the street look and feel different can be achieved by means such as:
- a change in surfacing – block paving has been found to reduce traffic speeds by between 2.5 and 4.5 mph, compared with speeds on asphalt surfaces – see *The Manual for Streets: Evidence and Research* (York *et al.*, 2007);
 - the presence of street trees, street art, cycle parking, or other items of street furniture in unconventional positions such as the middle of

the street (some may need a degree of protection depending on vehicle tracked paths);

- a reduction in the use of signs and other traffic management measures;
- introducing visual narrowing;
- reducing forward visibility; and
- using tighter geometry.

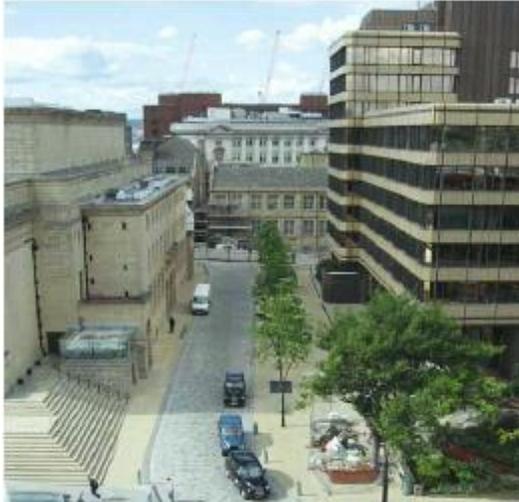


Figure 6.1 Visual narrowing

Photo: Ben Hamilton-Baillie

- 6.10 Features such as planting, parked vehicles and public art can reduce forward visibility and introduce horizontal deflection to create a meandering route through the space. They can be particularly useful where streets are long and straight. Care should be taken to ensure that places where pedestrians are likely to cross are not obscured.
- 6.11 These features can also be used to create visual narrowing of the street. Visual narrowing can be especially effective in changing a street's character. Figure 6.1 shows how the addition of a row of trees has been used to visually narrow the street (and improve its sense of place).
- 6.12 Tightening up the geometry of the street includes the use of small corner radii at junctions (where kerbs are retained) and deliberate changes of direction. It might be necessary to conduct a swept path analysis to ensure that the largest vehicles the street needs to accommodate can pass through.
- 6.13 Designers may wish to consider further restricting width and increasing horizontal deflection at key locations such as crossing points, even though this could require large vehicles to negotiate them at speeds well below the design speed. Given that most shared space streets are

of limited extent, this is unlikely to create unacceptable delays to vehicles. Chapter 7 of the *Manual for Streets* (DfT, 2007) provides further advice on measures that encourage low traffic speeds.

- 6.14 Many of these features also encourage pedestrians to use the street space. Other measures that encourage this include rest areas, art installations, and street cafes.
- 6.15 In addition to controlling speeds, it might be desirable to reduce motor vehicle flows for a shared space to work well. This can be achieved by changes to the surrounding network, although it may not always be necessary. Many shared space schemes experience lower flows on completion simply as a consequence of the tendency for some drivers to avoid such environments.

Transition to shared space

- 6.16 It is important that drivers enter shared space streets at an appropriate speed. It might therefore be useful to convey this requirement to them on the approach by means of a gateway feature. Ideally, the feature would encourage drivers to slow down to the scheme's design speed before entering the shared area. Figure 6.2 shows an example of a shared space gateway feature.
- 6.17 However, gateway features are not always necessary. Where the scheme begins at a T-junction for example, speeds on entry tend to be low and in these situations the space can often announce itself. In general, gateways will only be necessary for operational purposes where entry speeds exceed the scheme's design speed (although designers may wish to incorporate a gateway feature anyway for aesthetic reasons).



Figure 6.2 Example of a shared space gateway feature

Photo: Stuart Reid

- 6.18 The change from a conventional street to a shared space could be indicated by various measures used singly or in combination, such as:
- a reduction in road width;
 - visual narrowing (e.g. trees either side of the entry point);
 - a portal feature that reduces the visual (or actual) height;
 - a raised table;
 - a change in surfacing material; and
 - signing.
- 6.19 Where the speed difference either side of the transition is significant, physical traffic calming features using horizontal or vertical deflection might be required to bring traffic speeds down quickly.

Crossings

- 6.20 In shared space, crossings tend to be uncontrolled, although on busier shared space streets controlled crossings are sometimes necessary. However, controlled crossings using signals can cause drivers to behave in ways not entirely compatible with the shared space ethos. For example, they might travel a little faster when they see such a crossing because of the greater certainty with which they can predict pedestrian behaviour. While Zebra crossings may be better in this respect, they still need to be signed and marked in accordance with the Regulations, and this can detract aesthetically from a relatively sign-free environment.
- 6.21 Crossings in shared space are often called courtesy crossings. Figures 6.3 and 6.4 show some good examples. These crossings are so named because there is no statutory requirement for drivers to give way to pedestrians, but many do out of courtesy. In practice, it appears that drivers tend to treat courtesy crossings as they would a Zebra crossing.



Figure 6.3 Courtesy crossing, Chester

Photo: Ben Hamilton-Baillie



Figure 6.4 Courtesy crossing, Poynton

Photo: Andrew Coward

6.22 In order to reinforce this behaviour, courtesy crossings can be highlighted in a number of ways, including:

- using tonal contrast;
- using bollards or other vertical features to indicate the pedestrian entry to the crossing;
- locating the crossing on a raised table (where a level surface is not

a general feature);

- locally narrowing the carriageway to create vehicle pinch-points; and
- using a section of differently textured surfacing on vehicular approaches to the crossing.

6.23 Pinch-points can create problems for cyclists if there is enough room for drivers to overtake, but not enough for the manoeuvre to be carried out safely. If the narrowing is physical (as opposed to visual), 4 metres or more clear width should be sufficient to allow a typical car to pass a cyclist safely. Such a gap will also create a give-and-take situation for opposing flows of motor vehicles, which further calms traffic in the vicinity of the crossing. That said, pinch points should be much less of an issue for cyclists in shared space, given the vehicle speeds which can be expected.

6.24 Textured surfacing on the approach should not extend over the actual crossing if it is likely to be uncomfortable for people to walk on. It is also important that the surface texture does not cause stability problems for cyclists or motorcyclists, particularly when it is wet. It can be useful to include a smooth strip for the benefit of cyclists.

6.25 Crossings are best located on pedestrian desire lines. Desire lines can be determined in a number of ways, including:

- analysing pre-scheme pedestrian movement patterns;
- anticipating significant attractors within the new arrangement; and
- public and stakeholder engagement.

6.26 Ensuring that intervals between courtesy crossings are reasonable will benefit pedestrians and present frequent features to help increase driver awareness. Crossings should be orientated to provide the shortest possible crossing distance. However, pedestrian desire lines might not always be perpendicular to the carriageway. Figure 6.5 shows how innovative use of surfacing materials at a courtesy crossing can accommodate a number of desire lines. Note that the figure does not show the necessary tactile paving which should serve the perpendicular crossing alignment.

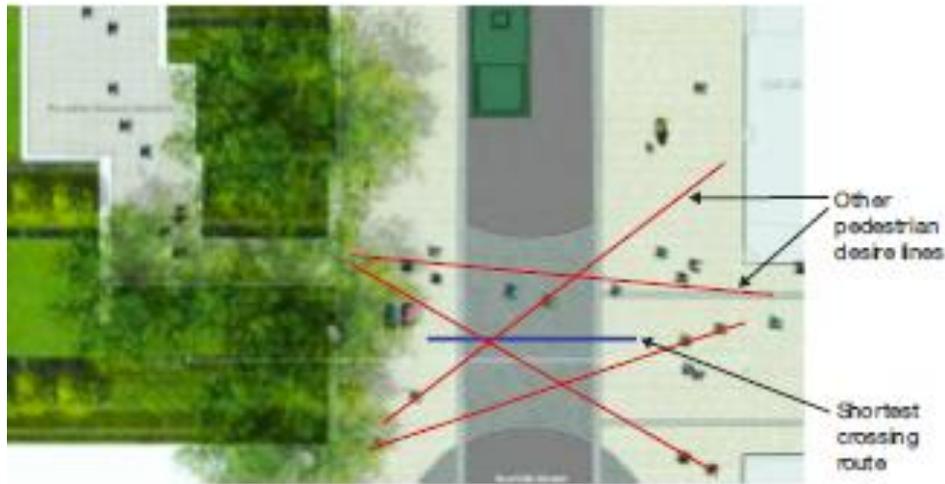


Figure 6.5 Crossing accommodating various desire lines

Image: Ben Hamilton-Baillie

Level surfaces

- 6.27 Level surfaces seem to be most acceptable to drivers and pedestrians when parts of the space are understood to be mainly reserved for pedestrian use. Research suggests that level surfaces are appreciated by many disabled people, including deaf people, people with learning difficulties and people with impaired mobility.
- 6.28 A level surface should not be a design objective in its own right. Any decision to use a level surface should be the result of a thorough consideration of what is required to deliver the desired degree of sharing. The time for considering the need for a level surface is at the action stage of scheme development, i.e. only after the vision and purpose have been established.
- 6.29 A level surface can have a significant visual effect that can create a more coherent and attractive public realm. Some other advantages of level surfaces are that they:
- make crossing the street easier physically;
 - can have a calming effect on traffic;
 - allow for more efficient use of space, especially when street width is limited; and
 - allow for flexible use of the space.
- 6.30 However, level surfaces will not be appropriate in all circumstances, such as where vehicle flows preclude a high degree of sharing, or in some conservation areas where kerb lines might be defining features of the street. There are also implications for drainage design.
- 6.31 Level surfaces, especially in busier settings, can create significant

problems for blind and partially sighted people who often use kerbs to define comfort space and to navigate by. Where a level surface is desirable therefore, it may be necessary to implement mitigating measures.

- 6.32 The extent of mitigation required will depend on the circumstances. Measures to demarcate the notional carriageway could include, for example, tactile paving, bollards, or other street furniture.
- 6.33 In general, motor vehicles tend to stay towards the centre of the street in a shared space, even when it has a level surface. This behaviour can be reinforced by the use of tonal contrast in the surfacing. Where tonal contrast is used in this way, abstract patterns that might confuse any delineation messages need to be avoided. Buildings and other vertical features in a level surface street might need some form of physical protection, depending on their proximity to vehicle swept paths.

Tactile paving

- 6.34 For shared space streets without a level surface, *Guidance on the Use of Tactile Paving Surfaces* (DETR, 1998) will generally apply. In streets with a level surface, tactile paving is sometimes used as a delineator strip between the notional carriageway and the footway – a use not covered in the tactile guidance. Corduroy paving, which conveys the message ‘hazard, proceed with caution’, is usually used (although some schemes use other tactile methods, such as a textured setts). It can be useful to use a contrasting colour for the delineator strip.



Figure 6.6 Corduroy delineation changing to blister paving at crossing

Photo: Stuart Reid

- 6.35 As part of the development of Exhibition Road, London, into a shared space with a level surface, trials were carried out on the suitability of corduroy paving for this purpose – see *Exhibition Road Corduroy Delineator Testing* (MVA, 2011). The trials demonstrated that an 800

mm wide strip of corduroy tactile paving could be reliably detected by blind and partially sighted people. The trials also found it didn't represent a barrier to mobility-impaired people. An examination of the results suggests that there may be scope for reducing this width to 600 mm while maintaining its effectiveness as a delineator strip.

- 6.36 Where corduroy paving is used as a delineator, it should change to blister paving at crossing points – see Figure 6.6. Blister paving should not be used as a general delineator because of its specific meaning of indicating a crossing point. In addition, over-use of blister paving can create instability issues for some users, particularly disabled people or older people.

Comfort space

- 6.37 Comfort space is defined in Chapter 1 thus:

Comfort space: *An area of the street predominantly for pedestrian use where motor vehicles are unlikely to be present.*

- 6.38 When considering the need for comfort space, designers need to check if the type of environment warrants its addition and, if so, whether the layout of the street already provides it. In a conventional street, kerbed footways usually provide comfort space. In a level surface street, comfort space is provided by other means. In general, it should only be necessary to specifically design for comfort space where a level surface is used.
- 6.39 It is not always necessary to design for comfort space in level surface streets because certain arrangements have inherent comfort space. For example, comfort space might be provided by a shopping colonnade some distance from vehicle tracked paths. Some level surface environments, such as Home Zones and residential mews, can be quiet enough to be comfort spaces in their own right.
- 6.40 However, comfort space always needs to be taken into account – if the layout does not provide sufficient comfort space naturally, it needs to be designed in.
- 6.41 Comfort space is of particular benefit to disabled people and older people, but it is especially important for blind and partially sighted people, and it needs to be designed with their needs in mind.
- 6.42 Comfort space should be uninterrupted between junctions and connect to suitable crossing points along the street. However, it does not need to be delineated by a continuous barrier (which would defeat the object of shared space). Delineation might range from a tactile strip to, say, a row of bollards every few metres. It could even be largely absent, such as where the comfort space is in front of a row of shops some distance from vehicle tracked paths. Comfort space can also be indicated by

different features in combination.

- 6.43 Comfort space is of most value in busier streets. As the impact of vehicular traffic reduces, the usefulness of comfort space diminishes. On the quietest of streets, specific measures to provide comfort space might be unnecessary.
- 6.44 Omitting all delineation is only likely to be appropriate in quieter streets where the building line (the most important navigation feature for blind and partially sighted people) can be easily followed or where the consequences of straying from it are minimal.
- 6.45 Where the need for specifically providing comfort space is not clear cut, such as in lowly-trafficked situations or where vehicle tracked paths are some distance from the building line, it might be worthwhile omitting it in the first instance and observing the new layout in operation. Comfort space can always be created later if the need for it becomes apparent, although the initial layout will need to be designed with this possibility in mind.
- 6.46 Discussing the need for comfort space (and how it might be provided) with local access groups and other stakeholders can be especially useful. Such engagement can focus on a site-specific solution, which might be more appropriate than one arrived at following a more formulaic approach to design.
- 6.47 While drivers tend to travel down the centre of shared space streets, in some circumstances it may be necessary to implement measures to discourage them from encroaching into the comfort space. At its simplest, this might be achieved by using tonal contrast. If this is insufficient, it could be reinforced by, for example, the careful siting of occasional items of street furniture. If parking in comfort spaces becomes a problem, compliance may be best realised through better enforcement rather than by adding physical features.
- 6.48 Figure 6.7 illustrates how comfort space might be realised using a range of features.

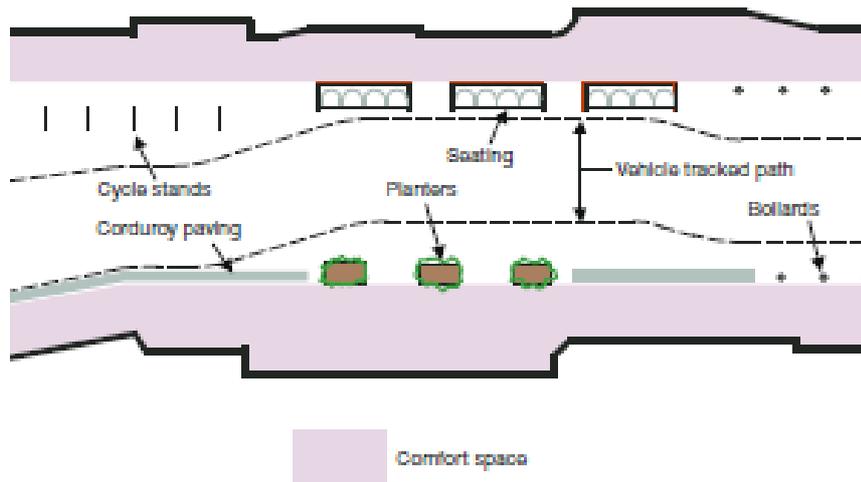


Figure 6.7 Comfort space

The ladder grid

- 6.49 In general, pedestrians in a conventional street will use the sides of the street to travel along it, and cross at distinct points along its length. This movement pattern can be described as a (virtual) ladder grid pattern.
- 6.50 While a prime objective of shared space is to enable pedestrians to move more freely through the space by crossing in places and at angles of their choosing, blind and partially sighted people are likely to want to continue to move along and across the street in a ladder grid pattern.
- 6.51 A ladder-grid minimises the need for pedestrians to interact with vehicles, it keeps crossing distances relatively short, and it allows blind and partially sighted people to make best use of the of the building lines or comfort spaces for orientation and navigation purposes.
- 6.52 Figure 6.8 illustrates the ladder grid concept where comfort spaces on either side are linked by the crossings. As a general rule, where specific provision of comfort space is considered necessary, a ladder grid will also be required.

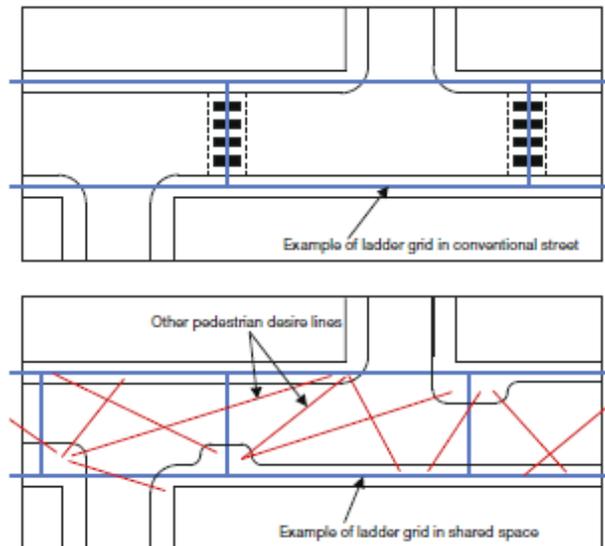


Figure 6.8 The ladder grid concept

- 6.53 Shared space can encourage increased activity in the body of the street. It may, for example, encourage cafe owners to seek to expand into the space to create a street cafe. Designers need to bear this possibility in mind and consider how to balance the overall social benefits of such developments with the needs of pedestrians and, in particular, the navigational needs of blind and partially sighted people.
- 6.54 A ladder-grid (if necessary) should be arranged so that its routes are not obstructed by such developments. One way of achieving this is to maintain a clear route for pedestrians along the building line between the premises and the street cafe area.

Parking and loading

- 6.55 Parking and loading areas in shared space streets require careful consideration, especially where a level surface is used. It is important that vehicles do not obstruct pedestrians or create other problems for them. Parked vehicles can be a particular hazard for blind and partially sighted people, who may walk into wing mirrors, opened doors, lowered tailgates, etc.
- 6.56 Short- and long-stay parking present different design issues to be addressed. Short-term parking may be desirable for shoppers, but will be accompanied by frequent vehicle movements. Long-term parking generates less frequent movements, and need not be located as close to the shops etc., but it creates a longer static presence on the street. The merits of each need to be considered in relation to the street's context, the scheme's design vision and parking provision in the neighbouring areas.
- 6.57 For disabled people, being able to park near important destinations is one of the advantages that shared space has over pedestrianised areas. The location of parking for Blue Badge holders is an important

consideration, and local organisations representing disabled people can help in this respect.

- 6.58 Care will be needed to discourage vehicle encroachment into areas predominantly used by pedestrians, including comfort space where provided. A particular problem in level surface streets can arise if the parking bays are close to pedestrian space along the building line with no physical feature separating the two. Inconsiderate parking can result in vehicles encroaching on the space, which may prevent wheelchairs or buggies from getting through. Figure 1.1 in Chapter 1 shows how street furniture can be used to protect the footway from parking and loading in a level surface scheme.
- 6.59 Where parking and loading are controlled, it is important that restrictions are clearly indicated. Failure to address this issue can result in high levels of non-compliance and difficulties in enforcing restrictions.
- 6.60 Using yellow lines to indicate parking restrictions can compromise the aesthetics of shared space schemes, especially where other road markings are largely absent. Restricted parking zones avoid the need for yellow lines, but the restrictions need to be clear to motorists.
- 6.61 If the need for parking bays is anticipated, it will be beneficial to include them in the design from the outset. Note that the use of coloured pavements as a road marking needs to be authorised.
- 6.62 Parking can be used to help in demarcating pedestrian space. It can also be arranged to introduce road narrowings and horizontal deflections to control vehicle speeds. End-on or echelon parking is particularly effective in this respect, but it may not be aesthetically appropriate in all situations.
- 6.63 Where delivery or loading takes place throughout the day, and where no appropriate facilities exist at the rear of the business premises, specific provision may be required for delivery vehicles. Ideally, the arrangement would involve minimal distance between the loading area and the businesses being served, and a loading route that avoids heavily textured areas which can make the movement of wheeled loads difficult.

Cycle parking

- 6.64 In general, cycle parking is best located as closely as practicable to major trip generators in the street, with additional parking dispersed along the street's length as appropriate. Well designed and appropriately positioned cycle stands will help to discourage informal cycle parking which can be inconvenient for pedestrians.
- 6.65 Sheffield stands with adequate spacing are popular with cyclists, as they are easy to use and offer an effective means of securing cycles. Isolated stands and end stands in a row of stands should be fitted with

a low level tapping rail to aid blind and partially sighted people.

- 6.66 Cycle parking should not obstruct pedestrian desire lines, especially through comfort space (though it could provide a boundary feature to the comfort space – see Figure 6.7). It might be possible to incorporate cycle attachment points with other street furniture, but care is required to ensure that parked cycles do not become a hazard to others.
- 6.67 LTN 2/08 *Cycle Infrastructure Design* (DfT, 2008b) provides further advice on cycle parking.

Public transport

- 6.68 A shared space scheme can affect bus services in a number of ways. It may become a new bus route, it may continue to serve existing buses, or it may displace bus services to surrounding streets. If the scheme is going to affect bus services, early consultation with bus operators during the planning stages is important.
- 6.69 Bus stops need to be accessible. Where kerbs are retained, a bus boarder can be provided with a locally raised kerb. Chapter 6 of *Inclusive Mobility – A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure* (DfT, 2002) provides an illustration of an accessible bus stop. The above arrangement can be adapted to level surface schemes by tapering the raised surface down to street level at a gradient no steeper than 1 in 20.
- 6.70 There is anecdotal evidence of buses and taxis sometimes travelling at inappropriate speed in certain shared space streets. It might therefore be worthwhile contacting bus operators and local taxi companies to ensure their drivers are aware of what is required of them when passing through these areas.

Seating

- 6.71 Improving a street's sense of place is key in shared space design, and a significant indicator of success in this regard is increased pedestrian dwell times. Shared space streets present an excellent opportunity to provide generous amounts of seating, which can encourage people to spend more time in the street. Conversely, there might be little incentive for people to stop and socialise if seating is largely absent.
- 6.72 Seating is best situated in well overlooked locations. It is of particular benefit to disabled people, older people and people carrying heavy shopping. *Inclusive Mobility* recommends seating at intervals of no more than 50 metres in commonly used pedestrian areas. Advice on seating is also available in a seating design guide published by I'DGO (Inclusive Design for Getting Outdoors) – see *The Design of Streets with Older People in Mind* (Newton and Ormerod, 2007–2011).



Figure 6.9 Seating in Great Queen Street

Photo: Tim Long

- 6.73 Although disabled and older people are likely to prefer conventional seating, other opportunities to rest can be provided less formally, such as by bespoke seating, low walls, or other street furniture. Figure 6.9 shows an example of seating that has been designed to integrate well with litter bins, creating an attractive uncluttered environment.

Traffic signs and road markings

- 6.74 The *Traffic Signs Regulations and General Directions* (TSRGD) 2002, as amended, detail all the prescribed traffic signs applicable in the UK (including road markings, which are technically traffic signs).
- 6.75 However, there is no underlying need to provide traffic signs. They are required to inform or warn road users and give effect to traffic regulation orders, and, while it may be easier to default to typical signing layouts, it is often possible to follow a more sensitive approach. Reducing the use of signing reflects general good practice, but it is particularly appropriate in shared space – indeed, it might be a fundamental part of the design.
- 6.76 The *Manual for Streets* (DfT, 2007) and LTN 1/08 *Traffic Management and Streetscape* (DfT, 2008a) provide further advice on reducing the use of signing. General advice on the application of prescribed signs is given in the *Traffic Signs Manual* (DfT, 1982–2009). Where non-prescribed signs are considered necessary, they need to be authorised.

Lighting

- 6.77 Lighting is important in shared space. Although creating ambiguity for drivers is one of the ways of designing for low speed, it should not be

achieved through inadequate lighting. For the street to be shared, drivers need to be able to observe pedestrian behaviour day or night.

- 6.78 Lighting needs to be considered at an early stage in the design process. Well designed lighting can enhance a street's night-time sense of place, and making lighting an integral part of the design will reduce clutter as well as improve the appearance of the street. Lighting can be incorporated into items of street furniture such as planters or bollards, or attached to buildings where practicable.
- 6.79 Lighting needs to be fairly even, as areas in shadow can give rise to concerns over personal security. Chapter 10 of the *Manual for Streets* (DfT, 2007) provides further advice on lighting. An example of well designed lighting is shown in Figure 6.10.



Figure 6.10 Well designed lighting, Devize

Photo: Ben Hamilton-Baillie

Drainage

- 6.80 Drainage requires careful consideration in shared space design, especially where a level surface is used. New drainage paths might differ from existing ones, so it may be necessary to install additional gullies. Excessive crossfall on pedestrian desire lines needs to be avoided, as it can create difficulties for many disabled people – see Chapter 3.
- 6.81 Particular care is required to ensure that ponding does not take place and

that surface water drains properly in the absence of kerb upstands. Linear surface drainage is often used to mitigate the loss of the kerb. If tactile delineator strips are provided, it might be appropriate to locate the linear drains immediately alongside them.

- 6.82 Many shared space schemes use block pavements, which offer opportunities for implementing a permeable drainage surface. Detailed guidance on sustainable drainage systems (SUDS) is contained in the *Interim Code of Practice for Sustainable Drainage Systems* (CIRIA/National SUDS Working Group, 2004).

Wheel loading

- 6.83 The surfacing and its underlying construction should be designed to accommodate vehicle loading as appropriate. This includes mortar mixes, drain gratings and other surface features. Quality of workmanship is important, particularly when using materials such as setts, or bespoke items. Defects and poor detailing can spoil the appearance of the street and create trip hazards.
- 6.84 It is worthwhile assuming that any part of the space that can be physically accessed by vehicles may well be at some time or other, regardless of whether such access is allowed or not. As such, it is useful to consider the likelihood of this and whether any vehicle-accessible area needs to be constructed to accommodate wheel loading. This does not necessarily mean that every vehicle-accessible surface needs to be able to take HGV loads – it will depend on the likelihood of particular classes of vehicle occupying a given area.
- 6.85 Failure to address this issue can result in areas intended mainly for pedestrian use suffering from damaged pavements.

Alternative routes

- 6.86 The availability of suitable alternative routes can have a significant impact on traffic flows following scheme completion. It has been observed at a number of shared space schemes that some drivers avoid the street after it has been converted to shared space. However, it is also possible that drivers might be attracted to the street if the implementation of shared space results in less delay.
- 6.87 The potential for a considerable transfer of traffic to adjacent streets needs to be recognised – planning for shared space should be considered in the context of the surrounding area, rather than looking at the street in isolation. It is important that improving conditions for pedestrians in one street does not result in a worsening of the pedestrian environment in adjacent streets.

Remedial measures

- 6.88 There may be times when certain elements of the design do not

perform as well as intended. Designers need to bear this in mind and be prepared to monitor the scheme and make modifications (possibly some time after scheme implementation) if required.

- 6.89 Some modifications can be difficult to implement if the necessary infrastructure is not built in as a contingency measure. It is therefore useful to consider what the potential modifications are, and base the need for any such contingency works on the likelihood of them being required. For example, where the need for a particular traffic sign is not clear, it might be worthwhile omitting the sign but installing a cable duct for illumination purposes should it become necessary later.

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