

# Manual for Streets 2: Digested Read

---

## Technical Information Note No. 24

September 2011



## About Sustrans

Sustrans makes smarter travel choices possible, desirable and inevitable. We're a leading UK charity enabling people to travel by foot, bike or public transport for more of the journeys we make every day. We work with families, communities, policy-makers and partner organisations so that people are able to choose healthier, cleaner and cheaper journeys, with better places and spaces to move through and live in.

It's time we all began making smarter travel choices. Make your move and support Sustrans today.  
[www.sustrans.org.uk](http://www.sustrans.org.uk)

Head Office  
Sustrans  
2 Cathedral Square  
College Green  
Bristol  
BS1 5DD

© Sustrans September 2011  
Registered Charity No. 326550 (England and Wales) SC039263 (Scotland)  
VAT Registration No. 416740656

Issue level: 02  
Owned by: NCN Director  
Contact: [tony.russell@sustrans.org.uk](mailto:tony.russell@sustrans.org.uk)

All photos by Sustrans unless noted otherwise

# Principles

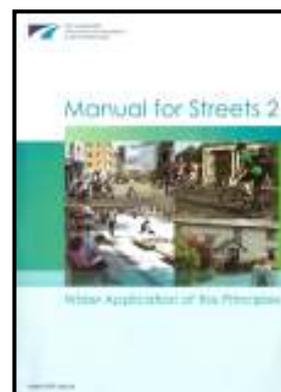
Manual for Streets 2<sup>1</sup> (MfS2) is published by the Chartered Institution of Highways and Transportation (CIHT), in collaboration with DfT and the Welsh Assembly Government. These guidelines take the principles set out in Manual for Streets<sup>2</sup> (MfS1) and demonstrate through guidance and case studies how they can be extended beyond residential streets to encompass both urban and rural situations. Within this TIN, MfS1 and MfS2 refer to these specific documents whilst MfS refers to the principles underlying and common to these.

MfS1 and MfS2 are guidance rather than mandatory, and apply to England and Wales; within Scotland, Designing for Streets<sup>3</sup> combines policy and guidance on street design. However, it is less detailed and many of the MfS case studies will be relevant there.

MfS2 has been designed to assist local highway and planning authorities as well as their consultants and contractors to bridge the gap between MfS1 and the Design Manual for Roads and Bridges (DMRB) to deliver more contextually sensitive designs for new or existing highways. The DMRB (published by the Highways Agency, the Scottish Executive, the Welsh Assembly Government and the Department for Regional Development Northern Ireland) relates to Trunk Roads and Motorways and so has a strong focus on designing out conflict and reducing the demands on road users; however, it has often been used inappropriately for local roads. The principal changes to DMRB design practice, common with MfS1, are:

- Applying a user hierarchy
- Emphasising a collaborative approach
- Recognising the importance of the community function
- Promoting an inclusive environment
- Reflecting and supporting pedestrian and cyclist desire lines
- Developing masterplans and preparing design codes
- Establishing a clear vision and setting objectives for schemes
- Striking a locally appropriate balance between the needs of different user groups
- Creating networks of streets that provide permeability and connectivity
- Moving away from hierarchies of standard road types
- Developing street character types
- Encouraging innovation
- Using quality audit processes
- Designing to keep vehicle speed at or below 20mph
- Using the minimum of highway design features

Table 1.1 of MfS2 demonstrates that most MfS advice can be applied to a highway regardless of the speed limit, subject to the local context. **MfS2 therefore recommends that designers should use MfS as a starting point for any scheme affecting non-trunk roads (1.3.2).**



<sup>1</sup> Manual for Streets 2, Chartered Institution of Highways and Transportation, 2010

<sup>2</sup> Manual for Streets, DfT, 2007

<sup>3</sup> Designing for Streets, The Scottish Government, 2010

Speed Limit	20mph	30mph	40mph	50+mph
User Hierarchy	●	●	●	●
Team Working	●	●	●	●
Community Function	●	●	●	●
Inclusive Design	●	●	●	●
Ped/Cycle Support	●	●	●	●
Master Plans/Design Codes	●	●	●	●
Stopping Sight Distance	●	●	●	●
Frontage Access	●	●	●	●
Minimise Signs and Street Furniture	●	●	●	●
Quality Audits	●	●	●	●
Connectivity/Permeability	●	●	●	●

Table 1.1 Application of key areas of MfS advice

Note: ● yes    ● subject to local context

Fundamental to the MfS approach is taking account of multiple objectives when developing transport schemes, many not traditionally associated with traffic. These include economic regeneration, climate change, casualty reduction, reducing air and noise pollution, impact on natural environment, heritage and landscaping, and encouraging more sustainable and healthy travel. LTN3/08 Mixed Priority Routes contains 10 case studies of busy roads that have helped to inform the MfS2 process.

These principles should help Sustrans make the case for designs on local roads that promote the use of sustainable modes and give them an advantage over private motor vehicles. In recognising the importance of placemaking rather than just traffic movement, it allows the inclusion of wider considerations that Sustrans promotes, such as community function and street character, in scheme development which in turn should support innovation.

## Selected Highlights

This section provides selected highlights of the content of MfS2 (quoted in bullet points) that may be of particular interest to those involved in the development and delivery of walking and cycling schemes. An Appendix includes a chapter by chapter summary of the contents.

### *Cycling in Pedestrian Areas*

Permitting cyclists into pedestrian areas is a regular issue to address, and MfS2 provides useful advice on this:

- Where there are proposals to introduce vehicle restricted or pedestrianised areas, the starting position should be that cyclists are allowed to continue to use the streets concerned. If there are concerns about conflict between cyclists and pedestrians, the preferred approach is to allow cycling from the outset on the basis of an experimental traffic regulation order and only restrict access when and if the need has been demonstrated. (2.3.11)

### *Risk and Liability*

There is a short but very important chapter on Risk and Liability, which puts the risk aversion that is often encountered amongst certain local authority and consultancy staff into a helpful perspective and should help address their concerns. It cites case law and extracts from the UK Roads Board second edition of the Highway Risk and Liability Claims<sup>4</sup> (HRLC). It emphasises the responsibility

<sup>4</sup> Highway Risk & Liability Claims, UK Roads Board, 2009

that is placed on the driver, the importance of professional judgement by the designer and the absence of any significant record of claims being made against a local authority on the basis of defects in a design:

- Use of the highway: “the public highway is a public place which the public may enjoy for any reasonable purpose, provided the activity in question does not amount to a public or private nuisance and does not obstruct the highway by unreasonably impeding the primary right of the public to pass and repass” Lord Chancellor, DPP v Jones 2000 (3.1.5)
- Looking out for children: “The Highway Code requires motorists to take particular care in looking out for children in built up areas and to travel at an appropriate speed. In the case of Russell v. Smith and Another 2003 EWHC, a motorist, Miss Smith collided with a young cyclist who had emerged into her path from a side road. Failure to observe a provision of the Highway Code is something which a court can take into account when assessing liability, and does not involve fault on the part of the driver. The court judged that Miss Smith had failed to observe the provisions of the Highway Code that requires drivers to have regard to the safety of children in a residential area, and was held partly liable.” (3.1.9)
- Drivers are responsible for their own safety: “The overriding imperative is that those who drive on the public highways do so in a manner and at a speed which is safe having regard to such matters as the nature of the road, the weather conditions and the traffic conditions. Drivers are first and foremost themselves responsible for their own safety” Gorringe v Calderdale , Lord Scott at para 76 (3.1.10)
- Design, defects and liability (HRLC): “There have been very few cases relating to alleged defects in design. A request went out to members of the CSS in 2008 for cases that had gone against the authority on the basis of design. There was no significant history. There was a small number of live cases that were tending to focus on trip hazards resulting from design. There is of course nothing stopping an individual making a claim for a design defect, however the instances seem rare and the chances of success remote.” (3.1.13)
- Professional judgement (HRLC): “The authors of guidance, however accomplished, will not be cognisant of the site and situation in question. It would be neither reasonable nor rational to presume that anyone could produce an optimal design in abstract. The informed judgement of trained professionals on-site, should logically take precedence over guidance.” (3.2.3)

### ***Consultation***

Many local authority consultation processes are very limited in scope; however, MfS2 recognises the importance of more thorough engagement and highlights the pioneering work Sustrans has done with DIY Streets:

- On many schemes there will be a need for thorough public consultation and involvement. The Mixed Priority Route projects all spent considerable time and effort to consult widely which resulted in much improved and well received schemes. (4.2.1)
- These principles can also be applied on small low budget schemes, for example the Sustrans DIY Streets project which is yielding significant benefits to local people. (4.2.2)

### ***Road Safety Audit***

Road Safety Audit (RSA) is covered in Sustrans’ TIN 23; there are useful references in MfS2 on the value of including a risk assessment within a RSA. What the risk assessment approach allows the designer to do is to weigh up all of the evidence in coming to a balanced decision. This may be valuable in situations where it appears that a RSA has not taken such an approach:

- A highway authority might consider asking for a risk assessment to be provided for each recommendation resulting from a RSA. (4.5.8)

- The road safety auditor should be able to provide some assessment of the risk, and the reasoning why a recommendation is made. This approach gives the designer a clear indication of the importance of particular issues and problems raised, and an audit trail. (4.5.11)

### **Reallocation of Road Space**

Many schemes to encourage walking and cycling entail the reallocation of road space from motor traffic to non motorised users. A frequent obstacle put forward against such schemes is the reduced carriageway and lane widths for motor traffic. MfS2 helps put the case for such schemes as it highlights that there can in fact be important wider benefits from reduced lane widths and that the designer should make the judgement on what is appropriate:

- UK practice has generally adopted a standard lane width of 3.65m but this can be unsatisfactory for cyclists. Narrower lanes will be appropriate in many circumstances, particularly in built up areas, resulting in carriageways that are easier for pedestrians to cross and encouraging lower traffic speeds without causing a significant loss of traffic capacity. Lanes wider than 3m are not necessary in most urban areas carrying mixed traffic. At a traffic signal stop line, where HGV and buses make up only a small proportion of traffic flow, 2–2.5m wide lanes would be sufficient for most vehicles, and would reduce overall carriageway width requirements. (8.6)
- MfS1 Figures 6.18 and 7.1 provides information on the width requirements of different types of vehicle, and these can be taken as a guide to minimum lane widths. (8.6.4)

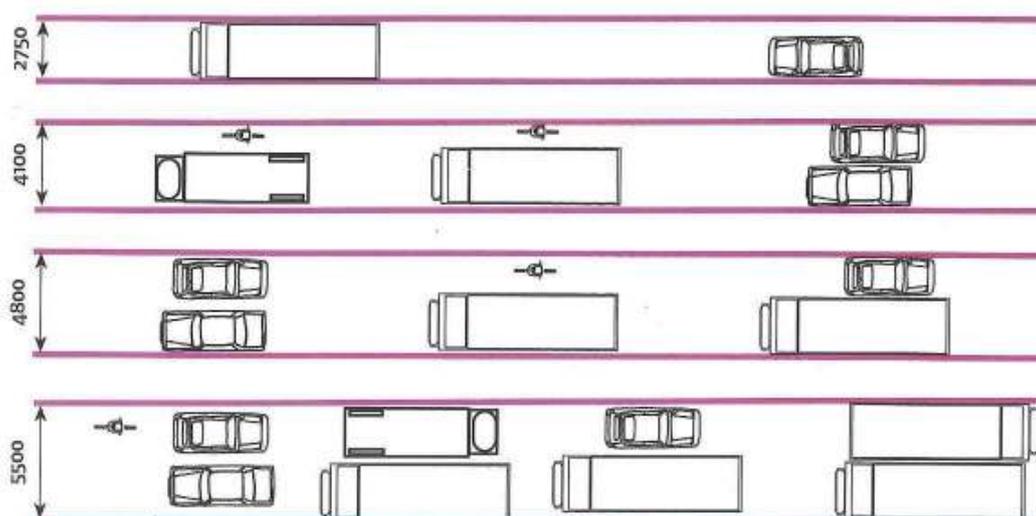


Figure 7.1 Illustrates what various carriageway widths can accommodate. They are not necessarily recommendations.

### **Informal Crossings**

Where a shared use route crosses a road at an informal crossing point (i.e. without traffic lights or a zebra), Sustrans strongly encourages local authorities to highlight the presence of the crossing in some way. MfS2 encourages the provision of informal pedestrian crossings that are clearly highlighted as such for both pedestrians and motor traffic. Particular benefits highlighted include (9.3):

- They can indicate more clearly to drivers where pedestrians are encouraged – and are therefore likely - to be crossing.
- Designs can make use of contrasting paving materials, street furniture and changes in carriageway width and level to emphasise pedestrian movement.

- When done well, in a slow speed traffic environment, they will often encourage drivers to give informal priority to pedestrians.

## **Zebra Crossings**

Despite the reluctance of many local authorities to put them in, MfS2 encourages the provision of Zebra crossings for various reasons (9.3):

- Offer the greatest advantage to pedestrians as they give them priority over all other traffic.
- In some authorities there has been a move away from providing zebra crossings towards signalised crossings, on the basis that they represent an 'upgrade' but this is not necessarily the case. Research in London found that it was not possible to ascribe a safety benefit to the conversion of zebra crossings to pelicans.
- Typically result in lower delays to traffic flow, except when pedestrian flows are heavy.
- More immediately visible to drivers than signalised crossings and can be located closer to junctions, which can help to put crossings on desire lines.
- Can be used across minor road junctions close to the give way line, when it is judged desirable to provide clear pedestrian priority across the minor road.

Sustrans also supports the provision of more Zebra crossings. Due to the nature of the document, MfS2 makes no reference to cycling over zebras, which is covered in Sustrans' TIN 17.

## **Conclusions**

MfS2 is a critical document for highways and traffic engineers working on non Trunk Road schemes as it fills a large gap in the guidance available. It also raises challenges in designing for cyclists to give more consideration to the sense of place as well as to the operation of a scheme. It is available to purchase as a hard copy or payment can be made for an electronic version for intranet use.

Sustrans welcomes the approach advocated in MfS2, which signals a significant change in direction from many 'traditional' engineering practices; of particular note are changes such as:

- Greater emphasis on street function and objectives other than traffic movement / congestion reduction
- Minimising highway design features
- Getting designers to think for themselves rather than lift standard designs off the shelf
- Challenging use of a hierarchy of road types
- Encouragement of innovation
- Safety Audit to be seen in the wider context of a Quality Audit

There are a number of important areas where Sustrans expects to see changes in design processes and practices, as highlighted above. Take up of this advice is likely to be variable, but it should be expected that schemes on local roads will adopt this design guidance. In particular:

- Sustrans strongly encourages all local authorities to invest in the intranet version of MfS2 at least, so it will be accessible to all design staff.
- Sustrans strongly encourages local highway authorities to formally adopt MfS2 as a design guide.
- Where Sustrans is involved in highway infrastructure projects such as Links to School or Connect2, we expect MfS2 to be used as a basis for the design in conjunction with other

earlier relevant design guidance such as the Connect2 Guidance<sup>5</sup>, NCN Guidelines<sup>6</sup> and LTN2/08<sup>7</sup>.

- MfS2 will be a valuable tool in challenging schemes in order to create high quality public spaces for walking and cycling.

---

<sup>5</sup> Connect2 and Greenway Design Guide, Sustrans 2009

<sup>6</sup> National Cycle Network: Guidelines and Practical Details, Sustrans, 1997

<sup>7</sup> Cycle Infrastructure Design, LTN 2/08

# Appendix: Summary of Contents

## Section A: Context and Process

### Chapter 1: Principles (discussed above) 5pp

### Chapter 2: Networks, Contexts and Street Types 17pp

This is an important chapter as it examines some common street types and how the MfS principles might apply to these. It highlights the importance of looking at the balance between the movement and the place function of a street and considers common street types and key issues for each of these:

- Town and city centres
- Urban and suburban areas
- Urban extensions
- Interchanges
- Village centres
- Rural areas
- Urban and rural settlements

Standard classifications of traffic routes should be used with caution as they fail to take account of the changing context along a route.

### Chapter 3: Highway Design, Risk and Liability 2pp

MfS1 sought to address the fears of some highway authorities when considering more innovative designs at variance with established practice concerning liability in the event of damage or injury. MfS2 provides further guidance on risk and liability and cites extracts from the UK Roads Board second edition of Highway Risk and Liability Claims<sup>8</sup> (HRLC) which sets out the legal uses and obligations of users of the highway.

Whilst a mere two pages, this chapter includes a number of useful quotes relating to the wider use of the highway and liability issues; it is discussed in the main body of this TIN.

### Chapter 4: Design and Implementation Process 10pp

Outlines a suggested design process, which draws on many of the lessons Sustrans has learnt through programmes such as DIY Streets, with particular emphasis on:

- Community involvement, including DIY Streets as a case study.
- Stages of Improvement process, identifying five progressive steps in transforming streets: tidy up, declutter, relocate / merge functions, re-think traffic management options, re-create the street
- Quality Audit: first described in MfS1, this process has now been undertaken by several local authorities but at present there is no guidance available on implementing these.
- Road Safety Audit (RSA): highlights the link with Risk Assessment (see separate TIN 17 on RSA)

---

<sup>8</sup> Highway Risk & Liability Claims, UK Roads Board, 2009

- Maintenance issues, notably whole life costs, should be considered early in the design process to ensure a maintainable scheme is delivered.

## Section B: Detailed Design Issues

Although numerical values for some geometrical parameters are given in this section, designers should take a flexible approach to their interpretation and application and think for themselves based on experience and local circumstances.

### Chapter 5: Pedestrian Needs and Footways 2pp

This chapter covers footway provision. Crossings and pedestrians' needs at junctions are covered in Chapter 9.

Refers to advice in Ch6 of MfS1, DfT's Inclusive Mobility<sup>9</sup> and IHT's Providing for Journeys on Foot<sup>10</sup>. Key factors to consider include:

- Quality of the walking experience
- Good visibility
- Direct and on desire lines
- Pedestrian networks need to be connected
- Multifunctional streets are preferred to segregated routes
- Minimise footway obstructions
- Footway width to reflect pedestrian volumes and composition

### Chapter 6: Cycle Facilities 3pp

This chapter covers cycle lanes, cycle tracks, cycle markings and cycle parking. Crossings and cyclists' needs at junctions are covered in Chapter 9.

Refers to advice in Ch6 of MfS1 and LTN2/08<sup>11</sup>. Key factors to consider include:

- Preferred approach is to create conditions on the carriageway so that cyclists are content to use it
- Routes to be direct and barrier free or they don't get used
- Cycle tracks that cross lots of side roads are not a good idea
- May need to reduce traffic speed or volume
- Junctions should be designed to accommodate cyclists' needs and encourage low speeds

### Chapter 7: Bus Facilities 2pp

Some useful factors in the chapter include:

- Recommends 4.25m width, minimum 4m, to allow buses to overtake cyclists.

---

<sup>9</sup> Inclusive Mobility, DfT 2002

<sup>10</sup> Guidelines for Providing for Journeys on Foot, IHT 2000

<sup>11</sup> Cycle Infrastructure Design, LTN 2/08

- Where bus lanes are not feasible bus advance areas with pre-signals may assist achieving bus priority.
- Providing cycle parking at key bus stops will greatly increase public transport accessibility
- Bus laybys should only be used where a stationary bus would otherwise create a safety problem; they reduce footway width and it can be hard for the bus to pull out
- Bus boarders (built out into the carriageway) can be useful where there is parking (however, care is needed that they don't create pinch points for cyclists)

It is encouraging to note that this chapter recognises the difficulties that some bus facilities can create for cyclists and seeks to address these.

### **Chapter 8: Carriageways 6pp**

Prior to MfS carriageway design was generally based on DMRB. Designs now should better respect local context and needs of non-motorised traffic:

- Design speeds: recommends use of design speeds below the speed limit and varying design speed along a route as circumstances change. Drivers go faster in response to more generous highway geometry.
- Carriageway and lane widths: encourages the use of narrower lane widths and consideration of the needs of cyclists; more details are included later in this TIN.
- Refuges, medians and central reservations: these can be useful features for pedestrians and cyclists to cross in two stages

### **Chapter 9: Junctions, Crossings and Accesses 15pp**

Emphasises the role of junctions as an opportunity for placemaking; the traditional approach has been to accommodate traffic and minimise the number of junctions, making them unattractive and difficult for cyclists and pedestrians. The use of DMRB is again highlighted as being inappropriate in many situations.

- Crossings: particular encouragement to provide informal crossings, Zebras, single stage crossings, diagonal crossings at signals (more details are included later in this TIN)
- Priority junctions: provide fewer right turn lanes; use tight corner radii.
- Conventional roundabouts: not encouraged; make them as compact as possible preferably with single lane approaches; don't provide left turn slips.
- Mini-roundabouts: can be a useful option and reduce traffic speeds
- Traffic signals: better suited to cyclists and pedestrians; avoid segregated left turn lanes; include ASLs; use tight corner radii
- Direct frontage access: links streets to their surroundings and should be encouraged.

### **Chapter 10: Visibility 8pp**

MfS includes fundamental changes to the way Stopping Sight Distance (SSD) for motor vehicles is calculated for speeds of up to 37mph. This has the effect of reducing the visibility requirements at junctions.

- Giving drivers on a side road more visibility as they approach a give way junction is not encouraged

- A reduction in visibility along the main road below recommended levels will not necessarily lead to significant problems
- Poor visibility for vehicles emerging from private accesses encourages drivers to emerge more cautiously so improvements may not be necessary.

### **Chapter 11: On Street Parking and Servicing 2pp**

- Discusses the pros and cons on providing on street parking.
- Recommends provision of loading areas on strengthened areas of footway rather than in laybys, so pedestrians can use the space when there are no vehicles present.

### **Chapter 12: Street Furniture and Trees 12pp**

Key principles to be followed with respect to street furniture:

- Start from position of having none and add what is really needed
- Design streets to be as self explanatory as possible
- Avoid excessive street furniture; some can assist sense of place, such as seating and cycle parking
- Keep pedestrian routes clear of street furniture
- New street furniture to be in sympathy with street character

Highlights the economic, environmental and social benefits of providing and maintaining trees.

Sets out key principles for the design of street lighting.

### **Chapter 13: Traffic Signs and Markings 6pp**

Looks at opportunities to reduce excessive signing. Key principles listed are:

- DfT publishes advice on signing
- There is flexibility within the current regulations
- This flexibility should be used to suit local circumstances
- The only signs that are required to be installed relate to Traffic Regulation Orders

Other points raised include:

- Excessive signing and lining can be particularly intrusive in rural areas
- Keep left signs are not always needed on central islands
- Use of centre lines is not a mandatory requirement
- Coloured surfacing can be visually intrusive and should be used selectively
- Yellow no waiting markings can be omitted in Restricted Parking Zones
- Narrower yellow lines may be used in areas regarded as environmentally sensitive

## Section C: Case Studies

### Chapter 14 Case Studies

This chapter discussed five case studies:

- Walworth Rd, Southwark, London: one of the DfT Mixed Priority Route demonstration projects carrying 20,000vpd fronted by retail and commercial properties. Central to the scheme was reallocation of road space to the footway involving removal of bus lanes and introduction of bus 'gates'. Other features included formal and informal crossings, wide median strip, changes to parking / loading, decluttering.
- London Rd, Southampton. Busy radial route with mostly retail frontages with a poor safety record for vulnerable road users. Speed reduction and improved walkability involved narrowed carriageways, lowered kerbs and centre line removed. Informal crossing points using change in materials and layout.
- Sheaf Sq and Howard St, Sheffield. Improvement of pedestrian route from the station to the city centre, including shared surface on Howard St, improved single stage crossing of ring road and replacing subway at Arundel Gate with at grade crossing.
- High Row and West Row, Darlington. Part of a major pedestrian priority scheme in the town centre, it reduced traffic levels and removed the level difference between footway and carriageway making them effectively pedestrian streets. Cyclists are permitted to use the pedestrian area informally.
- Maid Marian Way, Nottingham. Carrying some 28,000vpd pedestrians were expected to cross at its roundabout junction with Friar Lane via subways. The scheme replaced this large roundabout with traffic signals and the subways with in line signalled crossings. A wide central median allowed the crossings to be directly aligned with the dominant pedestrian movement.