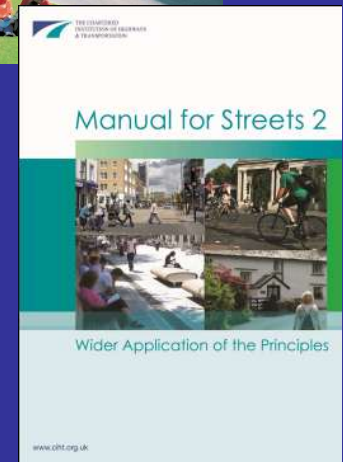
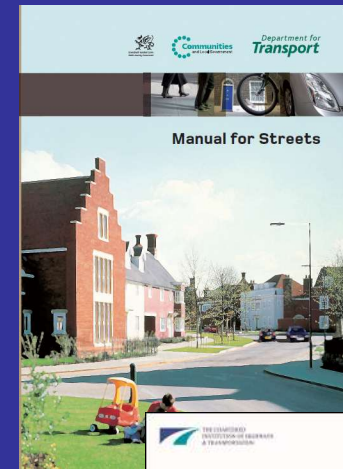


# *Manual for Streets 1 and 2*

## *Streets as Safe and Successful Places*

*SoRSA Conference*

*14 June 2011*



# What is a street anyway?

- “A street is a highway that has important *public realm functions* beyond the movement of traffic” (Manual for Streets)
- Streets have a sense of place and are distinctive
- Streets are lined with and provide direct access to buildings and public spaces
- Most highways in built-up areas can be considered as streets.



# What are roads for?



‘The word ‘road’ derives from the Old English word for a journey on horseback: a road was something that one rode along’

(Dictionary of Urbanism)

‘Roads are essentially highways whose main function is accommodating the movement of motor traffic.’

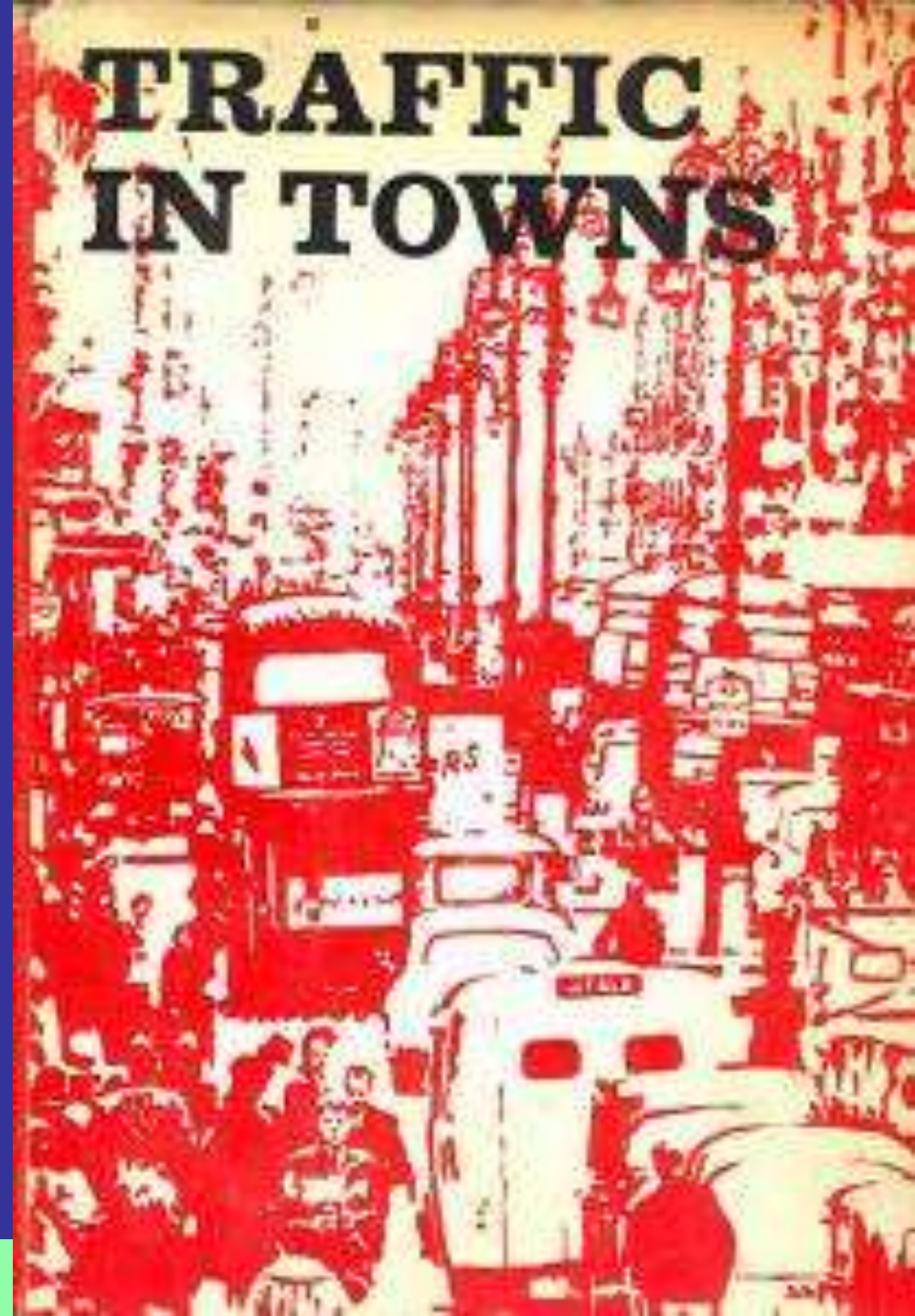
(Manual for Streets)





# Traffic in Towns (The Buchanan Report)

1963

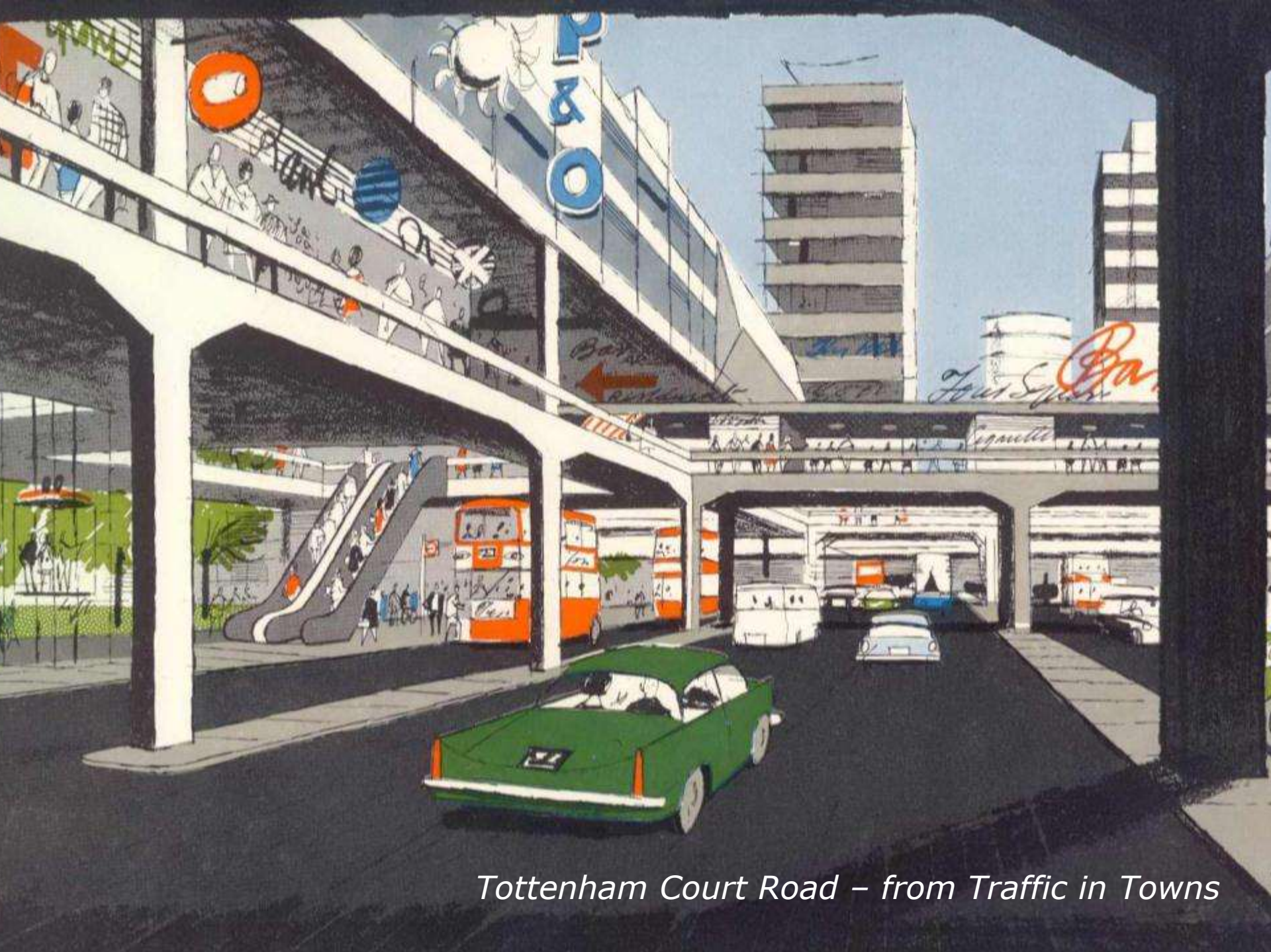




*"It is tempting to say that the objective should be the complete segregation of pedestrians and vehicles in all circumstances"*





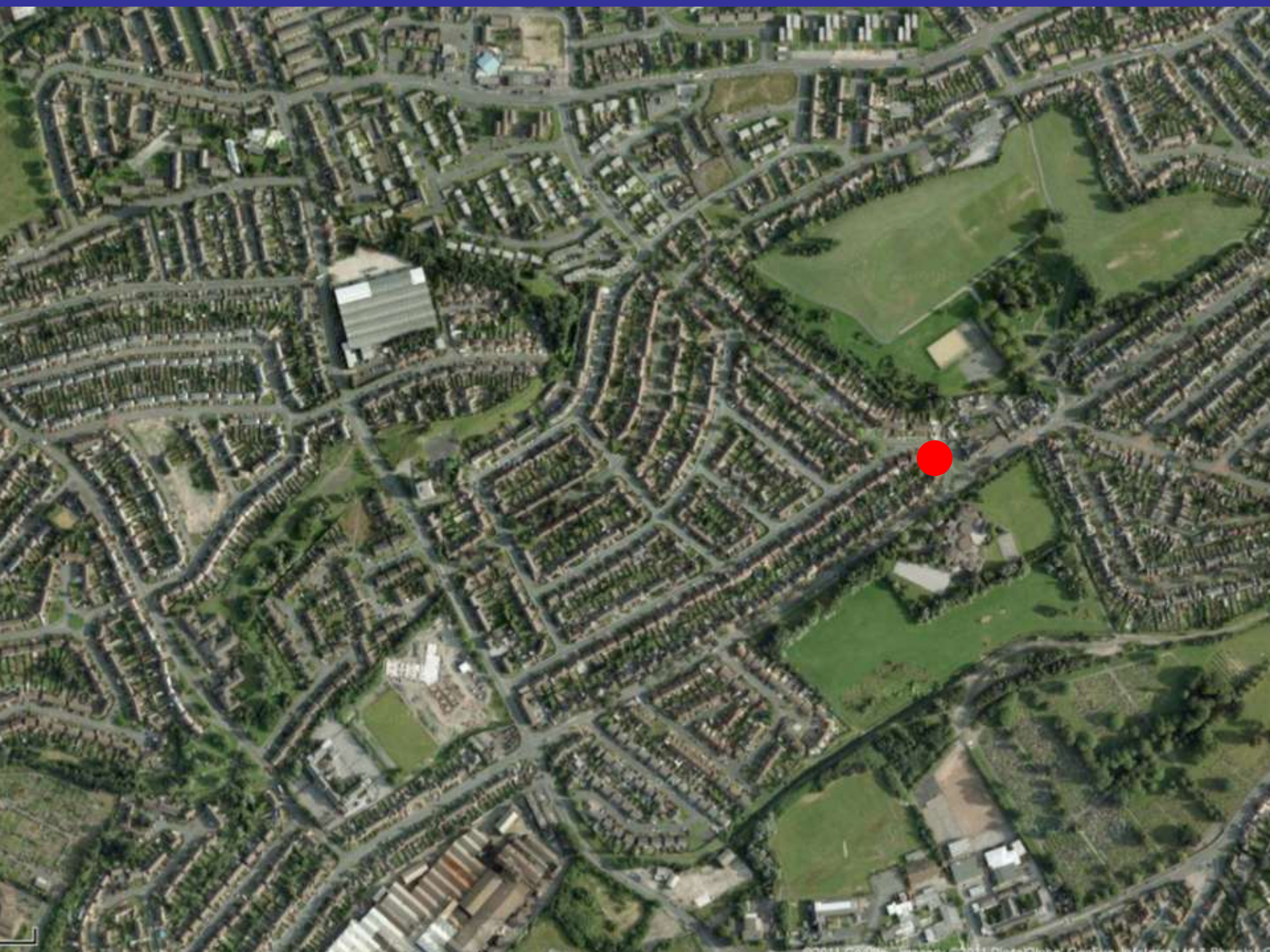


*Tottenham Court Road – from Traffic in Towns*









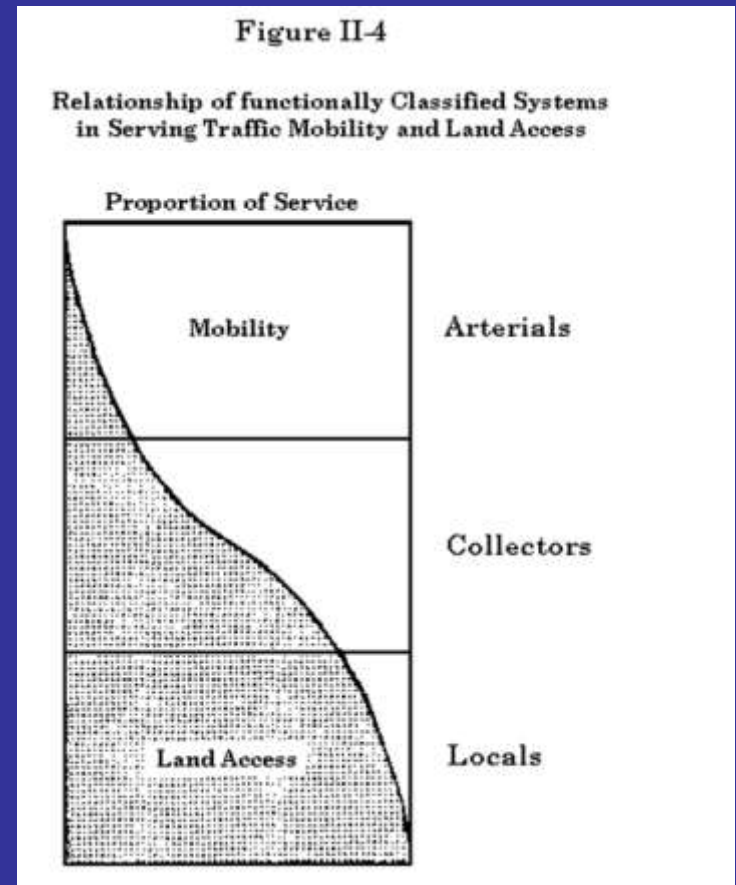






# Conventional Road Hierarchy – Segregation increases with traffic flow

- Conventional traffic based hierarchy:
  - Primary Route (Principal Arterial)
  - District Distributor (Minor Arterial)
  - Local Distributor (Collector)
  - Access Road (Local)
  
- Where does a Main Street fit in?

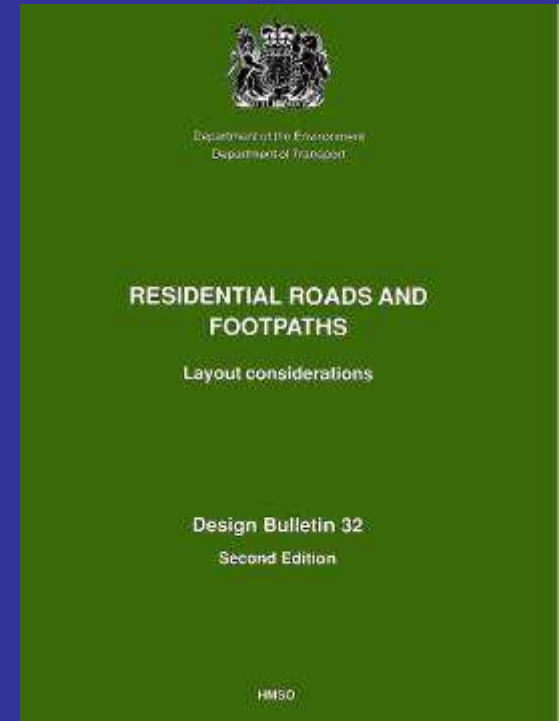




# Previous National Guidance on Residential **Roads**

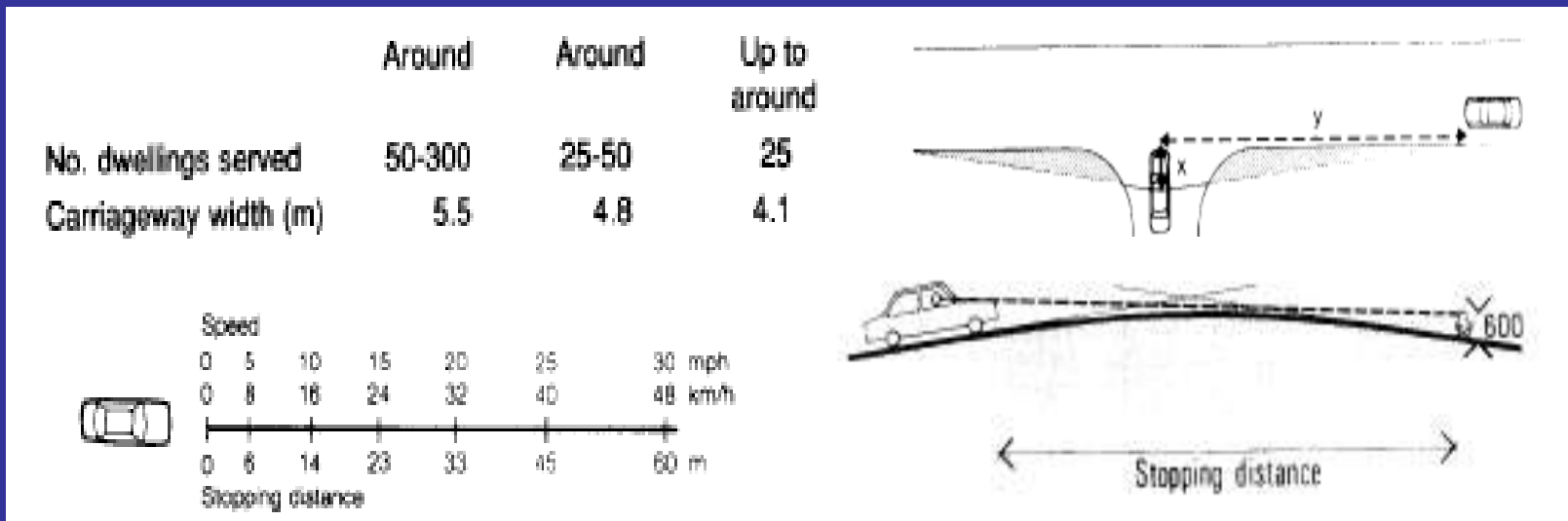
Design Bulletin 32 Second Edition (1992)

*“Residential roads and footpaths are an integral part of housing layout where ... in the patterns of movement around buildings the needs of pedestrians and cyclists for safety and convenience are given priority in design over the use of motor vehicles.”*

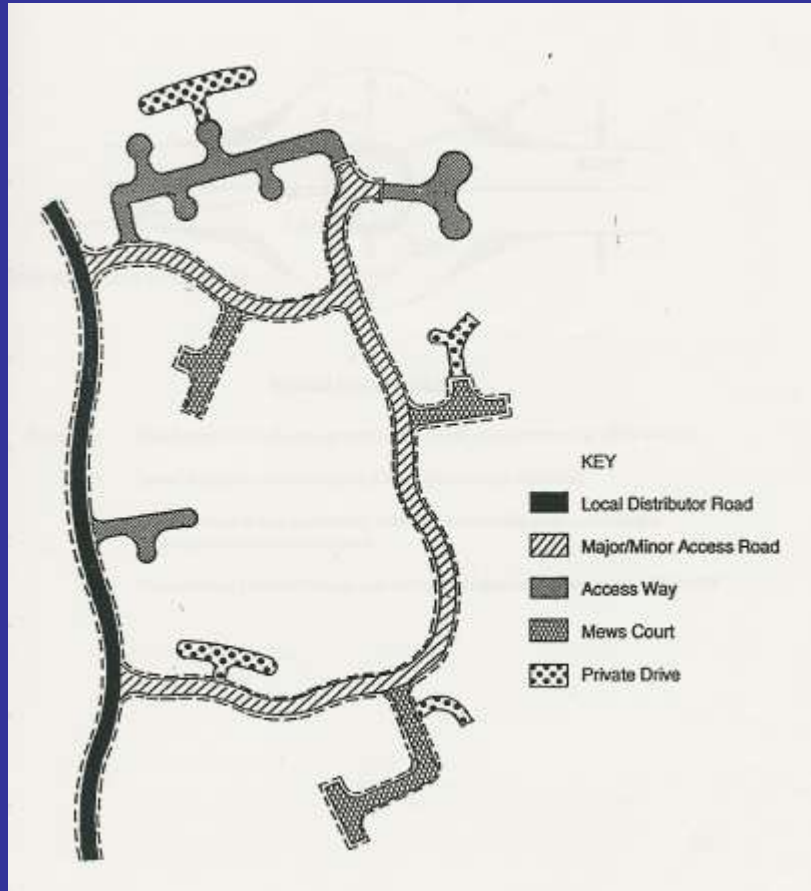




# But highly standardised car-led geometric standards...

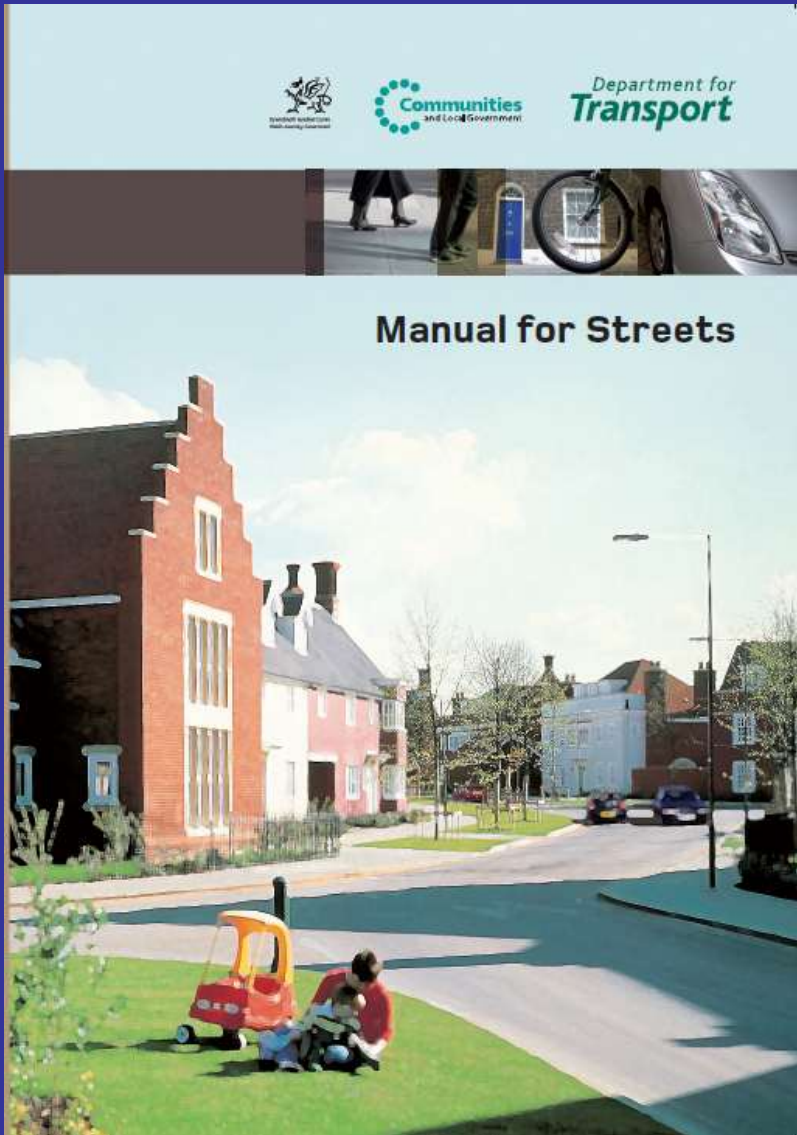


...created highly standardised, car-led layouts...





# Manual for Streets (2007)



*Streets are the arteries of our **communities** – a community's success can depend on how well it is connected to local services and the wider world.*

*However, streets are not just there to get people from A to B – they have many **other functions**.*

*They form vital components of residential areas and greatly affect the overall **quality of life** for local people.*

**(MfS Foreword)**

# Aims of Manual for Streets

- Bring about a transformation in quality
- A fundamental culture change to achieve streets that:
  - help to build and strengthen the communities they serve;
  - meet the needs of all, by embodying the principles of inclusive design
  - provide part of a well-connected network;
  - are attractive and have their own distinctive identity;
  - are cost-effective to construct and maintain; and
  - are safe.





# Working in partnership

- **Truly multidisciplinary teams:** planners, highways engineers, transport planners, road safety specialists, researchers, urban and landscape designers...
- **Crossing sectors:** local people, elected members, consultants, local authority officers, campaign groups, utilities, homebuilders...



# Sustainability

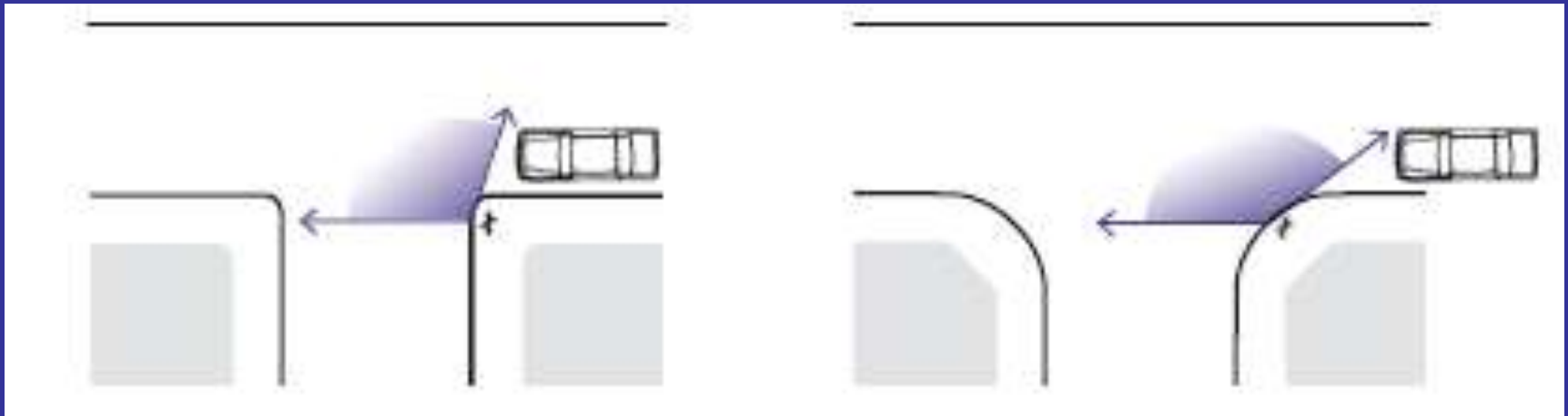
- MfS promotes walking, cycling, public transport due to...
  - Climate change/emissions
  - Congestion
  - Accidents
  - Health issues
- Badly connected places encourage car use





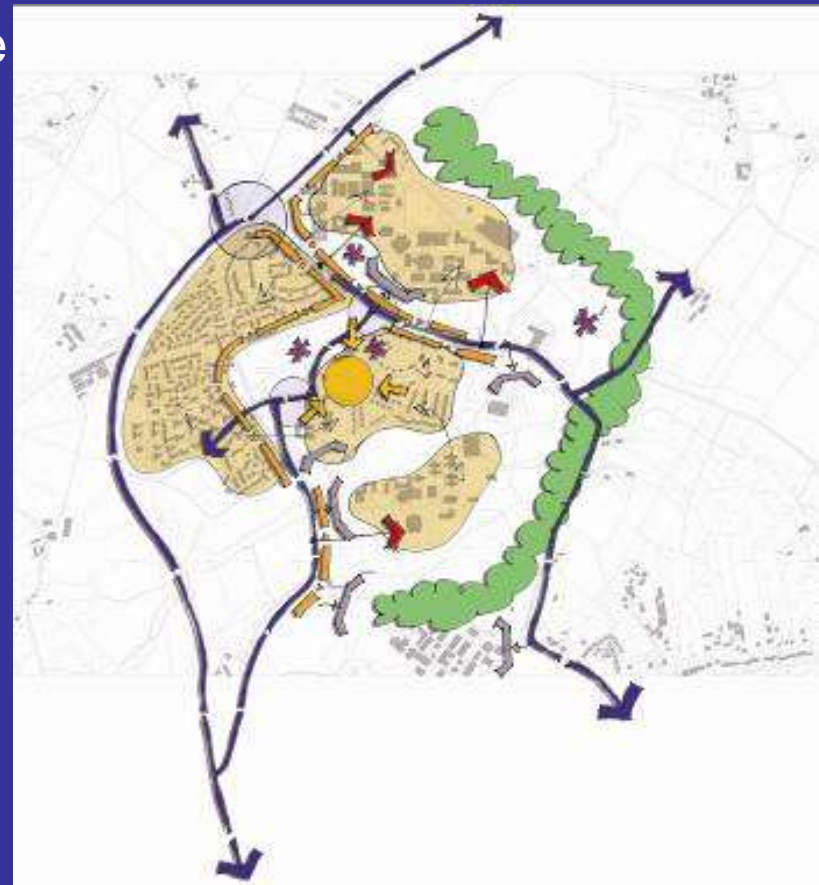
# Mode hierarchy

- Consider modes in order:
  - Pedestrians
  - Cyclists
  - Public Transport
  - Motor vehicles
- Accommodate all users on streets
- Tight corner radii level crossings



# Developing a Movement Framework

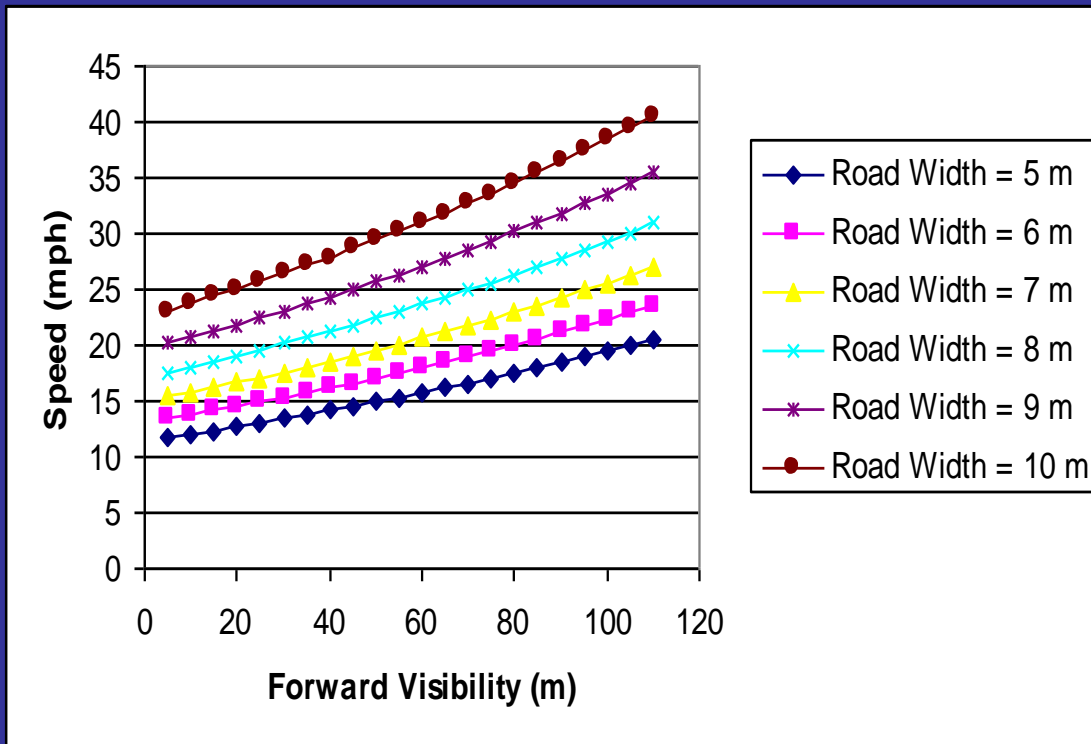
- Where are the key desire lines?
- How can the development enhance the existing movement framework rather than disrupt or sever it?
- What points of connection and linkage can be achieved?
- Should these be for all modes?
- Can concerns over 'rat running' be addressed through slower speeds?



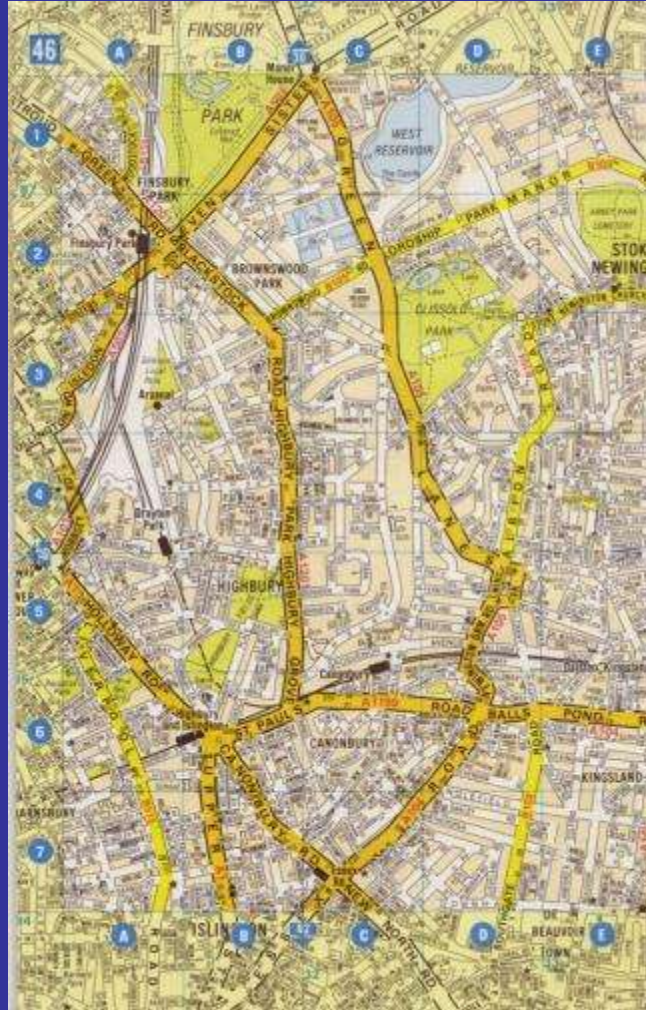


# Speed, Visibility and Width

Speed increases with road width and visibility



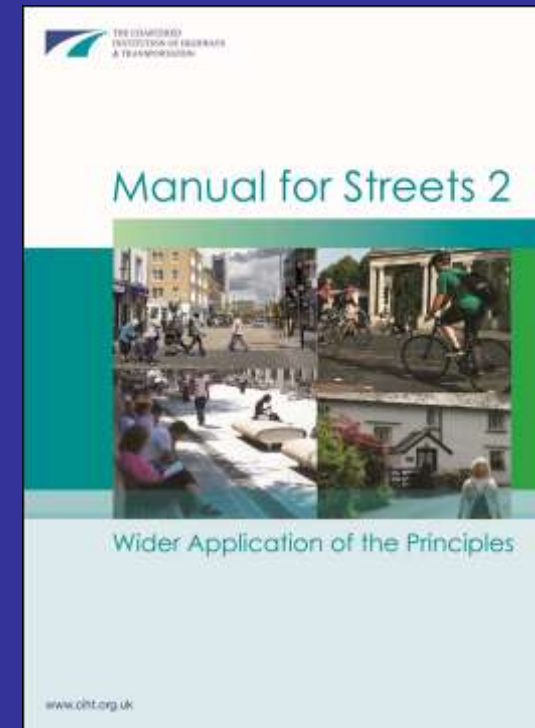
So far so good...what about everywhere else?



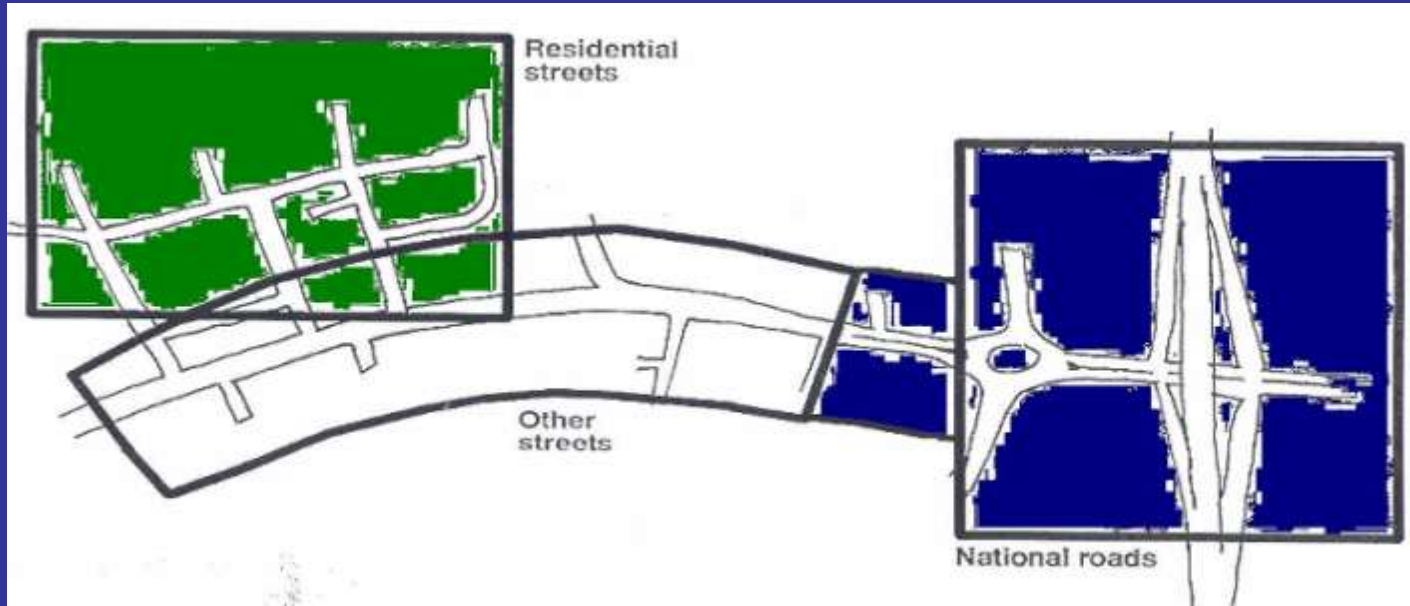


# Manual for Streets 2 - Why?

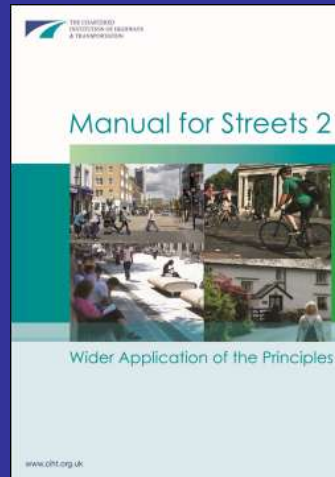
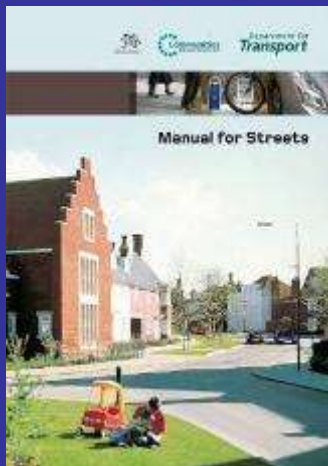
- MfS only applicable to residential streets (?)
- Concerns over HGVs and bus braking characteristics/SSDs
- Fear of litigation
- Lack of confidence in applying MfS principles in busier locations



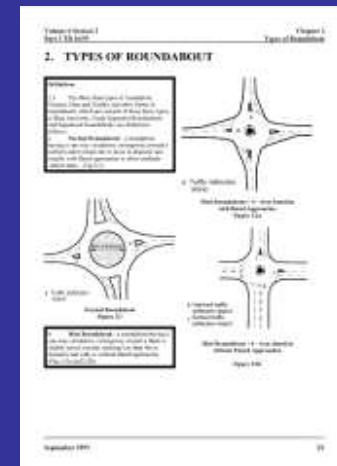
# Manual for Streets 1/2 - What applies where?



MfS

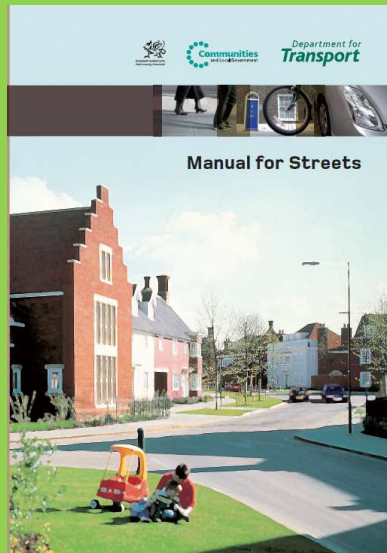


DMRB

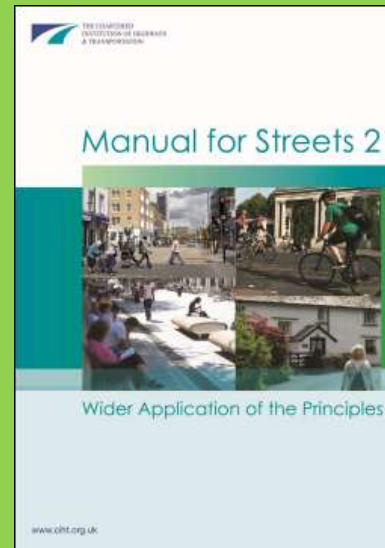




# Manual for Streets



MfS1

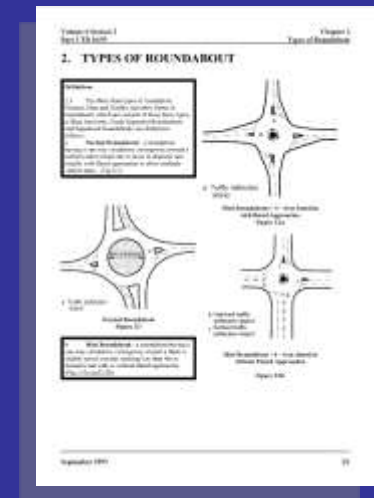


MfS2

# What is DMRB for?

## Use of the Manual for Trunk Roads

- 1.4 The documents in the manual have been prepared ...specifically for **Trunk Road Works** throughout the UK....



## Use of the Manual by Other Highway Authorities

- 1.5 The manual sets a standard of good practice that has been developed principally for Trunk Roads. It may also be applicable **in part** to other roads **with similar characteristics**. Where it is used for local road schemes, **it is for the local highway authority to decide** on the extent to which the documents in the manual are appropriate in any particular situation

Introduction to the DMRB, GD01/08 (our emphasis)







# MfS (1 and 2) Key Principles

- Hierarchy – consider pedestrians first
- Strike a balance – traffic is not always paramount
- Respect pedestrian and cycle desire lines
- Permeable and connected networks are preferred
- Collaborative approaches work best
- Innovation is encouraged

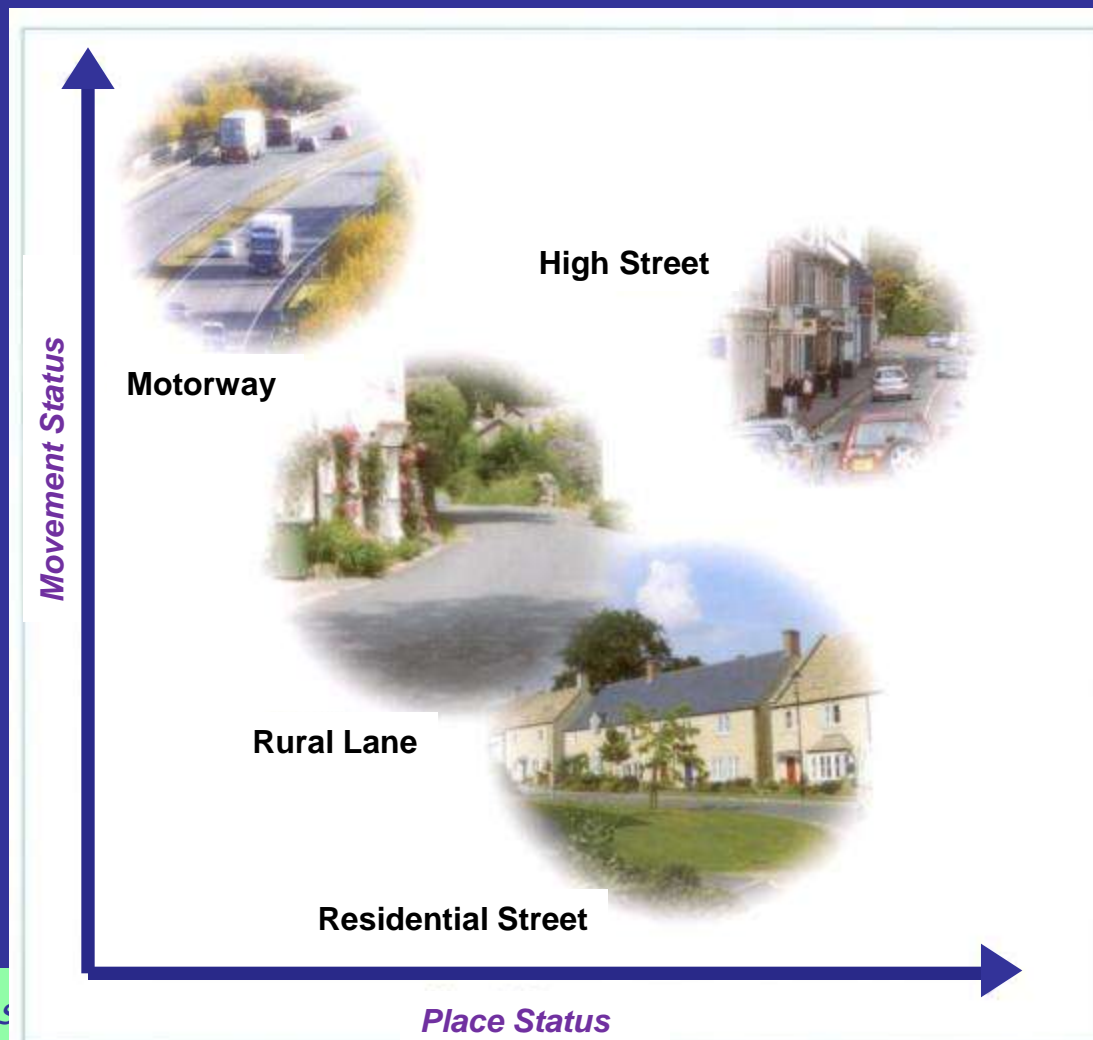




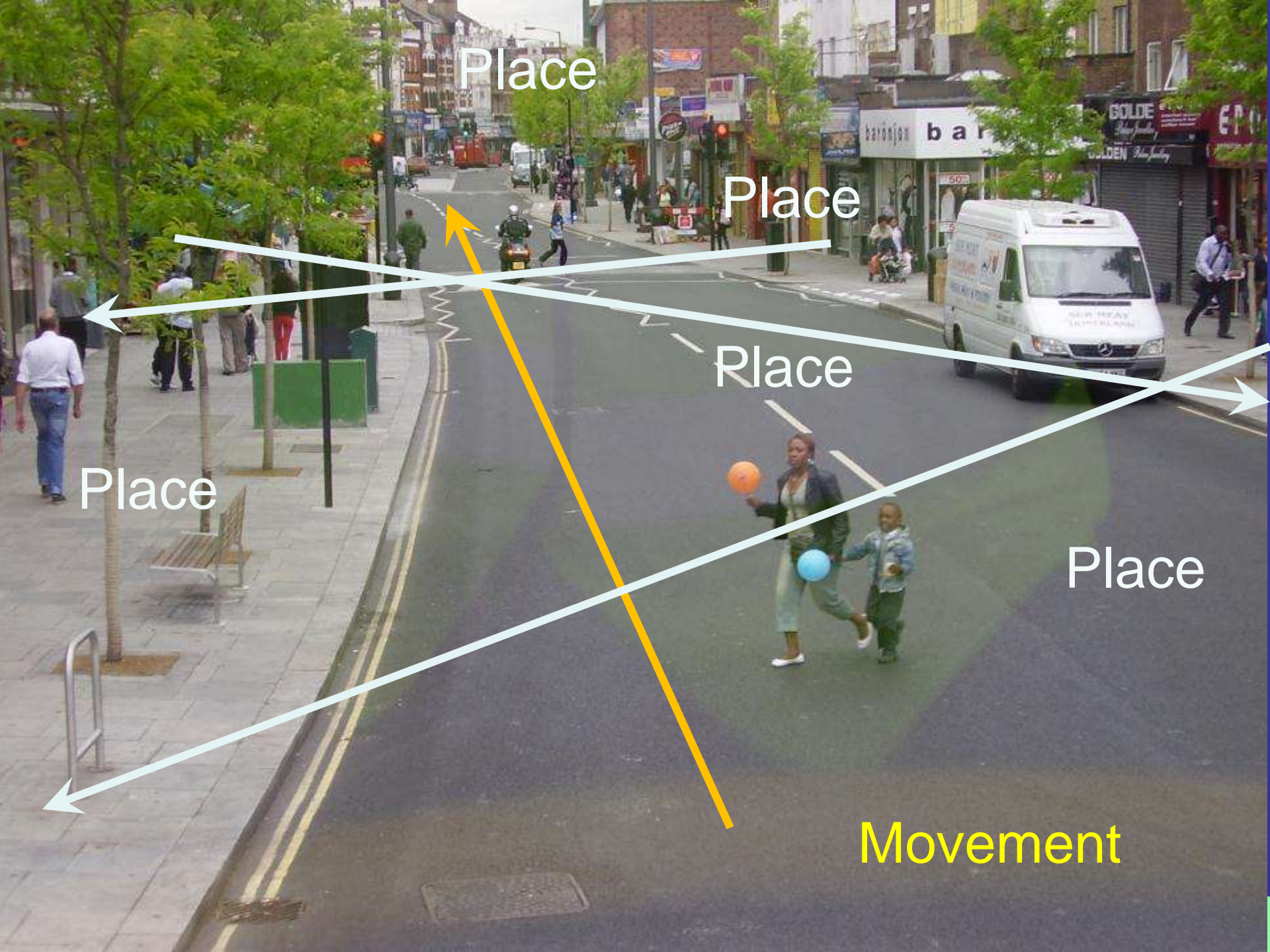
# Section A – Context and Process



- Two dimensional approach to Hierarchy – **Movement and Place**
- Design choices need to respect both functions
- Some Movement corridors are more important than others...
- Some Places are more important than others...







Place

Place

Place

Place

Place

Movement

**Context: Town and City Centres**

***Street Type: Multifunctional Streets and Spaces***





**Context:**

**Town and City Centres**

***Street Type:***

***Multifunctional Streets and Spaces***





**Context:**

**Urban and Suburban Areas**

***Street Type:***

***Arterial Routes and High Streets***





**Context:**

**Urban and Suburban Areas**

***Street Type:***

***Arterial Routes and High Streets***



**Context:**

**Rural Areas**

***Street Type***

***Rural Roads***





**Context:**

**Shared Space**





**Context:**

**Shared Space**







# Poynton, Cheshire



rt a problem





PARK CREEK, MOUNTAIN VIEW, TEXAS  
TOWNSHIPSUBURBAN.COM ©2014 PJA



ASSOCIATES



# Section B – Detailed Design Issues

(A quick selection!)

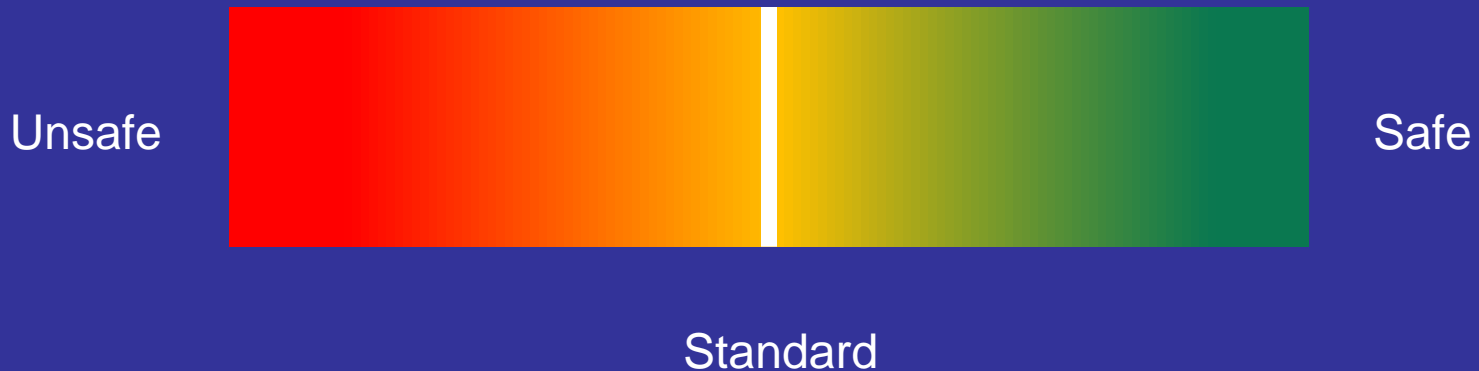




**“There are no safe highways: just safer or less-safe ones.”**

**“The safety of a highway does not change abruptly when some dimension changes slightly, so one dimension standard cannot correspond to the highway being ‘safe’ or ‘unsafe’.”**

Ezra Hauer, Emeritus Professor, University of Toronto



# Detailed Design Guidance in MfS2

- Pedestrian Needs and Footways
- Cycle Facilities
- Bus Facilities
- Carriageways
- Junction, Crossings and Accesses
- Visibility
- On-Street Parking and Servicing
- Street Furniture and Trees
- Traffic Signs and Markings





# Pedestrian Needs and Footways

It's not exactly rocket science...!

- Pedestrians need direct, connected and clutter-free footways of adequate width along and across multi-functional highways
- Their needs must be considered when designing links and junctions





Newlands Avenue MPR Scheme



# Cyclists' Needs

- Cyclists should generally be accommodated on the carriageway – by making conditions suitable for them.
- Poor facilities are worse than no facilities – vehicles travel closer when lanes provided
- Where on-carriageway facilities are provided, they should be well designed.
- Off-carriageway facilities should be convenient and not put cyclists at danger at junctions





# Carriageways

- Design Speed in urban areas should generally not exceed 30mph (50kph) – and can be less where necessary
- Both MfS1 and DMRB confirm that drivers respond to more generous geometry by increasing speed.



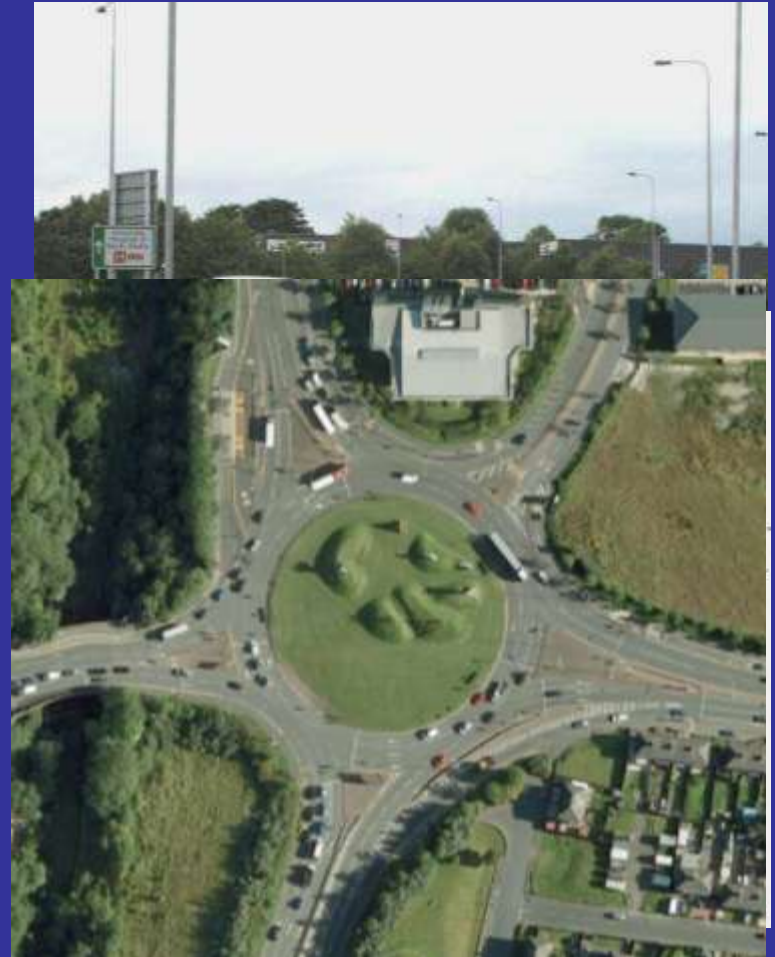
# Junctions, Crossings and Accesses

- Junctions often seen as problems – to be minimised
- But can also be seen as opportunities for ‘place’ functions
- Essential to consider pedestrian and cycle needs



# Conventional Roundabouts

- Advantages: High capacity, good safety record for vehicles, minimal delay outside peaks.
- Disadvantages - poor safety record for cyclists, barrier to pedestrians, high land take, visual impact.
- Particular problem for cyclists – left turn slip lanes
- Recommended approach – ‘compact’ geometry - as small as possible with narrow entries and exits.





# Informal Roundabout - Before





# Informal Roundabout - After



# Visibility

## Stopping Sight Distance

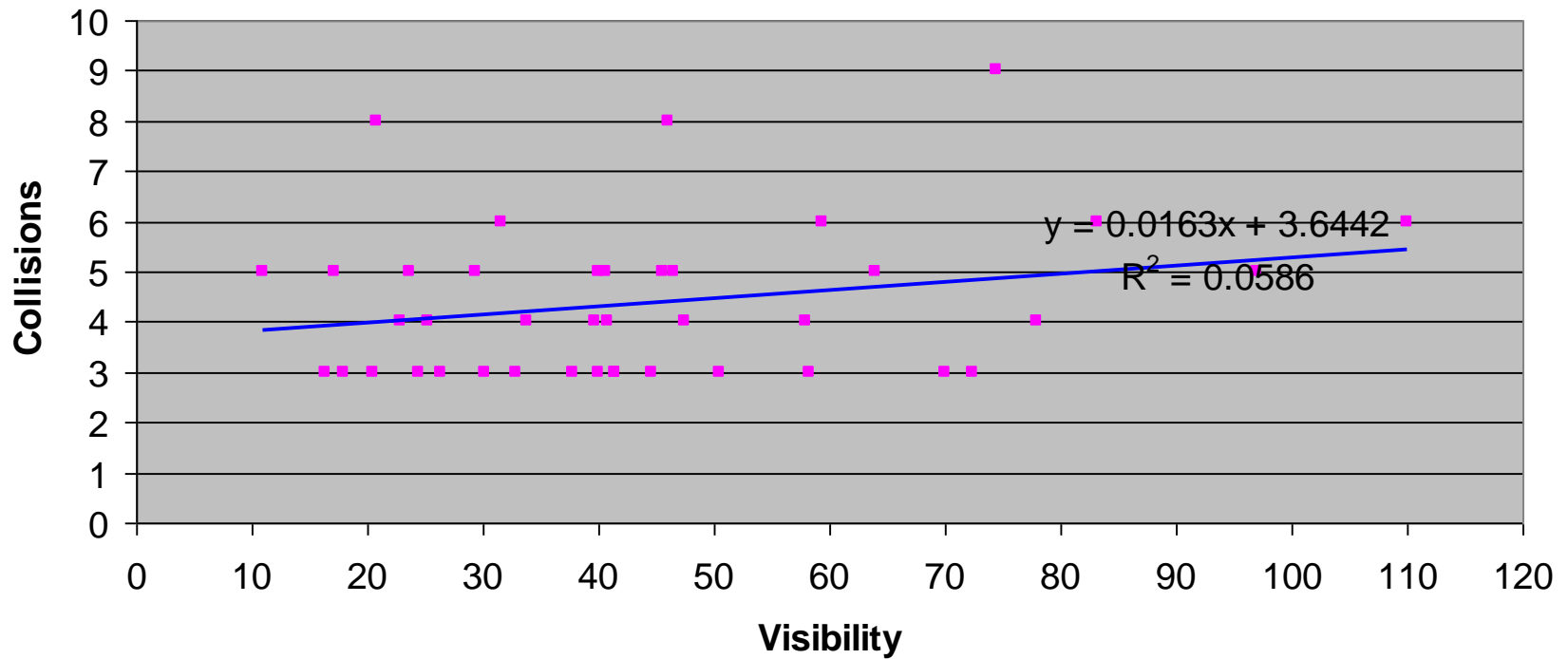
- Guidance in MfS2 incorporates that of MfS1 – effectively superseding it
- Based on further research carried out by TMS Consultancy, plus literature searches
- MfS1 parameters apply to all <60kph links:
  - 1.5s reaction time
  - 0.45g deceleration rate
- Except for buses and HGVs (>5% of flow typically)
  - 1.5s reaction time
  - 0.375g deceleration rate





# TMS Consultancy Research

<120m visibility to right from kerb vs "visi" collisions



# Main findings

## Visibility to right from kerb

Range (m)	No. sites	No. collisions	Ave colls/ site	Ave colls/ site/ yr
<b>0-70</b>	34	143	4.21	<b>0.84</b>
<b>70-120</b>	7	36	5.14	<b>1.03</b>
<b>120+</b>	48	208	4.33	<b>0.87</b>
<b>0-43</b>	24	97	4.04	<b>0.81</b>
<b>43-120</b>	17	82	4.82	<b>0.96</b>
<b>43-70</b>	10	46	4.60	<b>0.92</b>



$$SSD = vt + \frac{v^2}{2(d+0.1a)}$$

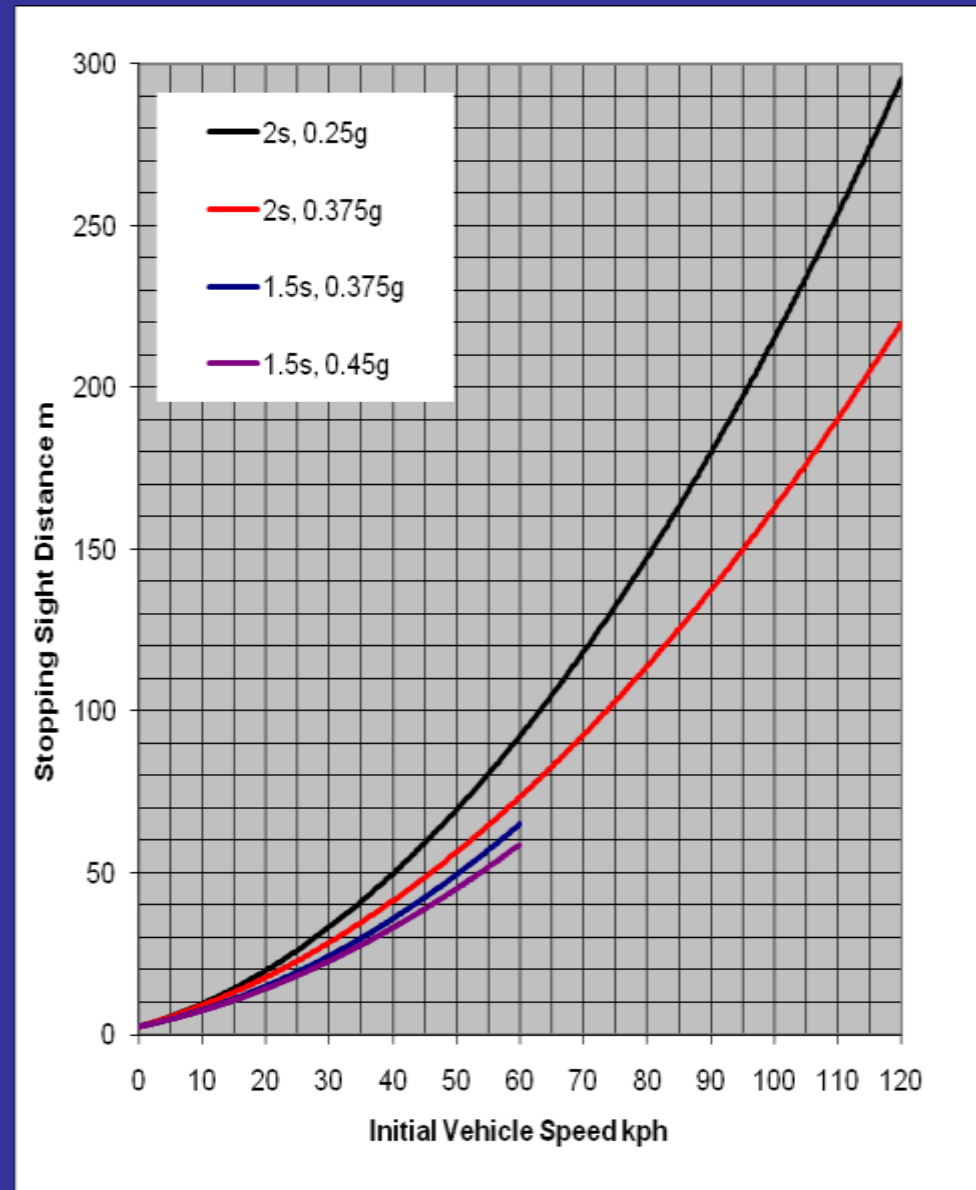
where:

$v$  = speed (m/s)

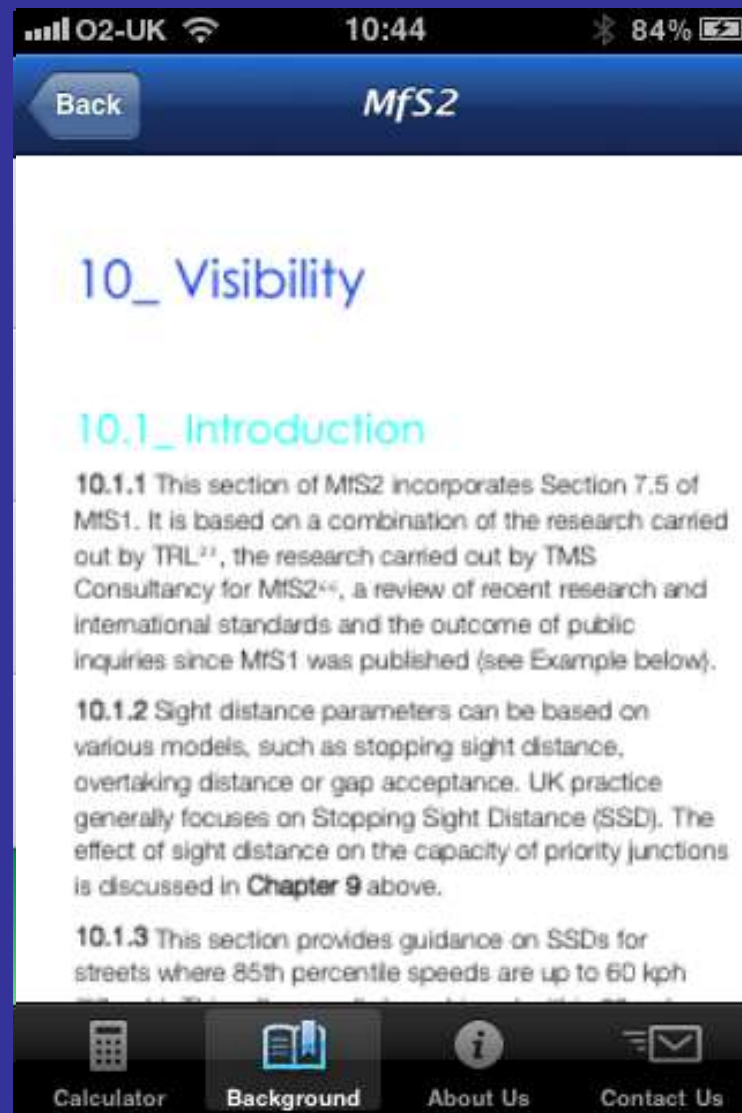
$t$  = driver perception–reaction time (sec)

$d$  = deceleration (m/s<sup>2</sup>)

$a$  = longitudinal gradient (%)  
(+ for upgrades and – for downgrades)

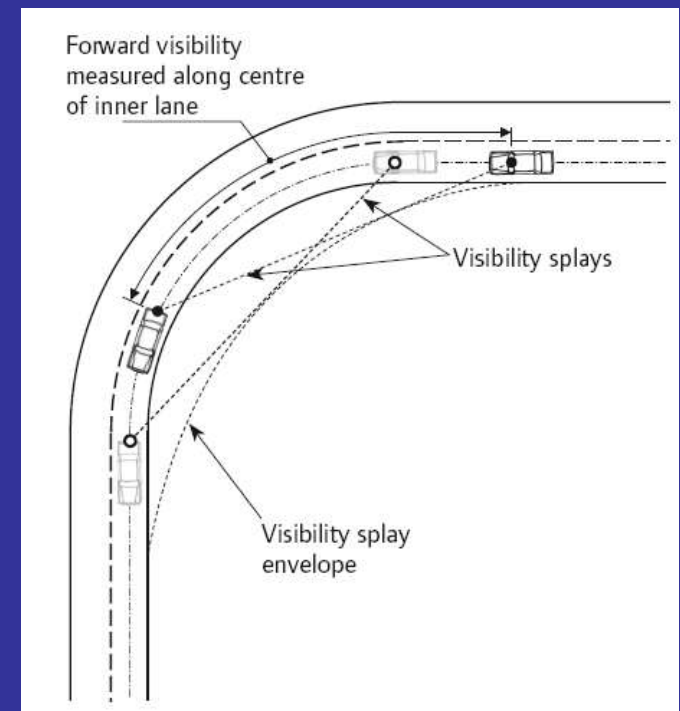






# Forward Visibility

- Apply SSD requirements in the horizontal and vertical plane.
- But in some situations may be desirable to restrict forward visibility to help control traffic speed.



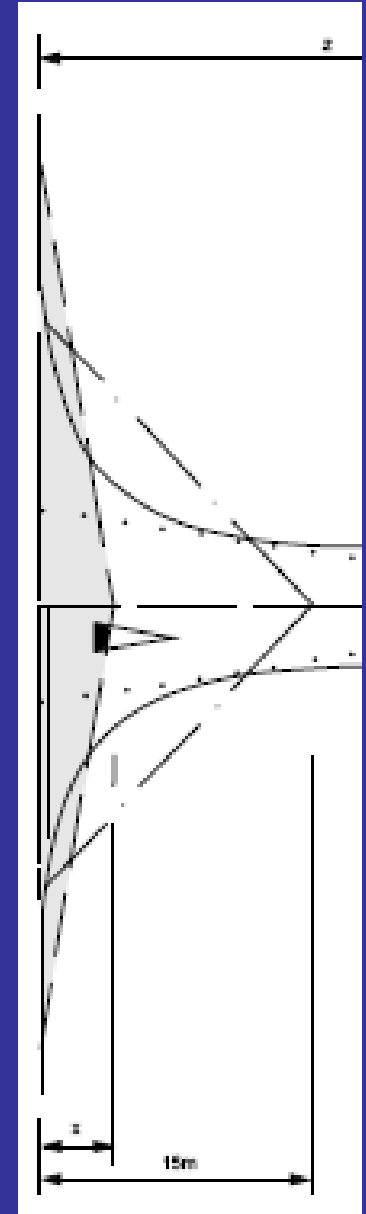
# Visibility at Priority Junctions

- X-distance of 2.4m generally appropriate, subject to capacity considerations
- Y-distance based on SSD but:

*It has often been assumed that a failure to provide visibility at priority junctions in accordance with the values recommended in MfS1 or DMRB (as appropriate) will result in an increased risk of injury collisions.*

*Research carried out by TMS Consultancy for MfS2 has found no evidence of this.*

*...unless there is local evidence to the contrary, a reduction in visibility below recommended levels will not necessarily lead to a significant problem.*





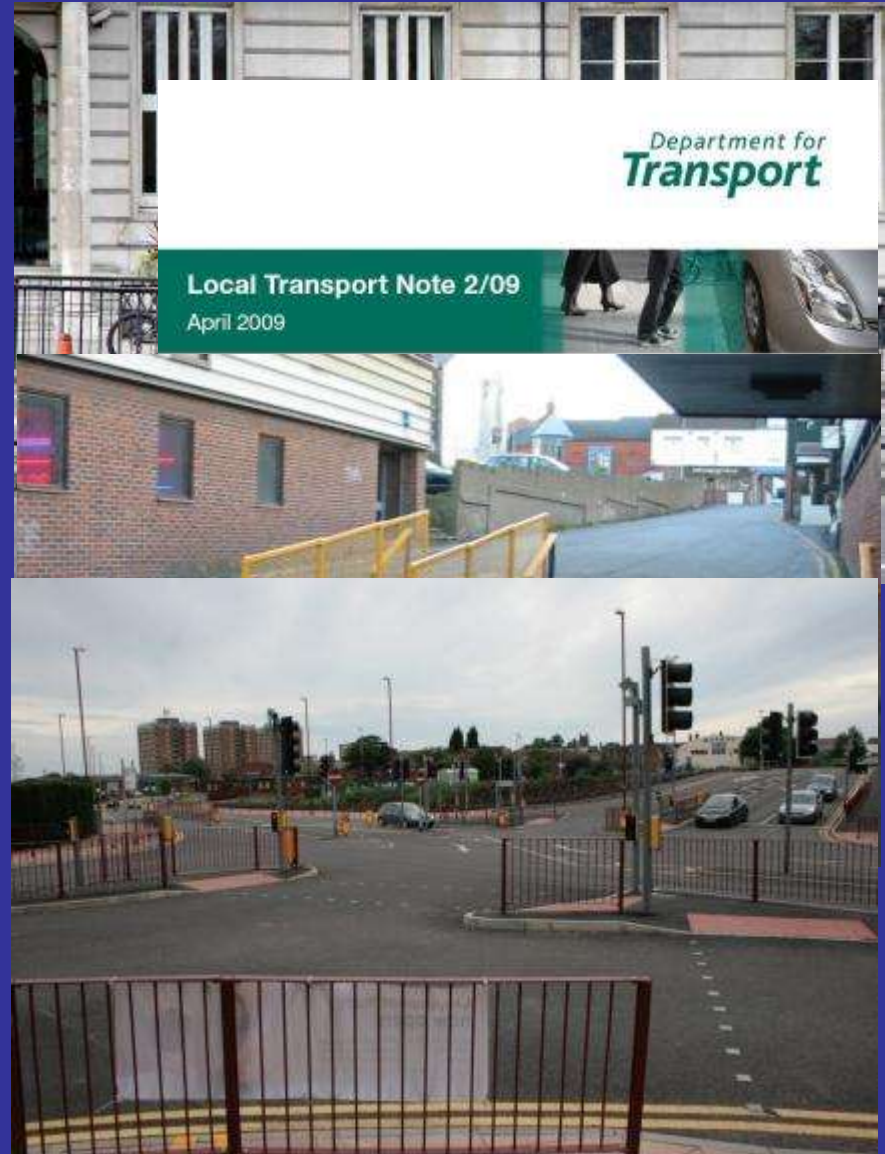
# Street Furniture

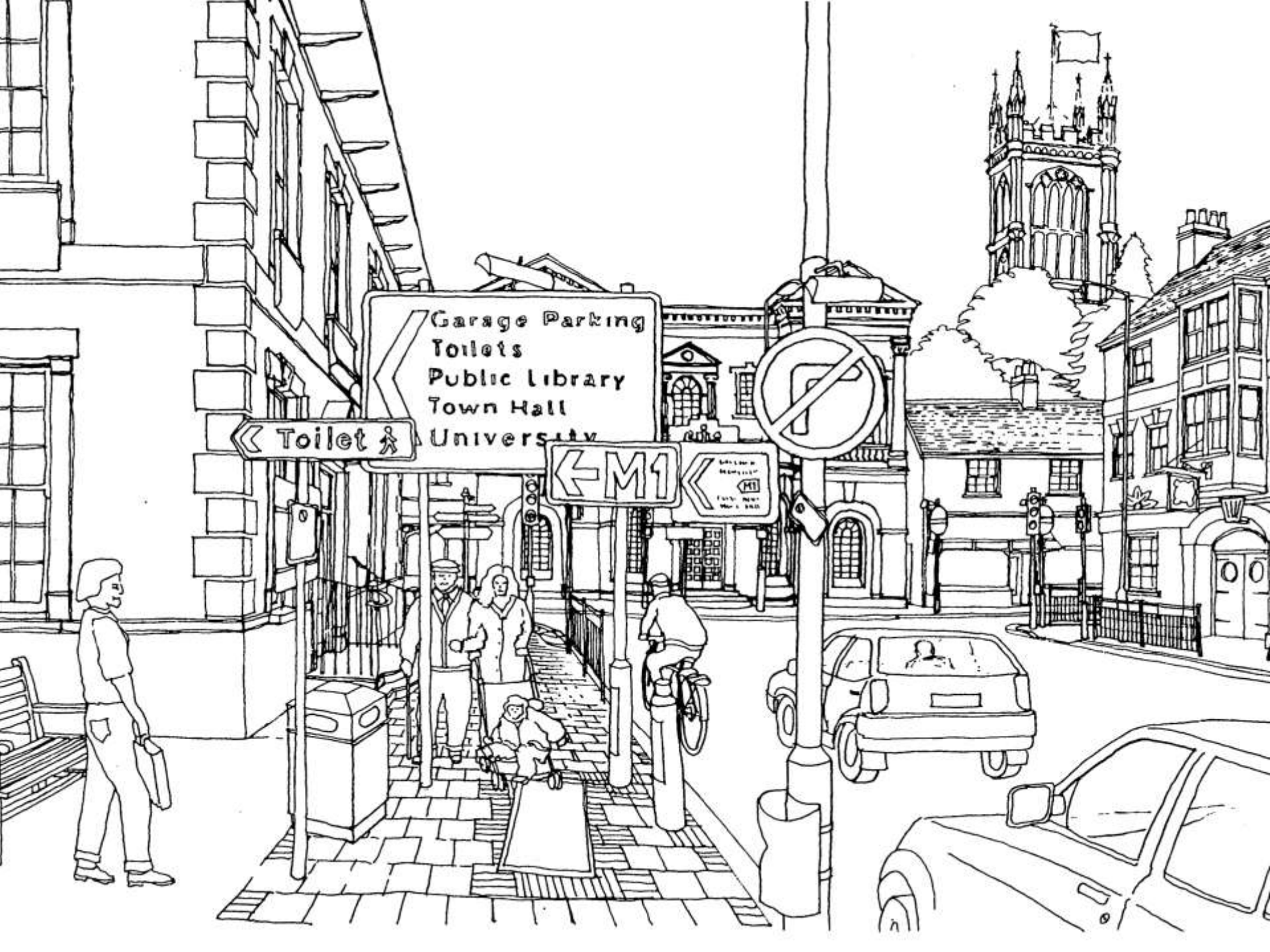
- Some street furniture is useful and important...much is not
- Start with nothing – introduce only elements that are necessary
- Clutter removal can be done as part of ongoing maintenance
- Combine elements together where possible
- Street furniture should be arranged to keep pedestrian routes clear




# Guardrail

- Significant disbenefits - highly intrusive, disadvantages pedestrians, unsightly, can increase traffic speeds and create risks for cyclists.
- May be necessary in some locations – but need better balanced use
- Many guardrail removal schemes have worked well in road safety terms, with careful assessment
- Look for alternative solutions before installing new guardrail

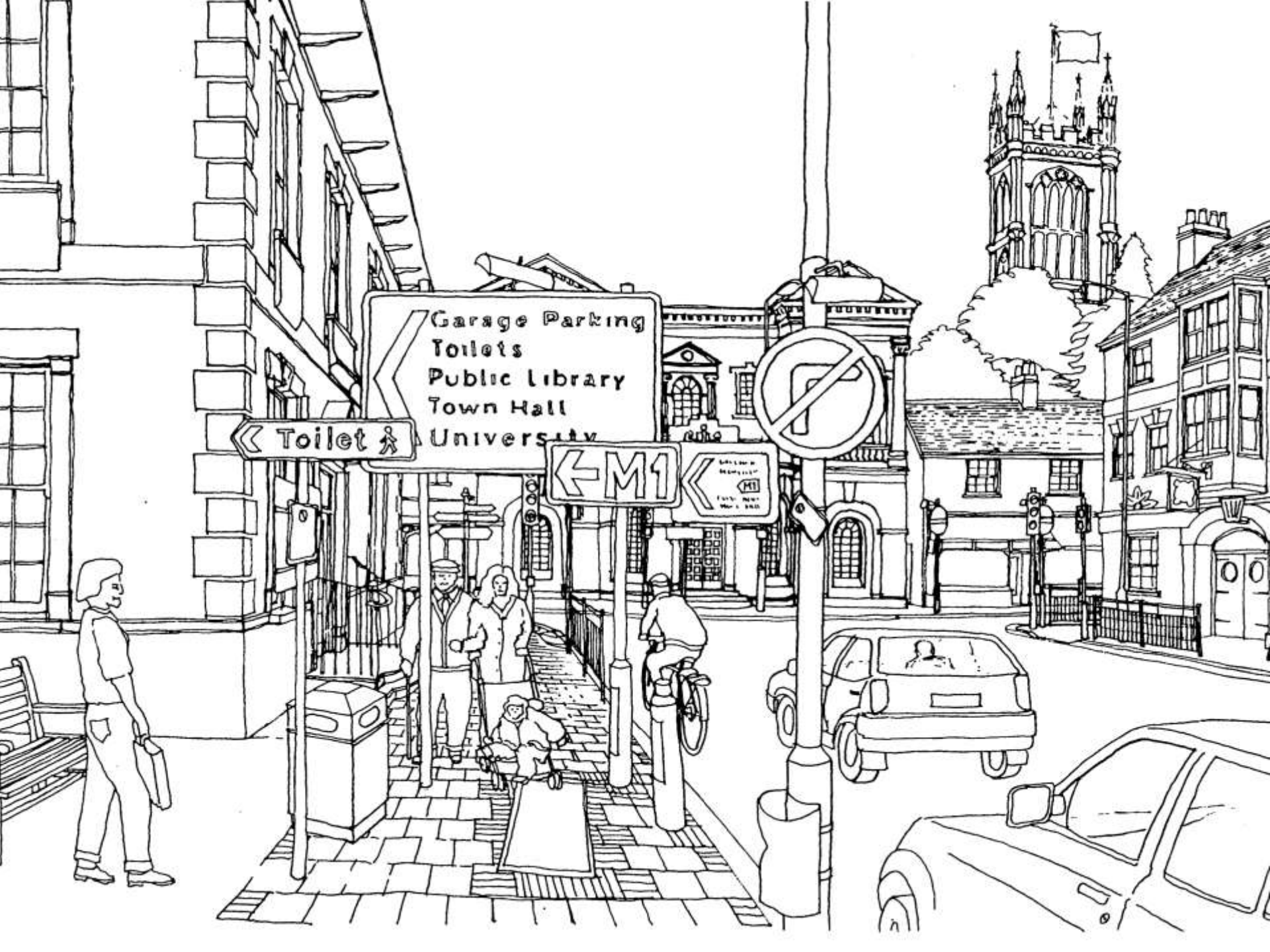




Garage Parking  
Toilets  
Public Library  
Town Hall  
University

Toilet 

M1  









# MfS and Road Safety Audits

- RSAs are not mandatory
- Responsibility rests with the Design Team...
- Who can decide whether to accept RSA recommendations
- No sense in which a scheme 'passes' or 'fails' RSA
- Risk assessment process encouraged
- Broader Quality Audit encouraged, including RSA







P Shoppers

Y<sup>e</sup> OLDE WINCE HARTE











# What's next?

- Local Transport Note on Shared Space – coming soon
- TAL on Quality Audits through CIHT
- CIHT Rolling revision of *Transport in the Urban Environment* or...  
Manual for Streets 3!



# Last slide.....!

- MfS 1 and 2 provide detailed guidance on a wide range of technical issues...
- for a wide range of contexts and street types
- They provide a 'way in' to DMRB and other technical guidance
- While encouraging designers to...
- Think!

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