

A.03 Traffic calming

Key Principle

All traffic calming schemes should be subject to a cycle audit to ensure that they meet cyclists' needs and do not create additional hazards.

Design Guidance

Background

Cycle Infrastructure Design:

5.1.1 Many cyclists feel comfortable on roads with no cycle-specific infrastructure if traffic speeds are low enough. Lower speed not only reduces the likelihood of an accident, but it also reduces severity of injury in the event of one.

Where traffic speeds are low, cyclists can mix more safely and comfortably with other vehicles without the need for cycle-specific measures. However, schemes intended to bring about or maintain low traffic speeds, whether traffic calming of existing roads or new build within proposed developments, must be carefully designed and built to avoid creating difficulties or even hazards, for cyclists. The use of a cycle audit will highlight any potential problems.

Manual for Streets:

7.4 Achieving appropriate traffic speeds

7.4.8 A speed limit is not an indication of the appropriate speed to drive at. It is the responsibility of drivers to travel within the speed limit at a speed suited to the conditions.

However, for new streets, or where existing streets are being modified and the design speed is below the speed limit, it will be necessary to include measures that reduce traffic speeds accordingly.

Likely problems

Three particular features have the potential to create difficulties for cyclists and these are: road narrowings (central refuges/build-outs/chicanes); vertical deflections (road humps/ speed cushions); and central hatching.

Road narrowings

Central refuges, build-outs and other forms of road narrowing are often used as traffic calming measures by reducing the available width. However, this can often lead to problems if the resulting gap is not wide enough for cyclists to be overtaken safely.

Where speeds are 20 mph or less the gap should be in the range 2.6 – 2.75m but only for short distances. If large vehicles are expected to be overtaking cyclists at speeds of 30 mph then the gap should be increased to 4.5m (see also [A04 Clear Space](#)).

Whatever the size of the gap, a short length of cycle lane through the restriction will help make drivers more aware of the limited space available to them.

Where sufficient space exists, a properly designed cycle by-pass will allow cyclists to safely and conveniently avoid the build out. If limited space precludes the construction of an arrangement that can be mechanically swept, a ramped by-pass can be considered.

Ramped cycle by-pass at narrowing

Picture: Patrick Lingwood/DfT

Note: use of the keep right/left arrows is incorrect as they refer to 'all traffic' which would include bicycles – the cycle track sign should be used instead (diagram 955)



Vertical deflections

Routes with large numbers of full-width humps are not suitable as through routes for cyclists unless comfortable and convenient means have been provided for cyclists to avoid them, such as cycle by-passes. Where cyclists have no choice but to ride over humps, the best way of minimising discomfort is to provide sinusoidal ramp profiles. These have shallower initial gradients and are marginally more comfortable for cyclists. Approximate sinusoidal profiles can easily be provided when constructing a conventional road hump.

Preformed sinusoidal profile ramps are available, and these can be particularly useful for ramped approaches to flat-topped humps and speed tables. However, their use should be approached with caution as it is understood that some fail to match the prescribed profile. In addition, on routes that are heavily trafficked, pre-cast units can work loose and break up.



Flat-topped hump using pre-formed sinusoidal units

Picture: Rob Marshall/DfT

In common with narrowings, a properly designed cycle by-pass will allow cyclists to safely and conveniently avoid the hump. Where neither of these solutions can be achieved, full-width road humps can be stopped some distance short of the kerb so that cyclists can use the resulting gaps as informal by-passes. The preferred minimum gap width is 1.2m.

Pre-formed speed cushions

Picture: Sustrans



Alternatively, speed cushions could be considered in place of full-width road humps. These are generally more comfortable for cyclists to negotiate than full-width road humps since they can usually avoid riding over the cushions. Usually placed in rows of two or more units across the road, cushions are also sometimes used singly where physical features, such as central traffic islands, limit the usable width to one lane.

The gap between kerb and cushion should be between 750mm and 1.2m wide. The latter is preferred so that cyclists do not have to appreciably deviate from their path. Gaps over 1.2m are not recommended as these could encourage some drivers to try and avoid the cushion by taking the kerbside line to the detriment of cyclists' safety. Drainage gullies should be positioned away from the gap between the cushion and the kerb.

Whilst cyclists will normally find a well-designed cushion scheme preferable to one that uses full-width humps, car parking can prevent cyclists from using the inside gap. This can create a hazard for cyclists as the result of having to weave through the central gap: given the steeper gradient of cushions compared to humps, most cyclists are likely to choose to cycle around them. Where parking might create such problems, a good scheme will anticipate and address any difficulties for cyclists by using a combination of off-carriageway parking provision, build-outs and by-passes, parking restrictions or a mandatory cycle lane.

Rumble strips and 'thumps' are also uncomfortable for cyclists to ride over. To improve matters there should be a gap of 1.2 m created between them and the kerb. This should be increased to 1.5m where a cycle lane of minimum width is provided.

Central hatching

The practice of introducing central hatching, often accompanied by the creation of central islands and coloured surfacing, to bring about reductions in traffic speeds can create particular hazards for cyclists. All of these features encourage motorists to drive close to the carriageway edge and occupy the space where most cycle movements take place. By doing so, the likelihood of conflict between motor vehicles and cyclists is increased. Where it is felt appropriate to reduce the

perceived available carriageway space as a way of achieving lower speeds, the preferred approach is to remove the central white lines (if present) and introduce cycle lanes in each direction see: [A02 Speed Reduction](#).



Bad practice: Central hatching moves motorists towards carriageway edge

Picture: Tim Pheby

Publications

[Cycle Infrastructure Design](#) - Local transport Note 2/08, DfT 2008

[Manual for Streets](#) DfT, Communities & Local Government 2007

[TAL 1/05 Rumblewave Surfacing](#) DfT 2005

[TAL 10/00 Road Humps: discomfort, noise and ground-borne vibration](#) DfT 2000

[TAL 9/99 20 mph speed limits and zones](#) DfT 1999

[TAL 9/98 Sinusoidal, H & S road humps](#) DfT 1998

[TAL 1/98 Speed Cushion Schemes](#) DfT 1998

[TAL 1/97 Cyclists at Road Narrowings](#) DfT 1997

[TAL 12/97 Chicane Schemes](#) DfT

[TAL 7/96 Highway \(road Humps\) Regulations 1996](#) DfT 1996

[TAL 7/94 Thumps, thermoplastic road humps](#) DfT 1994

[TAL 9/94 Horizontal Deflections](#) DfT 1994

[TAL 4/94 Speed Cushions](#) DfT 1994

[TAL 7/93 Traffic Calming Regulations](#) DfT 1993

[TAL 7/91 20 mph Speed Limit Zones](#) DfT 1991

[TAL 3/90 Urban Safety Management - Guidelines from IHT](#) DfT 1990 ([available from DfT](#))

[The effect of road narrowings on cyclists](#) TRL Report 621

[Cycling England Gallery](#) pictorial examples

[Rural Road Traffic Calming – Information Sheet ff38](#) (pdf - 789kb) Sustrans

Quiet Roads: taming country lanes Countryside Agency 1998

[London Cycling Design Standards – A guide to the design of a better cycling environment](#) (Sections 3.4, 3.5, and 3.6) TfL 2005

Lancashire - The Cyclists' County ([part 1](#), [part 2](#)) – creating pleasant road conditions Lancashire County Council, 2005

[CTC Benchmarking](#) – Best practice case studies

[Cushioning the Blow? – the use of speed cushions](#) (pdf - 743kb) CTC Cycle Digest, Issue 33 2002

[National Cycle Network – Guidelines and Practical details, Issue 2](#) Sustrans 1997

Other references

Traffic Calming Techniques, CIHT/CSS 2005

[Cycle Friendly Infrastructure - Guidelines for Planning and Design](#) Bicycle Association et al 1996

Traffic calming: the cyclist's viewpoint, 1996, H McClintock

Traffic Calming in Practice, County Surveyor's Society, 1994

Safer By Design – a guide to road safety engineering, 1994, DoT

Cyclists and Traffic Calming, CTC, 1991

Dutch 30kph zone design manual, 1991, TRL,

Traffic Calming Guidelines, 1991, Devon County Council

TAL 1/87, *Measures to control traffic for the benefit of residents, pedestrians and cyclists*; DoT

Illustrated Guide to Traffic Calming, 1986, Hass-Klau, Friends of the Earth