



Roads: traffic calming

Standard Note: SN/BT/3437

Last updated: 13 October 2010

Author: Louise Butcher

Section Business and Transport

This note gives information as to the legislative authority for traffic calming measures; the relevant guidance to local authorities on its installation and explains about different types of calming such as road humps, chicanes and so-called 'naked streets'.

Information on other roads-related issues can be found on the [Roads Topical Page](#) of the Parliament website.

Contents

1	Legislation and guidance	2
2	Road humps	2
3	Speed cushions, thermoplastic humps and other variations	5
4	Rumble devices and rumblewave surfacing	5
5	Horizontal deflections and chicane schemes	6
6	'Naked streets'	7

This information is provided to Members of Parliament in support of their parliamentary duties and is not intended to address the specific circumstances of any particular individual. It should not be relied upon as being up to date; the law or policies may have changed since it was last updated; and it should not be relied upon as legal or professional advice or as a substitute for it. A suitably qualified professional should be consulted if specific advice or information is required.

This information is provided subject to [our general terms and conditions](#) which are available online or may be provided on request in hard copy. Authors are available to discuss the content of this briefing with Members and their staff, but not with the general public.

1 Legislation and guidance

A highway authority may introduce traffic calming measures by way of a Traffic Regulation Order (TRO) made under Parts I and IV of the [Road Traffic Regulation Act 1984](#), as amended. Section 2 of the 1984 Act sets out what TROs may be used for and it includes almost anything prohibiting, restricting or regulating the use of a road by traffic or pedestrians. The procedure to be adopted by a local authority for making orders is set out in the [Local Authorities' Traffic Orders \(Procedure\) \(England and Wales\) Regulations 1996 \(SI 1996/2489\)](#); and the [Local Authorities' Traffic Orders \(Procedure\) \(Scotland\) Regulations 1999 \(SI 1999/614\)](#), as amended. It basically involves consultation on, and publication of, proposals and the consideration of objections.

The legislative authority for the type and installation of traffic calming measures is sections 90A-90I of the [Highways Act 1980](#), as amended, and the [Highways \(Road Humps\) Regulations 1999 \(SI 1999/1025\)](#) (made under section 90D) and the [Highways \(Traffic Calming\) Regulations 1999 \(SI 1999/1026\)](#) (made under section 90H).

These provisions were not included in the original Act; provisions regarding road humps were inserted by the [Transport Act 1981](#) and provisions regarding other forms of traffic calming were inserted by the [Traffic Calming Act 1992](#). There are slightly different rules regarding London, these provisions were inserted by the [Greater London Authority Act 1999](#). These provisions were inserted, in the case of road humps, to clarify the law regarding obstruction and to remove doubt that humps did not constitute an 'obstruction' under the law. The provisions regarding other traffic calming measures were inserted to widen the toolkit of measures available to local authorities – previously the regulations had been very prescriptive as to design and installation.¹

The relevant guidance to local authorities on the design and installation of traffic calming measures is [Local Transport Note 1/07, Traffic Calming](#), published in March 2007. There is also a code of practice for local authorities as to how they should consult fire and ambulance services about any proposed traffic calming measures.² Other guidance in the form of traffic advisory leaflets is also available, including a bibliography of the Department's work in this area.³

2 Road humps

Government, local authorities and road users have long disagreed about the safety and efficacy of road humps. The various arguments for and against are set out below.

The guidance, published by the Labour Government, states that road humps are a safe and effective means of calming traffic:

Traffic calming reduces speeds and hence improves safety, especially for vulnerable road users ... Speed and accident reduction are not the only valid objectives leading to the introduction of a traffic calming scheme. Other objectives may include encouraging non-motorised users, improving the local environment and reducing community severance. All objectives should be clearly stated at the outset and should tie in with both the authorities' strategic objectives and the needs and desires of the relevant stakeholders. A traffic calming scheme can provide an opportunity for the local

¹ see, e.g. the [Highways \(Road Humps\) Regulations 1990 \(SI 1990/703\)](#)

² DfT, [Fire and Ambulance Services traffic calming: a code of practice](#) (Traffic Advisory Leaflet TAL 1/07), February 2007

³ DfT, [Traffic calming bibliography](#) (Traffic Advisory Leaflet TAL 2/05), January 2005

community to get involved in the redesign of their street: considering uses, streetscape and sense of place as well as specific measures. Local authorities may have to make difficult decisions about the type of scheme they implement: weighing factors such as the size of area to be treated, against the quality and appearance of the final scheme.⁴

Labour ministers also highlighted the impact of road humps in reducing the number of road accidents:

... we regard traffic-calming measures, of which speed humps are the most effective, as being very significant indeed in reducing road speeds and hence accidents. The figures are quite straightforward. Research shows that a 1 mile per hour reduction on mean speeds produces a 5 to 6 per cent reduction in personal injury accidents. So they are effective.

They are effective too for the police because speeding limits are enforced without policemen needing to be present. I bear in mind what my noble friend says about the issue of speed humps interfering with the emergency services—police, fire and ambulance—on certain occasions. The attempt is to seek to ensure that there are not speed humps on through routes. But in residential areas members of the public campaign for speed humps because they know they are safer for them and for their children (...)

Overall, the position across the country is quite straightforward: local authorities are besieged by residents seeking to have traffic-calming measures in their neighbourhood. They have to reach a judgment between the increased safety they may well provide for residents and the proper needs of the emergency services and other traffic to proceed at reasonable speed (...)

[T]here are chicanes and flashing signs that state at what speed one should be travelling. But let me reassure him of this about traffic calming measures. Our most recent research states that on the introduction of such calming measures, the average annual accident frequency fell by 60 per cent; child pedestrian accident frequency fell by 70 per cent; child cyclist accidents fell by 48 per cent; and there was an overall reduction of 67 per cent for all child accidents. That is a gain worth having.⁵

There has been no indication that the Conservative-Liberal Democrat Coalition Government that took power in May 2010 intends to take a different view. This is unsurprising in view of the government's broader policy of devolving transport powers to local authorities and to allowing them to take decisions about what is best in their areas. The Secretary of State for Transport, Philip Hammond MP, emphasised this point before the Transport Select Committee in July when he was asked more broadly about road safety strategy:

We have not ruled out setting a new national framework. I think I am right in saying that the current national strategy expires at the end of this year, and we are currently considering how we will follow on from that, but certainly we will want to recognise that the situation is different in different localities, different parts of the country, and the localism agenda does require that local authorities have discretion to identify the priorities for their areas.⁶

⁴ DfT, *Traffic calming* (LTN 1/07), March 2007, paras 1.1.10-1.1.11

⁵ [HL Deb 8 December 2003, cc541-543](#)

⁶ Transport Committee, *Uncorrected evidence: The Secretary of State's priorities for transport*, HC 359, 26 July 2010, Q84

However, in the past the Conservative Party has indicated an antipathy towards such measures. For example, during the debates on what became the *Road Safety Act 2006*, the Conservatives put down a probing amendment to phase out road humps. The then Conservative spokesman, Greg Knight, commented on the issue during the debate:

In certain parts of the country, local authorities already seek to undermine—I suppose that that is the correct word—speed limits that are in place. I am thinking of the erection of speed humps. In many cases, the speed limit on a particular road is 30 mph, but the local authority has erected speed humps such that it is impossible to travel at anything close to 30 mph without wrecking one's vehicle. If there is a case for having traffic travelling at, say, 20 mph or 15 mph, why is that not the speed limit? That sort of incident causes outrage and anger in local communities and among motorists. If there is a compelling case for lowering the speed limit, perhaps near a school, I would support that rather than leaving the speed limit at 30 mph and erecting speed humps.⁷

In 2007 the report of the Conservative Party's Economic Competitiveness Policy Group⁸ stated that:

... the capacity of the existing road network, especially in urban areas, has been reduced by traffic management schemes over the last decade, as a result of the Government's focus on reducing speed to the exclusion of all else. We recommend a reassessment of improvements that have been made in the name of safety, since the measures taken have often been ineffective or even unintentionally dangerous (as in the case of artificial chicanes), and have sometimes ignored the evidence that speed is not a factor in over 90% of road accidents.⁹

Those broadly in favour of road humps cite favourable statistics showing decreased numbers of accidents, particularly serious accidents.¹⁰ However, over the past six or seven years a number of local authorities, particularly in London, have opted to remove their road humps on the grounds that they showed no material benefit and damaged vehicles.¹¹ In particular, those opposed to humps cite the impact of road humps on the emergency services particularly following comments by the London Ambulance Service (LAS) which stated that:

Not only do speed humps delay our response to calls they can also lengthen the patient's journey to hospital. Furthermore, they can have an adverse effect on patient comfort - as well as the inevitable jolting that can be experienced there is also the need on occasions when negotiating speed humps for the paramedic or emergency medical technician (EMT) to delay or temporarily cease their treatment of a patient [...]

As far as damage caused by speed humps is concerned, most people would think it possibly unlikely that a large, relatively high vehicle like an ambulance would suffer damage. However, nowadays the first unit to be deployed to 'life threatening' cases is often likely to be a fast response car. The transport department of the LAS did become

⁷ [HC Deb 8 March 2005, cc1421-1422](#)

⁸ the Group was one of several set up by David Cameron after he became leader of the Conservative Party in December 2005; it was chaired by John Redwood MP and Simon Wolfson

⁹ [Freeing Britain to Compete: equipping the UK for globalisation](#), August 2007, p26

¹⁰ see, e.g. GLA Transport Committee, [London's Got the Hump](#), April 2004, p1; and Kingston upon Hull Road Safety Partnership, [Investigation into the impact of speed humps](#), April 2004

¹¹ one of the most well known cases was the London Borough of Barnet, see, e.g.: ["Motorists' champion rips out humps and bus lanes,"](#) *The Times*, 22 March 2004

concerned that the sumps of these vehicles were being damaged by speed humps and as a result has fitted 'sump guards' to these vehicles.¹²

3 Speed cushions, thermoplastic humps and other variations

Speed cushions were introduced in order to overcome concerns about discomfort and delay expressed by bus companies and the emergency services resulting from the use of flat and round top road humps. Speed cushions were first tried on the public highway in the UK in 1993. Track trials investigating the design of speed cushions were carried out by the Transport Research Laboratory (TRL) in November 1992. TRL also undertook monitoring of on-road speed cushion schemes installed in Sheffield and York in 1993.¹³ TRL conducted a further assessment of these schemes in 1998.¹⁴

Thermoplastic road humps (thumps) were developed as an alternative to standard road humps. They underwent testing in the early to mid 1990s.¹⁵ It was left up to individual authorities to determine whether thumps provided a suitable alternative to road humps in particular circumstances and along particular lengths of road.

In 1998 the Labour Government commissioned research into other kinds of road humps such as sinusoidal humps, "S" humps and "H" humps:

Humps with a **sinusoidal** profile are similar to round-top humps but have a shallower initial rise. They were developed in the Netherlands and Denmark to provide a more comfortable ride for cyclists in traffic calmed areas. The sinusoidal profile has also been used instead of straight ramps for flat-top road humps.

The **"H" hump** was first developed in Denmark. Trials there showed that it was possible to design a combined car and bus hump with two longer, shallower outer profiles to take the tyres of buses, and with a shorter inner steeper profile to take cars. The theory is that buses, because of the shallower ramps, will be able to travel across at higher speeds and/or less discomfort compared to standard humps. The hump is called an "H" hump because the plan view of the half-carriageway hump resembles a letter "H".

Engineers from Fife Council carried out off-road trials prior to the on-road trials for the "H" hump. During this period an alternative design was developed, to eliminate some difficulties encountered with the "H" hump. This alternative design, because of its plan profile consisting of continuous curves, was referred to as the **"S" hump**.¹⁶

4 Rumble devices and rumblewave surfacing

Features with a vibratory and audible effect can be used, usually in rural areas, to alert drivers to take greater care in advance of a hazard such as a bend or junction. In combination with a gateway they can indicate the entry to a village or the start of a series of traffic calming measures. They have also been used to designate the start of shared use roads in new residential developments. Although rumble devices have been used, in places, with the aim of reducing speeds, the then Department of Transport reported in 1993 that:

¹² Letter to London Assembly Transport Committee from the London Ambulance Service, 4 November 2003; a traffic division report from the Metropolitan Police also warned that its response to emergency calls was being hampered by road humps, see: "[Road humps hamper police response](#)," *BBC News Online*, 3 December 2003

¹³ DfT, [Speed cushions](#) (Traffic Advisory Leaflet TAL 4/94), October 1994

¹⁴ DfT, [Speed cushion schemes](#) (Traffic Advisory Leaflet TAL 1/98), February 1998

¹⁵ DfT, ["Thumps", thermoplastic road humps](#) (Traffic Advisory Leaflet TAL 7/94), October 1994

¹⁶ DfT, [Sinusoidal, "H" & "S" humps](#) (Traffic Advisory Leaflet TAL 9/98), December 1998

...the evidence so far indicates that any speed reduction obtained will tend to be minimal, and will be eroded with the passage of time. It is also known that in some locations drivers have learned to accelerate over the devices to lessen the vibratory effect. Reliance should, therefore, not be placed on using rumble devices alone to reduce speed.¹⁷

The 1999 Regulations permit local authorities to construct rumble devices. However, traditional rumble devices, particularly rumble strips, can generate considerable external noise over a large area and government advice, given in 2005, is that the siting of rumble strips close to residential properties should be avoided. A quieter alternative to conventional rumble strips has been developed called rumblewave. It is designed to create noise and vibration within vehicles passing over it, but not increase noise levels significantly for those outside the vehicles.¹⁸

5 Horizontal deflections and chicane schemes

Although horizontal deflections have been used as an alternative to vertical deflections in some traffic calming schemes, results have been mixed. Little research has been undertaken on this subject in the UK, so designs have tended to be based on details obtained from work in other countries:

Horizontal deflections have mainly been installed to influence vehicle speeds, though not always successfully. In the case of build outs and pinch points the narrowed carriageway, even if reduced to a single lane, still allows most vehicles to be driven relatively quickly through the available gap, unless there is opposing traffic to prevent this. Unfortunately, in many residential streets traffic is either tidal, or of such low flow that it is unlikely that vehicles from opposite directions will meet at the narrowing. There is also some evidence that even where there is opposing traffic, one stream does not willingly give way to the other. Chicanes have been effective in reducing vehicle speeds, as long as large vehicles such as articulated lorries do not have to be accommodated. Where this occurs the stagger length may need to be so long that car drivers can adopt a relatively straight line through the chicane, and therefore speeds are not reduced.¹⁹

The 1999 Regulations permit local highway authorities to construct horizontal deflection devices and chicanes. Chicane designs vary considerably but fall into two broad categories:

1. single lane working consisting of build-outs, staggered on alternate sides of the road, narrowing the road so that traffic from one direction has to give way to opposing traffic; and
2. two-way working, using build-outs to provide deflection, but with lanes separated by road markings, or a central island.

In 1997 the Department for Transport published information on the impact of chicanes on accident rates and their application across the country.²⁰

¹⁷ DfT, [Rumble devices](#) (Traffic Advisory Leaflet TAL 11/93), November 1993

¹⁸ DfT, [Rumblewave surfacing](#) (Traffic Advisory Leaflet TAL 1/05), January 2005

¹⁹ DfT, [Horizontal deflections](#) (Traffic Advisory Leaflet TAL 9/94), December 1994

²⁰ DfT, [Chicane schemes](#) (Traffic Advisory Leaflet TAL 12/97), December 1997

6 'Naked streets'

There is an alternative approach to traffic calming known as 'naked streets' or 'shared space'. Broadly, this can be defined as follows:

Shared Space is an approach to highway design predominantly aimed at changing the impact of motor traffic in places used by pedestrians. Shared spaces are generally introduced with a range of purposes including:

- improving the urban environment;
- giving people freedom of movement rather than instruction and control;
- improving the ambience of places;
- enhancing social capital; and
- enhancing the economic vitality of places.

A characteristic of many Shared Space schemes, which highlights the departure from conventionally designed streets, is the minimal use of traffic signs, road markings and other traffic management features. With less, or no, traffic management or clear indication of priority, motorists are encouraged to recognise the space as being different from a typical road and to react by driving more slowly and responding directly to the behaviour of other users (including other motorists) rather than predominantly to the traffic management features. This approach takes place against a backdrop of concern at the proliferation of features such as pedestrian guardrailing, traffic signs and highway regulation which, it is argued, can tend to reduce users' understanding of the complexity of the street environment and their personal responsibility for safe and appropriate behaviour.²¹

A report by MVA Consultancy for the Department for Transport, published in 2009, concluded that:

...the evidence broadly suggests that Shared Space Schemes can deliver benefits: they appear to support economic activity, improve perceptions of personal security, be popular generally with the public and traders and increase freedom of movement for many people including some vulnerable pedestrians. In making these statements it is acknowledged that the evidence is not always conclusive and appears to vary from scheme to scheme.²²

Research was previously undertaken by TRL; it used the term a 'psychological approach' to refer to the naked streets concept, involving the abandonment conventional road humps and slowing down drivers by using psychology to make roads appear narrower than they are. Measures in keeping with such an approach could include removing centre white lines, blurring the boundary between pavements and roads and changing the colour of the tarmac. TRL's report was published in 2005, it concluded:

Overall, the project has shown that there is no simple, unique, widely applicable psychological measure. Rather it is a matter of applying psychological principles to each new situation in a holistic manner. There will continue to be situations where physical measures are needed. However, psychological schemes can be effective,

²¹ MVA Consultancy for the DfT, *DfT Shared Space Project Stage 1: Appraisal of Shared Space*, November 2009, paras 1.1.1-1.1.2

²² *ibid.*, para 5.1.5

their effect can be lasting (at least over a period of months) and they are highly acceptable to local people.²³

Such schemes have been implemented abroad, in countries such as Holland and Denmark. There have also been shared space pilots in a number of areas in the UK such as Wiltshire:

... there are already about a dozen roads operating a 30mph speed limit which have no central white lines. Despite initial concerns about safety, planners claim the policy has been a resounding success with accidents falling by 35% and a noticeable reduction in driving speeds.

"By removing certain road markings it removes certainty, so drivers tend to be a bit more cautious," said Andrew Wyatt, traffic and road safety manager at Wiltshire county council.

Wiltshire is also trialing a TRL traffic-calming project in the village of Latton, near Swindon. The main high street has had its central lane markings removed and sensitive areas such as bus stops have been given a buff-coloured road surface to alert drivers to a potential hazard. Initial findings suggest motorists are adhering to a new 30mph speed limit.²⁴

And Kensington and Chelsea:

On Kensington High Street the crossings now work on a shared space scheme. The whole high street is a zone that pedestrians can make use of. Since we introduced the scheme in 2003 there's been an overall reduction in accidents from 71 casualties to 40 casualties. Pedestrian-related accidents have fallen by almost 60 per cent. It is quite significant and it is because everybody — motorists and pedestrians — is looking around and taking more care.²⁵

The concept is also supported by the pedestrian advocacy group Living Streets:

We believe that schemes which use naked streets principles have great potential to make our streets safer and more people-friendly, by changing the behaviour of all road users for the better. However these schemes must be well designed and implemented, and involve thorough consultation with local interest groups as well as ongoing monitoring and evaluation of impact to ensure that the scheme brings positive results. Improving safety and ensuring accessibility must be at the heart of schemes.²⁶

²³ TRL, *'Psychological' Traffic Calming* (TRL report 641), 2005, p3

²⁴ "Mind games to replace bumps in the road", *The Sunday Times*, 1 August 2004

²⁵ "Are shared streets safe for pedestrians?", *The Times*, 11 September 2009

²⁶ Living Streets, *Living Streets' position on naked streets*; for more information see: [Living Streets Policy Briefing 1/09](#)