

# **SPEED MANAGEMENT AND SPEED LIMITS**

Response by the Slower Speeds Initiative  
to the consultation on updating Circular Roads 1/93

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## Introduction

The Slower Speeds Initiative was founded in March 1998 by the Children's Play Council, CTC, the Environmental Transport Association, the Pedestrians' Association (now Living Streets), Pedestrian Policy Group, Road Danger Reduction Forum, RoadPeace, Sustrans and Transport 2000. We are working for evidence-based speed limits that reflect the impacts of speed and contribute to increased sustainability of our transport system. Such limits should be sustainably enforced, through appropriate vehicle design.

We are submitting this technical response to the consultation on behalf of all our founders. CTC and Transport 2000 have also submitted more general responses that accord with this one.

The Initiative has an obvious interest in commenting on this consultation, but we would like to point out four key reasons why we consider this new Circular to be of paramount importance:

- It introduces the Speed Assessment Framework, which we very much welcome as opening an era of evidence-based speed policy. We commend the Department for taking an international lead in applying an approach that has so far been largely theoretical. Our policy advisers are Stephen Plowden and Mayer Hillman, authors of *Speed Control and Transport Policy* (1996) which argued for a cost-benefit analysis approach to determine optimal speed limits for a given road type and demonstrated that, in general, speed limits should be lower than at present. Their work is acknowledged in the research that has led to this draft Circular.
- The Initiative is regularly contacted for advice by individuals and community groups who want lower and/or better enforced speed limits. We are acutely aware of their plight.
- The work of our founders, some of it funded by the Government, depends on lower and better enforced speed limits and greater institutional recognition of the impacts of speed for its success. This work encompasses safer routes to school and child independent mobility, use of the National Cycle Network, Active Travel, environmental considerations in car use, campaigns against aggressive driving and for greater awareness of the seriousness of speeding offences in charging and sentencing.
- We represent the main non-governmental organisations with a primary concern for vulnerable road users. Last year pedestrians and cyclists accounted for 46% of casualties involving death and serious injury on urban roads. They deserve at least proportionate consideration in official guidance on speed management and the determination of speed limits.

Our comment on the draft is intended to be helpful. We have tried to accompany our criticisms with explanations and recommendations on how the new Circular could be improved. This is the main reason for the length of our response. We believe that extensive revision of the draft Circular is required to eliminate ambiguity — essential if the Circular is to serve as guidance. We also believe that the scope of the Circular needs to be widened to provide transport planners and managers with the information they need to realise the full potential of speed management.

The two main themes in our comment are that speed management must ensure equitable access to the road network and that explicit guidance and information will help to reduce what we consider is wholly unjustified controversy around speed limits and their enforcement.

We urge the Government to overcome its speed phobia. More people favour speed control than oppose it. Forthright presentation and implementation of clearly reasoned policy is the best way to end spurious and mischievous controversy. Lives are at stake — as all the research commissioned by the Department over the last few years clearly shows.

## **Executive Summary**

### **THE ROLE OF SPEED MANAGEMENT AND SPEED LIMITS**

'Practically all significant impacts of road traffic, e.g., various cost components and safety, depend on driving speeds.' Two phases of speed management are recognised: setting speed limits for different kinds of roads and applying the measures that promote compliance. Speed limits should be primary indicators of how the road network is to be used and the desired pattern of impacts of that use.

### **A CHANGED CONTEXT FOR MANAGING SPEED**

Understanding of the impacts of speed has increased considerably since 1993. The policy context for managing speed has also changed dramatically. Controlling traffic growth and its impacts is part of a wider environmental protection agenda. The relevance of speed management to the wider policy spectrum including sustainable development, land use, health, social inclusion, community safety and improving the public realm should be highlighted in the guidance.

### **THE NEED FOR A NATIONAL SPEED MANAGEMENT STRATEGY AND NEW LIMITS TO SUPPORT IT**

The new context and increasingly urgent environmental priorities of reducing CO2 emissions and fossil fuel dependency argue for a national speed management strategy, with new national speed limits. The problem that the new Circular seeks to address also argues for new national speed limits. Two new limits, 20mph for settlements and 50mph for single carriageway roads, would provide the basis for a simplified, coherent and consistent approach by Traffic Authorities to developing speed management strategies and setting local speed limits. The 70mph limit for dual carriageways and motorways is also unnecessarily high if global warming, high oil prices and energy security are taken into account. If the Government will not consider reducing national limits, it could at least carry out large-scale trials of lower limits to determine optimum limits for different types of road.

### **THE NEED FOR GUIDANCE**

Comprehensive guidance on speed management is needed to reduce conflicts between road functions and road users, to ensure that speed management supports wider policy objectives, to deal with conflicting perspectives and because the entire task has been left to Traffic Authorities.

The uses of risk, road user, driver perception and mean speed expose assumptions which are not consistent with the broader aims of speed management or the specific thrust of the Speed Assessment Framework: balancing impacts and determining optimal speed limits. Speed limit changes are treated as measures of last resort and it is assumed they will usually be considered only in response to casualties. There is far too much emphasis placed on the role of police in determining acceptable speed limits and far too little on the role of communities. These problems arise because one key concept for policy, including speed management, is missing entirely — equity.

The Objectives of the new Circular should be to provide up to date advice on research and best practice in speed management in order to promote consistency, reduce conflicts between road functions and road users and ensure local transport policy supports wider policy objectives.

The general presumption in the draft Circular against speed limit changes in the absence of a casualty problem builds in a post hoc approach to speed management which militates against the very consistency the new Circular is supposed to achieve. It discriminates against pedestrians and cyclists and underestimates how far responses to intimidation account for the absence of casualties.

### **PRINCIPLES**

The principles from the MASTER framework are recommended as a basis for the new Circular, including the following:

- decisions concerning speed management should be transparent and based on explicitly formulated principles
- driving speeds should reflect a socially desirable balance of all impacts of speed and equitable distribution of these impacts

- the authorities involved in managing speed should have compatible ideas about general objectives, target speeds and appropriate measures to achieve compliance.

Equity, precaution and prevention, participation, transparency, accountability and environmental protection should be included in the explicitly formulated principles. A police policy on speed limits is needed to demonstrate compatibility.

### **CONSIDERATIONS AND PROCEDURES IN SETTING SPEED LIMITS**

A clear procedure for setting speed limits in support of local speed management strategies is needed. The appropriate division of the task between national and local authorities is essential if speed limits are to be changed in a consistent and cost-effective manner. A procedure based on analysis of functions and road users would help to restore equity and ensure the consideration of relevant impacts. A system which explicitly addressed the conflicts between the settled and the mobile and between the slow and the fast would aid decision-making by indicating appropriate approaches, data collection requirements and speed management techniques.

### **THE SPEED ASSESSMENT FRAMEWORK**

The Speed Assessment Framework is the most significant and welcome development behind the draft Circular. The Framework should be used to ensure that speed management and speed limits on roads where the traffic function is dominant increase the social, economic and environmental efficiency of network. For the sake of transparency and equity, the Framework should be developed to ensure full consideration of qualitative impacts, analysis of the distribution of impacts, sensitivity tests and taking a range of viewpoints into account when determining acceptability.

The methodology for assigning roads to tiers should include explicit steps to indicate when and how to take into account additional criteria. A route for identifying Quiet Lanes should be included. The current road classification system should not be imposed on the tier system.

### **COSTS AND BENEFITS**

Trials are needed to establish how journey times for motorised traffic might change with lower speed limits. The cost and negative visual impact of signing would be reduced by a change in the regulations. The ratio of benefits to costs justifies a major expansion in funding for speed management measures, which could underpin an area wide approach in settlements and a network wide approach on rural roads.

### **DATA COLLECTION**

The new Circular should provide guidance to Traffic Authorities on the appropriate data for evaluating the current state of their networks, carrying out initial assessments of costs and benefits and monitoring the impacts of changes in speed limits. Traffic Authorities should have a duty to monitor speeds across the networks they manage.

### **TRAFFIC CALMING MEASURES, INNOVATION AND REGULATIONS**

The new Circular should provide explicit guidance on not endangering cyclists when traffic calming measures are introduced. There should be some discussion of recent innovations in traffic calming and the new Circular should incorporate guidance on relaxation of regulations to encourage innovation. There should also be guidance on dealing with liability.

## MAIN RESPONSE

### THE ROLE OF SPEED MANAGEMENT AND SPEED LIMITS

'Practically all significant impacts of road traffic, e.g., various cost components and safety, depend on driving speeds.' (Kallberg and Toivanen, 1998, p 9)

The direct impacts include:

- the frequency and severity of crashes
- intimidation and stress
- severance
- journey time and reliability
- fuel consumption
- global warming and other pollution
- noise

Travel speeds also affect perceived accessibility, modal choice and environmental quality and therefore have significant impacts on land use, reliance on the private car and efficient use of the road network (Figure 1).

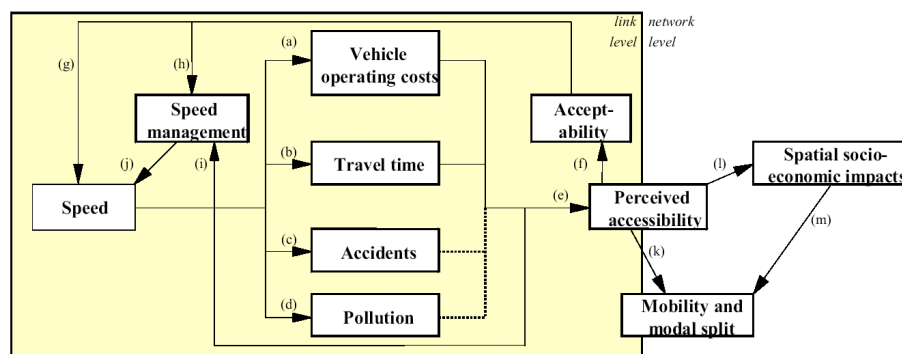


Figure 1: Summary of the direct and indirect impacts of Speed (Kallberg and Toivanen, 1998)

The Speed Assessment Framework introduced in this Circular is an adaptation of the MASTER Speed Assessment Framework. It is the most important feature of the new guidance and is a promising tool for developing evidence-based speed limits that take account of local impacts and contribute to a range of policy objectives.

Two phases of speed management are recognised:

1. setting speed limits for different kinds of roads and
2. applying the measures that promote compliance (Plowden and Hillman 1996).

Speed limits should be primary indicators of how the road network is to be used and the desired pattern of impacts of that use. Speed limits are the only source of guidance to individual drivers on keeping their impacts within boundaries determined by society. However, even if drivers did not need this guidance (for example, if all cars were fitted with mandatory, dynamic speed limiters) speed limits would still be needed to control system performance and impacts. By setting the level of risk, speed limits (and enforcement effort) are also determinants of rights of access to the road network.

## **A CHANGED CONTEXT FOR MANAGING SPEED**

Much has changed since the last general guidance on setting speed limits was issued in 1993. As the Speed Assessment Framework demonstrates, much more is understood about the impacts of speed, especially its contribution to road crashes and casualties.

The research background for the new Circular has not been widely disseminated or understood, as the controversy around speed reducing measures shows. It should be more fully discussed and referenced in the new Circular in a separate chapter that could provide more detail on the speed crash relationship and the research leading to the development of the Speed Assessment Framework (Lynam, et al.). (See Appendix A).

The policy context for managing speed has also changed dramatically since 1993. Controlling traffic growth and its impacts is part of a wider environmental protection agenda. The mounting disease burden of sedentary lifestyles and premature death due to poor air quality are major concerns for public health policy. The relationship between transport and social exclusion is increasingly recognised. Above all there is recognition of the need to move towards greater sustainability (progressive reduction of impacts coupled with increasing equity).

The wider impacts of speed are not given sufficient emphasis in the draft Circular. There is no guidance on the connection between local authority speed management and national environmental targets. In addition to the casualty reduction target, the Department has Public Service Agreement targets for air quality improvements and CO2 reduction. Speed management should play a major role in meeting these targets, not least by enabling modal shift.

The relevance of speed management to the wider policy spectrum including sustainable development, land use, health, social inclusion, community safety and improving the public realm should be highlighted in the guidance.

To reflect this wider scope and the more comprehensive approach which the Speed Assessment Framework shows is possible, the new Circular should be a replacement for the Circular 1/93, not an update. Speed management should be mentioned in the title.

## **THE NEED FOR A NATIONAL SPEED MANAGEMENT STRATEGY AND NEW LIMITS TO SUPPORT IT**

The new context and increasingly urgent environmental priorities of reducing CO2 emissions and fossil fuel dependency argue for a national speed management strategy, with new national speed limits. The research that the Department has commissioned over the last decade provides ample support for a national strategy. The report on the Speed Assessment Framework has outlined the steps for introducing a national framework for single carriageway roads.

The problem that the new Circular seeks to address also argues for new national speed limits. Local limits are 'set for situations where it is appropriate for drivers to adopt a speed which is different from the national limit' (para 3). Therefore, the problem of 'increasingly different approaches to speed limits' (para 5) also indicates that, increasingly, national limits are no longer considered appropriate. The draft acknowledges the 'need for a more consistent and recognisable approach to setting speed limits **at both national and local level**' [our emphasis] but the Government do not accept the national speed limit setting job. There is no recognition that the current system of national default limits is breaking down even though its breakdown is a primary motivation for the new Circular.

Two new limits, 20mph for settlements and 50mph for single carriageway roads, would provide the basis for a simplified, coherent and consistent approach by Traffic Authorities to developing speed management strategies and setting local speed limits.

### A new 20mph default limit for the majority of roads in settlements

The relationship between impact speed and pedestrian injury severity, rates of death and serious injury among pedestrians and cyclists and the need to reduce motorised traffic in towns and cities indicate that the urban 30mph limit is too high.

The relationship between impact speed and pedestrian injury severity is not linear, with injury severity and risk of death rising steeply at speeds above 20mph. Impact at the 30mph speed limit is fatal to 45% of pedestrians. At 20mph only 5% are killed (DETR 2000). 30% will receive non-minor injuries. The effects of this curve are demonstrated in national casualty statistics: pedestrians were the single largest group of road users killed on urban roads in 2003 (DfT 2004, Table 24). 46% of those killed and seriously injured on urban roads in 2003 were pedestrians and cyclists — people who posed absolutely no serious risk to other road users. Rather, their mode choice reduces danger to others as well as meeting the wide range of policy objectives for network efficiency, health and the environment.

Current rates of death for pedestrians and cyclists per distance unit of exposure are 17 and 19 times respectively those for car occupants (DfT 2004, Table 51). This cannot represent a socially desirable balance between mobility and safety, as the draft Circular claims (para 66). The decision to walk or cycle should entail no higher level of risk than the decision to travel by car. (Indeed, there is a strong argument that the rates of death and injury for vulnerable road users should be lower than the rate for car occupants in order to encourage modal shift and its attendant benefits.)

It is obvious that equity in access to and use of the road network in settlements will not be achieved on the basis of very intermittent 20mph limits, especially when regulations make their introduction so costly.

The very scarcity of 20mph zones helps to generate inequity, since the majority of communities are forced to accept dominance by the motorcar. In 2003 over half of road casualties resulting in death or serious injury occurred in 30mph limits (DfT 2004, Table 13).

The draft Circular comments that 'the type of road user casualty involved differs substantially from one location to another' (para 69) but does not acknowledge how far this variation reflects the suppression of walking and cycling. While collisions are 'more scattered' on residential roads and involve a higher proportion of pedestrians, cyclists and children (para 69), this simply indicates that there are places where there is no escape for vulnerable road users from the dangers of inappropriate speeds.

All before and after studies of 20mph zones indicate a very large potential for casualty reduction. A recent study by the Transport Research Laboratory for Transport for London suggests all casualties could be reduced by 42% and deaths and serious injuries by 53% (TfL 2003).

This rate of casualty reduction means that replacing the 30mph limit with a 20mph limit could reduce the total number of people killed and seriously injured on Britain's roads by 27%. All other road casualty reduction measures should be evaluated in light of this saving.

The Initiative is currently engaged in research into the extent of 20mph limits and zones, their benefits and obstacles to implementation. Child pedestrian safety and the promotion of safe routes to school are major motivators for 20mph speed limits. But there is also a large community demand for 20mph limits to reduce traffic intimidation and intrusion. Recent surveys by the Home Office (Wood 2004), Defra (MORI 2003) and the DfT (DfT 2005) have also revealed the high impact of traffic on quality of life. Attitude surveys by the Department indicated that 80% of people favoured 20mph zones (DTLR 2001).

A 20mph default limit would help meet PSAs on air quality and CO<sub>2</sub> (as well as casualty reduction) by promoting walking and cycling. It would also support health objectives.

20mph limits were described as the single most important measure underlying balanced use of street space, promoting walking, cycling and public transport and vibrant urban centres in a 2001 report on

transport best practice by the Commission for Integrated Transport (CfIT 2001).

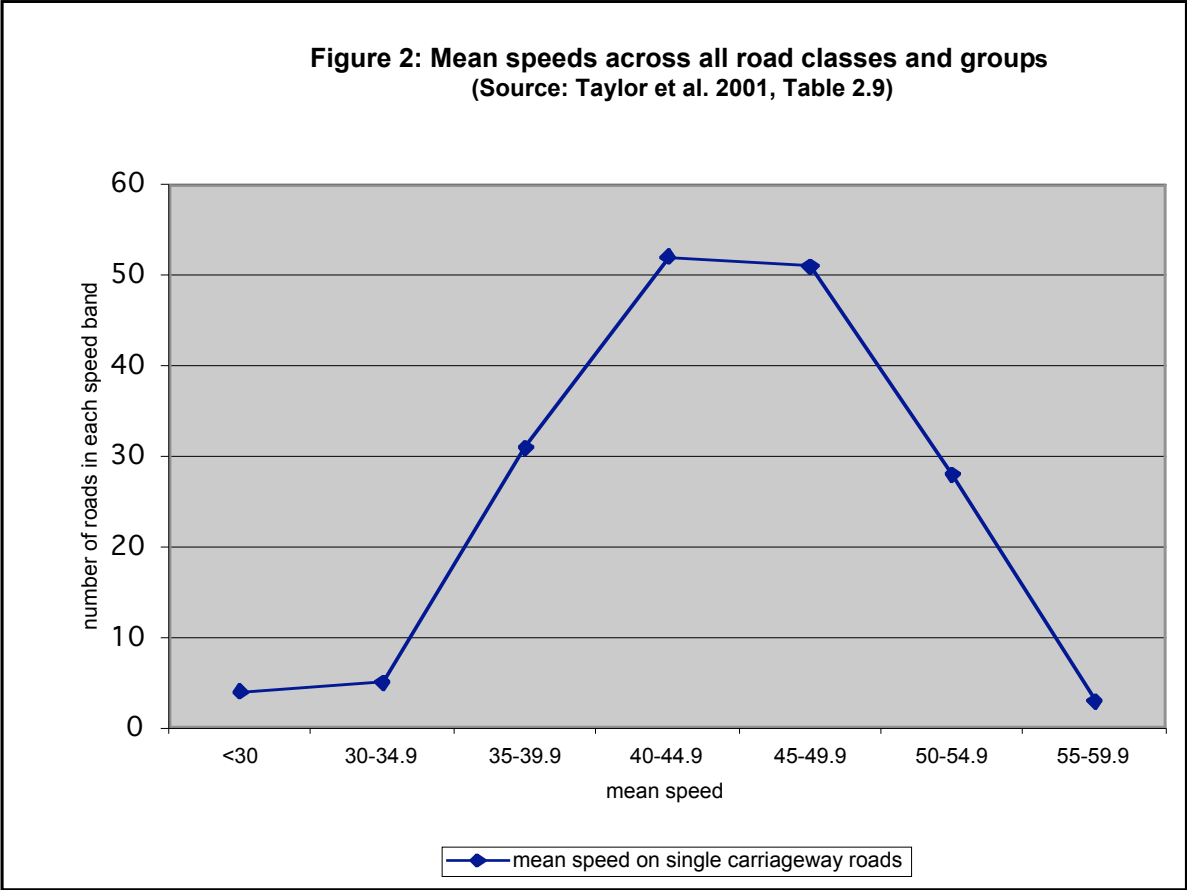
62% of the highway authorities responding to our survey question asking what would make the designation and enforcement of 20mph zones easier said that a 'new default limit of 20mph for some types of roads (e.g., residential roads, shopping streets, cycling corridors)' is a major or essential step. Only 8% thought a new default limit 'unimportant'.

A new national 50mph limit for single carriageway roads

The breakdown of the national system 'especially' affects rural single carriageway roads (para 5), where the national limit is 60mph.

'The majority of drivers do not ... reach or exceed the speed limit on many single carriageway roads. ... Nonetheless 45% of serious or fatal road casualties, and more than half of road deaths, occur on rural roads' (paras 87-88).

It is estimated that fewer than 40% of Class A & B class roads and 7% of Class C and Unclassified roads with 60mph limits have mean speeds above 50mph (Lynam et al., 2004). See Figure 2.



The increased setting of local speed limits in response to fatal and serious crashes on single carriageway roads and measured speeds both show that the 60mph limit is too high. It gives drivers the wrong message and encourages too many of them to take unnecessary risks. Lynam et al. show that 50mph limits reduce speed variance, thereby increasing safety.

The problem of rural road casualties has driven a major research programme for the Department with important outputs including the Speed Assessment Framework described in the draft Circular. A two-tier system of speed limits has been recommended on the basis of simplicity. The research report concludes that:

'Within the Upper tier, the speed limit likely to be appropriate for the majority (75%) of single carriageway roads would be 50mph, although many of these might be justified primarily on the basis of making the limit more consistent with current low mean speeds rather than reflecting high [crash] rates' (Lynam et al., 2004, p 27)

A new 50mph default limit for single carriageway roads would allow Traffic Authorities to apply the Speed Assessment Framework to vary speed limits downward where appropriate.

The main argument against consistent applications of a 50mph limit to upper tier roads is the cost and environmental impact of signing (for ex. paras 16 and 91).

It is obvious that creating a new default limit of 50mph for single carriageway roads would reduce the burden on local authorities and simultaneously eliminate the signing problem. Without this step, Traffic Authorities will either face unnecessary costs when setting local limits or, more probably, will make minimal headway in using the guidance to reduce traffic impacts. The cost implications of leaving the task to Traffic Authorities should be assessed.

#### The 70mph limit should be reviewed

The 70mph limit for dual carriageways and motorways is also unnecessarily high if global warming, emissions, high oil prices and energy security are taken into account. 'Vehicles travelling at 70mph use up to 30% more fuel to cover the same distance as those travelling at 50mph' (DSA, 2001, p 299). In 1973 a 50mph top speed limit was introduced to maximise fuel efficiency. Despite improvements in fuel economy over the intervening years, the optimum speed for all motor vehicles except buses remains between 45 and 50mph. We urge the Department to commission work enabling the extension of the Speed Assessment Framework to motorways and dual carriageways if it cannot be applied in its current form.

#### Large scale trials of lower speed limits

Even if the Government will not consider reducing national limits, the Department could at least carry out large-scale trials of lower limits to determine optimum limits for different types of road. Pilots of 20mph limits with the 'best practice' coverage of at least 65% of an urban network (CfIT 2001) should be undertaken, testing varying mixes of education, engineering and enforcement and the effectiveness of shared space designs. A range of limits from 20mph up to 50mph on single carriageway roads would provide the opportunity to further develop and test the Speed Assessment Framework. The effects of 50mph and 60mph limits for dual carriageways should also be investigated.

## **THE NEED FOR GUIDANCE**

Comprehensive guidance on speed management is needed for a number of reasons:

- Conflicts between road functions and between road users pose the most intractable road safety problems for speed managers. A consistent and thorough approach is needed to reduce these conflicts.
- Speed management strategies should support wider traffic management and policy objectives. Traffic Authorities should ensure that speed management is linked with other strategic plans.
- The task of dealing with conflicting perspectives and frequent controversy should be reduced or made easier by reference to clearly argued and well-founded guidance.
- The Government's rejection of the need for a national speed management strategy and new speed limits puts the entire burden on Traffic Authorities.

The draft Circular needs to be much clearer if it is to assist Traffic Authorities in resolving dangerous conflicts equitably, achieving shared priorities and ensuring movement toward national targets.

Some key concepts for the guidance are very problematic. The uses of risk, road user, driver perception and mean speed expose assumptions which are not consistent with the broader aims of speed management or the specific thrust of the Speed Assessment Framework: balancing impacts and determining optimal speed limits. Speed limit changes are treated as measures of last resort and it is assumed they will usually be considered only in response to casualties. There is far too much emphasis placed on the role of police in determining acceptable speed limits and far too little on the role of communities.

These problems arise because one key concept for policy, including speed management, is missing entirely — equity.

### Equity

'The concept "equity" usually refers to the ethical desirability of distributing benefits or wealth among groups and individuals, and to the corresponding injustice caused by substantial uncompensated losses.' (Kallberg and Toivanen 1998, para 4.1.2)

There are 'substantial uncompensated losses' in the road transport system: the burden of road crashes, the higher rates of death and injury for vulnerable road users and exclusion from the road network, the disproportionate impacts on roadside communities and the degradation of the environment. These uncompensated losses should be a concern for policies that seek 'balance'.

### Risk

Risk assessment is pivotal to judgement about appropriate speeds and speed limits. Both the likelihood of an event occurring and the possible consequences contribute to the level of risk. It is not really helpful to say that risks to vulnerable road users are higher on rural roads simply because speeds are higher (para 35). The statistics are absolutely clear about where the majority vulnerable road users are killed and seriously injured. The issue for Traffic Authorities is how their speed management strategies, including speed limits, will affect the distribution of risk across the network and across different groups.

Risk tolerance varies enormously depending on whether the risk is imposed or voluntarily accepted. These factors influence how risk is perceived or misperceived. Not all road users can 'recognise and understand the risks involved on different types of road' (para 18) and the Circular should take them — mainly children — explicitly into account. But even for road users who could be expected to recognise and understand risks, the task of doing so is not fairly distributed. Pedestrians and cyclists recognise and understand these risks all too well as their dwindling presence over most of the road network shows. And no matter how well they recognise it and what precautions they take, it will not protect them against the failures of motorists, however momentary, to not only recognise and understand risks, but to take responsibility for the degree of danger they pose. This failure is lethal when speed limits are too high and unenforced.

The current distribution of risk is not only a problem for equity — it creates an obvious tension between the draft Circular and wider Government aims to increase accessibility and social inclusion, reduce congestion, improve air quality, encourage healthy travel and slow global warming. Delivery in all of these policy areas is hindered if risk is not addressed.

### The role of communities in setting speed limits

The most fundamental conflict in managing speed and determining appropriate speed limits is between the settled and the mobile. Streets are our most important public open space. They can accommodate a multitude of functions but do this less and less satisfactorily — and with ever-increasing risks — as traffic becomes increasingly dominant. Speed management can reduce traffic impacts and restore the wide range of functions of the street.

The existence of roadside communities is almost completely ignored in the draft Circular. They are allowed no role in determining acceptable speed limits in spite of the fact that they disproportionately bear the costs of any speed management regime (or its absence) in terms of casualties or their

avoidance, emissions, noise, anxiety, and distortion of both travel choice and the use of public open space. Their only right is not to have their expectations raised (para 30).

Home Office research into anti-social behaviour has found that speeding is the single biggest problem affecting people in their local area (Wood 2004). DfT research into attitudes to street uses and streetscape reveals the negative impact of traffic on a sense of well being (DfT 2005). The evident failure of police and local authorities to keep up with community demand for protection indicates that the impacts of traffic speed on 'liveability' should be a major consideration in setting speed limits.

Overlooking the entirely legitimate role of communities in determining speed limits contradicts the Government's ostensible approach to community involvement: that communities should be able to 'say what sort of place they want to live in at a stage when this can make a difference' (ODPM 2004, para 43). It is contrary to sustainability.

### Road users

*'A highway means at least a right of way on foot.'* (Orlik 2001, p 6)

In the draft Circular, the term 'road user' can mean all road users but often it is clear that it can only mean drivers. This lack of precision conceals the great differences in distribution of the impacts and benefits of any given speed limit regime. It permits a systematic bias that understates both the risks to which vulnerable road users are exposed and the extent to which they are prevented by intimidation from using most of the road network (how they become road non-users).

Speed management must properly recognise the needs and protect the rights of vulnerable road users in the conflict between the slow and the fast. The traditional approach of deliberate discouragement and segregation has undermined sustainable modes and made journeys on foot and bicycle awkward. Levels of death and injury for these road users also show that the approach does not work.

The draft Circular contains an unstated but consistent presumption that vulnerable road users will be absent from most of the road network. Mobility is something only car occupants have and occasionally this benefit can be exchanged for safety benefits (para 5, Appendix C), but not very often. The draft effectively defines 'only minor roads or networks of minor roads which have low flows of traffic travelling at low speeds' as 'suitable for shared use by walkers, cyclists, equestrians and motorists' (para 113) and thus banishes vulnerable road users to 'Quiet Lanes' of which only very few kilometres officially exist.

When the draft does allow for the existence of vulnerable road users, it falls short of providing real guidance for enhancing their safety:

- Appropriate speed limits would alert drivers to the 'presence and needs of vulnerable road users' (para 35) but there is no clear guidance on what these speed limits are.
- There is an unsupported assertion in the section on urban speed management that 30mph represents 'an appropriate balance between mobility and safety of road users, especially the more vulnerable groups' (para 66) but no justification is given for this statement. In what way does the Department consider that rates of death and injury in 30mph limits and for vulnerable road users on built up roads represent an 'appropriate balance'?
- 'Lower speeds benefit all road users' (para 67) but there is no evidence on how low they should be to guarantee this benefit is equitably distributed.
- '20mph zones and speed limits are very effective at reducing collisions and injuries in the right situation' (para 70) but there is no guidance on what the 'right situation' is.
- Speeds up to 60mph are 'recommended for C and unclassified roads with a mixed (i.e. partial traffic flow) function on 'roads with important access and recreational function' (Appendix D).
- 40mph, which will kill 85% of pedestrians on impact, 'should be considered' for routes where 'there are considerable numbers of vulnerable road users' or where the road is 'part of a

recognised route for vulnerable road users’.

- Worst of all, not safeguarding the needs of vulnerable road users is preferable to changing the regulations on speed limit signing — another ‘sensible balance’ (para 91).

This treatment guarantees that walking and cycling will almost everywhere continue to result in levels of danger and risks of injury far higher than those to which car occupants are exposed. Walking will continue to decline. Cycling will continue to be restricted to the hardy and the brave. Speed management and speed limits will not address imbalances in the transport system.

#### Drivers cannot be the judges of appropriate speed.

After trivialising the problems of pedestrians and cyclists, perhaps the central failing of the draft Circular, and unfortunately, of the TRL research which informs it, is the concept that driver speed choice indicates an appropriate speed for a given road. This perpetuates the legacy of Circular Roads 1/93 and contradicts the basic premise of the Speed Assessment Framework, which acknowledges that a range of factors, including ones of which drivers will be completely unaware, can and should be taken into account when setting optimal speed limits.

The absence of casualties does not justify the statement ‘Sometimes, but not always, the appropriate speed will be lower than the speed drivers are choosing at present’ (para 36). When impacts not presently accounted for are properly considered the appropriate speed will almost always be lower than that preferred by drivers:

‘[D]rivers ... get much of the benefit immediately for themselves and their associates in terms of earlier arrival (and possibly the pleasure of going faster). They do bear some of the costs themselves (in increased fuel consumption, wear and tear to their vehicles, and risk of accidents and their consequences for themselves) but they are known to under perceive these costs. They do not themselves bear any of the human consequences for others than themselves and their associates, or much of the damage to the environment, or any of the damage to the quality of life in the areas through which they drive. **This is why there is an inherent tendency for all of us to drive faster than is good for ourselves or society, and why speed management is largely concerned with moderating the currently chosen levels of speed.**’ [our emphasis] (Allsop 2002, Ev 186)

Drivers are simply not in a position to choose appropriate speeds. If there are no pedestrians or cyclists present they will not know that it is their speed choice that has helped to produce that aspect of the ‘prevailing conditions’ (para 28). They are incapable of accurately assessing their impacts and therefore the distribution of those impacts. That is the rationale for speed limits. It should take logical precedence over the use of environmental cues, which should simply help drivers adopt appropriate speeds within speed limits based on a more inclusive assessment of the needs of communities, all road users and policy objectives.

The problem for the transport managers is achieving balance when the entire system is forced to adapt to operating conditions determined by vehicle design. Since the draft Circular can do nothing about this, it, like its predecessor, has to ignore the role of vehicle design in driver speed choice.

#### The use of mean speeds as a primary determinant of appropriate is not justified or properly qualified.

The use of mean speeds is another aspect of the conceptual ambiguities discussed above. It excludes (the speeds) of non-motorised road users and therefore underestimates speed variance, an important factor in road safety. It accepts driver speed choice as the main determinant of appropriate speed limits. It negates the concept of the Speed Assessment Framework. It assumes a high proportion of non-compliance with speed limits.

The use of mean speeds is justified on the basis of current local authority practice when attempting to improve on Circular Roads 1/93 advocacy of 85th percentile speeds (para 37). It also derives from an apparently pragmatic step made by Lynam et al.

Mean speed is a key variable in the speed crash relationship. It is one of the key variables in the road typology developed by TRL (Taylor et al., 2001) which is the basis for the two-tier system described in the draft. It is easy to measure. It is, assuming a normal distribution, a good indicator of what the majority drivers are doing on the road network, thanks to the power of the vehicles they are driving.

None of this however justifies the reasoning that because mean speed reflects the speed choice of the majority of drivers, the 'appropriate speed limit should be aligned' to this speed choice (Lynam et al. 2004, p 7; repeated in para 38, 103 and Appendix C para 10 in the draft Circular).

The main reason for using mean speed appears to be the wish to avoid enforcement as far as possible:

'It is proposed that the assessment is based on mean speeds, recognising that the process is attempting to match the perception and behaviour of the general driving population. Drivers adopting speeds well above the mean speed will be penalised through enforcement, but the aim is to ensure that only a minority fall into this group' (Lynam et al. 2004, p 29).

However, the authors then do acknowledge the obvious problem of using mean speed to set a speed limit:

'A second check should be made on whether the revised speed meets any other criteria, such as encouraging more activity by vulnerable road users. **If either of these checks fails** [our emphasis], additional engineering or enforcement measures should be added into the evaluation, and new speeds estimated, until they fall within acceptable levels.'

This does not allow for the possibility that there could be circumstances where criteria involving vulnerable road users would be the 'first check'. While the need to undertake a second check is implied in the draft Circular (paras 102, and Appendix C paras 7 and 16), the guidance on how to carry out the check falls short of what is needed in a context where low numbers guarantee low priority.

The criteria that speed limits need to meet to ensure the rights of vulnerable road users, and how they are to be met should be set out in principle but also reflected in speed limit setting procedure and methodologies to supplement the application of the Speed Assessment Framework.

#### The police appear to be the major obstacle to appropriate speed management

The draft Circular is unambiguous on one thing at least: the police have the final say on both acceptable speeds and appropriate speed limits, apparently because of the cost implications of enforcement. But this is tantamount to a refusal to manage speed. It risks making a nonsense of developing a Speed Assessment Framework and issuing guidance to Traffic Authorities.

The failure to adapt vehicles to the environments in which they are used together with the difference between the private and social costs of driver speed choice make enforcement a necessity. Sanctions and the risk of incurring them are at present the most effective and equitable tools for securing respect for speed limits, as the success of speed cameras in localised speed control has shown. Greater publicity for the impacts of speed would help to reduce current controversies surrounding enforcement.

The issue for speed management is to ensure that enforcement effort is proportional to the problem. That can hardly be said to be the case at present. The majority of drivers speed when conditions permit. Only a vanishingly small percentage of the road network has any kind of effective enforcement and several crashes involving injury have to have occurred before it does.

Any scrutiny of the cost objection would demonstrate how unjust it is. Enforcement costs are low in proportion to casualty reduction benefits — the benefit to cost ratio is estimated to be about 4 to 1. This is an excessive rate of return in comparison to other areas of expenditure and argues for

increased enforcement effort (Ward et al. 2003). Since the benefits of speed management are wider than casualty reduction, the relative enforcement costs are even lower.

The cost objection is particularly perverse, however, given that enforcement costs are now almost entirely paid by speeding drivers. This is one rare example of an attempt to internalise costs that drivers misperceive.

While the police are made the final arbiters in setting speed limits by the draft Circular, they are not directly accountable to the local communities whose quality of life, access to the road network and chances of living or dying their decisions affect. There is no transparency either: there appears to be no formal police policy or guidance on the rationale for speed limits and their wider role. (There is an enforcement policy that has the effect of increasing the operational speed limit by a factor of 10% plus two miles per hour.) The potential rigour of the Speed Assessment Framework and the potential for accountability, transparency and equity are set aside in the final decision.

The enforcement excuse is the tacit acceptance that speed management is defeated by vehicle design. Technology will almost certainly overcome this objection within the probable lifetime of this Circular, especially if the increased enforcement which would be plainly justified by an equitable optimising procedure creates a market for speed limited cars.

The costs of enforcement should not determine speed management effort. Rather, the objectives of speed management should determine priorities for ensuring cost-effective compliance.

#### The objectives of the Circular

The objectives of the Circular (para 18) would be much clearer if it took some of these considerations set out above into account.

The new Circular should provide up to date advice on:

- the empirical basis for speed management
- underlying principles
- elements of local speed management strategies
- procedure for determining appropriate speed limits
- the new methodology for assessing speed limits
- speed control measures
- legislation

with the aims of

- promoting a consistent approach to speed management
- reducing danger from conflicting road uses and functions
- better reflecting the needs of all road users and roadside communities
- improving driver recognition and understanding of speed limits
- reducing speed-related crashes
- reducing the overall impacts of traffic
- improving the balance between mobility on the one hand and safety, accessibility and

environmental protection

- ensuring local transport policy supports wider policy objectives

We suggest altering the text along these lines and revising the new Circular to maintain consistency with these revised Objectives.

#### Speed Management Strategies

As we have argued above, speed limits should support speed management strategies that are not restricted to casualty reduction. The 'priorities for action' (para 21) suffer from the defects of casualty led intervention and divorce from the wider policy context.

The general presumption in the draft Circular against speed limit changes in the absence of a casualty problem builds in a post hoc approach to speed management which militates against the very consistency the new Circular is supposed to achieve. It ignores the predictive power of the speed crash relationship. It discriminates against pedestrians and cyclists where the absolute level of death and injury is lower but the rate is vastly higher than for car occupants. It underestimates how far responses to intimidation account for the absence of casualties. Traffic Authorities should do more to prevent casualties from occurring and speed management would be the single most effective way to do this, particularly to prevent death and serious injury (Mosedale and Purdy 2004).

Ensuring that speed limits are appropriate is an essential component of a speed management strategy. Local transport plans must help to achieve the 'shared priorities'. In addition to contributing to the national PSAs on safety and air quality, shared priorities include reducing congestion and increasing accessibility.

The new Circular should provide guidance on the role of speed management in meeting these priorities. For example, road capacity can be used more effectively and emissions reduced by increasing walking and cycling. Improving conditions for pedestrians and cyclists increases accessibility and social inclusion.

Finally, while it has — strangely — not made it onto the list of shared priorities, slowing climate change requires everyone's participation. Transport has notably failed to 'do its bit'. Speed management is the fairest and most immediate way to begin to reduce emissions.

The draft Circular should help Traffic Authorities take all road users into account, accurately assess current conditions on local road networks, evaluate the scale of the problems these conditions pose for preventing casualties, addressing injustice and meeting wider policy objectives, and set out the initial steps which will begin to redress these problems.

Traffic Authorities should have targeted programmes for completing speed limit reviews and introducing new speed limits across the networks they manage.

The Department should issue guidance on appropriate returns on road safety investment, where there are existing methodologies to evaluate costs and benefits, to encourage greater investment and faster progress.

## **PRINCIPLES**

The section on underlying principles is problematic for the reasons described above. The MASTER Speed Assessment Framework from which the Department's version derives sets out clear principles:

- 'The decisions concerning speed management should be based on explicitly formulated principles ... and careful consideration of all possible impacts. The reasoning behind decisions and the weights given to different impacts should be clearly stated.'
- 'Driving speeds should reflect the socially desirable balance of all impacts of speed and equitable distribution of these impacts between different groups in the population.'
- Driving speeds should be in harmony with road environment 'so that the environment encourages appropriate choices of speed by drivers.'
- Measures and tools should be cost-effective and should exploit advanced technology.
- 'Various authorities and other organisations responsible for speed management should have compatible ideas about general objectives of speed management, target speeds and measures and tools for adoption of such speeds.'
- 'It follows from [the previous two points] that speed management should have a long term plan to guide the implementation and development of measures and tools.' (Kallberg et al., 1998, pp 47-48)

Equity, precaution and prevention, participation, transparency, accountability and environmental

protection should be included in the explicitly formulated principles. Clear statements of the reasoning behind speed management decisions would help to reduce controversy.

Collaboration with the police (para 23) would take an appropriate form if the MASTER principles, especially the 1st and 5th were followed. However, the collaboration should be based on an explicit and publicly available police policy on speed limits both to demonstrate compatibility and ensure transparency. We hope the Department will work with the Home Office and the Association of Chief Police Officers to ensure that such a policy accompanies the new Circular.

## CONSIDERATIONS AND PROCEDURES IN SETTING SPEED LIMITS

A clear procedure for setting speed limits in support of local speed management strategies is needed. As we have argued above, new default limits for settlements and single carriageway non-built up roads would provide the starting points for Traffic Authorities to review limits on the networks they manage and introduce a system of local limits which supports as far as possible their transport, land use and other policies. The appropriate division of the task between national and local authorities is essential if speed limits are to be changed in a consistent and cost-effective manner. It is unfortunate that the Government reject this distribution of responsibility.

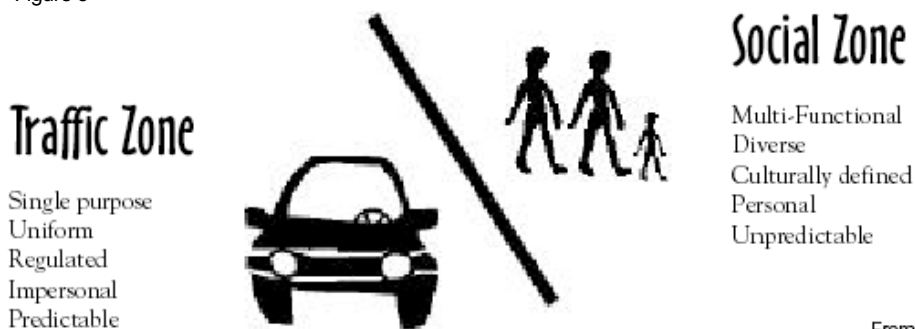
The new Circular should provide more detailed advice on procedure for applying appropriate local limits, data collection, when to use the Speed Assessment Framework and how to adapt it to local circumstances.

A procedure based on analysis of functions and road users would help to restore equity and ensure the consideration of relevant impacts. A system which explicitly addressed the conflicts between the settled and the mobile and between the slow and the fast would aid decision-making by indicating appropriate approaches, data collection requirements and speed management techniques.

Is the social function of the road dominant, or should it be?

This distinction, set out in Figure 3, is used by the innovative Dutch planner and traffic engineer, Hans Monderman, and has begun to attract interest in Britain:

Figure 3



From a sketch by J. Monderman

'In essence, his view was that space is either designed for traffic (e.g. the motorway), or it is designed for social activities. The two are not compatible ... the work of progressive urban planners, is about extending the social zone and limiting the impact of the traffic zone.' (Hamilton-Baillie n.d.)

If the social function is dominant, then a different range of techniques will be required than for roads where the traffic function is dominant, and different data should be gathered.

So for example, where social function is dominant it would be inappropriate to apply the Speed Assessment Framework because time penalties to drivers should not be a major concern. But data

on noise levels, severance and public attitudes would be very important.

The speed impact severity curve indicates that speed limits favouring the social function should be no higher than 20mph. In some very sensitive areas, like Home Zones, even lower target speeds are desirable.

Distinguishing between social and traffic functions would eliminate the often unhelpful distinction between urban and rural settlements. It would also allow an appropriate procedure to be applied to rural roads of importance to tourism and countryside conservation ('Quiet Lanes').

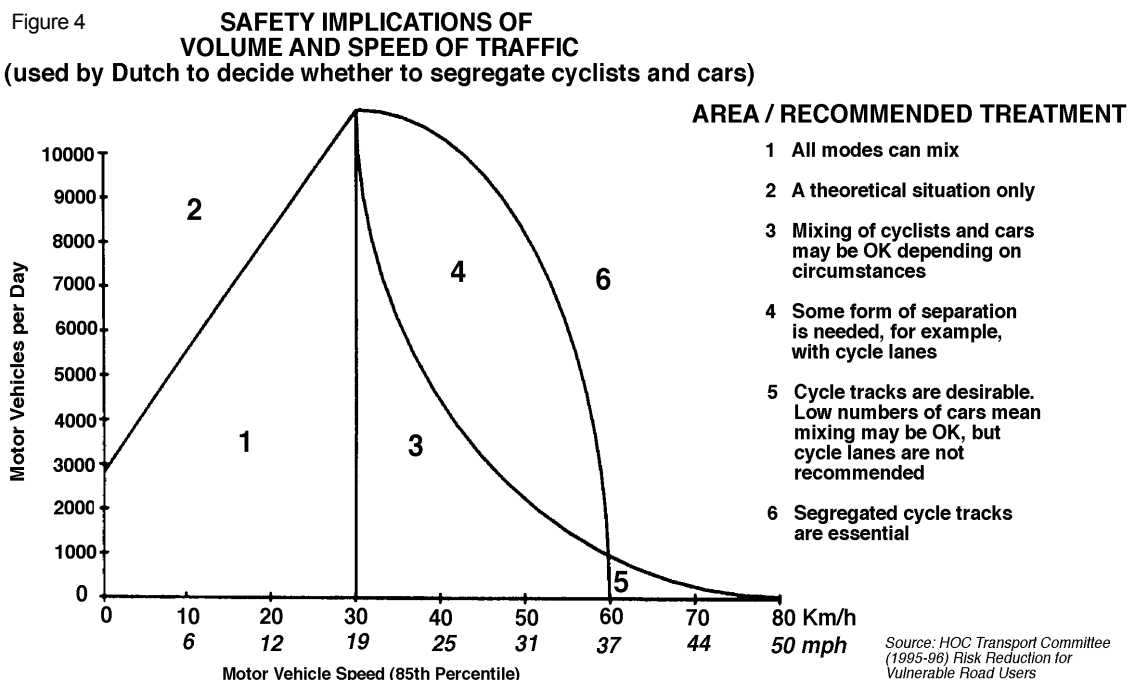
Are the social and traffic functions co-dominant?

Where social and traffic functions are co-dominant, for example, on local access roads, the limit should be no higher than 20mph unless adequate road space (to a minimum standard) can be reallocated to pedestrians and cyclists:

**'... the upper speed limit of 30 km/h [19mph] is a fundamental condition from the traffic safety point of view.** This is the speed at which the probability that an impact of a car on a pedestrian will result in a fatal [crash] is statistically minimal. Where the integration of such incompatible travel modes is aimed for, the 30 km/h speed limit acts as the prerequisite for avoiding detrimental effects of the speed and mass of motorised traffic.' (DUMAS 2001, p 19)

It has been established that crash frequency is most sensitive to mean speed and to the spread of speeds (of motorised traffic) on congested urban roads (Taylor et al. 2000) where pedestrians and cyclists are most likely to be present.

Figure 4 shows a methodology for using a notional three dimensional grid of road space, traffic volume and traffic speed to determine the nature of an intervention: 20mph speed limits, reallocation of road space or no action needed.



Is the traffic function dominant?

Where the traffic function is dominant and space is available for vulnerable road users, the Speed Assessment Framework could be used. So for example, the Framework could be used to determine

whether a 40mph limit is appropriate for roads where there is mixed traffic or a potential for journeys to be made on foot or by bicycle.

## **THE SPEED ASSESSMENT FRAMEWORK**

The Speed Assessment Framework is the most significant and welcome development behind the draft Circular. It needs more emphasis and explanation in the final version. But it also needs further development or supplemental methodologies to assist decision-making.

It should be introduced in the section on principles because it is:

‘a firm theoretical basis for choosing speed limits for road functions taking account of safety, mobility and environmental factors.’ (App C, para 4)

However, because the draft Circular is so hesitant about changing speed limits (see paras 89 and 90), the main use envisioned for the Framework is evidently tweaking speed limits on the basis of crash history. The Framework should be used to ensure that speed management and speed limits on roads where the traffic function is dominant increase the social, economic and environmental efficiency of network. The draft Circular almost acknowledges this:

‘the Assessment Framework methodology is based on the presumption that single carriageway rural roads should operate at speeds near to those that give the minimum total costs taking safety, mobility and environmental impact into account’ (para 95).

The Speed Assessment Framework is a simplified and more user-friendly version of the 1998 MASTER Framework (Kallberg and Toivanen, 1998) and it has been explicitly developed for use on rural single carriageway roads to deal with the problem of the inappropriateness of the national 60mph default limit. The principle of optimum speeds should cover all roads where the traffic function is dominant and sufficient road space can be reallocated to vulnerable road users. It should be extended to dual carriageways and motorways to demonstrate whether or not the 70mph limit is optimal.

### Developing the Framework

There are some features of the MASTER Framework which have been lost in the simplified version and which should be restored for the sake of transparency and equity. These include full consideration of qualitative impacts, analysis of the distribution of impacts, sensitivity tests and taking a range of viewpoints into account when determining acceptability (i.e., not only those of road safety officers and the police) (Kallberg and Toivanen, 1998).

### Qualitative impacts

Benefit assessment is only possible in terms of crash reduction, but ‘the absence of a high [crash] rate does not in itself mean that a lower limit is not justified if other factors are present’ (Lynam et al. 2004, p 20). MASTER emphasises that ‘an impact is no less important just because it cannot be quantified’ (Kallberg and Toivanen, p 30). But it is not clear how the spreadsheet could be applied in the absence of a casualty history when the other factors, including qualitative ones, would all increase in relative importance. This means that the Framework — and particularly the spreadsheet — is insufficiently developed to be applied to the ‘borderline cases’ where it could potentially be of most use. The emphasis on casualty reduction contradicts consistency and systematic application of the Framework.

The draft Circular says ‘if walking, cycling, equestrians or environmental factors are particularly important on the road section, consideration should be given to using the lower limit even if the accident rate is below the threshold shown’ (Appendix C, para 16). 40mph is recommended where there are ‘considerable numbers of vulnerable road users’ even though this speed will kill most of them outright. The Framework should make it possible to consider even lower speeds.

The spreadsheet for the Speed Assessment Framework accommodates important qualitative factors (encouraging walking, cycling and horse riding and reducing noise and severance) and thus, implicitly introduces the 'second check'. But these appear very much as peripheral issues, rather than ones that might be of intrinsic importance to the speed policy being evaluated. Ways of assessing traffic intimidation and the impacts of traffic on immediate environmental quality (such as local landscape values and tranquillity) are needed. Fuller guidance on criteria and alternative assessment methodologies should be provided for 'local conditions and constraints to be taken into account' (para 95). This should be clearly incorporated into the Framework or explicitly linked to it.

There should be a way of demonstrating that Local Transport Plans and other local strategic plans have been taken into account in applying the Framework, as in wider speed management.

Distribution of impacts

'Groups experiencing the impacts of the policy differently must be identified. The effects of the policy must be examined from the viewpoint of each of these groups. Finally, groups that gain and those that lose are highlighted. It should be noted that even if the total net change in the magnitude of the impacts is low ... there may be important distributional factors to take into account. In other words the question is not the distribution of the total net change, but that of the various gross changes that make up the whole' (Kallberg and Toivanen, 1998, p 31).

The distribution and magnitude of effects are accorded equal priority in the MASTER assessment process (Table 1, Kallberg and Toivanen, 1998, p 30)

*Table 1. Classification of the impacts.*

	Magnitude of impact	Distribution of impact
1. Monetised impacts		
2. Other quantitative impacts		
3. Qualitative impacts		

Sensitivity tests

The values for crashes, time and fuel within the spreadsheet appear to have been chosen for application at the national level. The values contain important assumptions that could be varied, especially for local use when the mix of road users and the function of the road(s) could be of chief interest, but also given rising oil prices. The spreadsheet should allow for these values to be varied for sensitivity testing. How to undertake sensitivity tests should be spelled out in the guidance, TAL and spreadsheet notes.

Acceptability

The draft Circular is clear that acceptability is officially determined by the police, in collaboration with the Traffic Authority road safety officers and unofficially determined by drivers through their speed choice. The flow chart asks 'Is speed acceptable? Are social objectives met?' (p 44) but does not indicate the criteria that are to be applied in order to answer these questions.

MASTER is clear that acceptability should be tested from the viewpoint of 'various road user and citizen groups (e.g. car drivers, pedestrians, residents, policy makers) and that its weight in decision making is greater than what might be concluded on the basis of the measured impacts.' This is one reason why making the distribution of impacts and sensitivity testing explicit is important. The weight given to the differing viewpoints in determining acceptability should be transparent in the use of the Framework (cf para 97).

The extent to which acceptability is dependent on understanding and communication should be brought out in guidance to Traffic Authorities, especially given the controversial nature of the subject.

However:

‘what is considered beneficial and acceptable by the majority of people is not necessarily desirable from society’s viewpoint, because of a) the difference between private and social costs, and b) the distributional impacts. Therefore, it is not always good practice to give undue weight to public opinion or acceptability in decision making regarding speed management.’ (Kallberg et al., 1998, p 47)

This mismatch between what is popular and what is appropriate should be addressed in the new Circular. The Framework should enable Traffic Authorities to demonstrate that potentially unpopular decisions are well-founded.

#### The tier system and selection procedure

The methodology for assigning roads to tiers should include explicit steps to indicate when and how to take into account additional criteria (i.e., qualitative factors such as the needs vulnerable road users, or the sensitivity of the surrounding landscape) when determining ‘tier load’. This is implied at Appendix C, para 11: ... ‘local issues in relation to particular routes can be reflected in the functional tier to which the road is assigned.’

The flow chart and selection procedure should provide a route for identifying roads that should be considered for Quiet Lane designation because of their sensitivity, value for tourism, etc.

The use of the tier system should not be confused by imposing the road classes. The inconsistency of the road classification system is one of the problems the Framework can potentially solve (see Appendix A. p 28).

Rural communities will suffer if quality of life is not considered an important factor on upper tier (and A and B) roads when the Framework is applied (para 94).

## **COSTS AND BENEFITS**

In theory the Speed Assessment Framework allows Traffic Authorities to achieve an ‘acceptable balance between costs and benefits ... so that speed management policies take account of environmental, economic and social effects as well as the reduction in casualties they may achieve’ (para 36).

Discussion of costs and benefits in the new Circular (para 27) should be more clearly related to the Framework and its philosophy that an optimum can be determined. It should include the monetised, quantified and qualitative impacts and their distribution.

The ‘disbenefits’ of lower speed limits include ‘increased journey times for motorised traffic’, the ‘cost and negative visual impact of signing’ and the ‘cost of enforcement’.

#### Journey times

Trials are needed to establish how journey times for motorised traffic might change with lower speed limits. In theory, the time penalty should be small or even non-existent in urban areas due to scale, congestion and present average speeds. Lower limits might have time benefits by smoothing traffic flow, reducing crashes and increasing junction capacity. It is questionable whether time penalties for motorists should be considered at all on roads where the movement of through traffic is not the primary or the only function. Increased journey times would be a benefit if it discouraged use of these roads for through traffic.

#### Signing

The cost and negative visual impact of signing would be reduced by a change in the regulations.

### Enforcement (or securing compliance)

The cost of enforcement is low in relation to the benefits, as we have argued above. The ratio of benefits to costs is an issue that the Circular should address. Returns on road safety investment in general are well above those expected from other areas of public expenditure. Average expenditure to prevent a road death achieves a return of 10 to 1. This is far too high when lives are at stake. There are arguments for an 'opportunity cost' of 1.25 to 1 (Ward et al. 2003). This ratio would justify a major expansion in funding for speed management measures, which could underpin an area wide approach in settlements and a network wide approach on rural roads. As suggested above, the Department should issue guidance on appropriate returns on road safety investment.

## **DATA COLLECTION**

The new Circular should provide guidance to Traffic Authorities on the appropriate data for evaluating the current state of their networks, carrying out initial assessments of costs and benefits and monitoring the impacts of changes in speed limits. Data requirements will vary according to the character of the network (Home Zone, social or social/traffic, Quiet Lane, traffic lower tier and traffic upper tier) and the size and type of speed management scheme (area wide or targeted).

'In order to get a picture of the current traffic and safety situation, a collection of relevant road, accident, traffic, surrounding, and opinion data, and a subsequent processing and mapping of these data has to be done. The data is a precondition for any planning process including a speed management program. From the mapping of data it is possible to determine the extent of problems, and to identify the most important issues in the specific area.' (Greibe et al., 1999, p 13)

DUMAS recommends collecting and analysing the following data for urban networks (Greibe et al., 1999, p 13):

- Road network data (existing road function, network for vulnerable road users, and network for public transport)
- Crashes (3-5 year period, if possible divided into personal injury, damage only, severity, crash types)
- Traffic flows (AADT of motor vehicles, cyclists/mopeds, trucks, and pedestrians)
- Speed (posted speed limits, average speed, speed profiles, travel speeds)
- Security and barrier effect concerning vulnerable road users
- Environmental and visual parameters (emissions, road noise, air quality, aesthetics)
- Public transport (bus services)
- Road user behaviour
- Public attitude and opinion
- Land uses (residential areas, schools, shopping centres, industry)

The data should be mapped in 'a clear and understandable way, so that the main conclusion is apparent for all involved, also non-experts' (Greibe et al., 1999, p 14).

Greibe et al. emphasise the importance of information on travel patterns, attitudes to traffic and personal security and provide guidance on involving the public so that the views of communities are taken into account.

Data required for the Speed Assessment Framework include traffic flows and mean speeds, crash rates and the effects of any potential safety measures. Traffic Authorities should have a duty to monitor speeds across the networks they manage. Collecting this data from a suitable sample of roads is necessary to apply the Framework coherently. It would also provide the basis to give the public, and motorists and businesses in particular, an objective picture of current conditions and help to allay worries about the likely impacts of any changes.

## **TRAFFIC CALMING MEASURES, INNOVATION AND REGULATIONS**

Given the importance of traffic-calmed roads to cyclists, Traffic Authorities should have explicit guidance on not endangering cyclists when traffic calming measures — such as humps, roundabouts, gateways and pinch points — are introduced.

The discussion of traffic calming measures, home zones and quiet lanes (Section 5.2 and the related Appendix B) should cover innovations in traffic calming, such as ‘shared space’ and ‘natural traffic calming’ where managing the road or street environment is done in the interests of the most vulnerable road users and wider landscape values, and not just as a means of communicating with drivers.

There should also be explicit guidance on procedures — including relaxation of regulations — for introducing innovative measures. 55% of respondents to our survey into 20mph speed limits and zones consider that ‘greater scope for innovation in engineering measures’ is either of major importance or essential in order to make the introduction of 20mph limits easier. Local Highway Authorities willing to innovate have made major contributions to changes in policy, guidance and regulations (for example 30mph limits for villages and sensitive design of road environments). In the absence of action by the Government, they may be able to solve the signing problem.

Guidance on dealing with liability should also be provided so that Traffic Authorities can more easily introduce measures, both conventional and novel, which favour vulnerable road users

## **SUMMARY OF RECOMMENDATIONS**

### **A CHANGED CONTEXT FOR MANAGING SPEED**

The new Circular should be a replacement of Circular Roads 1/93 not an update. It should provide more guidance on speed management and the title should reflect its wider scope.

The research background for speed management should be more fully described and referenced.

The wider impacts of speed should be more fully described.

The policy context for speed management should be more fully described.

There should be guidance on using speed management to meet national and local policy objectives, especially Department for Transport Objective III Public Service Agreements and Local Transport Plan shared priorities.

### **THE NEED FOR A NATIONAL SPEED MANAGEMENT STRATEGY AND NEW LIMITS**

There should be a national speed management strategy with new national limits to provide the basis for the development of local speed management strategies and speed limits.

20mph should be the default limit for the majority of roads in settlements.

50mph should be the default limit for single carriageway roads.

The 70mph limit should be reviewed for environmental reasons.

In the absence of legislation for new default limits of 20mph and 50mph, the Department should undertake large-scale trials of lower limits on urban and rural road networks. The effects of lower limits on dual carriageways and motorways should also be investigated.

### **THE NEED FOR GUIDANCE**

The Circular should provide much clearer and more explicit guidance. Speed management strategies should support wider traffic management and policy objectives. Traffic Authorities should ensure that speed management is linked with other strategic plans.

The use of key concepts — risk, road user, driver perception and mean speed — needs to be reviewed to avoid bias and inconsistency.

The Circular should put equity at the centre of considerations for speed management.

Communities should be given a role in determining appropriate speed limits.

The Circular must avoid the presumption that vulnerable road users will be absent from most of the road network by providing much clearer guidance on how to take them into account.

Driver speed choice and mean speeds should not be the overriding determinants of appropriate speed. The Circular must provide guidance on how to give other factors appropriate weight. The criteria that speed limits need to meet to ensure the rights of vulnerable road users, and how they are to be met should be set out in principle but also reflected in speed limit setting procedure and methodologies to supplement the application of the speed assessment framework.

The police should not be given the final say on appropriate speed limits.

The costs of enforcement should not determine speed management effort. Rather, the objectives of speed management should determine priorities for ensuring cost-effective compliance.

The Objectives of the Circular should be somewhat broader, more explicit and should be reflected in the final Circular.

The Circular should not be based on the presumption that changes to speed limits are measures of last resort. It should provide guidance on how appropriate speed limits contribute to speed management strategies that support the wider policy context.

The draft Circular should help Traffic Authorities take all road users into account, accurately assess current conditions on local road networks, evaluate the scale of the problems these conditions pose for preventing casualties, addressing injustice and meeting wider policy objectives, and set out the initial steps which will begin to redress these problems.

Traffic Authorities should have targeted programmes for completing speed limit reviews and introducing new speed limits across the networks they manage.

The Department should issue guidance on appropriate returns on road safety investment, where there are existing methodologies to evaluate costs and benefits, to encourage greater investment and faster progress.

## **PRINCIPLES**

The Circular needs explicitly formulated principles which should include equity, precaution and prevention, participation, transparency, accountability and environmental protection. The MASTER speed assessment framework principles are recommended.

The Department and the Home Office should work with the Association of Chief Police Officers to produce an explicit and publicly available police policy on speed limits both to demonstrate compatibility with speed management principles and ensure transparency. The police policy should be issued alongside the new Circular.

## **CONSIDERATIONS AND PROCEDURES IN SETTING SPEED LIMITS**

The new Circular should provide more detailed advice on procedure for applying appropriate local limits, data collection, when to use the speed assessment framework and how to adapt it to local circumstances. A procedure based on analysis of functions and road users would help to restore equity and ensure the consideration of relevant impacts. We recommend a system which distinguishes between social and traffic functions.

## **THE SPEED ASSESSMENT FRAMEWORK**

The Speed Assessment Framework should be introduced in the section on principles.

The Framework should be used to ensure that speed management and speed limits on roads where the traffic function is dominant increase the social, economic and environmental efficiency of network.

The Framework should be extended to dual carriageways and motorways to demonstrate whether or not the 70mph limit is optimal.

The Framework should include fuller consideration of qualitative impacts, analysis of the distribution of impacts, sensitivity tests and take a range of viewpoints into account when determining acceptability.

Ways of assessing traffic intimidation and the impacts of traffic on immediate environmental quality are needed. Fuller guidance on criteria and alternative assessment methodologies should be provided. This should be clearly incorporated into the Framework or explicitly linked to it.

There should be a way of demonstrating that Local Transport Plans and other local strategic plans have been taken into account in applying the Framework, as in wider speed management.

The distribution of impacts as well as their magnitude should be taken into account in the Framework.

The spreadsheet should allow for sensitivity testing.

The criteria for determining whether the speeds are acceptable and social objectives have been met when applying the framework should be clearly indicated. The weight given to the differing viewpoints in determining acceptability should be transparent in the use of the Framework.

The extent to which acceptability is dependent on understanding and communication should be brought out in guidance to Traffic Authorities. The mismatch between what is popular and what is appropriate should be addressed in the new Circular. The Framework should enable Traffic Authorities to demonstrate that potentially unpopular decisions are well-founded.

The methodology for assigning roads to tiers should include explicit steps to indicate when and how to take into account additional criteria (i.e., qualitative factors such as the needs vulnerable road users, or the sensitivity of the surrounding landscape) when determining 'tier load'.

The flow chart and selection procedure should provide a route for identifying roads that should be considered for Quiet Lane designation.

The use of the tier system should not be confused by imposing the road classes.

### **COSTS AND BENEFITS**

Discussion of costs and benefits in the new Circular (para 27) should be more clearly related to the Framework and its philosophy that an optimum can be determined. It should include the monetised, quantified and qualitative impacts and their distribution.

Trials are needed to establish how journey times for motorised traffic might change with lower speed limits.

The Department should issue guidance on appropriate returns on road safety investment.

### **DATA COLLECTION**

The new Circular should provide guidance to Traffic Authorities on the appropriate data for evaluating the current state of their networks, carrying out initial assessments of costs and benefits and monitoring the impacts of changes in speed limits.

Traffic Authorities should have a duty to monitor speeds across the networks they manage.

### **TRAFFIC CALMING MEASURES, INNOVATION AND REGULATIONS**

The new Circular should provide explicit guidance on not endangering cyclists when traffic calming measures are introduced.

The discussion of traffic calming measures, home zones and quiet lanes should cover innovations such as 'shared space'.

There should also be explicit guidance on procedures — including relaxation of regulations — for introducing innovative measures.

Guidance on dealing with liability should also be provided.

## **APPENDIX A: Specific changes to draft Circular**

We have discussed general problems in the main body of this response. The presumption that vulnerable road users should be excluded from the network, emphasis on casualty reduction, use of mean speed, excessive reliance on driver perception and preferences, treatment of speed limit changes as measures of last resort, neglect of the rights of communities and allowing police to be the final arbiters of limits should all be corrected. This will require extensive revision to the text, which is beyond the scope of this response.

### SECTION 1: Introduction

The Department's Objective III (para 1) should be stated in full by including reference to 'improving safety and respecting the environment'.

### SECTION 2: Background and objectives

We have suggested a clarified set of objectives in the main text.

There should be a new subsection on the policy context for speed management and speed limits. It should refer to

- the Common Transport Policy
- the Department for Transport's Public Service Agreements on Air Quality and CO2 emissions (as well as casualty reduction)
- the shared priorities on congestion, accessibility, safety, air quality and the quality of public transport
- the Sustainable Development Strategy
- Health, Active Travel, Community Safety and Public Realm/Liveability strategies

Para 19 should mention enforcement as part of the package of measures. Para 20 should be deleted unless it can be backed up by evidence.

### NEW SECTION 3 on Research findings

The research background referred to in para 15 should be more fully described (and referenced in Section 8). Topics should include:

- MASTER (Managing Speeds of Traffic on European Roads)
- DUMAS (Developing Urban Management and Safety)
- Gloucester Safer City
- the speed crash relationship and the different key variables for urban and rural roads
- a short summary of Lynam et al 2004
- best available research on comparative casualty reduction from various speed management techniques for built up and non-built up settings and how to use these estimates in the Speed Assessment Framework
- recent innovations in traffic calming (shared space, cognitive load)
- Community perception and road user perception studies
- driver behaviour: response to enforcement, engineering and signing measures

### Section 3 (new SECTION 4), retitled 'Underlying principles of local speed management and speed limits'

The sequence should be Principles, Costs and Benefits, Responsibility and then Considerations. The 'Considerations' should include a clear general procedure for determining speed limits. We recommend progression from settled to mobile, slow to fast, social to traffic, using appropriate. If distinct sections on urban and rural speed management and Quiet Lanes and Home Zones are retained they should follow directly, with Legislation coming after.

### Section 6: Rural Speed Management

The current road class system should not be imposed on the Speed Assessment Framework (paras

94, 100 and also at Appendix D). This is not supported by the TRL research and it creates unnecessary confusion.

The distinction between lower and upper tier roads in Lynam et al. is made on the basis of road quality, indicated by mean speed, and crash rates (Taylor et al., 2002). The report shows that roads of all classes appear in each of the four road quality groups so retaining the road class distinction introduces an unnecessary confusion.

The existing road class system is unsuitable for speed management purposes (Babtie Ross Silcock 2001) and it has been supplemented by a range of other classification systems ('systems exist for Trunk road / non trunk road, principal roads, planning categorisation, maintenance, road safety, investment expenditure, street lighting, traffic routing category, winter maintenance, and the New Roads and Streetworks Act (NRSWA)') all of which could be well served by a system based on desired speeds: A = 50, A+ = 60, B = 40, Q (Quiet Lane) = 30 or 20. A road class system based on speed limits would encourage drivers to choose appropriate routes while informing them of safe travel speeds (and to a limited extent the needs of other road users) and allowing them to plan their journey times, reducing stress and increasing reliability.

#### Section 7: Quiet lanes and home zones

We object to the notion that activities permitted in Home Zones will be specified by law (111 and 119). These paras, we very much hope, will be contradicted by the final guidance and regulations (para 122).

#### Section 8 becomes 'The legislative framework'

#### New Section 9 becomes References/Bibliography

TAL 3/90 Urban Safety Management Guidelines predates the 1992 United Nations Conference on Environment and Development and formal sustainability obligations. There is more recent guidance on Urban Safety Management informed by both DUMAS and the Gloucester Safer City project, oddly not mentioned. We have made suggestions under the new section on research for additions to this section.

#### Appendix B: Traffic calming

The section should not be restricted to urban roads. Impacts of traffic calming on cyclists should be described in brief. Recent innovations that have more to do with hard and soft landscaping than with conventional traffic management should also be described.

#### Appendix C — Speed Assessment Framework

Appendix C should be fully integrated into the main text in new Section 4 (principles and benefits and disbenefits) and the rural speed management section 6 as appropriate.

The flow chart on p 44 should be included in the discussion of procedure for setting speed limits. It should incorporate a pathway for identifying potential Quiet Lanes. It should indicate when to use the Speed Assessment Framework. It should incorporate or refer users to a wider range of criteria for answering the question 'Which tier road?' These criteria should take into account both existing and desired functions. Use of the Speed Assessment Framework (general principles, tier flow chart and the spreadsheet) should have as a general goal the progressive opening of the network to vulnerable road users through the reallocation of space or reduction of speed or both. Discouraging through traffic from lower tiers, designating quiet lane areas and targeting enforcement of speed limits along sensitive corridors would contribute to the restoration of equity.

#### Appendix D: Speed limits for single carriageway roads in rural areas

This table is confusing and refers without justification to the obsolete road class system and, worse, to speed limits that are too high for vulnerable roads users. It should be replaced with Table 7.1 on p 41 of the TRL research report by Lynam et al., which it misrepresents. A row for 20mph limits for villages and lower tier roads (as Quiet Lanes) should be added. Explicit links to the Speed Assessment Framework (amended to reflect wider criteria as discussed in the main text) should be included.

## **APPENDIX B: Answers to the Questions**

### Q 1. Structure and layout of the document.

See Appendix A.

### Q2. Is the level of content sufficient? Is the right balance struck? How could it be improved.

No, much more detail is needed. It is cumbersome because of ambiguity and vagueness. We have discussed this problem at length in our reply and would be happy to meet the officials at the Department and comment further on drafting if that would be helpful.

### Q3. Is there anything omitted from the draft guidance that should be included?

We would widen the scope of the guidance considerably. See Summary of recommendations and Appendix A.

### Q4. Will the guidance form a solid basis for the formulation of a speed management strategy.

Not until it eliminates ambiguities and the general presumption that speed management is casualty led. It will if it provides a more coherent procedure that progresses logically on the basis of road functions and incorporates the Speed Assessment Framework amended in the way we advocate.

### Q5. Using mean speeds instead of the 85th percentile

We comment on this at length (pp 12-13). It is very problematic.

### Q6. Will the revised guidance help to determine appropriate and more consistent speed limits?

Not yet. The Government must help by legislating on two new speed limits.

### Q7. Will the revised guidance help to achieve a wider understanding of how local speed limits are set and why?

It has enormous potential to do this, but this is betrayed by deeply ambivalent approach that does not change the status quo: Driver perception and police views of driver perception of what is appropriate still determine the system boundaries.

### Q8. Any other comments?

The shortcomings of the draft Circular are probably more due to political sensitivity than to the inherent complexity of the subject. It may be too much to expect the Department to make sense. But clear and authoritative advice is urgently needed. Perhaps the task of drafting guidance should 'farmed out' to experts recognised as independent?

What is really needed is work on producing consensus. The Department should disseminate research findings more widely and ensure that they are subject to proper peer review. Much wider discussion of speed by public health and transport professionals should be encouraged. This would not only to reduce controversy, but make it obvious that the main problem for speed management is vehicle design.

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