

Rural Minor Road Traffic calming



Introduction

Sustrans believe that, to encourage people to choose alternatives to the private motor car and to increase walking and cycling, rural minor roads need to be made safer and more attractive for all those who are not in a motor vehicle.

The rural road is an integral part of any rural community structure, and a considerable recreational opportunity. However activities such as cycling, walking and horse riding for recreation, walking and cycling to school, access to public transport, or access to local shops and amenities can be made almost impossible by heavy traffic volumes or high vehicle speeds. For example, a significant proportion of the National Cycle Network utilises this type of road and, if traffic speed or volume is excessive, the route becomes dangerous and unsuitable.

Levels of traffic are increasing faster on rural roads. Despite government targets on traffic reduction, traffic is expected to grow by 20% on non-urban roads.

People will only consider walking or cycling on rural or minor roads if the perception of danger is reduced. Despite

the fact that generally road traffic casualty rates are falling, they are not falling so much on rural roads. In fact, most road deaths happen on rural roads and 60% of crashes on 'A' roads happen in rural areas.

The way these problems are tackled can, if done properly, enhance the quality of life for many people. If not done sympathetically, a highway 'improvement' scheme can damage the character and integrity of a traditional rural setting.

It is essential for a rural road to retain its character. Often, narrow lanes or unfenced moorland roads are urbanised through insensitive engineering techniques. This can lead to a negative change in driver behaviour. Over-engineering these roads can shift the perception of it being a valuable local community network into a high-speed route for the movement of freight and traffic. Therefore great attention to the detail of how modern engineering techniques should be applied to countryside situations is essential.

In some cases, the best action may be to remove highway engineering from the road altogether and reintroduce natural features so that the travelling landscape

dictates the level and speed of traffic (not vice-versa).

Generally, high traffic densities are less expected on rural minor roads between towns and villages. Therefore where they do occur (e.g. tourist routes, national parks, markets and car boot sales or short cuts avoiding urban congestion) pedestrians, cyclists and horse riders are less prepared and therefore more vulnerable. Whilst motorists may regulate their speed in a village where they would expect people to be crossing roads etc., they may be totally unprepared to show consideration towards cyclists or horseriders on rural minor roads.

Rural communities also suffer the intrusion of large/heavy lorries and coaches using routes which are totally inappropriate for the size of vehicle.

Diverting traffic to routes which are more appropriate, or reducing the intrusion of traffic, will lead to a reduction in noise and pollution and therefore make the area more pleasant for other road users and the local community.

This document is aimed at those areas that may normally be subject to the National Speed Limit but where vehicles travelling at an inappropriate speed for the surroundings make integration with other road users extremely difficult.

Various means can be used to reduce the speed and volume of vehicles on these roads. Traffic calming and speed reduction initiatives should be combined with measures to divert heavy or non-essential traffic onto more appropriate routes.

It has been proven that traffic calming and lower speeds result in a substantial reduction in crashes. The greatest reduction is in those crashes involving vulnerable road users. Therefore, to make these roads safer and more attractive, some form of speed reduction and traffic volume restriction measures should be considered.

This document outlines some of the types of measures that can be used on rural minor roads. It considers their appropriateness for different applications, the results that can be expected and the design details that could be considered, especially with regard to their effect on vulnerable road users. Existing schemes of this type are very few compared to urban equivalents and therefore more trials are needed in this area.



Advisory speed limit - minimalist signing

Traffic calming measures should be considered where

- There is a National Cycle Network Route
- There is a regional cycle route or long distance path
- The road is used by a riding school
- There is a busy community link with a more suitable alternative route for vehicles
- There is a proven or perceived safety problem

Or where there is a need to

- Meet the standards required for the introduction of the National Cycle Network
- Meet the standards required for the introduction of a walking or cycling route
- Reduce the amount of traffic using a road
- Reduce the speed at which vehicles travel
- Restrict the size/weight of vehicles which need to use the road

Types of traffic calming

There are many types of traffic calming, some methods are severe, others more subtle. Schemes should be chosen for their potential to improve the environment locally and further afield.

Every Highway Authority has their own particular variation on the theme and there are plenty of stories relating to schemes which have not been successful for various reasons. Often this is due to the inappropriateness of the scheme to the surroundings. Each individual site has different conditions, so the scheme must be tailored to suit.

Rural traffic schemes should be designed to make local facilities and amenities more accessible for people to reach on foot or by cycle. However, engineering measures should not impose any restriction on accessibility by public transport but should wherever possible enhance links to buses and trains etc. This is especially important in more remote communities.

The following list highlights some of the most popular methods. Each can be used on its own or considered as individual elements of a combined scheme. This approach is often the most successful.

The main traffic calming measures featured in this document are:

- Speed limits
- Gateways
- Access Restrictions (gated roads, physical closures, legal orders)
- Signs (standard, vehicle actuated)
- Road Markings
- Surface treatment; (rumble strips, bar markings)
- Road narrowings (chicanes, islands, kerb build-outs, footway extensions)
- Road humps (speed cushions, etc)
- Speed cameras
- Changed priorities
- Reverse measures

Speed limits

The link between crash severity and speed has been well documented; it is accepted that the safety risk to vulnerable users is directly related to traffic speeds. However the problem is conveying this message to the motorist.

On open rural roads and through rural village communities, the speed that is deemed appropriate may vary from place to place. Crashes on rural open roads happen more frequently than most people would imagine, often with a severity related to the higher speed. Within villages and on established walking routes, cycle networks and bridle-ways, the risk of a crash involving a vulnerable road user increases. In both open road and village scenarios the motorist needs to be made aware of their own speed, of the need for greater care due to the increased likelihood of encountering other road users on the road and of any speed limit that has been set and the reason for it. Simply installing a blanket speed limit regulation with associated signing on what may be deemed by motorists as an 'open road' will not bring about acceptance or integration with other road users and could lead to further disregard of speed limits where they are most needed. As well as being of little benefit, standard signing measures may detract from the countryside scene.

New thinking is currently being evolved for setting rural speed limits. Speed data collected by the Transport Research Laboratory (TRL) for a large sample of rural single carriageway roads shows that current average speeds vary from between 35mph on the lowest quality roads to 51mph on the highest. As part of revised governmental guidance a simplified method of setting and signing speed limits may be provided. It is the governments intention that all villages will eventually have a maximum speed limit of 30mph.

Gateways

Gateways are becoming a feature of traffic calming schemes at the approach to settlements but they may also be useful in rural areas to highlight to drivers that they are entering an area of changed use or character, such as the entrance to a length of traffic-calmed road (e.g. in a National Park) which may involve physical measures such as carriageway markings

and signing and/or a change of speed limit. The Gateway can be suitably named (e.g. South Loch Earn Traffic Calmed Route) to heighten the impact on drivers. Recent experience from nine sites at villages on major roads monitored by the Department for Transport suggested reductions of inbound speed of 3–13mph with an average decrease of 5mph.

An important issue in the design of Gateways is achieving a good balance between 'visual impact' and the local environment. Gateways can be designed using sympathetic local materials whilst still conveying the required message to drivers. Speed reductions at more muted Gateways have been shown to be lower than at sites with bolder designs.

Access restrictions

These can take many forms, but are possibly the simplest and most effective means of altering the character of a road.

At the simplest level, direction signing pointing away from the route that is to be 'restricted' is an excellent way of deterring non-local traffic from using a given road. However if the traffic problem is being generated locally or by people that know the road well this may have little effect.

In many cases the implementation of a traffic regulation order with associated signing can be used to restrict the use of the road to a certain type of vehicle. However these restrictions have proven to be notoriously difficult to enforce and rely heavily on policing to make them effective. In a rural situation this is unlikely to happen in reality and therefore a physical restriction is going to be a better solution.

As with roads in towns and cities, a physical closure at the mouth of a road junction can be implemented to prevent motor vehicles from entering. Signs should be provided to indicate the alternative route and suitable provision for cyclists and pedestrians should be incorporated within the closure (i.e. gaps and direction signing).

'Road Ahead Closed' signs combined with either localised closures or access barriers/gates can be effective even if the gates are often unlocked or even left open. The signing acts as a cautionary reminder that to proceed by car along the road may



Very effective physical traffic restriction

result in a wasted journey and a long diversion.

Schemes of this type are very effective in reducing traffic volumes, but their value needs to be accepted by local people who may have to endure some personal inconvenience in order to achieve a traffic free environment.

Signs

Standard traffic signs give a clear message to the driver of what to expect on the road ahead: the layout of the road, any specific hazards, the maximum speed limit etc.

In a rural or minor road setting, consideration should be given to which messages are the most important so that sign clutter can be kept to a minimum and so that drivers do not become overwhelmed with constant visual intrusion. If too much information is provided then the most important message i.e. road safety, is often lost.

Over the past decade Highway Engineers have devised ways of giving more impact to warning signs and speed limit signs by designing them with high visibility backing boards and arranging them to create a 'gateway effect'. This has worked to some degree but is more effective when combined with other physical measures (see below) and by personalising the area as a place, not a road. In some areas the philosophy of high impact signing seems to be turning full-circle with a new approach involving low impact/discreet signing to appeal to the motorist in a more personal, polite way.

In contrast, many Authorities covering rural areas have recently trialled a more high-tec approach using vehicle actuated

traffic signs. These often have a worded road safety message, typically 'SLOW DOWN' or 'REDUCE SPEED' sometimes combined with the speed limit roundel which is internally illuminated when a vehicle exceeds a pre-set speed.

Recent research has shown that vehicle-actuated signs can be very effective in reducing speeds, without the need for enforcement such as safety cameras. Average speeds can be reduced by between 1–7 mph. They can be particularly useful on the entrance to rural settlements but their use should be limited to avoid an adverse effect on the environment.



Vehicle activated speed signs mobile or permanent

Experience of these shows that they are most effective when used on a mobile basis, possibly shared between different villages on a rota basis. When located at one site as a permanent fixture, regular traffic can become immune to the unit.

Ideally the sign should be co-ordinated with local speed reduction campaigns and any police speed enforcement initiatives. This gives added weight to the presence of the sign and the location becomes known by motorists as an area where high speeds are not acceptable.

These signs either require an electricity supply to ensure reliability, or rely on battery power and regular maintenance. They could be included within the remit of a street lighting or sign contractor to manage installation, maintenance and routine relocation. Efforts should be made to locate these units in more remote settings in order to encourage manufacturers to experiment with solar energy as an alternative power source.

Roadmarkings

The installation of roadmarkings is possibly the most cost-effective means of conveying a road safety message or indicating the layout of a road and the action road users need to take. In addition to the roadmarkings detailed in the TSRGD (Traffic Signs Regulations & General Directions) other layouts have been used to give a visual message and alert the motorist to the need to moderate vehicle speed.

Some of these layouts combine edge of carriageway markings and central hatching to give the illusion that the road is narrower than it is. Edge lines can also be used in such a way to provide a false footway or kerbline. It may be possible to incorporate cycle symbols or cycle lanes if the road is part of a network. Roundels depicting the speed limit, 'dragons teeth' triangle edge markings or transverse bar markings across the carriageway have all been used to varying degrees throughout the UK. It is essential to ensure that cyclists will not be adversely affected by placing the markings where they may lose traction, become unstable or get squeezed into the path of vehicles.

Each individual Highway Authority has their own preference as to the style of road marking layout that they use at entrances to villages or the approach to hazards. Some Authorities have adopted the practice of installing transverse bar markings and reapplying the roadmarking material to create height and produce a 'rumble strip'. These should not be placed on bends or steep gradients due to risk of



'Dragon's Teeth' and surface treatment on approach to rural speed limit



Advisory cycle lane - 'narrows' carriageway and gives prominence over vehicles



Bar markings - although too near edge for cyclists

loss of traction. The skid resistance of the markings should also be within the specifications set out for the material. The strips must also finish at least 750mm from the edge of the carriageway so that cyclists can avoid them.

Thought must also be taken not to over-use road markings as a cheap solution to all traffic related complaints. The low-cost, ease of installation and obvious visible action can lead engineers to recommend them in reaction to political and local pressure. This erodes the effectiveness of the markings locally and nationally. Proper consultation is often overlooked despite the major effect roadmarking schemes may have. Therefore clear robust policies should be adopted by Local Authorities to avoid the proliferation of these measures.

Surface treatment

The next level of visual message on the carriageway is surface treatment. This comes in the form of a coloured surface dressing which is applied directly to the existing road surface. In addition to a change in carriageway surface colour, an audible or physical message can be achieved by using different textures.

Use of coloured surfaces are now fairly widespread and are commonly used as part of Gateways or to emphasise the presence of particular traffic calming features. They may be laid across the full width of the carriageway and are typically 8-12m long. The choice of colour is important. Red surfacing will have high initial visual impact but will be prone to fading. Buff will be more expensive but will be less prone to fading. Guidance on the use of colour is given in the publication Design Manual for Roads and Bridges. As with road markings and signage, they appear to be most effective when used in combination with other measures. Without words or sign symbols it is difficult to convey a specific message.

Coloured patches with speed limit roundels alert drivers to a change in speed limit and encourage a reduction in speed. Early trials of 30mph and 40mph roundel markings in eight villages suggested small mean speed reductions of about 3mph at 40mph sites only but since then roundels have been used more successfully in combination with other measures. Roundels are permitted in conjunction with terminal signs showing 20,30, 40 and 50 mph and with repeater signs displaying these speeds except on lit roads subject to a 30mph limit.

In some circumstances however the careful design and application of a pattern of coloured/ textured surface can relate a



Contrasting colour/texture and clear warning message

change in surroundings to the motorist and therefore a need to alter vehicle speed. As with roadmarkings it is essential to leave enough clear carriageway surface so that cyclists can bypass any harsh changes in surface and have a smooth uninterrupted route.

Surface texture can be laid in strips to give an intermittent rumble effect which can be successful in alerting motorists to a hazard, speed limit or change in surroundings. This type of rumble strip material should maintain or exceed required standards of skid resistance.

It is advisable to install the surface across both (all) lanes of the carriageway so that motorists are not tempted to change lanes to avoid the surface treatment.

An innovative use of a traditional 'rumble' device can be the installation of a cattle grid (or imitation version) which will cause the same effect to a motorist, but with a bypass, plates or bridging sections for cyclists and horse-riders.



False cattle grid combined with gates

All 'rumble' devices should be installed well away from residential property or residents should be consulted. Possible ground borne vibration can occur or noise can result if the route is regularly used by heavy vehicles.

'Rumblewave surfacing' is a recent development in traffic calming. The surface has an undulating profile designed to create an alerting noise and vibration within vehicles but with only minimal changes in external noise.

New footway - narrowed road and traffic priority system. Previously people would have walked in the road or not at all.



Road narrowings chicanes, islands, build-outs, carriageway width reductions

The design and application of this type of traffic calming measure has been more scientific and the results widely monitored and assessed. The effectiveness is therefore more predictable. In villages where this type of scheme has been installed, studies have shown that typically both the frequency and severity of injury accidents can be reduced between 25% and 50% (compared with national trends around 7%). This relates to a general speed reduction of 12mph in some cases with the use of single lane chicanes. Even a 1mph reduction in average speed can result in a substantial reduction in injury accidents. Therefore there is plenty of evidence to support the introduction of such schemes and persuade local authorities and communities of their value.

Road narrowings can be grouped into four specific styles. Central islands (or pedestrian refuges), kerb build-outs that maintain 2-way traffic flow or that dictate that one direction gives way to the other and carriageway width reductions to encourage drivers to reduce their speeds through using markings as well as physical means.

Refuges act as an overtaking deterrent however the visibility of refuges should be emphasised by the installation of illuminated refuge indicator lamps, particularly on unlit roads. As refuges will be used by pedestrians they should only be located at points where it is acceptable for pedestrians to cross.

Single chicanes can reduce speeds by up

to 20mph, but if designs are modified to allow for buses, HGVs etc then the effect on car speeds may be negated. Speed cushions on the approach may also be beneficial. Double chicanes (two closely located) can reduce speeds further by up to 5 mph. Width reduction can be effected at the centre of the road (hatched markings, etc) or at the verges.

These measures need careful design if they are to be installed in rural roads where the available width is likely to be limited. Any reduced width should not be in the range 3.1 - 3.9m as research shows that motorists are likely to try and pass cyclists and will be uncomfortably close. Better to design cycle bypasses into these measures if at all possible.

The most successful schemes utilise a combination of all types rather than relying on one style. This is possibly due to the unpredictable layout and consequently the need for motorists to pay special attention.

As with all calming schemes it is advisable to precede the calming device with a feature that will bring the general speed of traffic down e.g. a roundabout/junction. It is particularly important to reduce the speed of traffic on the approach to the first single lane narrowing device, which essentially obstructs a large portion of the carriageway. Rural schemes which have not been designed with this in mind have resulted in vehicles colliding head-on or motorists crashing into the build-out with serious consequences.

Care must be taken when implementing a road narrowing scheme to consider the movement of pedestrians and cyclists and to ensure that routes are improved for these users. Also chicanes are not an ideal place for pedestrians to cross the road because of the alternating traffic directions, but as long as visibility is not restricted by street furniture or planting then the reduced road width can give pedestrians more prominence and confidence at these locations. Road narrowings have been used as a way of constructing a much needed footpath link through a village where previously people had to walk in the carriageway. (see photo)

Cyclists should not be forced to go through a pinch point unprotected. There should be a choice of using the carriageway (possibly with a marked/coloured advisory lane) or bypassing the pinchpoint directly with a gap through any build-out. If the narrowed carriageway section could be used by pedestrians to cross, then the detail of the interface between pedestrians and cyclists must be carefully designed using changes in footway material textures/colours. This detail should be the subject of consultation with local user groups.

One issue that is often overlooked at the design/consultation stage is the issue of movement of wide vehicles. Traffic calming dimensions which may work perfectly well in an urban situation can be totally impractical in a rural community where the movement of wide agricultural machinery (sometimes only once or twice a year) is absolutely vital to the local farming community.

As an alternative to physical narrowing, surface changes and imaginative verge treatment can give the illusion of a narrowing or gateway effect without physically restricting the carriageway width.

Road humps

There have been many studies into the design and effects of road humps. Since the first regulations, there have been trials with many different profiles and cross sections. The level of speed reduction usually reflects the harshness of the profile and the discomfort it causes to the occupants of vehicles.

If the aim of a scheme is to benefit vulnerable users and encourage people to use alternative modes (e.g. public transport)



Speed cushions should not be ruled out of rural applications

then the humps should be designed to give minimum discomfort to bus passengers and cyclists.

The main factors which affect the comfort of these users are the ramp profile and the length of the plateau section of the hump. In tests, the longer humps (5m) create less discomfort to cyclists and bus passengers. A sinusoidal transition ramp causes less discomfort and also lower noise levels.

Care should be taken when placing road humps near residential properties as ground borne vibration can be an issue especially with flat top road humps on routes used by HGV's.

Lighting is an essential factor of schemes involving isolated level changes, so thought must be given to their suitability in a rural context. This factor, combined with the need for additional drainage would make road humps an unlikely choice for traffic calming in an open countryside situation but more suitable within a village setting.

Note that they cannot be installed on roads with speed limits greater than 30mph without special authorisation.

Virtual road humps have also been used to give the impression to approaching drivers that the carriageway has been raised to form a road hump. They take the form of painted white edge markings and may be appropriate as part of a Gateway treatment.

Speed cushions

These are road humps that do not traverse the whole carriageway. Each cushion only occupies a section of each traffic lane.

The development of this design followed problems experienced by emergency

services and bus companies negotiating traditional road humps.

The narrow cross section allows buses and fire engines to straddle the hump whilst general traffic (cars) must deal with the vertical deflection.

The main advantage of this design for cyclists is that they can bypass each hump without deviating from their course provided there is a proper gap of at least 750mm between the kerb edge and the cushion. It is also critical that this gap is completely free of obstructions, such as parked vehicles and drainage gullies as cyclists will not be able to avoid them.

This type of device has been used to great effect in urban 20mph zones where optimum spacing, height and gradients have now been arrived at. The device is very cost effective compared to traditional road humps as additional drainage is not usually required.

The use of this device could easily be incorporated into rural village schemes because aesthetically there is less change to the traditional layout of the road. Kerb/verge lines are unaffected, thereby retaining the original perspective of a street scene. Great care must be taken to ensure that each cushion is clearly visible, especially in darkness. This will allow motorists to adjust their approach speed accordingly and for motorcyclists to prepare for the instability that may be induced. The lighting and signing requirement including use being restricted to 30mph or less speed limits may make this device unsuitable for most open countryside situations, but the idea should not be ruled out of potential scheme designs.

Speed cameras

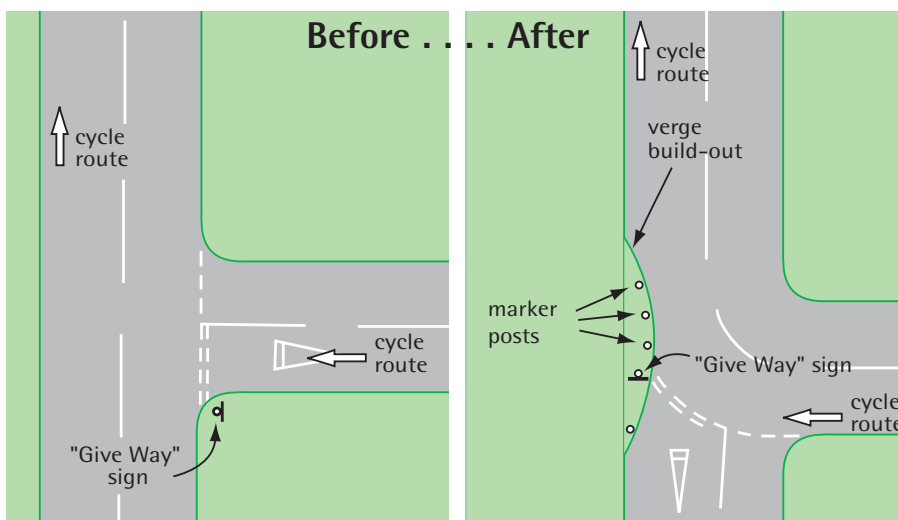
Ideally rural and minor roads should be engineered in such a way that motorists become aware of and responsible for their own speed as appropriate to the conditions and surroundings rather than be governed only by the fear of prosecution.

It is however accepted that locations with a speed related accident history can benefit greatly from the introduction of speed cameras to effect a limit lower than the National Speed Limit. They should be used in conjunction with other measures to create a more attractive environment for vulnerable users over a longer length of road.

Changed priorities

A simple measure to interrupt the flow of traffic in order to control vehicle speed and to give priority to a cycling or walking route is to change the priorities at a junction. The normal situation where this can be used is at a 'T' junction. The modification usually makes the more major road traffic 'give way' to a side road. On busy traffic routes this modification is fairly effective at providing a natural checkpoint in the flow of traffic. However where vehicle flow is fairly light, care must be taken to ensure that the requirement to give way is absolutely clear. In many cases where this system has been introduced, collisions have occurred in the initial period after introduction due to the failure of through-traffic to 'give way'. Introducing 'roundabout style' deflections and clear signage/roadmarkings can alleviate this.

This measure can also be successfully used to reduce speeds on many through routes.



Changed priorities



Single lane with wide verge and natural stone replaces white lining and edge marker posts



Two way traffic intimidates vulnerable users

THE SOLUTION: single lane with passing places and new verge path



Reverse measures

It has been demonstrated in some towns and villages that road safety has actually been improved by the removal of engineering features. This effectively reverses the trend of installing signs, roadmarkings and other means of informing road users and instead allows them to assess the road layout, traffic priority and conditions themselves.

Work has already been done in the UK by some Local Authorities but could become widespread.

The principle can be controversial as motorists have become dependant on road signs. Highway Authorities have significantly improved road safety at accident blackspots through the use of signing measures. However, a simple technique such as the

removal of a central white line can question a motorist's confidence that oncoming traffic is safely in a separate lane. In some areas, traditional style road features such as cattle grids (or imitation ones) and stone mileposts have been installed to create a rural setting.

Initial results have shown that where rural roads have been redesigned to appear more like the country lanes they once were, motorists may adjust their driving behaviour accordingly. Traditional, rudimentary measures such as gates to restrict the free movement of motor vehicles can create the illusion of a private track. Introducing significantly wider verges and more natural road surfaces can also be effective in reducing speed and volume. Even if this is implemented over a fairly short length it can cause vehicles to divert well away from a chosen route. This route will then naturally take on the character of a traffic free country lane along its entire length.

Research into these psychological traffic calming measures is currently in progress. Sustrans would like to see more experimental schemes of this type as early results show them to be very effective.

Management and consultation

A highway within an Authority will usually manage the scheme, but there should be equal input from other disciplines.

Landscape architects, Rights Of Way/Access Officers, tourism development professionals, conservation experts and rural stewardship organisations will all have valuable views on the detail of such schemes. It is also wise to involve Highway Maintenance managers in the design and specification of the layout and materials used. In many cases the fear of increased maintenance costs due to higher quality materials can be offset by a reduction in traffic levels and therefore in damage to the highway fabric.

It is essential to match the design to the needs of the local community. The people who are best placed to know that are those who live, work and play in that area.

Every scheme will be maximised with the input of these people at the concept design stage. In some cases the scheme can be enhanced by the involvement of the local community in the future management (e.g. planting borders, cutting hedges etc)

Monitoring

To ensure a worthwhile monitoring methodology, the effects of the scheme must be set against agreed objectives. Before and after implementation surveys must be taken in various categories, at each site/route, to gauge the effects both long and short-term. Sustrans can assist with devising a strategy. Whilst some of the objectives can be measured statistically by some form of check/ count (speed /volume/crashes), many important objectives such as rural character, urbanisation, aesthetic appeal are based more on perception. Therefore the consultation and partnerships established with the local community and relevant national bodies should start at an early stage to enable perception studies to be undertaken and output targets determined.

Summary

The measures outlined in this publication are by no means exhaustive. It is now widely known that the most effective and most accepted traffic calming schemes are

those which incorporate a variety of measures. Some villages have achieved long term benefits for all users by combining speed reduction measures with new lengths of footway and pedestrian crossing facilities in a way that allows residents and visitors to access local amenities and the public transport system in comfort and safety. These measures have allowed for the inclusion of cycle facilities often as a by-product. Ideally all rural traffic calming schemes should be designed to meet the standards defined by the National Cycle Network Guidelines.

Sustrans are constantly seeking new methods and examples of best practice and are willing to work with other organisations to design innovative forms of traffic calming that can be applied to encourage safer access to the road network by all non-car users.

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Village Traffic calming

Chicane Schemes

Road Humps: discomfort, noise etc.

Sinusoidal, 'H' & 'S' Road Humps

Quiet Lanes

Vehicle Activated Signs

Rural Traffic Calming: Bird Lane, Essex

The National Cycle Network, Guidelines and Practical Details *Sustrans*

Guidance on setting local speed limits

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Highways Agency, Scottish Executive and other Overseeing Organisations

Rural Speed Management-Looking Ahead

The Slower Speeds Initiative

March 04

The Traffic Signs Regulations and General Directions 2002

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