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ENFORCEMENT OF SPEEDING ON RURAL ROADS IN THE UK AND EUROPE

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This paper looks at the different types of speeding enforcement on rural roads in the UK and throughout Europe. It considers examples of best practice and gives a brief overview of mean speeds and speed limit violations on rural roads for a select number of European countries.

SUMMARY OF KEY POINTS

UK

- The Government's road safety strategy "Tomorrows roads: safer for everyone" (DETR 2000a) has a key component which focuses on the management of speed, particularly in rural areas.

- Under current legislation (Road Traffic Regulation Act 1984,and Highway Code (DETR, 1999)), speed limits (for cars and motorcycles) on the rural road network are 60 mph on single carriageway roads (from major inter-urban routes to quiet country lanes) and 70 mph on dual carriageways.

- Speed limits in villages are 30mph, in Home zones or Quiet Lanes, speeds are below 20mph. Transport Act 2000 enables a local traffic authority to designate any road for which they are the traffic authority, as a Quiet Lane or a Home Zone.

- Use orders and speed orders can be issued by traffic authorities under the Transport Act

- The introduction of a Rural Roads Hierarchy to keep speed limits consistent and appropriate to the function of the road is discussed in the *Guidelines for Rural Safety Management* (IHT, 1999)[1].

- Hierarchy consists of 2 Tiers: Tier1 one for A roads, Tier 2 for B roads and Tier 3 for all other. Roads are grouped under a tier according to appropriate speed for them.

- Local police conduct the enforcement of speeding limits, and drivers caught breaking speed limits by the cameras are committing an offence. Most speeding offences are dealt with through the fixed penalty system where a driver/motorist has three points added to their licence[2].
- It has been suggested by the Governments Speed Review (DETR,2000b[3]) that speed limits on their own have little effect on vehicle speed (pg19) and that additional traffic calming is required to reduce drivers speeds.

- Slower Speeds Initiative by the Countryside Agency found schemes using physical measures and high impact marking and signs slowed drivers by an average of 8% and reduced casualties by nearly 50%

Europe

- In April 2009, the traffic police across Europe conducted a week-long operation with 22 countries taking part, which saw more than 636,038 drivers being detected for breaking speed limits[4].

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[1] IHT. (1999). *Guidelines for Rural Safety Management*. Institution of Highways and Transportation, London.

[2] DfT, Managing speed on our roads

[3] DETR (2000b) *New Directions in Speed Management - A Review of Policy*. DETR, London

- In France, it has been proposed that automatic confiscation of vehicles can be carried out on motorists who exceed the speed limit by over 50 kmh
- According to the European Transport Safety Council (ETSC)[5], up to 50% of photographs from speed cameras in Germany are unusable. Many speeding offences will go undetected as the owner is under no obligation at all to name the driver unless detected on the camera.

- Optimised enforcement would be a major contribution to reducing traffic deaths and injuries in Europe (EU 15). In particular in the case of speeding, 5,800 deaths could be prevented every year[6].

- New automated methods can be used to compliment traditional methods, in order to deal with large number of violations. France has been very successful at implementing automated speed enforcement.

- An example of the principles governing safe infrastructure design can be found in the Dutch' 'Sustainable Safety' approach, according to which a road network should integrate the core principles of traffic calming[7]

- European Parliament finally adopted an EU Directive that aims to improve the road network by introducing an EU harmonised system of road safety inspection, management of high risk sites, road safety audits and safety impact assessment on the Trans-European Road Networks.

- Introduction of Section Control which is a method of speed enforcement which involves a series of cameras installed over a stretch of road so as to calculate the average speed. In the Netherlands on a section of the A13 motorway, only 0.5% of vehicles were detected speeding after section speed control was put in use in 2002.

- Some of the front running EU countries in speed enforcement are: the Netherlands, Belgium, Switzerland and Norway.

- Table 1 shows that out of the countries listed, Belgium has the highest percentage of speed violations on rural roads, while GB has the lowest. This shows that while Belgium displays one of the best levels of speed enforcement, violations are still high, therefore other factors must considered.

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[4] Motoring Offences Team Blake Lapthorn Solicitors http://www.bllaw.co.uk/services_for_individuals/motoring_offences/news_and_updates/speeding_in_europe.aspx

[5] ETSC http://www.etsc.eu/home.php

[6] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport

[7] SWOV (2006). The principles of Sustainable Safety.

CONTENTS

UK
Background 1
Enforcement 1
1. Speed Limits 1
2. Development of a Road Hierarchy System for speed management 3
3. Speed Cameras 5
4. Traffic Calming 6
5. Natural Calming 7
Europe
Background 8
Enforcement 9
1. Cameras, automatic speed controls, and effective strategic enforcement plans 9
2. Traffic calming measures 11
3. EU Directive 11
4. Section Control 12
5. Examples of Best Practice 13

UK

BACKGROUND

In England and Wales, the number of issued fixed penalty fines rose seven-fold from 260,000 in 2000-2001 to 1.8 million in 2003-2004[8].

According to the Government's speed review (DETR 2000b)[9], there are a number of research reports which link fewer collisions of lesser severity with lower speeds. The Government's road safety strategy "Tomorrows roads: safer for everyone" (DETR 2000a)[10] has a key component which focuses on the management of speed, particularly in rural areas. The component is the introduction of a new rural road hierarchy, which will be discussed later, along with other enforcement measures used for speeding on rural roads.

The key aim of the enforcement measures is to reduce the speed on the roads, so that there are fewer accidents and casualties. According to the Department for Transport (DfT), in 2004 46% of serious road casualties and more than half of all road causalities occurred on rural roads.[11]

The main purpose of this paper is to look at the different types of speeding enforcement used on rural roads throughout the UK and Europe.

ENFORCEMENT

The different enforcement measures for speeding are as follows:

1. SPEED LIMITS

Legislation is set under the Road Traffic Regulation Act 1984,[12] and limits can be found in the Highway Code (DETR, 1999)[13]

Under current legislation, national speed limits apply to all roads, unless signs show otherwise. The system of national speed limits is followed by authorities in England, Scotland and Wales. The current speed limit on motorways is 70mph, 60 mph on single dual carriageways, 30mph for built up areas where a system of street lighting exists (not more than 183 metres apart, or 185 metres in Scotland).

At present, the speed limits (for cars and motorcycles) on the rural road network are 60 mph on single carriageway. Some of the roads will have had lower limits imposed for various reasons, especially where the national speed limit is inappropriate for the prevailing conditions. For example, according to the Department for Transport in their circular: "Setting local speed limits,"

"The majority of drivers do not reach or exceed the 60 mph limit on many single

[8] http://www.speedcamerasuk.com/speed-camera-faqs.htm
[9] DETR (2000b) *New Directions in Speed Management - A Review of Policy*. DETR, London
[10] DETR (2000a). *Tomorrows roads: safer for everyone. The Governments road safety strategy and casualty reduction targets for 2010*. DETR, London.
[11] DfT (2006) Setting local speed limits
[12] Road Traffic Regulation Act 1984
[13] DETR (1999). *The Highway Code*. TSO, London.

carriageway roads because it is often difficult to do so because of the characteristics and
environment of the road."[14]

The national speed limit of 60mph for single carriageway rural roads covers a range of road types, from major inter-urban routes to quiet country lanes. There is often confusion surrounding the current speed limit system. Research by the AA Foundation for Road Safety Research found there was a lack of understanding about the maximum speed on single carriageway rural roads, and that speed limits other than 30mph and 70 mph were not well understood (Silcock,Smith, Knox and Beuret, 2000)[15]

Speed limits in Villages

The Traffic Advisory Leaflet 01/04 (DfT, 2004[16]) sets out the current policy for achieving limits in villages. According to the leaflet what constitutes a village is:

- 20 or more houses (on one or both sides of the road); and
- A minimum length of 600 metres.

For villages that fit within the definition, a speed limit of 30mph is applied. In exceptional cases local traffic authorities can consider alternative limits, eg slightly higher or lower than 30mph. Such circumstances have to be approved by the Secretary of State.

Speed limits on Quiet Lanes and in Home Zones

A road in a Quiet Lane network or in a home Zone is a place where the whole space is available for a range of different uses. The speed of vehicles must be low enough so that permitted activities can be carried out safely. Quiet lanes tend to be rural minor roads with low flows of traffic and are shared by walkers, cyclists, equestrians and motorists[17].

Home zones are considered as places for people, and not just thoroughfares for vehicles, their key elements are:

- Community involvement to encourage a change in user behaviour
- For the road to be designed as so it can be used for a range of activities and to encourage very slow vehicle speeds.

Speeds are well below 20 mph in these zones. For guidance on Home Zones see the Department's Traffic Advisory Leaflets 10/01 (DETR, 2001b)[18] and 08/02 (DfT, 2002)[19],

[14] DfT (2006) Setting local speed limits
[15] Silcock, D., Smith, K., Knox, D. and Beuret, K. (2000). *What Limits Speeds? Factors that affect how fast we drive*. AA Foundation for Road Safety Research.
[16] http://www.dft.gov.uk/pgr/roads/tpm/tal/trafficmanagement/villagespeedlimits.pdf
[17] Countryside Agency technical guidance: www.countryside.gov.uk/LAR/Recreation/Greenways/quietlanes/index.asp
[18] http://www.dft.gov.uk/pgr/roads/tpm/tal/trafficmanagement/homezonesplanninganddesign
[19] http://www.dft.gov.uk/pgr/roads/tpm/tal/trafficmanagement/homezonespublicparticipation.pdf

In England and Wales Section 268 of the **Transport Act 2000** [20]enables a local traffic authority to designate any road for which they are the traffic authority as a Quiet Lane or a Home Zone. It also introduced the concept of "use orders" and "speed orders" for designated roads.

Speed Orders enable the local traffic authority to set a specified speed with a view to introducing speed-reducing and speed-control measures in order to hold traffic speeds below the specified speed. Specified speed is a new concept in regulations and is associated with vehicular speeds, but speed orders do not impose speed limits at the specified speed. If wanted for enforcement purposes, speed limits need to be set by traffic regulation orders for individual roads, and any local speed limits below 20 mph require the approval of the Secretary of State.

2. Development of a Road Hierarchy System for Speed Management

This concept has been under development and consideration for a number of years. The *Guidelines for Urban Safety Management* (Institution of Highways and Transportation 1990)[21] discusses an urban hierarchy for safety purposes. The *Roads, Bridges and Traffic in the Countryside Initiative* in Scotland identified the need to investigate the role of rural road hierarchies. The *Rural Road Hierarchy and Lorry Routing*[22] (produced under the initiative by Scottish Office and CoSLA, 1997) identified a process for implementing a hierarchy on rural roads.

The need for rural hierarchy strategy to keep speed limits consistent and appropriate to the function of the road is discussed in the *Guidelines for Rural Safety Management* (IHT, 1999)[23].

The Transport Research Laboratory (TRL) conducted a study defining 4 groups of roads according to their geometric and topographic characteristics, or quality. Group 1 is low quality (very hilly, high bend, junction and access density and low traffic speed) and group 4 for high quality (low bend, junction and access density and high traffic speed). Accident frequency was found highest on Group 1 roads and about a half, third and quarter of the group 1 level on Groups 2, 3 and 4 roads[24].

The study concluded that the groups identified could form the basis for a rural road hierarchy, which would be strongly linked to the existing road classifications.

The proposed number of speed management tiers for rural roads (excluding motorways) is 3, as listed below[25]:

Tier 1: (A roads) through routes of national or regional importance and traffic distribution. Acceptable speeds are based on current speed limits (60 mph for single, 70 mph for dual, carriageways, 30 in villages). In exceptional cases lower speeds may be applied.

[20] Transport Act 2000 section 268
[21] Guidelines for Urban Safety Management
[22] Scottish Office, and COSLA (1997). *Rural Road Hierarchy And Lorry Routing*. Scottish Office and the Convention of Scottish Local Authorities, Edinburgh.
[23] IHT. (1999). *Guidelines for Rural Safety Management*. Institution of Highways and Transportation, London.

[24] http://www.slower-speeds.org.uk/files/Rural%20speed%20management%20-%20looking%20ahead.pdf
[25] DfT, Proposed template for a speed management hierarchy

Tier 2: (B roads) mixed use roads primarily for motorised traffic, with limited numbers of vulnerable road users and occasional access to properties such as farms rather than residences. A suggested maximum of 50 mph with 30 mph in villages.

Tier 3: (all other roads) local roads that are primarily for access, particularly roads through villages, where vulnerable road users are to be expected. Maximum speeds could be 40 mph, and 30 mph or less in villages. In particular cases, such as villages with restricted carriageway widths and Quiet Lanes, these should be very low speed areas with a maximum of 20 mph.

Similar projects to his have been adopted in the Netherlands, where rural roads are defined by their function as part of the **Sustainable Safety** approach (Schermers 1999). Here a three tier hierarchy has been applied that designates motorways and distributors of through traffic, and access roads as a separate speed, for example:[26]

The Dutch Rural Speed Hierarchy

In the 3-tier Dutch system, motorways and distributor roads are for through traffic. Separate speed limit regimes apply to these two types of road due to the difference in road quality (with motorways obviously of a better design standard, and more suited to faster traffic speeds). Speed limits on motorways are set at either 100 or 120 km/h.

On Distributor roads there is to be segregation between flows of different types of traffic (including parallel routes for slower vehicles such as farm machinery), and the markingsdiffer. This segregation complements the goal of homogeneity, or the realisation that inorder to achieve safety there is a need to reduce differences, for example in speed, massand direction. Speed limits on distributor roads are set at 80 km/h.

Access Roads are those that have access to properties. On such roads, users share theroad space, and to indicate this environment, there is no centre line. Speed limits onaccess roads are set at 60 km/h.

To identify changes between the three tiers of road class, there are gateways at all transition points in the hierarchy.

Complementing the functions and homogenous use of roads is the principal of predictableuse. This is intended to ensure that there are no uncertainties in the road environment,including the characteristics of the road, or the behaviour of other road users.

The local police conduct the enforcement of speeding limits and drivers found to be above the designated limit are committing an offence. Most speeding offences are dealt with through the fixed penalty system where a driver is currently fined £60 and has 3 points added to their licence. Although this may be the case for most speeding offences, the courts have the power to:

- endorse driving licences by up to 6 penalty points;

[26]Schermers, G. (1999). *Sustainable Safety - A preventative road safety strategy for the future*. Transport Research Centre, Dutch Ministry of Public Works and Water Management

- disqualify drivers in the most serious cases; and
- impose a fine of up to £1,000 (£2,500 for motorway offences).

3. SPEED CAMERAS

The role of safety cameras is to encourage drivers to stay within the stated speed limit. According to the Department of Transport, research has shown that where cameras have been introduced, **the numbers of killed or seriously injured have fallen by 35%, and the number of vehicles speeding has fallen by 67%**[27]
The number of speed cameras has now reached about **6,000** across the country, 2,500 of them being mobile speed cameras.

Speed cameras are currently netting more than £20m a year profits for the Treasury. The number of fixed penalty fines issued in England and Wales has risen from around **260,000 in 2000-2001**[28] **to around 1.8 million in 2006**[29].
Local police conduct the enforcement of speeding limits, and drivers caught breaking speed limits by the cameras are committing an offence. Most speeding offences are dealt with through the fixed penalty system where a driver/motorist has three points added to their licence[30].

The Association of Chief Police Officers (ACPO) suggests a range of possible actions when enforcing speed limits[31]:

- give you only a verbal warning.
- offer you the chance to attend a speed-awareness course, which you will have to pay for.
- issue a Fixed Penalty Notice (a speeding ticket), with a fine of £60 and three penalty points.
- prosecute you for speeding. This will mean you will have to go to court, and could face a fine of up to £1,000 (£2,500 if you were speeding on the motorway), between three and six penalty points on your driving license, and a possible driving disqualification.

If a driver or motorcyclist accumulates **12 or more penalty points in three years then they are disqualified.** The sentence for a driver who gets disqualified is usually a minimum of six months or if they are disqualified for motoring offences before, then they may get a longer sentence.

Although Parliament has set guidelines for speeding offences, **the court has a discretionary power** to endorse licenses by up to 6 points or order the license holder to be disqualified. This could be for any time period from a week up to several months. If a motorist has been charged with careless and inconsiderate driving

[27] DfT, Managing speed on our roads http://www.dft.gov.uk/pgr/roads/managingspeedonourroads
[28] http://www.speedcamerasuk.com/speed-camera-faqs.htm
[29] Ministry of Justice, Offences relating to motor vehicles England and Wales 2006 (pg 60/61 Table 20a)
[30] DfT, Managing speed on our roads
[31] http://www.trafficsignsandmeanings.co.uk/what-happens-if-youre-caught-speeding-uk.html

(Section 1 & 2 Road Traffic Act 1991) [32] much heavier penalties could apply which could result in immediate disqualification.

In addition to fines and license endorsements, Speed Awareness Courses which offenders are required to attend have been introduced in some areas of England such as Lancashire for example. The Department is considering the roll out of a national scheme of awareness courses for persistent offenders. [33]

4. Traffic Calming

A study commissioned by the AA Foundation for Road Safety Research found that the road environment has a large influence on the speed that people choose to drive. In places where low limits were imposed (30mph or 40mph), and where the roads were wide, straight, with good forward visibility and with little frontage activity, the highest percentage of speeding was found.[34]

The study suggested that in some cases where speed limits are lowered, there is not always a following trend in the lowering of actual vehicle speed. It has been suggested by the Governments **Speed Review (DETR,2000b[35])** that speed limits on their own have little effect on vehicle speed **(pg19)** and that additional traffic calming is required to reduce drivers speeds.

Typical interventions found in rural areas include:

1. Gateway signing accompanied by significant markings, coloured road surface and/or minor narrowing, and occasionally one-way working through narrowings.
2. Road markings, coloured surfaces and traffic islands in the village, with some gateway features.
3. Significant physical measures within the village, involving horizontal and/or vertical deflections, usually in conjunction with gateways.

Gateways:

- mark the entry to villages and highlight a change in speed. Tend to be located near to the first buildings in a community (more so in rural areas)
- Announce to drivers leaving the major road that they are entering an area of different character
- Tend to be combined with other traffic calming works such as pinch points, islands, change of carriageway colour and texture.

For more detail on gateways visit:
http://www.dft.gov.uk/adobepdf/165240/244921/244924/TAL_13-93

[32] Road Traffic Act 1991
[33] DfT, Managing Speed on Our Roads
[34] DfT, Development of a rural road hierarchy for speed management .
[35] DETR (2000b) *New Directions in Speed Management - A Review of Policy*. DETR, London

According to an article produced by the Slower Speeds Initiative, Countryside Agency:

- village calming schemes with gateways reduced speeds by up to 2mph and casualties by 10%
- schemes using physical measures and high impact marking and signs slowed drivers by an average of 8% and reduced casualties by nearly 50%
- Deflections (humps and chicanes) must be illuminated and accompanied by warning signs.

5. NATURAL CALMING [36]

Some safety measures such as warning signs, white lines and concrete kerbs can encourage higher speeds by giving visual cues to drivers. Visibilty splays can iopen up junctions and encourage higher approach speeds, while narrower junctions can reduce speeds. The use of natural traffic calming protects and enhances rural features that slow traffic. These include:

- Trees and hedges
- Walls and buildings with frontage close to the road edge
- Verge management
- Bends, narrow roads and rough surfaces
- Presence of people and activity along the roadside

For example, Norfolk has pioneered an approach to:

- remove excess signing
- reduce the size of signs where appropriate
- use local stone as a surface dressing for village roads
- mark village entry points with bespoke gateways and signs
- place speed limit signs on sturdy wooden posts
- remove road markings, including centre lines
- replace bend chevrons with reflector posts
- make the road appear narrower, for example by introducing a different coloured surface to mark out a footway.

The Local Government and Rating Act 1997 (section 30) enables town and parish councils to fund the introduction of traffic calming measures. According to the Countryside Agency:

- Hampshire County Council has adopted a partnership approach and provides matching funding for town and parish councils for traffic calming schemes. In 2000/01 a total of 30 schemes were allocated funds ranging from £1,000 to £10,000 (typically between £2,000 and £3,000).
- Buckinghamshire County Council has created a £250,000 interest-free loan fund allowing councils to pay for traffic calming schemes over a three year period. For

[36] http://www.slower-speeds.org.uk/files/Cutting%20speed%20in%20the%20countryside.pdf

a standard charge of £3000, local councils who introduce traffic calming under the 1997 Act can also fund a new speed limit related to the measures, as long as it has been approved by both the county council and Thames Valley police[37]

EUROPE

BACKGROUND

Across Europe it is accepted that speeding is the most common cause of road related deaths. In April 2009, the traffic police across Europe conducted a week-long operation with 22 countries taking part, which saw more than 636,038 drivers being detected for breaking speed limits[38].

In France, it has been proposed that automatic confiscation of vehicles can be carried out on motorists who exceed the speed limit by over 50 km/h (31mph). It would then be down to the court to reverse the confiscation, but only where there are good grounds.

The use of technology to enforce speed limits has certainly helped. However, there are still major problems with the speed enforcement process across Europe. In Germany, for example, there is no owner-liability except for non-moving traffic offences. Thus, unless the police stop a speeding motorist, or it is clear from a photograph who was driving, many speeding offences will go undetected as the owner is under no obligation at all to name the driver. According to the European Transport Safety Council (ETSC)[39], up to 50% of photographs from speed cameras in Germany are unusable.

By contrast, according to the ETSC, the UK is determined to press ahead with plans to "Make Britain's roads the safest in Europe". The UK has had 'owner' liability (normally this is the registered keeper) for many years. In 2006 the **Road Safety Act** increased the penalty for non-compliance from three points to six. The UK has also led the way with the implementation of new technology such as Intelligent Speed Assistance (ISA).

(For more information on ISA visit the following link from ESTC http://www.etsc.eu/documents/ISA%20Myths.pdf)

There does not appear to be a unified approach in Europe. It has been reported that in Poland, the Government is pressing ahead with plans to increase the speed limit on motorways from 130kmh (81mph) to 140kmh (87 mph). Of more importance is the fact that the President refused to sign off an automated speed camera system.

[37] www.buckscc.gov.uk/safety_schemes/traffic_management/speed_limits.htm
[38] Motoring Offences Team Blake Lapthorn Solicitors http://www.bllaw.co.uk/services_for_individuals/motoring_offences/news_and_updates/speeding_in_europe.aspx
[39] ETSC http://www.etsc.eu/home.php

ENFORCEMENT

1. CAMERAS, AUTOMATIC SPEED CONTROLS, AND EFFECTIVE STRATEGIC ENFORCEMENT PLANS

According to the ETSC available data shows that there is still not full compliance with the legal speed limits even in some of the best performing EU Member States in terms of road safety, such as the U.K. and Sweden. The European Commission had a cost-benefit analysis carried out concerning the three enforcement areas of speeding, drink driving and seat belt use. It assessed that increased enforcement would result in a total annual reduction of 14,000 road deaths and 680,000 injuries in the EU 15, and in a net benefit of 37 billion Euro or 0.44% of GNP. Optimised enforcement would be a major contribution to reducing traffic deaths and injuries in Europe (EU 15). In particular in the case of speeding, 5,800 deaths could be prevented every year[40].

Traditional methods Vs new automated methods[41]

Traditional	New automated
Rely on radar and laser measurements made by mobile police patrols. These offer the advantage that offenders are directly apprehended by police officers.	Use recording devices (camera, video) that are triggered automatically by speed violations. These offer high levels of continuous and widespread enforcement (whereas traditional methods tend to focus on the most severe offenders)
	Countries that apply high numbers of automated speed devices, such as The Netherlands and the UK, (about 6000 devices) tend to have low numbers of road deaths whereas countries with no or low numbers of such devices generally have much higher deaths rates.

Automated methods can therefore be used to compliment traditional methods, in order to deal with large number of violations.

The most impressive example of success of automated speed enforcement: France[42]

According to the ETSC the road safety achievement of France is mainly due to the introduction of fully **automatic speed control** introduced late 2003(no human processing involved to issue fines) and information campaigns that augmented the **subjective risk** of sanctions among drivers (i.e.: the drivers' perception of the risk of being caught). At the end of August 2007, there were 995 fixed cameras and 557

[40] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport
[41] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport (pg 16)
[42] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport (pg 22)

mobile cameras in France; at the end of 2007 there were 1950 radars (2/3 of which were fixed).

The number of speeding tickets issued has greatly increased and the number of offences is easier to track since automatic speed control has been introduced. The money generated from this was reinvested in road safety work.

For traditional enforcement (operated manually by the police) the number of tickets remains unchanged.

Impact:

- In France road deaths were reduced by 31% between 2001 and 2005[43]; a government report indicates that 75% of this reduction results from reduced speeds.[44]
- In 2004, a driver survey showed that a large majority of drivers declared that they drove more slowly, and that the main reason for that was the fear of enforcement.[45]
- In addition to increasing the number of speeding tickets issued, the automatic system allows for better tracking of offences

Evidence confirms the safety benefits of speed checks. In the U.K., a Home Office research report shows that accidents at sites where speed cameras were introduced were reduced by 28%.[46] Traffic law enforcement is supported by a large share of the European public. A total of 70% of European drivers are (strongly) in favour of more enforcement of traffic laws, according to an EU survey.[47]

According to a public opinion survey in France (2005), 77% support automatic speed enforcement as a good tool to improve road safety. Also as regards public support, automatic speed enforcement may be perceived as more objective by road users, thus increasing the perceived fairness and acceptance of police enforcement.[48]

The ETSC has suggested that the money generated from speed offenders should be generated back into road safety work, especially when such upgrades to enforcement result in higher penalties.[49]

Subjective risk: To raise people's awareness that their compliance is being checked, enforcement must be highly visible and publicised. Research indicates that it is the drivers' subjective risk of being caught that must be increased[50].

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[43] ETSC (2007a). Traffi c Law Enforcement Time for a Directive, Brussels.

[44] ONISR (2006a). Impact du contrôle sanction automatisé sur la sécurité routière (2003-2005).
Observatoire national interministériel de sécurité routière, Paris.

[45] Arrouet, J.-P. (2004). Conducteurs Français, vous avez changé. In : Circuler autrement 121, May-June
2004.

[46] Hooke A., Knox J. and Portas D. (1996). *Cost benefit analysis of traffic light and speed cameras*. Police
Research Series Paper 20, Home Offi ce: Police Research Group.

[47] Ewers, U. (2004). Changes over time. Presentation to the SARTRE 3 Final Seminar in Paris, France.

[48] ESCAPE (2003). *Enhanced Safety Coming from appropriate Police Enforcement*. Final report. (pg101)

[49] ETSC (2006). *Traffic Law Enforcement across the EU*. Brussels.

[50] ESCAPE (2003). *Enhanced Safety Coming from appropriate Police Enforcement*. Final report

The main problem:

A problem with automated speed checks is driver identification, therefore a system that makes the owner of the vehicle liable (disregarding who is driving the vehicle at the time of the offence) is necessary. According to Nilsson 2004[51], identification can be made automatically by the registration system, for example:

In the Netherlands- 100% of fines are paid as the owner has to pay the fine no matter who was driving the car. This is also the case in France, however in other countries such as Germany and Poland, payment relies on the liability of the driver to come forward and identify themselves, it is not the responsibility of the owner.[52]

2. TRAFFIC CALMING MEASURES

Traffic calming devices such as road humps, chicanes and other road engineering measures are among the most effective method of reducing vehicle speeds in urban (and some rural) areas. In the U.K. they have been identified as able to reduce average speeds by 10 mph (16 km/h).[53]

Traffic calming devices cannot be applied everywhere, such as on major through-routes, especially if regularly used by the emergency services, ideal areas for applying such devices are in more rural locations.[54] Road markings can also be used to good effect for changing the nature and appearance of a road, and the speed at which people choose to drive. An example of the principles governing safe infrastructure design can be found in the Dutch' 'Sustainable Safety' approach, according to which a road network should integrate these core principles[55]

3. EU DIRECTIVE

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A further measure which will contribute to reducing speeds throughout the EU is the proposed Directive on road infrastructure safety management. This proposal was adopted in October 2005 and after discussions in the European Parliament, was finally adopted in 2008. The Directive aims to improve the road network by introducing an EU harmonised system of road safety inspection, management of high risk sites, road safety audits and safety impact assessment on the Trans-European Road Networks, accounting for 85,000 km of main roads. Member States will then also be able to apply these instruments to the rest of their road network.[56]

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[51] Nilsson, G. (2004). Traffi c safety dimensions and the power model to describe the effect of speed on
safety. *Lund Bulletin 221. Lund Institute of Technology, Lund.*

[52] ETSC (2007). *Raising compliance with road safety law, First Road Safety PIN Report*. Brussels.

[53] Mackie A. (1998). *Urban speed management methods.* Transport Research Laboratory TRL report
363, Crowthorne.

[54] DETR –Department of environment Transport and the Regions. (2000). 'New directions in speed
management: a review of policy'. London.

[55] SWOV (2006). The principles of Sustainable Safety.

[56] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport (pg 20)

4. SECTION CONTROL

Section control (as referred to in the 2006 OECD publication on speed management[57]), is a method of speed enforcement which involves a series of cameras installed over a stretch of road. An image and data are recorded for each vehicle as they enter and leave two points in the system (a section of road). The data is then used to calculate the average speed of the vehicle by dividing the distance between to points by the time taken to travel through them:

Distance / Time = Average Speed

The average speed is checked against the speed limit for that section, and if the average speed exceeds the speed limit, a fine or other sanction can be issued to the offender. In the late 1990s the Netherlands became the first country to implement this technology and a number of other countries are using it or have trialed it since (mostly in Europe).

Benefits:

- Section control encourages drivers to reduce their speed across an entire section of road and greater levels of behaviour changes can therefore be obtained.

- Section Control benefits from higher public acceptance compared to traditional cameras (Soole, 2009[58]; SUPREME, 2007[59]). The reason for this is that excessive speed detected at a single point on the road could be due to momentary lapses of concentration or the "need" to overtake a vehicle. Excessive "average speed" would therefore be a better indicator of speed limit violations than "point" speed measurements.

- Reduction of average speeds at or below the posted speed limit (Soole, 2009)[60]: In the Netherlands on a section of the A13 motorway, only 0.5% of vehicles were detected speeding after section speed control was put in use in 2002 (SUPREME, 2007)[61]

The United Kingdom is considering the possibility to introduce section control to enforce speed limits in 20mph zones. According to the Parliamentary Advisory Council for Transport Safety, one significant impediment to lowering speed limits and expanding the 20mph network (in both rural and urban areas) is that, at present, standard cameras are not type approved to enforce limits below 30 mph.

[57] OECD/ECMT, (2006). Speed management. Paris.
[58] Soole, D.W. Watson, B. (2009). Point-to-point speed enforcement: a review of the literature, Centre of Accident Research and Road Safety – Queensland.
[59] SUPREME, (2007). Thematic report: enforcement.
[60] Soole, D.W. Watson, B. (2009). Point-to-point speed enforcement: a review of the literature, Centre of Accident Research and Road Safety – Queensland.
[61] SUPREME, (2007). Thematic report: enforcement.

Traffic humps and chicanes are therefore used. However such traffic calming, while effective, can be unpopular, can increase some emissions locally, and can cause inconvenience to service and emergency vehicles.

For example: the British Social Attitudes Survey suggested that around three quarters of people support 20mph speed restrictions, including 72 per cent of drivers questioned. Only 43 per cent of drivers favour speed bumps, which can be necessary to enforce this low speed limit[62]. Depending on being given type approval for lower speeds, time over distance cameras may be used in the United Kingdom to enforce the speed limits even in 20mph zones.

The OECD publication on Speed Management[63] states that the system '*could also be used between the entrance and exit of a village or in 30Km/h zones*', this will give information on vehicles travelling directly between the two points.

5. EXAMPLES OF BEST PRACTICE

The following table shows some of the front running countries in speed enforcement throughout the EU. Some of the examples apply only to rural roads, while others apply to the general road network which includes rural roads.

Country	Best Practice	Impact
Netherlands[64]	***'Start-up programme Sustainable Safety'*** between the national government and the local authorities launched in the early 90s. The approach borrows from the sustainable development concept: that it is no longer acceptable to hand over an unstable traffic system to future generations. Many **infrastructure measures** were promoted: • 30 km/h and 60 km/h zones were created (down from 50 km/h and 80 km/h respectively), accompanied by low-cost speed reducing measures (speed humps; plateau…) • construction of roundabouts was carried on a large scale • road markings are installed to increase 'recognisability' (especially in rural areas) to inform the road users about the type of road they are driving on (which is linked to a speed limit). Other measures include: • Tighter sanctions since 1st of January 2006 'the more dangerous the behaviour, the higher the sanction' • Increased enforcement pressure (more inspections) • Penalty point system for novice drivers • very high number of automated speed check devices (1,700) • Development of Section Control radars which have been used there for over 10 years[65]	The implementation of 60km/h zones in particular has had a significant impact in terms of casualty reduction. It was estimated that in such zones road deaths were reduced by 67% in the period 1998-2003 and the number of hospitalised people by 32%.

[62] Crawford, E. (2008). PACTS Beyond 2010 - a holistic approach to road safety in Great Britain http://www.pacts.org.uk/docs/pdf-bank/Beyond2010Final.pdf
[63] OECD/ECMT, (2006). Speed management. Paris.

Country	Best Practice	Impact
Belgium[66]	**Strengthening of sanctions** for speed infringements introduced March 2006, also a stronger link between the 'dangerousness' of the infringement and the amount of the fine or the level of sanction. For serious speed infringements, the amount of the fine grows for each additional kilometer over the limit. The law has also recently been tightened for novice drivers. **New speed limits** introduced- 70 km/h zones outside built-up areas instead of 90 km/h.. **Safety cameras** in Flanders has increased over the last years and reached 350 cameras.	A significant drop in mean speeds between 2003 and 2005 Mean speeds are lower in Flanders
Switzerland[67]	In the mid 1980s rural roads maximum speed was lowered from 100 to 80 km/h. number of speed controls has doubled from 2002 to 2006 2006 about 203 million vehicles were checked for speed (Federal Office of Statistics, 2008a), 188 million with a fixed camera, and 14 million with a mobile safety camera. Every motor vehicle in Switzerland has been checked for speed 37 times. Rural road speed controls are only rarely conducted (about 3% of total controls). www.bfs.admin.ch/bfs/portal/de/index/themen/19/04/01/ind11.html	Frequency of speeding has gone down on all types of roads, particularly on motorways and urban settings The rate of fatal crashes (per million vehicles) for which the policeman believed speed to be a major cause has more than halved from the mid 90's to 2006.
Norway[68]	Digital cameras introduced recently. In the past cameras were operated only about 5-10% of the time because films had to be changed manually and processed at the police office. Digital pictures are automatically transferred to an office set-up for the processing of speed offences. Plans to increase 330 cameras to 400. A trial for the installation of section control was completed near the town of Lillehammer. This was designed to test the reliability of the technology and had a positive outcome. The introduction of such devices throughout Norway now awaits political approval. Speed limits were reviewed and changed on some roads in 2001, lowered from 90 to 80 km/h on 393 km of roads and from and 80 to 70 km/h on 741 km of road with a high number of fatal or serious accidents.	Mean speeds have diminished in the past few years. Lowering the limit from 80 to 70 km/h was associated to a reduction of 15% of the number of injury accidents and a reduction of about 25% of deaths.

[64] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport
[65] www.sustainablesafety.nl
[66] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport
[67] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport
[68] ETSC, Managing Speed: Towards Safe and Sustainable Road Transport

Table 1: Mean speeds and speed limit violations on rural roads. Sourced from *'Raising Compliance with Road Safety Law: 1st Road Safety PIN Report,'* pp.66-67[69]

Country	Year	Vehicle Type	Speed Limit (km/h)	Road Type	Mean Speed	Vehicles Exceeding Speed Limit (%)
Belgium	2005	Cars	70		74.6	58.9
	2005	Cars	90		88.6	42.3
France	2006	Cars	90	National Road	80.3	26.8
	2006	Cars	90	Departmental Road	84.5	37.3
	2006	Cars	110		100.4	27.1
Great Britain	2005	Cars	60 (mp/h) (96 km/h)		49.0 (mp/h) (78.9 km/h)	11.0
	2005	Cars	70 (mp/h) (112 km/h)		69.0 (mp/h) (111 km/h)	48.0
Norway	2006	All traffic	70		69.8	57.2
	2006	All traffic	80		78.1	44.8
Switzerland	2006	All traffic	80		72.0	16.0

[69] http://www.etsc.eu/documents/PIN_Report.pdf