INTRODUCTION

1.1 The County Council has introduced traffic calming measures at various locations throughout the County. Pedestrian priority in shopping areas, environmental improvements and road safety schemes which incorporate speed

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reducing techniques have all proved effective in controlling traffic and improving road safety and the living environment. There is now a need to expand on these initiatives, taking account of experience gained in Devon, the rest of the country and abroad. These guidelines set out the present position and give advice on the implementation of future schemes.

THE NEED FOR TRAFFIC CALMING

1.2 The quality of life in our towns and villages is under growing pressure from the increasing volume and use of motor vehicles. As more space is turned over to parked or moving vehicles, less space is available for other activities, while those activities that remain are subject to

1: Pedestrianised area of Plymouth creating a pleasant environment for shoppers and office workers. (Photo: Devon County Council)

2: Exeter High Street
before pedestrian
priority scheme. (Photo:
Devon County Council)

3: Exeter High Street
after pedestrian priority
scheme. (Photo: Devon
County Council)

4: Inconvenience for
pedestrians, the
so-called "severence
effect" of main roads.
(Photo: T. Pharoah)

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increasing dangers, noise and fumes. Many streets are now carrying volumes of traffic for which they were never intended and to which they are entirely unsuited. The high performance of modern vehicles can result in speeds and driving behaviour which is potentially dangerous and intimidating for vulnerable road users. Pedestrians, especially children, the elderly and those with a handicap, together with cyclists, are most affected and have almost literally been forced off the road. Many urban roads and other public areas can offer space for people to meet, rest and enjoy the open air and should not be places from which people retreat because of traffic.

1.3 The growing use of the car has also set in motion a vicious circle in which alternative means of travel become less used, less attractive and less viable, which in turn results in further dependence on the car. It is apparent that the full potential growth in car use cannot be accommodated even if such a course was desirable. Ways need to be found to limit the growth of traffic.

1.4 There is a need to change priorities in the way our streets and public spaces are designed and managed so that they can play a useful role and make life more enjoyable in towns and villages. Transport and traffic policy in built-up areas has to be aimed at improving safety and environmental quality rather than the accommodation of more and faster traffic.

However, the routes that carry the majority of traffic, including through trips, do require specific attention to enable them to perform their intended function. In Devon to assist in this process a strategy has been developed to deal with traffic congestion,

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5: Segregating traffic can at best be only a limited answer; at worst a pedestrian's nightmare. (Photo: T. Pharoah)

6: Service vehicles are an essential part of the commercial scene, and can mix with other street activities. Groningen, Netherlands. (Photo: T. Pharoah)

including the identification of peak pressure routes.

LIMITATIONS OF TRADITIONAL APPROACHES

1.5 The traditional approach to the problem of traffic in towns has generally been to cater for growing traffic while attempting to minimise the environmental damage. This is unsustainable in the long term while leaving major problems unsolved in the short term.

1.6 Attempts to segregate traffic from sensitive areas have been successful in particular cases (e.g. pedestrian shopping streets and village by-passes), but frequently residential and shopping streets have been pressed into service as traffic routes entirely out of keeping with their function and character. Segregation of traffic is often not possible, and cannot provide a universal answer. Traffic ultimately seeks access to the streets in which we live, work and shop, so ways need to be found to civilise or calm traffic especially in residential and shopping areas.

1.7 One-way streets, road closures and other traffic management measures can create inconvenient access to property. Traffic calming aims to maintain direct access whilst deterring "rat runs".

1.8 The design and appearance of streets has historically been influenced by the requirements of traffic engineering
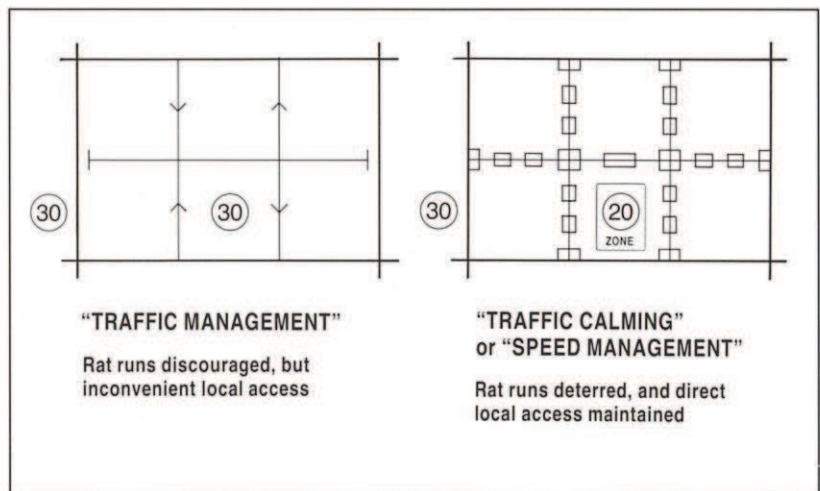

"TRAFFIC MANAGEMENT"

Rat runs discouraged, but inconvenient local access

"TRAFFIC CALMING" or "SPEED MANAGEMENT"

Rat runs deterred, and direct local access maintained

DIAGRAM 1.1 RAT RUNS AND LOCAL ACCESS

7: Townscape dominated by traffic layout, signs and markings. London. (Photo: T. Pharoah)

8: Surplus carriageway space is unsightly, and can encourage speeding and double parking. (Photo: T. Pharoah)

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geometry, traffic signs, and other street furniture. Some street space consists of carriageway which is surplus to what is useful to traffic, but which is sterile in terms of other possible uses.

1.9 The control of the speed of vehicles has been a problem in many situations. Blanket provisions of 30 mph or 40 mph speed limits are often not respected by a considerable number of drivers and effective enforcement places too great a demand on Police resources. Streets which have been laid out with generous dimensions allow rather than inhibit excessive speed. From a road safety viewpoint, there is a clear and unequivocal link between speed and the severity of accidents. In most urban streets speeds of 30 mph or more are inconsistent with road safety objectives whereas speeds lower than 30 mph generally result in less severe accidents. The chance of a pedestrian sustaining fatal injuries following a collision

30 mph

20 mph
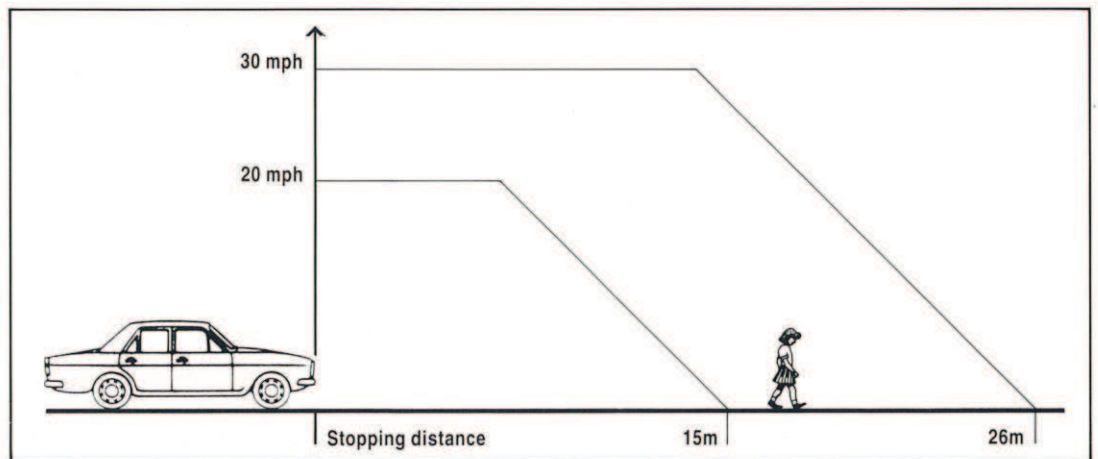
Stopping distance   15m   26m

DIAGRAM 1.2 SLOWER IS SAFER

is significantly reduced when vehicle speeds are below 20 mph. Comparative stopping distances for 20 mph and 30 mph are illustrated in Diagram 1.2 .

OBJECTIVES OF TRAFFIC CALMING

1.10 The term "traffic calming" is open to interpretation, but it conveys the basic objective, which is to reduce the adverse effects of road traffic. The approach is to adapt the volume, speed and behaviour of traffic to the primary functions of the streets through which it passes, rather than to adapt streets to the unbridled demands of motor vehicles. The immediate environment needs to convey to the motorist that it would be wholly inappropriate and anti-social to drive at other than a low speed.

1.11 Traffic calming techniques such as those described in these guidelines can directly improve the safety and environmental quality of streets in built-up areas and, in combination with other policies, can help to limit the growth of traffic and promote the use of alternative means of travel with the associated environmental benefits.

1.12 The main beneficiaries of traffic calming are those who live, shop and make their living in frontage properties, and also the most vulnerable people who use the area. The principal aim is to achieve driving speeds and behaviour that are in sympathy with non-traffic activities. This can be done by creating a more constant traffic speed at an appropriate lower level, minimising
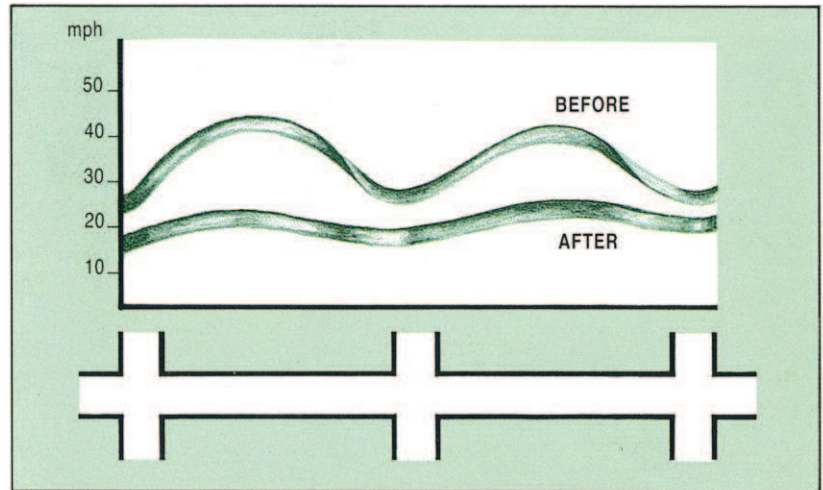
DIAGRAM 1.3 SPEED PROFILE BEFORE AND AFTER CALMING

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"The principal aim is to achieve driving speeds and behaviour that are in sympathy with non-traffic activities...."

9: In Bedford Street Exeter, traffic is restricted to vehicles requiring access. (Photo: Devon County Council)

braking and acceleration and thus reducing noise and pollution. The aim is also to discourage unnecessary vehicle intrusion into sensitive areas by using techniques that support and enhance the essential character of the area, and which avoid the clutter usually associated with traffic management techniques. Slower speeds also enable some traffic space to be returned to non-traffic

uses which can promote local economic and cultural life such as street cafes, street theatre and other open air activities. Traffic calming thus fits well with the concept of street enhancement, encouraging a sense of pride in the urban environment and discouraging litter and graffiti.

1.13 The objectives of traffic calming may be summarised as follows:-

- Improve safety and convenience for vulnerable road users, including pedestrians, cyclists and handicapped people
- Reduce number and severity of accidents
- Reduce noise and air pollution
- Provide space for non-traffic activities (e.g. rest and play)
- Enhance street appearance and reduce the number of traffic signs
- Provide more planting and greenery
- Promote local economic and cultural activity
- Implement improvements in public transport
- Achieve an overall improvement in the environment
- Discourage non-essential use of unsuitable routes by motor vehicles

SPEED/PRIORITY CLASSIFICATION OF ROADS

LIVING AREAS

Walking, cycling and other "living" functions have priority over motor vehicles.
Speed limits to be self-enforcing by the introduction of physical measures.

SUB 20 MPH AREAS
- Pedestrian areas (vehicles mostly excluded)
- Shared-surface streets with little traffic

20 MPH LIMIT AREAS
- Residential and other streets with no through traffic
- "Collector" streets connecting to the traffic areas, but not designated as through routes

MIXED PRIORITY AREAS

Areas where priority is shared between "living" and "traffic" functions including sections of through routes.

20 MPH OR 30 MPH LIMIT (PREFERABLY SELF-ENFORCING)
- Shopping areas, areas near schools, colleges, and other major generators of pedestrian traffic. The use of an area by vulnerable road users, e.g. school children, should weigh heavily in favour of a 20 mph speed limit (with necessary physical measures)

TRAFFIC AREAS

30 MPH LIMIT (NOT NECESSARILY SELF-ENFORCING)
- Signposted major access and through routes such as peak pressure routes where traffic function takes priority, but where vulnerable road users are to be protected
NB. Roads with speed limits higher than 30 mph not included.

TABLE 1

POLICY FRAMEWORK

1.14 The objectives of traffic calming can be realised through three principal measures, namely:-

- Reducing traffic speed
- Reallocating carriageway space to non-traffic activities
- Redesigning and enhancing the street environment

These measures usually involve permanent street works that may have effects beyond the particular street being treated, such as the displacement of traffic from one street to another. Wider transport and town planning considerations are inevitably involved and therefore it is essential that traffic calming is set within a coherent policy framework which needs to have regard to the financial and staff resource implications. The guidelines for "Urban Safety Management" produced by the Institution of Highways and Transportation is a valuable reference in the determination of the policy framework, giving advice on a structured approach to accident prevention and casualty reduction on urban roads.

1.15 A suitable framework can be provided by the re-classification of the roads in built-up areas. This classification should be based on "speed management" and the functions and sensitivity of the roads rather than on traffic function alone. 20 mph speed limit zones are relevant in appropriate situations. The recommended classification framework is shown in Table 1.

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10: In Exeter's High Street traffic is confined to mini-buses. (Photo: Devon County Council)

1.16 Unlike traditional road hierarchies, there is no need for the network of roads of any particular speed or set of priorities to be continuous, as illustrated in Diagram 1.4. Changes of speed limits, however, should be kept to a minimum to avoid a proliferation of signs.

1.17 The classification should be drawn up on the basis of existing and planned intentions for each road in the built-up areas. These need to take account of a range of transport and land use policy issues. Once established, the classification itself provides a framework within which these policies, including traffic calming, can be developed. The classification assists in the setting of design, maintenance and other standards, the allocation of resources, and the choice of appropriate traffic calming measures for each road. Decisions need to be taken on the design of new roads and new estates from the outset.

SPECIFIC POLICY ISSUES

1.18 Traffic calming is essentially a better way of resolving different and sometimes competing interests within the street, such as those illustrated in Diagram 1.5. This calls for an integrated approach within which individual policies can be developed. Specific policy issues which can be developed and reviewed in the light of traffic calming objectives and the speed management framework are briefly discussed below.

(a) Road Safety

1.19 The Government's Urban Road Safety Project identified the need for a strategy for the planning and implementation of road safety measures.

This strategy involves the definition of a road hierarchy enabling a degree of redistribution of traffic and safety improvements on selected roads which will result in improved conditions for vulnerable road users. The approach in Devon emphasizes that speed reduction and priority for vulnerable road users needs to be taken into account when determining road safety schemes. As an example, in the "living" areas, self enforcing 20 mph speed limits with supporting environmental improvements are an appropriate road safety technique. In "mixed priority" and "traffic" areas there needs to be a combination of innovative traffic calming measures and more conventional accident prevention treatments.

KEY

Living Areas
- Pedestrian and shared surface zones
- 20mph zones (individual streets not shown)
- 20mph collector roads

Mixed
- 20mph or 30mph mixed priority roads

Traffic Areas
- 30mph roads
- 40mph or more (non-urban)
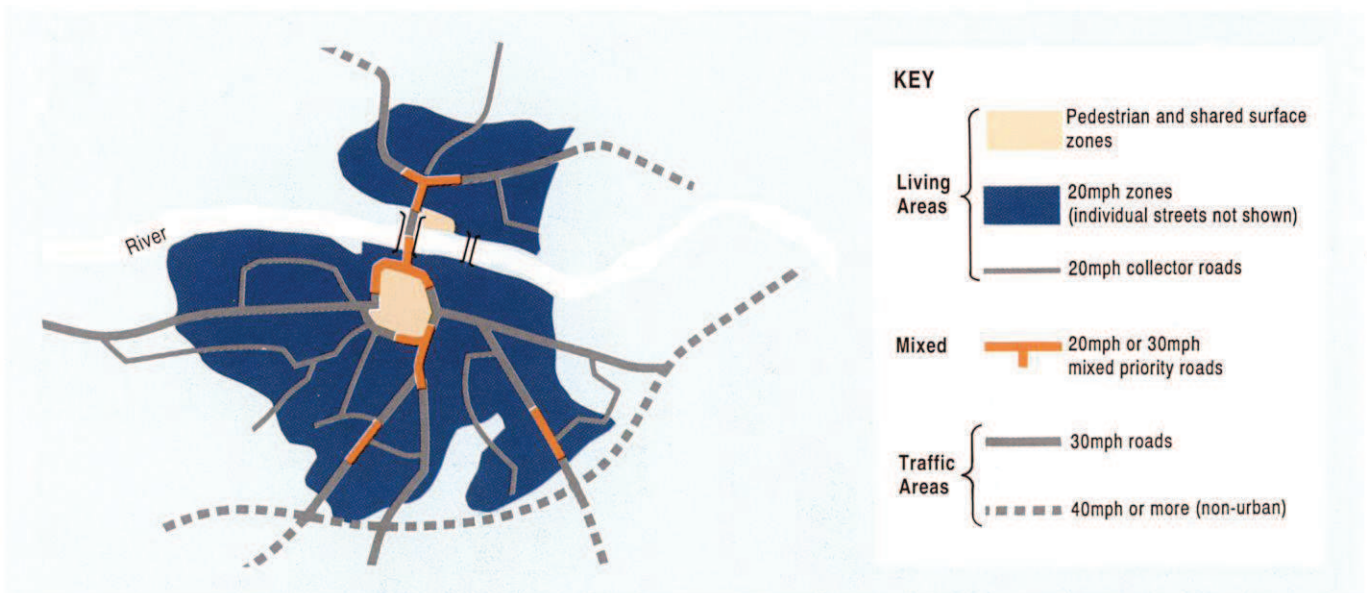
DIAGRAM 1.4 EXAMPLE OF ROAD CLASSIFICATION BASED ON "SPEED MANAGEMENT" FUNCTIONS AND SENSITIVITY

We want to shop here undisturbed

We want to go quickly and to get on and off the bus safely

I want to unload here

Where can I sit for a while?

We live here

We want to talk quietly

And where can I play?

I want to go safely, quickly and directly to my destination

I want to go fast and safely through here

I work here

We want to cross the street quickly and safely

DIAGRAM 1.5 COMPETING ACTIVITIES IN THE STREET

11: Burnthouse Lane, Exeter incorporates flat top humps, sheltered parking and well-defined cycle lanes. (Photo: Devon County Council)

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12: The Exe Cycle Route segregates cyclists from other vehicles to their mutual benefit. The route runs parallel to the Exeter canal for some of its length. (Photo: Devon County Council)

13: Lorries using unsuitable routes not only cause congestion but have a detrimental effect on the environment. (Photo: Devon County Council)

(b) Public Transport

1.20 The design of traffic calming measures needs to have regard for any requirements to give priority to public transport. The development of park and ride is also important, and relates well to traffic calming objectives.

(c) Traffic Restraint

1.21 Our streets can no longer be expected to accommodate all the potential traffic growth. Traffic calming strategies can help to limit growth in the "living" areas by discouraging the use of unsuitable roads by through traffic, can allocate priority between different road users in the "traffic" areas, and can contribute to other traffic restraint policies such as parking policy and provision for buses, cycles and pedestrians.

(d) Pedestrians and Cyclists

1.22 The road classification should take account of where pedestrians and cyclists need protection, and where they should be given priority over motor traffic. The further aim is to identify ways of encouraging these modes of travel as alternatives to the car, including the provision of special routes and other facilities. It may be desirable to prepare separate plans for the development of pedestrian and cycle route networks.

(e) Safe Routes to School

1.23 The reduction in child pedestrian casualties is a specific target of traffic calming. The road classification needs to take account of school routes, and local traffic calming schemes should pay special attention to the safety of these routes.

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14: The use of block paving and raised planters help to minimise the visual effect of these parked vehicles in Shilhay, Exeter. (Photo: Devon County Council)

15: Extended pavements, tree planting and seating create an attractive setting at The Plains, Totnes. (Photo: Devon County Council)

(f)   Lorry Control and Routeing

1.24 Lorries pose a particular difficulty in view of their environmental impact. The practical advice contained in "Lorries and Traffic Management" published in 1990 by the Civic Trust, County Surveyors' Society and the Department of Transport needs to be used to determine methods of reducing the impact of lorries while maintaining local accessibility.

(g)   Parking

1.25 Traffic calming schemes should include provision for on-street and other parking, but should not be devised solely to increase parking capacity. Planting and other features in traffic calming schemes should be used to reduce the visual intrusiveness of parked vehicles. Where parking demand is heavy, imaginative design is required together with appropriate regulations.

(h)   Environmental Enhancement

1.26 Traffic calming involves changing the way in which streets are used, and this means that people's perceptions of the street

environment also need to change. The appearance and design of streets therefore need to be enhanced to convey to drivers that slow speeds and tolerant behaviour are necessary, and to create a comfortable and attractive environment so that pedestrians, cyclists, residents and others are able to enjoy the new freedoms that traffic calming offers. Environmental enhancement is also necessary to secure public acceptance of the speed reduction measures and other changes. Within the "living" areas, slow speeds mean that generally the need for traffic signs and lane markings is reduced. In these areas design is influenced by the character of the surroundings, rather than by traffic requirements. In the "traffic" areas with speed limits of 30 mph or more, traffic regulations and standards continue to be necessary.

(i)   Economic Development

1.27 Areas free from the dangers and disruption caused by traffic have greater potential for economic growth and development. Pedestrianisation and the

calming of essential access routes can therefore be used as positive encouragement to shopping and other commercial activity.

(j) Planning Policy

1.28 Land use policy and development control and other planning activity such as housing improvement programmes can make a positive contribution to traffic calming objectives. As an example, land use which generates high traffic volumes should be located in relation to "traffic priority" roads. Traffic calming has an important part to play where buildings and activities are planned around the street frontage and the street block as positive urban features. Although traffic calming measures will be used primarily in existing streets, similar techniques may be applicable to new highway layouts which serve residential and retail developments. However with new developments the aim is to integrate all elements of the design. To obtain futher information on standards for new adoptable residential streets, together with general advice on layouts, it will be necessary to refer to the Devon County Council published "Residential Estates Design Guide". Further review of planning policies and practice with the District Councils may be appropriate to enable the full potential of traffic calming to be realised.

COUNTY COUNCIL TRAFFIC CALMING POLICY

1.29 The County Council has adopted the following traffic calming policies:

(a) Reduce the dominance of traffic in inappropriate streets through physical restraints and environmental enhancement measures

(b) Ensure that the needs of vulnerable road users receive priority and reorganise the street scene to accomplish this objective

(c) Incorporate traffic calming as an accident prevention measure wherever appropriate

(d) Develop public transport and park and ride schemes to cater for predicted traffic demands, and use SCOOT or electronic control systems to extract maximum capacity from the strategic urban network

(e) Ensure that essential lorry traffic is managed with minimum disbenefits to the environment

(f) All new developments should incorporate traffic calming measures where appropriate.