

## ENVIRONMENTAL IMPACTS & EVALUATION

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### 1. The Problem

Like most heavy industries, road traffic is a source of danger, dirt, noise and air pollution; but no other heavy industry is carried on in the streets where we live and work. No matter where we are, we can rarely escape the damaging effects of motorised road transport. These environmental problems are a powerful negative feature of urban life, causing many people to take themselves and their businesses to places away from the worst affected areas. Ultimately this process can destroy the vitality of compact towns and cities, and even villages, as it has in much of North America.

The improvement of traffic and environmental conditions thus is not an optional luxury, but an essential requirement to urban survival. The alternative will be a continuing drift to a car-dependent lifestyle which, whatever the immediate attraction for the individual, is unsustainable in the long run (See Pharoah 1992.) This paper therefore assumes a "pro-urban" stance, and sets out a traffic calming strategy within a broader planning framework.

### 2. Excessive speed or volume?

Even low volumes of traffic can cause problems in residential or shopping streets if drivers travel fast or aggressively, or if the street has hazardous design features. The main task of traffic calming is to reduce this impact by the promotion of slow and steady driving, and by more attractive and functional designs. However, the potential improvements to be gained from traffic calming are inversely proportional to the volume of parked and moving vehicles. In many places, especially the denser parts of our towns and cities, traffic calming alone cannot provide the full solution: traffic reduction will also be necessary.

### 3. Urban-friendly transport strategy

An "urban friendly" strategy must have three broad objectives:

1. Less travel (eg. planning and pricing measures to reduce distances),
2. Switch from car to other modes (using "sticks" to discourage car use, and "carrots" to encourage travel on foot, cycle and public transport),
3. Urban-friendly design (offering tangible safety and environmental benefits).

Total miles travelled by Britons is now four times greater than in the 1950s, the hey-day of rail and bus. It seems unlikely that public transport could ever be expanded to meet this level of demand. Measures will thus be needed to reduce the need for travel (Objective 1) with location planning being of key importance.

Meeting the full potential demand for car access in towns is neither desirable nor feasible. In order to improve economic as well as environmental conditions in towns, it will be necessary to reduce the proportion of travel undertaken by car (Objective 2). Some local authorities have adopted traffic "restraint" policies, but not one has yet put forward a policy for overall traffic **reduction**. Current restraint policies are incapable of securing such a reduction because they focus on only a limited segment of urban travel, namely peak travel to and from town centres.

Traffic calming is concerned primarily with Objective 3, but in turn may contribute to the other two. Traffic calming is an important technique for delivering benefits at street and local community level. It is not a complete answer to traffic or transport problems, but it is essential if the wider problem of urban vitality and viability is to be resolved.

We can summarise the benefits of traffic calming as follows:

- Less accidents
- Safe and comfortable streets
- Less noise and fumes
- Stronger economic and social communities.

#### 4. Traffic calming in Britain

Traffic calming is now an established part of transport policy in Britain and needs no further justification here.

Compared to other North West European countries, Britain was slow to develop the technique, but progress in the past two or three years has been rapid. Most highway authorities now have adopted some kind of policy or programme and have implemented local schemes. Some have a special budget for the purpose.

For most people, traffic calming is probably associated with the speed hump. Other techniques (chicanes, optical narrowing, etc.) are less commonly found. Gradually, streets are being redesigned to make life easier for pedestrians and other users. Main roads as well as residential streets are beginning to feature in traffic calming plans. However, most schemes are aimed at reducing accidents, and other objectives have been secondary if not absent.

Despite the progress made, traffic calming remains the exception rather than the rule. It is therefore appropriate to consider what direction future policy might take. The author was involved in the first area-wide examination of traffic calming possibilities in London ("ELAS", Ove Arup, 1989), and subsequently with the development of traffic calming strategies for Devon County and the City of Birmingham (Devon C.C. 1991 and MVA 1992). What follows is derived from that work.



## 5. Scenario for traffic-calmed towns

What would our towns, cities and villages be like if they were fully traffic-calmed? Roads and streets would be graded not only by their traffic significance, but also by the other activities which take place in them. This grading would be expressed in terms of the priority accorded to different street users, and the maximum speed of motor vehicles, and would be reflected in the overall street design. This may be referred to as the "speed management" approach, an example of which appears at the end of this paper.

The whole urban road network would be classified as follows:

LIVING PRIORITY	20 mph streets where priority is given to residential or other street activity.
MIXED PRIORITY	20 - 30 mph sections of main traffic roads with shopping or other important non-traffic activity.
TRAFFIC PRIORITY	30 mph roads where traffic movement has priority, but where vulnerable road users are protected.

The great majority of the network (80-90% of urban roads) would fall into the first category. Physical measures would be needed at frequent intervals to ensure self-enforced slow and steady driving compatible with pedestrian and other activity. Environmental enhancement would be important to reinforce the change of priority and to gain its acceptance by all road users.

The main traffic routes would fall into one of the other two categories, depending on the intensity of frontage activity. Most of their length would be "**traffic priority**". Provision would be made to protect pedestrians and cyclists. Buses and perhaps goods vehicles would be accorded priority in the flow of traffic. The usual 30 mph speed limit would apply.

Those sections of main road with intense frontage activity, mostly shopping centres astride the main road would become "**mixed priority**" areas. Speeds would be lower and vehicles passing through would have to relent to pedestrians, cyclists, turning traffic, buses, vehicles loading and parking, and so on. The ELAS study indicated that about 10% of main roads would require such "mixed priority" status.

## 6. Traffic calming in villages

Many villages lie astride busy main roads where traffic causes severe environmental damage, and divides the community in two. Sometimes a by-pass can help, but there will always be literally thousands of small settlements where this is not an option. The answer is to introduce traffic calming measures that will reduce the speed and intrusiveness of vehicles, to achieve "mixed priority" as described above. Two research projects are currently being sponsored by the Department of Transport, one for six by-passed towns, and one for villages without by-passes.

## **7. Is it feasible?**

The total cost of traffic calming on the model outlined above could be in the region of £5 billion (or £100 per head). Spread over an implementation period of 10 or 15 years, this seems a reasonable investment to rid ourselves of the worst environmental excesses of urban traffic, and could be financed by diverting 25% of the money from the national roadbuilding programme.

Achievement of the full range of traffic calming benefits will require less emphasis on simply accident reduction, and more concerted efforts to include environmental enhancements as part of scheme design. This will require a stronger input from urban and landscape designers, and a change of grant rules to allow funding of features not directly associated with reducing accidents.

## **8. Evaluation of traffic calming**

Experience from several countries (including 20 mph zones in England) leads us to expect a reduction of serious and fatal road injuries of at least 50% in urban areas (about a third of the total). Vulnerable road users, including pedestrians, cyclists, children and elderly, benefit in particular. Not counting other benefits, this alone would be likely to produce an economic return on traffic calming investment.

A reduction of traffic speeds from 30 mph to 20 mph can produce a reduction in roadside noise of 3 - 5 dbA, equivalent to a halving of traffic volume. Exhaust emissions will also be reduced providing that a calm style of driving is achieved. Traffic calmed areas will prove to be more attractive to business, especially business relying on local custom.

The real test, of course, is public opinion. Well-designed traffic calming schemes implemented with involvement of the "end-users" have proved popular in almost every case. A majority of car drivers also approve where the overall benefits are clear.

## **9. Conclusion**

The benefits of traffic calming are now widely accepted and schemes are being introduced in many towns. Traffic calming should be seen as part of a wider strategy which includes less car travel, promotion of the town-friendly modes, and environmental improvements. Such a strategy is not a luxury, but a necessity in the fight to retain the vitality and appeal of urban life.

The change of priority implicit in the adoption of a traffic calming strategy should be reflected in a change of spending priorities. The scenario of comprehensive traffic calming described in this paper can be achieved with a quarter of the funds currently planned to be spent on enlarging the inter-urban road network. The sum of benefits would, in the author's judgement, be greatly increased by such a change.



## REFERENCES

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### EXAMPLE OF "SPEED MANAGEMENT" FRAMEWORK

