

# Chapter 25 Management of Heavy Goods Vehicles

## 25.1 Introduction

An efficient system of road freight transport is essential to the national economy. Industry and commerce, shops and offices all depend on a complex flow of raw materials, components and finished goods. Yet lorries often have a negative image and can cause nuisance such as noise, environmental intrusion and damage to infrastructure. This has led to the development of a wide range of lorry management techniques, aimed at mitigating such nuisance.

It is now generally recognised that it is physically and economically impossible to build new roads to solve all the environmental and operational problems now facing transport. Nor is it possible to reduce, significantly, the number of lorries on our roads by shifting freight to alternative modes, notably railways. However, in many cases, lorry problems can be alleviated by relatively low cost management schemes. The approach to lorry management tends to vary from place to place, in recognition of the local economic situation and quality of the environment. While this is to be expected, consistency of approach is important, in terms of problem-identification and assessment of possible solutions, in a manner which recognises both the impact of lorries on the community and the needs of commerce and the freight transport industry.

Lorries are now quieter, safer and less polluting than ever before, because:

- engine noise has been reduced to half the levels of ten years ago;
- air brake silencers are now standard equipment on most new lorries and recent EC legislation has reduced permitted compressed air noise even further;
- better brakes have improved safety and manoeuvrability;
- more sophisticated suspensions have reduced roadwear and, coupled with better body design, lowered body noise levels;
- lorry exhaust emissions have been radically reduced – and further improvements are on the way; and
- vehicle manufacturers and operators are striving continually to improve safety and reduce the environmental impact of lorries. Their achievements have been impressive but they recognise that lorries must be made even safer and more environment friendly.

## 25.2 Legislative Framework and Responsibilities

Lorry weights and sizes are regulated by the Road Vehicles (Construction and Use) Regulations 1986 (HMG, 1986) [NIa]. The maximum permitted weight for general use on roads in the UK is 38 tonnes. However, since March 1994, lorries up to 44 tonnes, with six axles and road friendly suspension, have been permitted for use in combined transport operations, ie moving freight to or from a railhead prior to or after transport by rail. In December 1996, the Government published a consultation document seeking views on proposals to permit 44 tonne lorries for general use in the UK (DOT, 1996). A fully laden 44 tonne vehicle, on six axles, with road friendly suspension, with a 10.5 tonne axle weight limit and with adequate minimum axle spacings would cause no more road or bridge wear than most 38 tonne, five axle vehicles already allowed on UK roads, and considerably less wear than the 40 tonne, five axle vehicles which will be allowed on the roads from 1 January 1999 under EC Directive 85(3).

Many, but not all, of the measures which can reduce the environmental impact of lorries require legal procedures to be followed for their implementation. The relevant Acts of Parliament and Statutory Instruments should always be consulted for precise detail. For example, sections 6 and 1 of the Road Traffic Regulation Act 1984 (HMG, 1984) deal with traffic regulations in Greater London and elsewhere, respectively. Section 2 provides for the types of 'amenity' control on goods vehicles, which a local authority may introduce [NIb]. These include:

- control of 'through' routes used by heavy commercial vehicles; and
- prohibitions or restrictions on the use of heavy commercial vehicles (subject to specified exceptions) in such zones or roads "...as may be considered expedient for preserving or improving the amenities of their area or of some part or parts of their area".

A 'heavy commercial vehicle' (HGV) is defined in section 138 of the Act as any goods vehicle with an operating weight (ie gross permitted weight) exceeding 7.5 tonnes [NIc]. Section 138 should be consulted, if necessary, for further definitions of 'operating weight' in relation to articulated vehicles,

solo articulated tractor units and drawbar-trailer combinations (ie a rigid lorry drawing a separate trailer).

Control of through routes relates to 'positive' routeing; ie specifying mandatory through routes for lorries. However, experience has shown that mandatory positive routeing networks are not very practical; signing requirements are extremely complex and drivers' understanding and compliance are likely to be poor. For this reason, lorry control Orders now invariably rely on 'negative' routeing; ie specifying roads and zones which are prohibited to lorries but subject to exemptions, such as for loading or unloading. Also, the designation of 'advisory routeing' for lorries is now common-place (see Section 25.9).

Section 3 of the Act provides that an Order must not prevent access to premises by vehicles for more than eight hours in 24, subject to certain exclusions [NI<sub>d</sub>]. These include Orders where the objective is to preserve or to improve the amenities of an area, by prohibiting or restricting the use of heavy commercial vehicles on a road or roads in the area.

When exercising their powers to control lorries, local authorities must have regard to their duties under section 122 of the Act [NI<sub>b</sub>]. These duties are:

- to exercise their powers (so far as is practicable, having regard to the matters specified below) to secure the expeditious, convenient and safe movement of vehicular and other traffic (including pedestrians) and the provision of suitable and adequate parking facilities on and off the highway.

Due regard must be paid:

- to the desirability of securing and maintaining reasonable access to premises; and
- to the effect on the amenities of any locality affected and the importance of regulating and restricting the use of roads by heavy commercial vehicles, so as to preserve or improve the amenities of the area through which the road runs.

Orders may provide for the prohibition or restriction of waiting, loading and unloading.

Section 61 of the Act provides for the designation of land, which is not part of a highway, as a 'loading area' [NI<sub>d</sub>]. This can usefully be employed when off-street delivery or service areas are obstructed by unauthorised parking. However, an Order requires consent by the owner and occupier of the land and this may not always be readily forthcoming because of existing use.

Section 9 of the Act enables authorities to implement experimental Traffic Orders, for a maximum period of 18 months [NI<sub>e</sub>]. In general, an experimental Order can make any provision for any purpose specified in relation to permanent Orders under sections 1 and 6. Schedule 9 includes provisions which require consent by the Secretary of State for certain Orders, including Orders (except in Greater London) preventing access to premises for more than eight hours in 24.

The Local Authorities' Traffic Orders (Procedure) (England and Wales) Regulations 1996 (HMG, 1996e) [Sa] describes the statutory procedures to be observed by authorities when exercising their powers to make Traffic Orders (see also Chapter 13) [NI<sub>f</sub>]. The regulations are complex but the key requirements are [NI<sub>g</sub>]:

- for proposed Orders, authorities must consult with organisations representing persons who use any road to which the Order relates or are otherwise likely to be affected. The Freight Transport Association and the Road Haulage Association are among the consultees who must be consulted in relation to all proposed traffic Orders (see Chapter 13) [NI<sub>h</sub>];
- details of proposed Orders must be published in the London Gazette [NI<sub>d</sub>] and local newspapers;
- all objections must be considered;
- if Orders are made despite objections, the objectors must be notified in writing, with the reasons why their objections have been over-ruled; and
- a public inquiry must be held if there are unwithdrawn objections to an Order which would prevent access to premises or loading or unloading, unless wholly within peak hours [NI<sub>i</sub>]: ie 07.00 to 10.00 hrs and 16.00 to 19.00 hrs.

Many of the above requirements are relaxed for minor or experimental Orders. The regulations should be consulted for further information.

The Traffic Signs Regulations and General Directions 1994 (HMG, 1994) authorise a range of signs including those for lorry controls [NI<sub>j</sub>]. For amenity controls, the 7.5 tonne sign to diagram 622.1A, as specified in HMG (1994), is most commonly used. The only permitted variant is 17T. Sign 622.2 should be used to indicate the end of a lorry control indicated by a 622.1A sign. Signs to diagram 618.2 in HMG (1994) can be used to indicate loading exemptions for goods vehicles in pedestrianised areas. Diagrams 629, 629.1 and 629.2 indicate, respectively, signs for width, length and height restrictions.

Diagram 625.2 indicates a 'weak bridge' weight limit and 627.1 the supplementary plate, 'except empty

vehicles'. The Department of Transport recommends that authorities use the empty vehicle exemption for all weak bridges with a capacity of 17T and above (DOT, 1994a). The permitted variants for 'weak bridge' signs are: 3T, 7.5T, 10T, 13T, 17T, 25T and 33T, as set out in the General Directions (HMG, 1994). Signs to diagram 665 and 666 indicate the entrance to, and exit from, a controlled lorry parking zone.

## 25.3 Lorries and Operator-Licensing

The Goods Vehicles (Licensing of Operators) Act 1995 (HMG, 1995) provides for a comprehensive system of goods vehicle operator-licensing, founded on safety and environmental considerations [Nik].

An 'operating centre' is the place where a lorry is normally kept when not in use. References to a particular operator's operating centre(s) mean the place or places, specified in the operator's licence, where the vehicles specified on it are normally kept. An operator's licence must be held by the operator of any goods vehicle over 3.5 tonnes maximum gross weight, unless exempt. In practice, the 'operator' is usually the person or company who employs the driver.

Once a licence has been granted, its renewal is necessary only if the operator wishes to increase the number of vehicles authorised or to alter any conditions, on it. Traffic Commissioners can discipline operators, at any time, if they fail to observe any of the statutory requirements (eg regarding maintenance) or breach conditions placed on a licence. Local residents, who are adversely affected by an operating centre, can make representations to the Traffic Commissioners [Sb] at any time [NII]. Unless representations relate to alleged breaches of statutory requirements or licence conditions, they are considered at a five-yearly review of the licence. If significant environmental difficulties emerge, the Traffic Commissioners [Sb] may convene a Public Inquiry.

Statutes prescribe a number of bodies, including local authorities, who can object to the granting of a licence, on specified grounds.

## 25.4 Planning Conditions

Goods vehicle operator-licensing is not related to planning law. The two processes are entirely separate. A Traffic Commissioner [Sb] can only control licensed vehicles. He cannot control vehicles smaller than 3.5 tonnes gross nor can he control vehicles which merely visit a site.

It has been common practice for many authorities, sometimes by mutual agreement with an operator, to impose routeing conditions or accept undertakings, relating to planning consent for new developments – typically new or extended quarries. The legality of such conditions has always been unclear. However, in 1994, the Secretary of State issued an important direction, in which he ruled as 'inappropriate': "...the establishment of an approved route in respect of heavy goods vehicles associated with the operation of the quarry and with the removal of minerals from the land ...neither conditions nor planning obligations can lawfully control the right of passage over public highways" (DOE, 1994).

## 25.5 Lorries: Benefits and Environmental Effects

The overwhelming reliance on lorries for the movement of goods is hardly surprising, given the door-to-door flexible and cost-effective service offered by lorries, coupled with the relatively short distance of the average freight trip in the UK (89km in 1995).

While car traffic in urban areas continues to increase, total lorry traffic remains largely unchanged. During the period 1983–93, car traffic on urban roads increased by 12% from 57.9 to 65.0 billion vehicle-km. During the same period, lorry traffic remained constant at 3.8 billion vehicle-km. However, the mix of urban lorry traffic has changed substantially. Development of 'just-in-time' distribution systems by industry, with consolidation of suppliers' deliveries at out-of-town regional distribution centres, has eliminated many town centre lorry trips by individual suppliers. However, this reduction in urban lorry traffic has been off-set by a substantial increase in small- and medium-sized goods vehicles, reflecting economic growth in the service industries.

Although the total number of heavy lorries registered in the UK has declined gradually for many years, their average permissible size and weight has increased and there is continuing public concern about their effect on the environment, on people and on local communities. Complaints are made about noise and exhaust emissions and pedestrians, cyclists and car drivers feel that their safety is threatened. These problems are perceived at their worst when lorries use unsuitable roads, often because there is no adequate alternative.

Industry itself is well aware of the environmental effects of lorries and much effort is devoted by many companies to minimising those effects in their

operating practices. Vehicle manufacturers are continually improving vehicle-design, to make lorries safer and more environment friendly. Improvements in tyres, suspension, brakes, fuel-technology, exhaust emissions, engine-noise and body-design have made a major contribution to reducing the environmental impact of lorries. The Road Vehicles (Construction and Use) Regulations 1986 (as amended) (HMG, 1986) prescribe stringent design and in-use requirements to limit environmental nuisance [NIa]. The statutory operator licensing system extends to the environmental as well as the safety aspects of lorry operation.

However, there are still opportunities to manage the movement of lorries by using regulatory controls, traffic management techniques and advisory and voluntary routeing agreements. These measures are described below.

## 25.6 Evaluation of Lorry Controls

An objective cost-benefit and environmental assessment should always be undertaken, at the planning stages, for all but the smallest lorry control schemes. The assessment should take account of both the net environmental benefits and the additional operating costs incurred by industry. More detailed advice is available in the following works:

- ❑ Lorries in the Community (DOT *et al*, 1990a);
- ❑ Lorries and Traffic Management (DOT *et al*, 1990b);
- ❑ Lorry Management Schemes (IHT, 1981); and
- ❑ Code of Practice for Highways and Traffic Management in London (ALBES *et al*, 1985).

Whenever lorry management measures are being planned, early consultation with affected operators and their representative bodies (notably the Freight Transport Association and the Road Haulage Association) is vital. The wider effects of all schemes should be assessed beforehand and monitored afterwards, to ensure that localised problems have been alleviated and not merely displaced elsewhere.

Further information on economic and environmental assessment techniques is given in Chapters 9 and 17.

## 25.7 Strategic Lorry Plans

The proportion of lorries in a large conurbation that are on through trips is generally small. Consequently, strategic area controls of the type suitable for smaller towns are not usually effective in reducing overall environmental disturbance in conurbations, because through vehicles will simply re-route into adjoining areas. A ban on vehicles passing through the whole

conurbation would affect only a very small proportion of total flows.

Successful strategic lorry-routeing controls depend upon the existence of a network of purpose-designed roads which are able to accommodate increased lorry flows, ie lorries displaced from environmentally sensitive roads. Experience suggests that strategies which concentrate lorry nuisance on a small number of roads, some of which are sensitive, may not be acceptable. The roads identified for an urban lorry network are likely to be busy roads with poor existing environmental conditions.

## 25.8 Positive Assistance for Lorries

Lorry management is not only about regulating, restricting or banning lorries. It is also about positive initiatives to assist lorry access to, and circulation within, urban areas for essential freight movements. Generally, the more efficiently industry can operate its lorries, the fewer are needed. Conversely, the inefficiency and unreliability of many urban road networks, coupled with over-restrictive control measures, can generate increased lorry traffic as industry strives to maintain service to customers. Positive assistance to lorries will usually yield environmental as well as economic benefits. For example, where obstruction is caused by lorries loading or unloading, in unsuitable places, positive measures might include:

- ❑ the provision of off-street servicing (potentially costly but should not be ignored by default as a possible option);
- ❑ the designation of laybys, or localised widening using the loading bay sign (Figure 25.1), which also prohibits parking by Orange Badge holders;
- ❑ revised regulations for the times of waiting or loading; and
- ❑ enforcement of kerbside car parking regulations, violations of which often cause delivery drivers to double park.

Low cost improvements can often reduce or eliminate, difficulties caused by lorries negotiating a sub-standard junction (see Figure 25.2). For example, Newcastle City Council has introduced a shared



Figure 25.1: Loading bay sign.

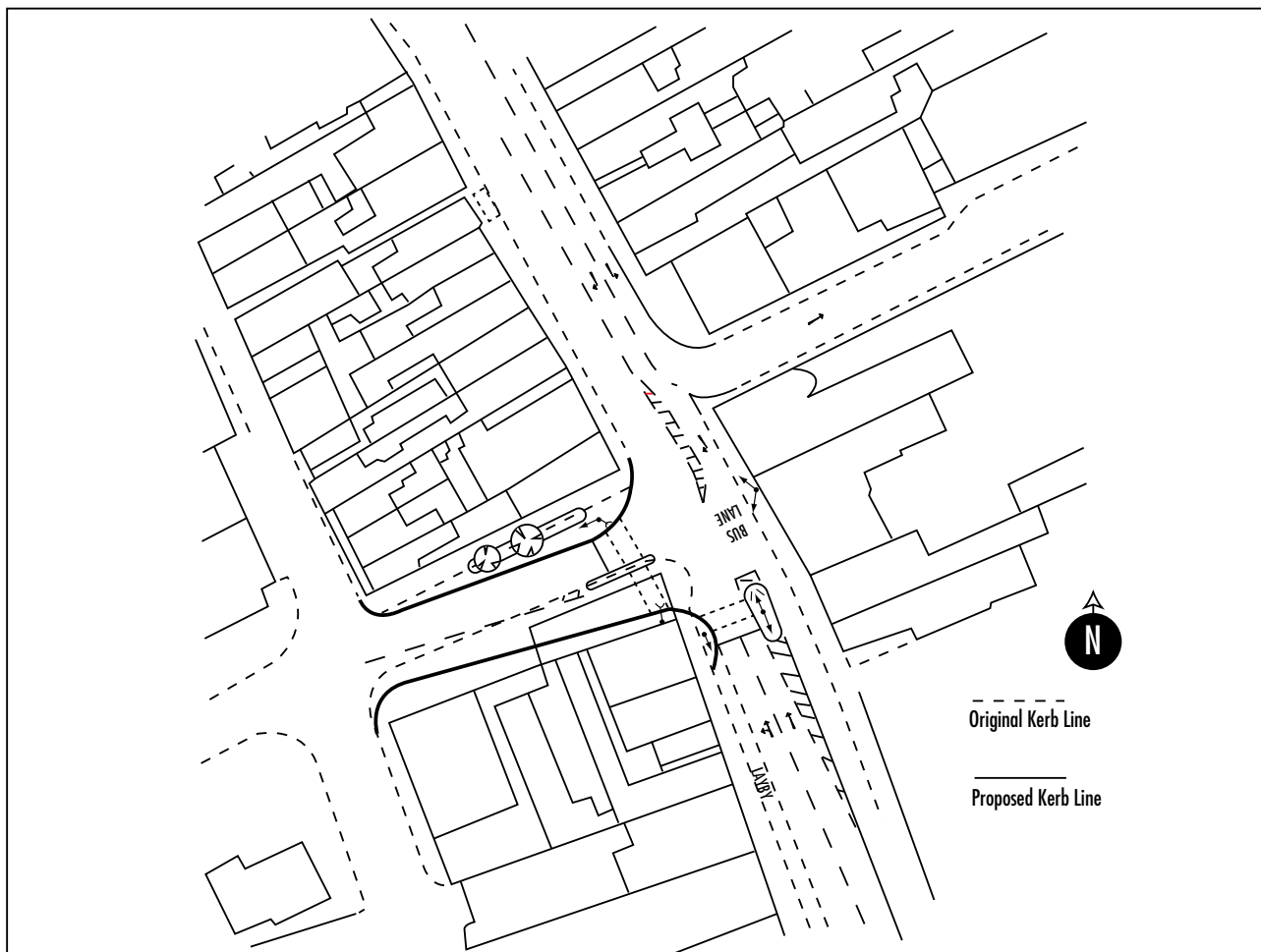


Figure 25.2: Example of low-cost junction improvement to assist lorry operation.

bus/lorry priority (no-car) lane (at Barras Bridge in the city centre) to facilitate essential passenger and goods movements (see Chapter 24). The lane functions well and others are planned on major radial routes. In London, no-car lanes are under consideration for certain locations on the developing priority (red) route network. Where bus usage is likely to be insufficient to justify an exclusive bus lane, a shared-priority lane for buses and lorries can sometimes provide a viable alternative (see Photograph 25.1).

## 25.9 Non-Regulatory Controls

The national primary route network is clearly the national advisory route network for use by lorries and other long-distance traffic. The DOT leaflet *Commercial Vehicle Drivers: Know Your Traffic Signs* (DOT, 1995) contains the following advice:

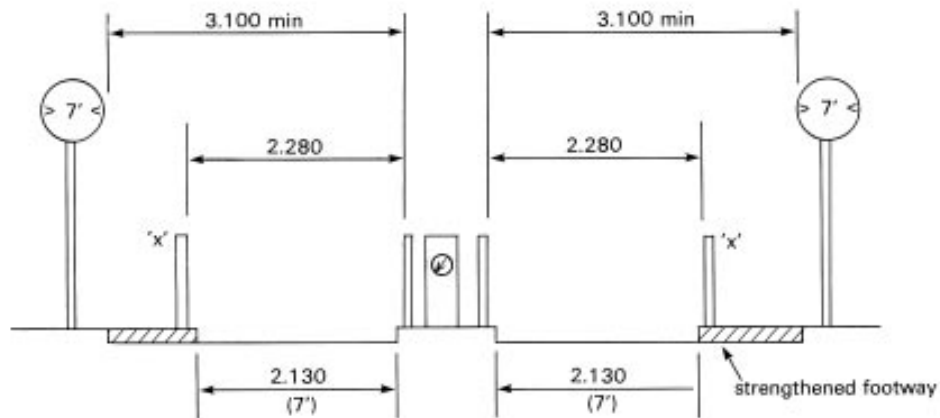
“Away from motorways, the best routes for commercial vehicles are the primary routes. These form a national network between towns and can easily be recognised by their distinctive green signs

...on a long journey, away from the motorway (network), use the green signs”.

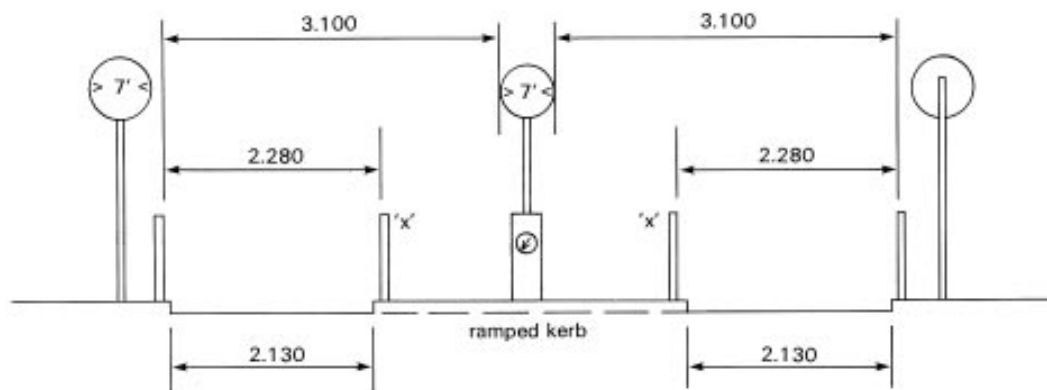
Traffic management on primary routes, therefore, should be consistent with their role as commercial vehicle routes.

Off the primary route network, the signing of preferred routes for lorries, using the ‘white lorry’ sign, may provide a simple solution, particularly where the problem is of environmental intrusion by long-distance traffic passing through built-up areas. If the majority of lorries passing through are engaged on local journeys, an unacceptable time/distance penalty may be incurred by diverting them on to the alternative route and compliance will be poor.

A number of authorities have introduced local advisory routeing schemes, to identify preferred routes for lorries servicing town centres, industrial estates, retail parks and other significant generators of lorry movement (see Photograph 25.2). Typically, the area concerned is divided into zones, with the preferred routes serving each zone codified by letter, number, symbol or colour and signed accordingly. For



A: for carriageway width 5.100m–7.500m



B: for carriageway width 7.500m–9.000m

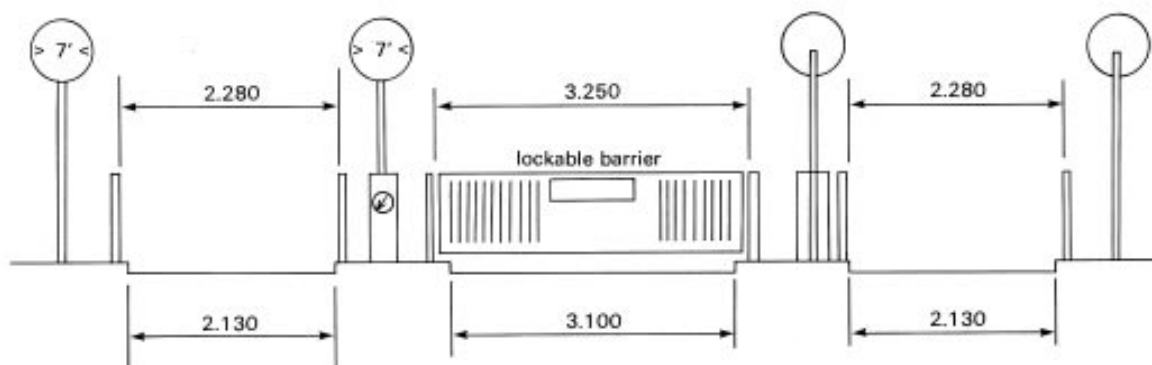


Fig. C: FOR CARRIAGEWAY WIDTH OVER 9.000m

- Notes (i) 'x' = removable/collapsible steel bollard
- (ii) A clear width of 2.280m between bollards permits an ambulance to pass without the attendant having to leave a casualty to unlock the barrier.
- (iii) Further details of width instructions are given in the Code of Practice for Local Authorities/Emergency Services available through ALBES.

Figure 25.3: Typical layouts for width restrictions.

Source: ALBES *et al* (1985).



Photograph 25.1: A priority lane shared by buses and goods vehicles in Newcastle upon Tyne.

maximum benefit, such schemes need good publicity in the form of maps and leaflets and full co-operation by local firms in advising their suppliers.

Although physical barriers are non-regulatory, in the sense that they are self-enforcing, they require a supporting Traffic Regulation Order (TRO) if placed on the highway, because they have the effect of preventing the passage of vehicles otherwise lawfully allowed (see Chapter 13).

The simplest physical measure is a height-limiting barrier, although this is normally used only to give advance warning of physical restrictions ahead (eg a low bridge). It can, however, be useful when placed at the entrance to a car park or other off-street location, to prevent access by oversized vehicles. Sometimes, an automatic warning system is provided at low bridges, with a sign activated by a height-detector unit. Physical width-restrictions, authorised by Orders under the Road Traffic Regulation Act 1984 (HMG, 1984) may be used to narrow the carriageway to less than 2.5m at selected points, to prevent the passage of large vehicles (a 2.28m clear width between posts is often used) [NIm]. Figure 25.3 shows a number of typical layouts. The method of construction, using, for example, bollards or planting boxes, needs to be particularly robust to withstand a certain amount of abuse. Especially in the early stages of introduction, drivers who have not seen, or have chosen to ignore, the associated warning signs may try to squeeze through. It is usually necessary to locate such a width-restriction adjacent to an existing junction, which can then be used as a turning-head for those drivers who have not complied with the warning signs (Photograph 25.3). Width-restrictions can



Photograph 25.2: Local advisory signs for lorries.

effectively create culs-de-sac without turning space, so that large vehicles can become trapped and may have to reverse for long distances. It is therefore important that they are located intelligently and signed well in advance.

Other problems are associated with physical width-restrictions. They are inappropriate for bus routes and can be detrimental to normal servicing requirements, particularly of refuse vehicles, furniture removal vans and fuel deliveries. Although ambulances will normally be able to pass a width-restriction, fire appliances will usually be prevented and the additional distance for emergency vehicles may have important consequences. It is possible to provide a lockable barrier or removable bollards for fire appliances but this does increase journey time unless it is operated automatically. Whenever width-restrictions are contemplated discussions should be held with the emergency services at the earliest stage.

The Traffic Calming Act 1992 (HMG, 1992) amended the Highways Act 1980 (HMG, 1980) [Sc] with new provisions, allowing works to be carried out '...for the purposes of promoting safety and preserving or improving the environment' [NIn]. A wide range of physical measures is now available to reduce the environmental impact of traffic, including chicanes, humps, speed-control tables and carriageway-narrowings. Authorities should note that the Highways (Traffic Calming) Regulations 1993 (HMG, 1993) [Sd] state specifically that [NIc]:

"No traffic-calming work shall be constructed or maintained in a carriageway, so as to prevent the passage of any vehicle, unless the passage of that



Photograph 25.3: A typical width–restriction with a gate for use by emergency vehicles.

vehicle is otherwise lawfully prohibited.”

Therefore, if the intention is physically to prevent the passage of lorries, a Traffic Regulation Order is required. The DOT has published advice for authorities wishing to implement traffic-calming schemes (DOT, 1993a [Se], 1993b [Sf] and 1994b) (see also Chapters 13 and 20).

## 25.10 Regulatory Controls

The Road Traffic Regulation Act 1984 (HMG, 1984) contains wide-ranging powers for local authorities to regulate traffic, either generally or in relation to particular classes of vehicle [NIm]. For many years, local authorities have taken powers under the Act to protect sensitive or weak parts of the highway infrastructure from the effects of heavy lorries, for example, prohibiting them from using weak or low bridges, using both regulatory and advance warning signs.

In 1987, the Government commenced a fifteen year programme to assess and, where necessary, strengthen bridges, in view of the impending introduction of 40 tonne lorries in the UK from January 1999 (under EC Directive 85(3)) and to ensure the network’s continuing ability to accommodate, safely, the increasing demands of traffic growth. However, the programme is substantially behind schedule, on both trunk and local roads and many local authorities have expressed concern about the economic and environmental implications, if widespread weight restrictions have to be imposed on bridges, pending adequate funding for their strengthening.

Each year there are around 1,000 bridge strikes by overheight vehicles or loads. While many such strikes cause little damage, some cause great damage to bridge structures, posing serious hazards to rail and road users

and imposing heavy costs of delay and disruption.

New legislation is likely to be introduced in 1997, which will require all lorries to carry a prominent notice in the cab indicating the overall travelling height of the vehicle (or, where relevant, its load) if over 3 metres. Special warning devices will be required on vehicles fitted with power-operated high-level equipment, such as lorry mounted cranes, skip carriers and tower wagons.

In 1973, the legislation was extended by the Heavy Commercial Vehicles (Controls and Regulations) Act 1973 (HMG, 1973) (which amended the Traffic Regulation Act 1967 – now RTRA 1984) to include environmental considerations. Regulatory signs are available to limit the weight, width and (less commonly) the length of vehicles in unsuitable areas ( see Section 25.2).

While a Traffic Regulation Order must be used to reinforce physical measures, the aim should always be to achieve compliance by good design and drivers’ understanding. Relying solely on statutory controls can impose a heavy burden on police manpower. The simplest form of restriction to affect heavy vehicles is a prohibition of on–street loading and unloading, as well as parking, introduced, usually, to maintain traffic flow on important routes. Where there are consequences for servicing frontage premises, such restrictions are usually introduced only in peak traffic hours. A high proportion of urban deliveries and collections take place in the morning, so it is important that loading and unloading bans are not unduly restrictive. They should be the minimum necessary to avoid peak–hour traffic disruption. Wherever possible, loading and unloading should not be prevented before 08.00, as the 07.00 hrs to 08.00 hrs period is critical for many urban delivery operations.

Overnight on–street parking of lorries is generally undesirable, particularly in residential areas. Under goods vehicle operator–licensing requirements, a licence must specify the operating centre(s) where vehicles specified in the licence are normally kept (see Section 25.3) [NIp]. Therefore, lorries returning to base at night should normally be parked off–street in their operating centre(s). However, lorries away from base overnight need alternative facilities.

Where authorities perceive a local problem with on–street lorry parking, some basic research should reveal whether the vehicles concerned are locally or remotely based. An informal approach to locally–based operators should disclose why the relevant vehicle(s) are not being parked at their operating centre. For away–from–base vehicles, provision of off–street parking facilities might be

necessary. Such facilities could be developed either specifically for the purpose or, perhaps, as an adaptation of existing facilities such as surface car-parks. The basic requirements are good hard-standing, ease of manoeuvring for larger vehicles, good lighting and sufficient security to discourage vandalism and petty theft.

An alternative approach is to designate roads in appropriate non-residential areas for on-street lorry parking. Roads in industrial and commercial areas and trading and industrial estates can provide opportunities for this purpose.

In many older shopping streets, where rear servicing facilities are not available, conflict often occurs between delivery vehicles and other activities on the street, especially pedestrian movements. This has encouraged many local authorities to restrict access to such streets during certain times of the day, usually mid-morning to late afternoon, to coincide with the highest levels of pedestrian activity. Others have introduced full or partial pedestrianisation (see Chapter 22). The amenity benefits of pedestrianisation are self-evident, with the reduction in vehicular intrusion, noise and emission levels and a safer environment.

Studies have shown that pedestrianisation can increase trade and the perceived benefits of this increased trade, within a traffic-free environment, are often a key factor in the decision to pedestrianise a high street or town centre. However, the linkage between pedestrianisation and increased trade is not axiomatic and authorities should take particular care to assess any assumed economic benefits of pedestrianisation before implementation (CELRC, 1990). It is, in any case, vital to consider the implications for deliveries and other essential servicing activities as part of any scheme appraisal. For all but the smallest schemes, comparative surveys of pedestrian and delivery activity should be undertaken. These may show that deliveries can be allowed until mid-morning or even later, without significant vehicular/pedestrian conflict. Prohibiting deliveries earlier than this (Saturday excepted) is then unnecessarily restrictive, because a high proportion of deliveries may be disrupted. For such schemes to be successful, full consultation should take place with both traders and the operators of delivery vehicles (FTA, 1983).

Some existing premises can be adapted, to provide loading bays and service yards, and rear service-ways can sometimes be created with the consent and co-operation of occupiers and owners. For new industrial and town centre developments, see Chapters 30 and 12.

Intrusion by lorries is likely to be perceived as being at its worst in residential areas, where people might reasonably expect peace and quiet (see Chapter 17 on environmental management). Particular aggravation can occur at night or at weekends.

Removing heavy vehicles from residential areas may be achieved in a number of ways, the simplest being to prohibit them from a short length of a street, by reference to 7.5 tonne or 17 tonne maximum gross vehicle weight. This acts as a 'plug' and forces drivers to divert to a more suitable route (see Figures 25.4 and 25.5). While this technique can alleviate the problem of through traffic, using short-cuts through residential areas, it can be very disruptive to vehicles on local servicing activities, such as fuel deliveries and furniture removals. Sufficient advanced warning should be given, by erecting signs some distance from the 'plug' and showing the restrictions on advance direction signs. Controls which incorporate exemptions now usually specify 'except for loading', as this is easier to enforce than 'except for access'.

It has already been emphasised that lorry management controls should achieve compliance by good design and drivers' understanding. Poor design and drivers' failure to understand will result in poor compliance. Area-wide controls must therefore be

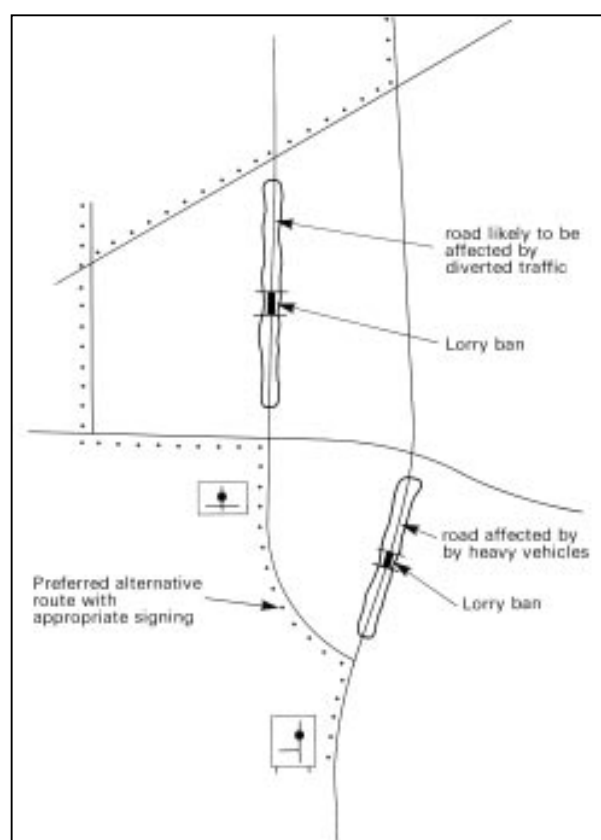


Figure 25.4: Layout of lorry controls to protect an individual road or a small area.

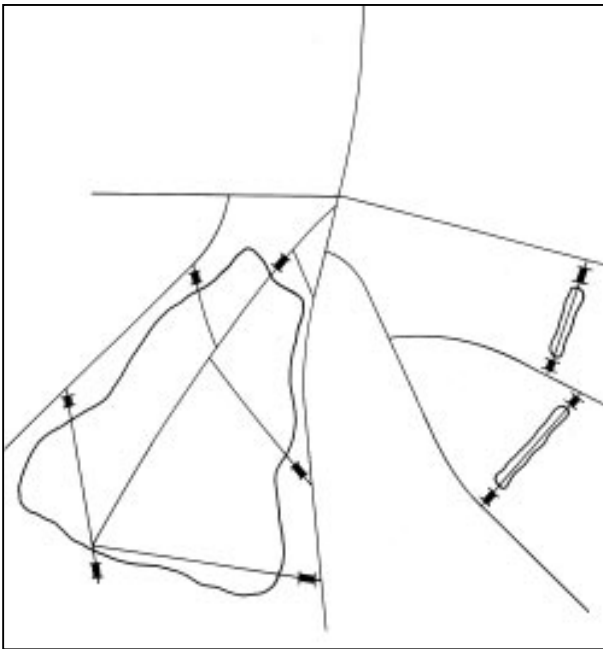


Figure 25.5: Layout of lorry controls to protect an environmental area and adjacent roads.

signed comprehensively to warn drivers sufficiently early for them to take sensible alternative route-decisions. For example, 17 tonne two-way 'plugs' could be located on all access routes to a sensitive town, thus forming a protective cordon. A permit scheme can then be introduced, to allow

passage across the cordon for local firms and their suppliers. This measure can be effective in preventing through traffic and can reduce the exposure to heavy vehicle noise for those living in the area, while maintaining reasonable facilities for access and deliveries. A pioneering scheme at Windsor is illustrated in Figure 25.6 (IHT, 1981 and DOE *et al*, 1978). The diversion and enforcement costs of such a cordon approach may be significant and authorities should consider the level of environmental gain in relation to cost before embarking on such projects.

Superficially, the use of permits as a basis for administering lorry control-schemes is attractive and a number are in operation. However, this approach must be treated with caution, since it is administratively cumbersome, vulnerable to misuse and, if widely adopted, would create serious difficulty for operators having to acquire and display a multitude of permits for use in different areas. The original objective, in amending the Road Traffic Regulation Act 1984 to provide for exemption permits, was to cater for particular circumstances, where a limited number of specific vehicles required exemption from a general control. Permit schemes should be used accordingly. Developments in access-control systems using electronic tags may make permit-enforcement easier (see Chapter 18).

Where measures are introduced which have no element of self-enforcement, then it is probable that regular police enforcement will be needed to ensure effectiveness. Other priorities for police resources have meant that such measures tend, increasingly, to be abused. Consequently, in recent years, there has been much interest in the use of cameras to provide a higher level of enforcement presence. Automatic video camera-based schemes have been introduced successfully to enforce weight-limits, for example, at Barnard Castle and at Tilehurst in Berkshire.

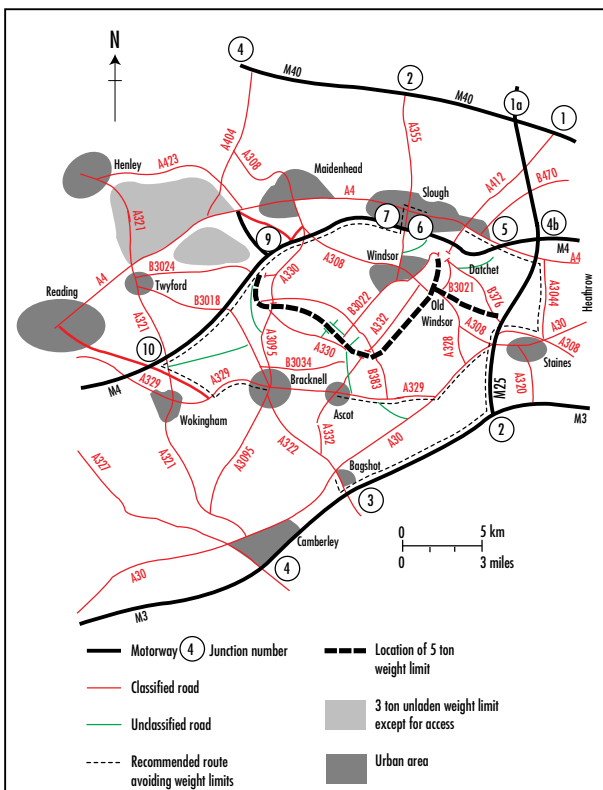


Figure 25.6: An all area-wide lorry control scheme around Windsor.

## 25.11 Rail Freight and Inter-Modal Distribution

Rail freight has played a vital role in Britain's economy since the industrial revolution. Although overall traffic volumes have declined steadily, with the development of road freight services, the railways have retained a core of business consisting mainly of bulk raw materials, fuels, semi-finished products and containers, mostly related to imports and exports. In the financial year 1994/95, Britain's railways carried 97.3 million tonnes of freight. This would have generated in excess of four million extra lorry-journeys, if it had all been carried by road. Rail-freight volumes, although only accounting for about 6.5% of total freight movements, are

nonetheless still significant, especially in terms of the heavy and bulky nature of the goods that the railways carry.

As emphasised in the introduction, it is not practical to reduce the overall number of lorries on the roads significantly by shifting freight to alternative modes, not even to the railways. The diffuse nature and relatively short distance of many freight movements make road transport the only practical option, particularly in urban areas. However, there is a general consensus, shared by industry, that all practicable means to move more freight by rail should be pursued. Transferring particular traffic to railways can have substantial local effects on the level of lorry traffic. The Rail-Freight Facilities Grant Scheme provides for government grants towards the capital cost of new or modernised facilities, particularly private sidings, handling equipment and railway wagons. These grants may help to make rail freight more competitive with road transport and could lead to a substantial reduction in lorry traffic locally but to only a marginal reduction overall. To qualify for a grant, it is necessary to demonstrate that a proposal would yield environmental benefits, would not otherwise be commercially viable and that, without the grant, the goods would go by road.

Rail freight can only be increased, sustainably, by services being developed which meet industry's needs and compete effectively both in price and in performance with other means of transport. This requires that the needs and expectations of customers are identified by rail-freight service providers and given a positive response. It also requires a stable business structure, free from political uncertainty (FTA, 1995).

There is some potential for inter-modal (combined) transport. However, in Britain, the potential for combined transport is limited by the large proportion of relatively short trip-lengths. Combined transport could be viable for relatively long north-south movements within Britain and, through the Channel



Photograph 25.4: An abnormal indivisible load.

Tunnel, to more distant places on the Continent. To establish inter-modal freight distribution in urban areas, an entirely new infrastructure would be needed.

## 25.12 Abnormal Loads

The road layout and structure in most urban areas has been designed, or evolved, to cater for a certain maximum size and weight of vehicle. The normal size and weight limits are contained in the Road Vehicles (Construction and Use) Regulations 1986 (HMG, 1986) and it is unlawful to exceed these [NIa]. However, some loads are very large or heavy and cannot reasonably be divided up in either size or weight for the purposes of transport. These loads, therefore, may have to be transported on special vehicles, which are larger and heavier than normal lorries (see Photograph 25.4).

The Motor Vehicles (Authorisation of Special Types) General Order 1979 (the 'STGO') (HMG, 1979) authorises the use on the roads of specific kinds of abnormally large and/or heavy vehicles which, either laden or unladen, exceed the Construction and Use Regulations limits [NIa]. Such vehicles include abnormal load carriers, mobile cranes and large tipper lorries.

Under the Construction and Use Regulations and the STGO, advance notice must be sent to the police, who may consult the Local Highway Authority for advice on appropriate routes, for the movement by road of the following:

- a load projecting more than 305mm on either side of the vehicle;
- a vehicle or load exceeding 2.9m in width;
- a rigid vehicle or load exceeding 18.3m in length;
- a motor vehicle, trailer and load together exceeding 25.9m in length;
- a load projecting more than 3.05m over the front or rear of the vehicle; and
- a vehicle or vehicle-and-load exceeding 76,200 kg (75 tonnes) gross weight.

The STGO authorises use on the roads of specific kinds of vehicle which, either laden or unladen, exceeds the Construction and Use axle or gross weight limits, provided that all highway and bridge authorities along the route:

- have been notified in advance of details of the vehicle, its load and the route it intends to take; and
- are indemnified against any damage caused thereby and that the vehicle travels at a reduced speed on ordinary roads (not applicable on motorways) [NIr].

Recommended routes for abnormal loads will not necessarily be the same for each load, as the choice will be constrained by physical features, such as bridges under and over the carriageway, constricted junctions and built-in street furniture. For especially large loads, the route may be extremely circuitous, in order to avoid these features, but local authorities need to be aware of the most appropriate routes for different types and sizes of load. These routes may be designated as especially appropriate for abnormal loads and opportunities may be taken to replace existing street furniture with designs which are easily demountable and, in the longer term, it may be beneficial to amend layouts which regularly present problems.

The informal status of a route set aside for abnormal loads should also be taken into account and not compromised when any junction improvements or maintenance schemes are designed. Loads requiring this type of consideration, although important for local industry, are unlikely to be frequent enough to create any particular environmental or road safety problems.

## 25.13 Hazardous Loads

Modern industrial processes increasingly require the transport of hazardous loads, not only within and between industrial areas but also to warehouses, stores and hospitals. The United Nations has a comprehensive system of classifying all dangerous goods under headings such as flammable, explosive, corrosive, toxic and radioactive. The relevant regulations governing the transport of such goods by road are listed under references HMG (1996a, b, c and d) [NIs].

A UK Hazard Information System (UKHIS) has been developed for dangerous goods tankers and tank containers. This is designed to give the emergency services all the necessary information in the event of an accident involving spillage. An important part of this is the HAZCHEM 'emergency action code', incorporated on the orange hazard-warning panels displayed on the sides and rear of lorries carrying such materials, which informs the emergency services of the nature of the hazards that could arise in the event of an incident, so that the appropriate action is taken promptly to minimise any possible effects (see Figure 25.7) (HMG, 1996a and 1996b).

Vehicles carrying dangerous goods in packages which are subject to the regulations (HMG, 1996a and 1996c) should display a plain orange plate to front and rear and the packages should also carry appropriate danger-warning signs. The circumstances in which this requirement applies are described in the Regulations (HMG, 1996c and 1996d) and in approved requirements and guidance provided by the Health and Safety Executive. If the vehicle is empty, the sign should either be removed or covered up.

The accident-rate for road-tank vehicles carrying hazardous loads is significantly less than that for ordinary goods vehicles (Gandham *et al*, 1982), although the potential for damage and environmental impact, if and when a serious accident does occur, is clearly much greater.

Department of Transport Circular Roads 1/87 (DOT, 1987) describes procedures which highway authorities should adopt to combat the dangers which may arise following a road accident involving hazardous substances. If an accident occurs to a vehicle carrying dangerous goods, the police and fire

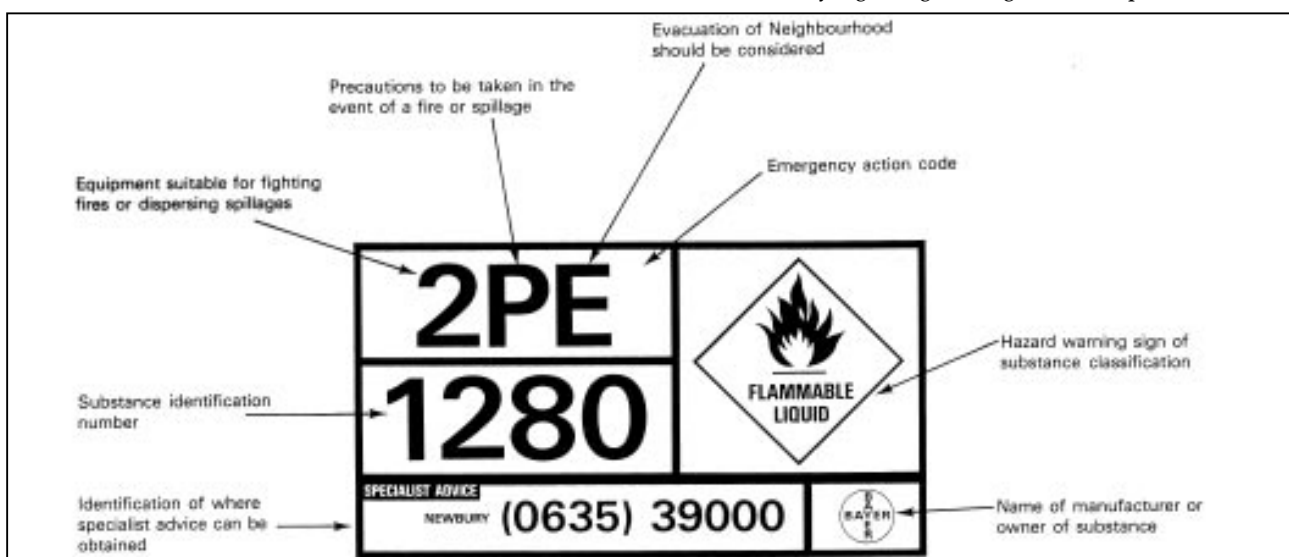


Figure 25.7: HAZCHEM plate for use on lorries carrying hazardous goods.

brigade will normally be informed by the driver or, if he is unable to do so, by someone else at the scene. For bulk loads, the emergency services will obtain technical advice or assistance, when necessary, from the specialist advice telephone number shown in the HAZCHEM orange hazard information panel (see Figure 25.7). For packaged goods, the name and address of the manufacturer, importer, wholesaler or supplier of the substance will appear in the transport document and the driver is required to carry information, in writing, concerning the nature of the hazards created by the substance (if released) and the actions to be taken in an emergency.

Once the immediate emergency is over, a highway authority may be called upon to remove dangerous substances from the highway. The Highway Authority has a statutory duty under section 22 of the Control of Pollution Act 1974 (HMG, 1974) to remove any spillages from the highway, where such removal is necessary for the maintenance of the highway or for the safety of traffic [NIt]. Under section 140 of the Highways Act 1980 (HMG, 1980) [Sc], a highway authority also has power to remove anything deposited on a highway which constitutes a nuisance, danger or substantial inconvenience to users of the highway and to recover the cost of removing it from the person or firm responsible [Nlu].

If a dangerous substance has to be removed from a highway and there is any doubt about the method appropriate and the safeguards to be taken, the Highway Authority should seek technical advice from the company concerned. In all cases, the emergency services should be consulted and informed of the actions to be taken, including (where necessary) the evacuation of people living in the vicinity while the highway is being cleared.

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