THE DEPARTMENT OF TRANSPORT

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STREET RUNNING LIGHT RAIL SYSTEMS

Paper by the Department of Transport: August 1991

1. Rapid transit systems are being considered in a number of British cities and towns as a way of providing improved public transport. This paper discusses issues relating to the street running of light rail systems and is intended for the promoters and operators of such systems, local and police authorities and other people affected by light rail proposals. It applies generally to systems in the United Kingdom but some different considerations may apply in Scotland and Wales. It is intended to be complementary to Her Majesty's Railway Inspectorate's (HMRI) *"Provisional Guidance Note on the highway and vehicle engineering aspects of street-running Light Rapid Transit Systems"* (April 1989) and to the Department's general briefing note on Light Rapid Transit (LRT) Systems (which is issued about every six months).

2. This paper is arranged as follows:-

INTRODUCTION

3. A light rail system uses the railway technology of steel wheels running on steel tracks, usually to the same gauge as the national railway system, although some new systems are being developed which involve other sorts of track compatible with street running. Light rail is the most common form of light rapid transit system. Other types of light rapid transit schemes include guideways and people-movers but as most of these systems require segregated tracks they are not considered in this note, which is only concerned with systems which can share a road carriageway with other traffic. While this paper is concerned chiefly with "conventional" light rail systems - ie ones with steel wheels running on steel track, much of its contents also apply to the other types of street running systems which are being developed.

4. "Light rail" systems differ from conventional or "heavy" urban or suburban railways principally because they are constructed to different standards. Typically, light rail systems can be built with much sharper curves and steeper gradients than a "heavy" rail system. Maximum speeds tend to be lower and the cars lighter as they do not have to be built to stand the stresses of normal railway rolling stock.

5. Light rail systems can be run as ordinary railway (eg the Tyne & Wear Metro and the Docklands Light Railway), or at the other extreme, as "tramways" running along roads, sharing the carriageway with other traffic, or as a mixture of the two. It is also possible to construct lines intermediate to these standards, eg with a reserved track running along a road.

6. When running on streets, light rail vehicles (LRV) are legally "trams" or "tramcars" and those expressions are used in warning road signs and in this paper. Trams are said to run on a "tramway" when running on street. HMRI divide light railway lines into three categories:

LRT1: Street running where the part of the carriageway used by the LRV is shared by other road users, including pedestrians.

LRT2: Those running on reserved parts of the highway where other road vehicles can use the LRT track in an emergency; and

LRT3: Where the LRT track is wholly segregated from other road users, including pedestrians.

7. On street, when sharing a carriageway with other traffic, the tramway track is level with the highway, the track being laid in the road and the paving flush with the surface of the track. On segregated rights-of-way (LRT3) tramways may use ordinary cross-sleepered railway track.

8. When a conventional railway crosses a street on the level, or runs along it, conventional rails are usually used with check rails to provide a fairly wide and deep groove for the rolling stock's wheel flanges. This can prove a hazard for other road users. However, a tramway running along a road uses rails in which a narrow, shallow groove is rolled into the surface of the rail to accommodate the wheel flanges. This smaller flangeway presents a negligible problem to other road vehicles or pedestrians (see Paragraphs 53, 72 and 73)

9. Trams are powered by electricity, at a voltage of no more than 750v DC when on-street. An electrical supply system of sub-stations, feeder cables and earth returns is required, the most visible evidence of which is the overhead wire suspended over the tracks for the vehicles to obtain their supply. Modern trams typically consist of single-deck, articulated vehicles with easy access for passengers and are able to accommodate up to 100 seated passengers and 150 standing passengers. Rapid acceleration and deceleration (1.3 m/s^2) rates are typical (3 m/s^2 in emergency braking), as is a top speed of 80 km/h where speed limits allow. Six-axle cars are 20-30 metres long and eight-axle cars are 25-35 metres long. Cars can be coupled together.

10. As modern trams have better braking and acceleration, and are also much quieter than the traditional tramcars which used to operate in this country (and still do in Blackpool) and as they are a new phenomenon for the United Kingdom, care must be taken that their introduction takes account of people's unfamiliarity with them.

Responsibilities for light railway (LRT) systems

11. The division of responsibilities for the non-financial aspects of light rail (LRT) between the promoters or operators of the system, local highway authorities and the Department will normally be covered in the enabling legislation obtained by the promoter. In default the arrangements contained in the Tramways Act 1870 would apply.

12. Unless it is itself the highway authority, the Department will normally only have an advisory function, except:

a. enabling legislation normally provides for the approval to open the system to be given by the Secretary of State for Transport as advised by HMRI;

b. enabling legislation normally provides for the Secretary of State to approve a lease or assignment of an undertaking to a third party;

c. grant-aid for light rail under s.56 of the Transport Act 1968 may be provided by the Department; and

d. credit approvals to give a local authority the necessary borrowing power to finance or help finance a light rail system are allocated by the Department.

PLANNING AND SYSTEM DESIGN

General

13. Light rail is a flexible mode. Existing railway tracks can be taken over, new track can be laid along the alignments of abandoned railways and newly constructed rights of way can be built for it, including tunnelled and elevated sections. The characteristics of its track construction and vehicle design allow the system to be safely installed in streets, thus allowing operation with normal traffic or, where space allows, on a reserved track within highway limits. If the reserved track is paved the right of way can be shared with emergency vehicles and buses. As the system is trackbound, clean and quiet, it may be suitable for pedestrianised streets and areas which are closed to other traffic.

14. Light rail has a large passenger carrying capacity with a potential well above the busiest bus routes or groups of routes and equalling that of full size local railway lines. However it is not a cheap system to construct so the route configuration of a proposed system should be planned by the promoter to make the most efficient use of any existing alignments.

15. Where grant from the Department is to be sought it should be borne in mind in designing the system that maximising the relief of traffic congestion is one of the Department's prime objectives when schemes are considered for grant-aid. At the system design stage the promoter may also wish to consider, in conjunction with the highway authority, whether it would make sense to take complementary traffic restraint measures, and to plan the system so that it fits in with any highway authority plans for park-and-ride and similar measures.

16. Promoters will need to consider, in conjunction with highway authorities, the effect that trams will have on existing traffic. Although trams may attract passengers from cars and buses, in some streets trams may add to congestion even taking into account their large capacity, rapid acceleration and short dwell time at stops and the design should take account of the desirability of reducing such effects.

Gauges and technical specifications

17. The track gauge employed is a matter for the promoter of the system. Most modern systems use the standard gauge of 1435mm with vehicles of 2650mm width. However, constricted city centre alignments and the need to reduce the area overhung by trams on the roadway (the swept path) which is described fully in

other vehicles may park, without inhibiting the operation of the tramway.

Access for mobility impaired people

28. Guidance on this subject, including access from loading islands or platforms into trams and access to platforms is given in HMRI's *Provisional Guidance Note*. With the development of low floor trams or same-level access from loading islands, light rail provides particularly easy access for all passengers, but especially for mobility impaired people. Promoters should consider the value that easy access has in terms of accident reduction to all boarding and alighting passengers and the shorter dwell time at stops; these features should be designed into the system at an early stage.

29. A proposed European Community Directive on the safe travel of workers of reduced mobility is at present under discussion in Brussels. The aim of this proposed directive is to ensure that sufficient public transport, running at appropriate times, is available to meet the specific needs of workers with disabilities; it does not envisage that all forms of public transport should be accessible. It may nevertheless have some implication for light rail systems. The terms of the proposed directive are subject to amendment and both its final terms and its likely date of adoption are still uncertain.

30. Guidance on matters concerning the transport of the mobility impaired may be sought as necessary from the Department of Transport's Disabled Persons Transport Advisory Committee and the Disability Unit (Room S10/21, 2 Marsham Street, London SW1P 3EB).

Environmentally sensitive areas

31. As can be observed in many overseas countries, street running tramways can operate relatively unobtrusively in historic cities, and have the advantage of creating less noise and air pollution than diesel buses. The grooved rails set flush into the road surface, are unobtrusive but the single overhead contact wires suspended over each track, usually from adjacent buildings, can be noticeable at times. However they are less obtrusive than, for instance, a light rapid transit system running on elevated track.

32. The actual design and appearance of the overhead electrical equipment has improved since trams last ran in British cities with the development of nylon-based span wires which are less obtrusive than those made of steel cables and also reduce the number of insulators needed.

33. Sensitive environmental treatment can be helpful towards a scheme gaining local acceptance. When the routes of a proposed light rail scheme are decided, promoters should, in conjunction with the local planning authority, consult and if necessary

obtain the agreement of the Royal Fine Arts Commission (7 St James's Square, London SW1Y 4JU) about the aesthetic implication of the design of such things as bridges and buildings.

34. The promoters should consult the Planning Authority on the environmental impact of the design of such things as fencing to guard possible danger points, signs, hard surface (landscape) treatment, the surfacing and marking of carriageways and the depiction of the swept path (see paragraph 17). Further advice on these matters can be obtained by submitting the draft proposals to the Townscape Committee (part of the Landscape Advisory Committee), Department of the Environment, Room S4/12, 2 Marsham Street, London SW1P 3EB.

Delivery vehicle loading bays

35. Where the track is to occupy space on the road which is used by vehicles stopping to load or unload, it may be necessary to consider the provision of delivery vehicle loading bays. That would be a matter for discussion between the promoter and the highway authority and will depend on specific local conditions such as the amount of land available and whether the carriageway can be widened or the footway narrowed in the vicinity (see also paragraph 27).

High load routes and vehicles carrying abnormal loads

36. Advice on the height (5.5m) that the overhead contact wire should normally be above the surface of the carriageway so as to ensure clearance for high vehicles is contained in paragraph 9 of the HMRI *Provisional Guidance Note*.

37. Wherever possible high load routes and abnormal road loads should be diverted away from light rail systems. If they cannot be avoided, agreements should be reached between the promoter, the highway authority, the Road Haulage Association, Roadway House, 35 Monument Hill, Weybridge, Surrey KT13 8RN, and the Department of Transport to cover the specific arrangements that will be necessary where the routes cross. Such special arrangements will need to be considered early in the design stage for the overhead electrical equipment.

Vehicle noise

38. When trams are running at speed, noise can be generated which will affect adjacent properties, perhaps requiring noise insulation measures. The promoter should discuss any noise insulation requirements with the local highway authority and other interested parties, and seek appropriate powers to undertake that work (see paragraph 87).

ENABLING LEGISLATION

Enabling powers

39. Promoters will normally need enabling powers and will need to employ parliamentary agents to obtain these through the private bill procedure. The following are the main reasons for needing legislation:-

a. To obtain compulsory purchase powers for necessary land acquisition.

b. To authorise interference with rights for which no other method of authorisation is available (particularly for public highways, bridleways and footpaths, or tidal or navigable waters).

c. To obtain immunity from private nuisance actions in respect of the subsequent operation of the works. This immunity flows directly from the fact of statutory authorisation.

d. To obtain authority for interference with the apparatus of statutory undertakers.

e. To modify earlier enactments, usually the private Acts under which an original railway on the site was constructed and which imposes obligations which are no longer relevant, or which would unreasonably prevent desirable development from now occurring.

f. To extend the powers of HMRI which presently extend only to railways authorised by statute.

g. To obtain the benefit of deemed planning permission for the works, under the Town and Country Planning General Development Order 1977.

40. The following specific items will also normally need to be included:-

a. Division of responsibilities for the non-financial aspects between operators, local highway authorities and the Department (see paragraph 11).

b. Noise insulation requirements (see paragraph 38)

c. Statutory undertakers' access to their equipment for maintenance and alteration (see paragraph 56).

d. Provision of electrical equipment (see paragraph 58).

e. Approval of the system before opening (see paragraph 62).

f. Provision of road signs (see paragraph 85).

g. Removal of any obstructions to light rail operations (see paragraph 88).

h. Bye-law making powers (see paragraph 44).

41. Parts II and III of the Tramways Act 1870 apply to all street-running light-rail systems whether they have been authorised under the Provisional Order procedure of Part I of the Act or by another Act of Parliament. Those sections of the 1870 Act which are unsuitable for a particular system must therefore be disapplied in the enabling Act for the scheme.

New Proceedure

42. Promoters should note that the Government recently issued a consultation document "*Private Bills and New Procedures*" (Cmnd.1110 HMSO 1990) in response to the proposals of the Joint Committee on Private Bill Procedure. In this, the Government proposed that new order-making powers should be substituted for transport and works Private Bills. The majority of responses to the consultation document supported the principles of the proposed reform and the Government has decided to introduce a Transport and Works (Authorisation Procedure) Bill at the earliest opportunity to implement the change. The new legislation will, amongst other things, bring up to date (or replace) the Tramways Act 1870 and the Light Railway Acts. The earliest it could come into effect is for the 1992/93 Parliamentary session.

Environmental statements

43. Promoters should discuss the environmental issues of the scheme with the local planning authorities at an early stage and provide an Environmental Statement following the advice set out in "*Environmental Assessment: a Guide to the Procedure*" (HMSO, 1989). The Department of Transport provides further advice in its "*Manual of Environment Appraisal*" (EEA Division, Department of Transport, Room S4/22, 2, Marsham Street, London SW1P 3EB); although this manual deals with road schemes, its framework approach gives a comprehensive listing of many environmental factors useful to promoters of light rail schemes. Other advice on the treatment of environmental impact for grant-aided schemes is given in the Department of Transport Circular 3/89 (HMSO, 1989) and in the Annex to the Circular (available from PTM Division, Department of Transport, Room S15/10, 2 Marsham Street, London SW1P 3EB).

Bye-laws

44. Promoters should ensure that they or the operator has the power to make bye-laws to control the use of the system, in particular by the public, on a day-to-day basis. In considering the possible content of bye-laws, it is suggested that the promoter or operator should consult the bye-laws relating to the London Underground system, and the Tyne & Wear Metro bye-laws. Consideration should also be given to The Public Service Vehicles (Conduct of Drivers, Inspectors, Conductors and Passengers) Regulations 1990 (SI No.1020). These Regulations do not automatically apply to trams and promoters and operators may find they provide a useful basis for bye-laws.

INFRASTRUCTURE

Tendering procedures

45. Where a light rail system is being promoted or mainly financed by a public sector body, the European Community directives on public procurement procedures may be applicable, in which case the rules in these directives on the advertisement and award of tenders will need to be followed for the construction of the system and the procurement of the rolling stock. Relevant directives are:

a. Directive 71/305/EEC on the co-ordination of procedures on the award of public works contracts, as amended by Directive 89/440/EEC (on which see the Department of the Environment Circular 16/90, available from HMSO);

b. Directive 77/62/EEC on the co-ordination of procedures on the award of public supply contracts, as amended by Directive 89/295/EEC (on which see the Department of the Environment Circular 6/89, available from HMSO); and

c. Directive 90/531/EEC on the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors. This directive has not yet entered into effect, but is expected to by 1 January 1993.

The applicability of these Directives will depend in individual circumstances, and advice should be sought as necessary from Public Transport Metropolitan Division, Department of Transport, 2 Marsham Street, London SW1P 3EB.

Construction period

46. The promoters or those undertaking the construction should, in conjunction with the highway authorities, provide local publicity to ensure that the community in general, users of the

system, and occupiers of any premises likely to be affected directly or indirectly by the proposal, are advised about the scheme and revised arrangements for traffic and pedestrians; the publicity should be maintained throughout the construction period.

Standards of track construction

47. In accordance with the Tramways Act 1870 the paving of street running sections of track should be flush with the road surface. In addition, HMRI require that grooved rails be used for tramways.

48. Special arrangements for track foundations may be necessary to take account of different subgrade conditions, drainage requirements and to prevent noise generation (for example elastomeric bearings between the rail and sleeper and between the sleeper and its support structure). On sections of track fully segregated from other traffic within the highway area (LRT3), the type of track construction can follow normal railway requirements although not necessarily to the same standard of construction or maintenance. Consideration must also be given to the containment of stray electrical currents.

Standards of road construction

49. The promoter or constructor, in conjunction with the highway authority, should ensure that the road surface area adjacent to a tramway not only follows current highway design standards but also takes into account the heaviest authorised road or rail loadings.

50. Any additional works necessary to make a segregated section usable by buses or emergency services is a matter to be agreed between the promoter or constructor, the highway authority and statutory undertakers. The particular problems that may affect cyclists are mentioned in paragraph 73.

Structural and routine maintenance of highways

51. Promoters and constructors should take particular note of the provisions of the New Roads and Street Works Act 1991 as this contains a number of important matters relating to works on highways.

52. Before track is laid, the arrangements for structural maintenance should be agreed between the highway authority and the operator, the promoter or constructor. The routine maintenance of highways (sweeping, gulley cleaning, etc) should not be affected by the installation of tracks; the routine maintenance of the track itself is the responsibility of the operator (see paragraph 85). The installation of track drains would need to be considered at places where water collects.

Damage to roads

53. Specific agreements between the highway authority and the promoter or constructor, based on the enabling legislation for the system (or on the Tramways Act 1870), to cover the apportionment of costs of road damage should be arranged. The agreements should deal separately with the initial installation of the infrastructure, subsequent damage caused by ordinary wear and tear, and damage caused by maintenance work to the infrastructure.

Skid resistance requirements at crossings

54. Where the track crosses a road by means of a level crossing the highway authority should ensure that the skid resistance of the surface of the approach road is the same as that required on the approach to pedestrian crossings or conventional railway level crossings. The skid resistance of the surface between and either side of the rails at the crossing itself should also be of a high standard.

Highway alterations and improvements

55. The design, implementation and cost of highway alterations and improvements are a matter for agreement between the promoter and the highway authority. Normally the promoter would bear the costs directly attributable to the light rail scheme itself, while betterment to the highway not directly attributable to the light rail scheme would be paid for by the highway authority.

Access for highway authorities and statutory undertakers

56. The promoter or constructor will need to make arrangements for the statutory undertakers' apparatus to be diverted wherever possible from the path of the light rail system. Specific arrangements will depend upon the discussions and agreements between the promoter or constructor, the highway authority and the statutory undertakers involved. The aim should be minimal disruption to both the operation of the light rail system and to the necessary activities of the undertakers. Particular attention should also be paid to the swept path (see paragraph 17) since statutory undertakers' activity within it will affect the operation of the light rail system.

57. The arrangements made will need to comply with the terms of the New Roads and Street Works Act 1991.

Overhead electrical equipment

58. Structural approval of the electrical equipment rests with HMRI. Promoters or constructors should consult the highway

authority on the location of traction poles, as cost savings could result from (or contributions received for) the use of these poles for street lighting, road signs and signals etc, and the clutter from street furniture would be reduced. In areas of sensitivity or tight clearances promoters or constructors may wish to consider suspending the overhead equipment from adjacent buildings (where they are considered strong enough to take the strain) but in any case the planning authority should be consulted at an early stage (see paragraphs 33 and 37).

59. Guidance on requirements for the clearances between the overhead electrical system and structures etc together with access to adjacent street lighting columns and windows is available from HMRI and these matters will be examined as part of the system's inspection before opening. Responsibilities for staff or contractors working on or near the overhead electrical equipment are outlined in paragraph 68.

ROLLING STOCK

Vehicle design requirements

60. The choice of vehicle is for the promoter or operator to make; it is desirable however that the chosen vehicle type has provision for same level access at stops for mobility impaired people (see paragraph 28).

61. All vehicle design requirements are a matter for HMRI. General guidance on braking, lighting, warning devices, couplers, skirting, fenders, doors etc. is given in their *Provisional Guidance Note* and advice on such matters as collision resistance is obtainable from HMRI.

OPERATION

Approval and commissioning requirements

62. HMRI will carry out the inspection and approval of the system on behalf of the Secretary of State. Further approvals on other matters, such as ensuring that road signs follow a national standard, will also be required by the Department.

System Safety

63. The responsibility for the safe operation of a light rail system lies solely with the operator. Enforcement of the various regulatory Acts, which include accident investigation, and of the Health and Safety at Work etc Act 1974 is carried out by HMRI, now part of the Health and Safety Executive.

64. Tramway accidents must be reported to HMRI either under the Railways (Notice of Accidents) Order 1986 (SI 2187), made under the Regulation of Railways Act 1871, which applies to statutory tramways, or the Reporting of Inquiries, Diseases and Dangerous Occurrences Regulations 1985 (SI 2033) made under the Health and Safety at Work etc, Act 1974, which applies to both statutory and non-statutory tramways.

65. Both Statutory Instruments cover the reporting of collisions and derailments, as well as many other occurrences. On receipt of a report HMRI investigate the circumstances and their response would range from a request for further information to a full statutory inquiry. HMRI's interest would concentrate on major accidents and not be involved in minor collisions between trams and other road vehicles or pedestrians.

66. Irrespective of HMRI's involvement, the police have a responsibility for investigating road traffic offences and any road traffic accident involving personal injury must be notified to them. As with any road traffic accident, they might require a vehicle inspector to examine a road vehicle involved. However, a vehicle inspector would have no role in looking at a tram involved in an accident. Whilst it is not strictly necessary to report damage-only accidents, including those between tramcars, to the police, it would be prudent to do so if only to seek out their help in dealing with the consequent interruption to the smooth flow of other road traffic.

Passenger numbers

67. Unlike the situation for some buses the advice from HMRI is that there are no technical or safety reasons, such as vehicle stability, for imposing restrictions on the number of passengers carried on each tram.

Staff safety

68. Enforcement of the Health and Safety at Work etc Act 1974 is the responsibility of the Health and Safety Executive and as far as staff or contractors working on any part of the tramway system including the traction power supply are concerned, this will be exercised by HMRI. The latter are also responsible for advising the HSE's local area Offices of additional risks to which those working on buildings adjacent to the overhead live equipment will be exposed.

Road safety - Publicity

69. The promoters or operators have the primary responsibility for informing the public, both pedestrians and drivers, that a tramway system is about to start operation. However they should be assisted as fully as possible by the highway authorities through whose areas the system is to operate. The promoters or

75. Tram priority measures would operate in the same way as existing bus ones: for example, trams could be allowed to make movements prohibited to other traffic or traffic signals could be programmed to change on the approach of trams to allow their passage. Promoters and operators should discuss possibilities with the highway authority. The priority arrangements, as finally agreed by the highway authority, should be signed and/or signalled as appropriate to other road users.

Road Traffic legislation

76. Whilst on street and to the extent that a light rail system is compatible with road traffic law, tram drivers must obey that law and observe road signs. To help ensure this the operator should include suitable provisions in the staff rule book and in the system byelaws to bring the operating practice of tram drivers into line, as far as is sensible, with that for bus drivers.

77. A number of provisions of the Road Traffic Regulation Act 1984 and the Road Traffic Act 1988 have not hitherto applied to trams operated under statutory powers. These exemptions date back many years and with the advent of street-running light rail it does not make sense that all the exemptions should continue. Schedule 8 of the Road Traffic Act 1991 therefore repeals these exemptions (in section 141 of the 1984 Act and section 193 and Schedule 4 of the 1998 Act) whilst section 46 of the 1991 Act provides a power for the Secretary of State to make regulations to either retain the exemptions or provide for their application to trams with modifications. In some cases it is expected that the exemptions will not be retained. The following are the relevant provisions of the 1991 Act:

a. **Section 46(1)** amends the Road Traffic Regulation Act 1984 so that sections 1 to 14, 18 and 81 to 89 of that Act can be either disapplied to tramways or applied to them with modifications by means of regulations.

b. **Section 46(2)** amends the Road Traffic Act 1988 so that sections 12, 40A to 42, 47, 48, 66, 68 to 73, 75 to 79, 83, 87 to 109, 143 to 165, 168, 170, 171, 178, 190 and 191 of that Act and sections 1, 2, 7, 8, 22, 25 to 29, 31, 32, 34 to 48, 96 and 97 of the Road Traffic Offenders Act 1988 can be either disapplied to tramways or applied to them with modifications.

c. **Paragraph 79(a) of Schedule 4** repeals the exemption of trams from section 127 of the Road Traffic Act 1988 (Extension of duration of registration for driving instructors) and applies the exemption to section 34 (prohibition of driving vehicles elsewhere than on roads), thus correcting an error in the earlier legislation.

d. **Paragraph 79(b) of Schedule 4** repeals the exemption of trams from sections 2 (Reckless driving), 3 (Careless and

inconsiderate driving) and 4(1) (Driving when under the influence of drink or drugs) of the Road Traffic Act 1988. There are no provisions for these sections to be subsequently disapplied or applied with modification to trams. See also sections 1-4 of the 1991 Act which affect these sections of the 1988 Act.

e. **Paragraph 79(c) of Schedule 4** adds the exemption of trams to new section 40A (Using a vehicle in a dangerous condition) of the Road Traffic Act 1988 from which trams are at present exempt. Section 40A is inserted by section 8(1) of the 1991 Act.

f. **Paragraph 79(d) of Schedule 4** adds sections 68 (Inspection of public passenger vehicles and goods vehicles) and 69 (Power to prohibit driving of unfit vehicles) of the Road Traffic Act 1988 to the list of provisions from which trams are at present exempt. New sections 68 and 69 are substituted for the present ones by sections 11 and 12 of the 1991 Act, and will apply to public passenger vehicles as well as goods vehicles; without this specific exemption, therefore, they would affect trams.

g. **Schedule 8** includes the repeal of section 141 of the Road Traffic Regulation Act 1984 and of section 193 and Schedule 4 of the Road Traffic Act 1988. One effect of the repeal of section 193 and schedule 4 of the 1988 Act will be the immediate application to trams of sections 25 (Tampering with vehicles) and 26 (Holding or getting on to vehicle in motion) of the Road Traffic Act 1988; there are no provisions for these sections to be subsequently disapplied or applied with modification to trams.

78. Sections 46(1) and 46(2), and the repeals described at g. above will not take effect until Regulations have been made specifying which of the provisions mentioned in section 46 will be disapplied to tramways, or applied to them with modifications. Texts of the Regulations are expected to be circulated for consultation in late 1991 with a view to making them early in 1992. The changes in c. to f. above will take effect in late 1991.

79. The Department has already consulted on which of the present exemptions should no longer apply to tramways (consultation paper sent with the Department's letter of 28 June 1990). Annex 2 sets out the Government's present intention on how each of the provisions listed in a. and b. above would be treated in the proposed Regulations, in the light of the replies to the consultation paper. No final decisions will be taken, however, until consultation on the text of the proposed Regulations has been completed. It should be noted that trolley buses are also the subject of a number of exemptions from road traffic law and the provisions of the 1991 Act will operate on them in a similar way. There will, however, be differences in the detailed application of the law, where appropiate for practical reasons.

80. The Government has also considered the present exemption for tram drivers in section 102A of the Transport Act 1968 from the domestic drivers' hours rules contained in that Act; these were discussed in the consultation paper mentioned above. Consultees were divided in their opinion as the whether the exemption would continue. The Government considers that there is a case for applying domestic driver's hours to tram drivers where street running is involved. New primary legislation would however be needed and no immediate changes are planned.

Traffic signals and road signs

81. Appendices 1-3 of the *Provisional Guidance Note* set out existing and proposed traffic signs for use in connection with street-running light rail systems, traffic signs for tram drivers and the design of special traffic signals for controlling the movement of trams at road junctions.

82. High safety standards and signal reliability are essential where trams cross streets at junctions and level crossings. The Department is developing specifications for a traffic signal head that will incorporate aspects to control light rail vehicles.

83. The operator should agree procedures for monitoring traffic signals with the highway authority. Whether 24-hour monitoring is necessary will be included in these procedures; most continental systems have at least 16-hour continuous monitoring. The monitoring of point indicator signals will be the responsibility of the operator.

84. When a signal aspect is not displayed because of a fault, emergency operating procedures for tram drivers must be incorporated within the system's operating rules. The operator should agree appropriate procedures with the police on the action to be taken if a signal fails completely.

85. As part of the light rail system and to benefit other road users, including pedestrians, a comprehensive system of road signs will need to be provided and maintained by the highway authority in conjunction with the promoter or operator. Section 64(4) of the Road Traffic Act 1984 gives powers to statutory operators of tramways to erect traffic signs. Whilst there are international road signs which are used in connection with tramways, there are none in the current UK regulations. The Department will prescribe such signs and signals as are necessary, either specially or through the revised Traffic Signs Regulation and General Directions to be issued in late 1991. The signs to be used at any location must be agreed by both HMRI and the highway authority.

Routine maintenance of track

86. Although routine maintenance of highways (see paragraph 52) should not be affected by or cause problems to the installation and operation of a light rail system, it will be the responsibility of the operator to ensure that the track itself is adequately maintained and that track grooves and points are kept free of debris.

Audible Warning devices

87. At normal speeds modern trams are extremely quiet and HMRI's advice is that a distinctive audible warning device must be fitted, for use by the driver where appropriate. The operator should ensure that special attention is given by the driver to warning other road users, especially pedestrians, in the early weeks of a new system's operation.

Parking in Streets and vehicles obstructing tramways

88. Waiting, loading and parking restrictions on the highway section of the scheme are a matter for the highway authority. The removal of obstructions on the track, eg broken down vehicles will be the responsibility of the operator. The use of special recovery vehicles and/or the employment of specialist contractors will need to be considered. (See also paragraph 27).

Winter weather

89. Snow clearance from roads used by street running light rail is a matter for agreement between the operator and the highway authority. Overseas practice is for the highway authority to accept responsibility for general snow clearance, but for the operator to clear track grooves and points and heat points. In severe conditions it is usual for the operator to keep the system open all night to keep grooves and points clear and for special snow clearing vehicles to be used.

90. To avoid wheelslip in icy conditions tram drivers will make increased use of sanding equipment and the operator will need to establish working practices to deal with the build up of sand deposited on the track, particularly where it could become a problem in the operation of points.

PTM Division
Department of Transport
August 1991

ANNEX 1

Other publications giving guidance on LRT systems

Department of Transport

1. Central Government grant for major transport projects including light rapid transit is available under the terms of section 56 of the Transport Act 1968. Department of Transport Circular 3/89 of 3 November 1989, published by Her Majesty's Stationery Office gives guidance on this, and a detailed technical annex on appraisal methods is available from Public Transport Metropolitan Division, Room S15/10, Department of Transport, 2 Marsham Street, London SW1P 3EB.

Her Majesty's Railway Inspectorate (HMRI)

2. HMRI has issued a "*Provisional Guidance Note on the Highway and Vehicle Engineering Aspects of Street-running Light Rapid Transit Systems*" (April 1989). Subjects included in that note are:

a. Definitions and legal consideration,
b. At-grade intersections
c. Traffic signs,
d. Traffic signals - design and construction
e. Traffic signals - control,
f. Highway and carriageway delineation,
g. Stations and stops,
h. Road Layout - geometric and other considerations,
i. Overhead electrification,
j. Vehicles.

3. HMRI are also working on the Light Rapid Transit part of their Railway Construction and Operation Requirements and intend to publish them shortly.

4. Details and availability of HMRI publications are available from:-

Her Majesty's Railway Inspectorate
Health and Safety Executive
Baynards House
1 Chepstow Place
Westbourne Grove
London W2 4TF

UITP

5. The International Union of Public Transport has issued a publication entitled "*Trends in Light Rail*" which includes much useful guidance on planning light rail systems. Some of the details and figures included in the publication do not necessarily coincide with those which are or will be required in the United Kingdom. Comments in the HMRI *Provisional Guidance Note*, the *Railway Construction and Operation Requirements* and in this paper are paramount. Details and availability of "*Trends in Light Rail*" are available from:

International Union of Public Transport
Avenue de 'Uruguay 19
B-1050 BRUXELLES
Belgium

ANNEX 2

Provisions in the road traffic legislation from which trams are at present exempt, with an indication of the Government's preliminary view on whether they should be applied or disapplied to trams when these exemptions are repealed. (see paragraphs 77-80 of this paper). There will be further consultations before a final view is taken and appropriate Regulations made.

ROAD TRAFFIC REGULATION ACT 1984	**Preliminary view**
ss.1-13: Traffic Regulation Orders	Partial application of TROs to trams to regulate waiting and overtaking.
s.14: Temporary prohibition or restriction of traffic on which works are being executed.	Partial application to trams for certain restrictions eg speed limits.
s.18: One-way traffic on trunk roads	Not to be applied to trams.
ss.81-89: Speed limits	To be applied to trams whilst on the public highway.
ROAD TRAFFIC ACT 1988	
s.12: Races and trials of speed	To be applied to trams.
s.40A: Using vehicle in dangerous condition (NB New section added by RTA 1991)	To be considered.
ss.41-42: Construction and Use Regulations	Not to be applied to trams.
ss.47-48: Obligatory test certificates	Not to be applied to trams.
s.66: Grant of excise licences	Not to be applied to trams. It should be noted that section 4 of the Vehicle Excise Act 1971 was amended by the Finance (No 2) Act 1975 to "no duty payable for vehicles used on tramlines".

s.68: Inspection of public passenger and goods vehicles (NB revised by RTA 1991)	To be considered
s.69-73: prohibition of unfit vehicles (NB revised by RTA 1991)	To be considered
ss.75-76: Sale of vehicles in unroadworthy condition	Not to be applied to trams.
s.77: Testing condition of used vehicles	Not to be applied to trams.
ss.78-79: Weighing of motor vehicles	Not to be applied to trams.
s.83: Reflectors and tail lamps	Not to be applied to trams.
ss.87-109: Licensing of drivers	Possible requirement for tram drivers to hold ordinary or PCV licenses. It should be noted that if tram drivers are to hold these licenses, s.19 of the Road Traffic Act 1991 would provide for somebody disqualified from driving another type of vehicle being also prohibited from driving a tram.
ss.143-162: Compulsory insurance or security against third party risks	To be applied to trams.
s.163: Power of Constables to stop vehicles	To be applied to trams.
ss.164: Power of Constables to require production of driving licences	Not to be applied to trams.
ss.165, 168, 170-171: Requirement for drivers to give their names and addresses, to report accidents and to produce documentation	To be applied to trams.
s.178: Taking vehicle without authority (in Scotland)	To be applied to trams
s.190: Unladen weight of motor vehicles	Not to be applied to trams.
s.191: Interpretation of statutory references to carriages	Not to be applied to trams.

ROAD TRAFFIC OFFENDERS ACT 1988

ss.1, 2, 7, 8, 22, 25-29, 31, 32 34-48, 96-97: Provisions requiring warning of prosecution etc and provisions connected with the licensing of drivers	To be considered.

ANNEX 3

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