SWEDISH ECONOMIC POLICY REVIEW 9 (2002) 257-286

Regulatory reform in rail transport—the UK experience

Chris Nash*

Summary

■ When it chose to privatise the British rail network, the British government wished to follow the model of a regulated infrastructure monopoly being used by a variety of competitive service operators. However, particular characteristics of railways, including indivisibilities, economies of scale and the need to allocate specific paths on the infrastructure, together with political constraints, led to substantial modifications of this model, with heavily controlled franchised passenger services.

In 1997, the incoming Labour government wished to expand the role of rail in an integrated transport policy. At the same time, whilst the privatised railway had achieved expanding traffic, it faced a number of problems relating to service quality, investment, profitability and safety. The government sought to overcome these problems and achieve its aims by setting up a new body, the Strategic Rail Authority, to be responsible for strategic planning and investment, and by tightening regulatory control. Infrastructure charges were revised to provide more appropriate incentives, whilst Railtrack has been superceded by a "not for profit" company, Network Rail.

This paper reviews and critically assesses these developments. It concludes that there remain considerable problems about providing appropriate incentives and ensuring value for money. The reforms do overcome the most serious weaknesses of the privatised rail system whilst retaining its strengths.■

JEL Classification: L51, L92.
Keywords: Regulation, rail transport, UK.

* *Chris Nash is professor at the Institute for Transport Studies, the University of Leeds.*

SWEDISH ECONOMIC POLICY REVIEW 9 (2002) 257-286

Regulatory reform in rail transport—the UK experience

Chris Nash*

Until 1994, the rail industry in Britain—as in most of Europe—was organised in the form of a single integrated state owned company providing passenger and freight services, and the infrastructure on which they ran, throughout the country. It is true that significant reforms did take place in the 1980s, grouping rail services into a number of sectors (inter city, London and South East and regional passenger, and trainload, distribution and parcels for freight) with their own objectives, management and accounts (Nash, 1988). Also activities such as hotels and rolling stock manufacture were hived off and privatised.

However, by the early 1990s the government was determined to go further and privatise the entire rail network. After much debate about options they determined on a pattern that had come to be seen as the norm for network industries—a regulated monopoly infrastructure provider with competitive operators using it. However, for a mixture of good and bad reasons they were not willing—at least initially—to leave the question of what services would be provided at what charges up to the market. This, plus a number of particular characteristics of railways, has led to the maintenance of a whole battery of regulatory controls throughout the rail industry, and the emergence of a series of problems has led these to be modified and increased over time.

In the next section we discuss the issue of rail infrastructure access and charging. We then describe the developments as they have actually taken place in Great Britain before offering an assessment of them and reaching our conclusions.

* *I am grateful both to delegates at the conference and to a referee for comments on an earlier draft. Responsibility for errors and opinions is however solely my own.*

1. Railways infrastructure access and charging

The usual approach to regulatory reform in network industries is to conclude that it is the infrastructure that is the natural monopoly, whilst it is possible for a variety of operators to use it to compete for the final market. Thus it is necessary to regulate the infrastructure provider to avoid abuse of monopoly power and to ensure open and non-discriminatory access to alternative service providers. The latter is particularly an issue if the infrastructure manager is also a service provider, so there is an argument for forbidding this. Regulators usually seek to ensure that prices reflect long run marginal costs and that infrastructure managers actually provide the necessary capacity. Provided that there are no economies of scale in infrastructure provision, this ensures that the infrastructure manager makes a reasonable return; if there are economies of scale then some sort of mark-ups on long run marginal cost will be required but as long as demand is not too sensitive to price this will not be a major distortion.

The first big problem that the British government faced in applying this approach was that the characteristics of rail infrastructure do not fit this model. Rail infrastructure is subject to major economies of scale, indivisibilities and time lags in adjustment of capacity. In the words of the Department for Transport (DTP, 1993) paragraph 3.2:

> "Work carried out by British Rail and the government's advisers, Coopers and Lybrand, has confirmed that the majority of rail infrastructure costs are common, that is, they cannot be uniquely attributed to any particular operator or even class of operator. The majority of costs also tend to be fixed, at least in the short to medium term."

They went on to say in paragraph 3.3:

> " If Railtrack were to charge all operators a proportion of common and fixed costs through a standard tariff .. it would drive off the railways traffic which was in a position to pay for its avoidable costs.... The strong market position of some industries makes it possible to sustain such an approach to charging. But on the railway that could lead to traffic loss and increases in charges for remaining operators."

Thus it would be necessary either to subsidise Railtrack, or to adopt a much more differentiated charging system according to what the market could bear. The then government was convinced that it was better to allow flexibility of charges, and for all government subsidies to be channelled through train operators, who would then have a purely commercial relationship with Railtrack (para 1.3).

> "Where subsidy of the operation of railways is appropriate on social grounds, it is more efficiently directed at particular services and paid to the operator rather than to the provider of the infrastructure".

At the same time, the problem of allocating capacity is much more complex for railways than for most network industries. Rail customers require the linking of a specific origin to a specific destination at a specific point in time. Of the other network industries only telecommunications shares this characteristic, but there capacity expansion is not usually a problem, and therefore congestion and the need to ration capacity are much less of an issue.

It was clear that the complete withdrawal of government support from rail passenger services would have led to closure of a large part of the network, and indeed even the allocation of capacity according to what the market would bear would lead to a decline in local and commuter services with capacity being reallocated to inter city services. The government was not prepared to see this, at least in the short term. In any event, there is good reason to suppose that a purely market based determination of rail services will not be optimal. Rail services provide benefits to users which cannot always be recouped as revenue, since services themselves are subject to major economies of scale; with increases in traffic one can benefit existing users by providing more frequent services, or carry the traffic at low marginal cost in longer trains. They also provide non-user benefits by diverting passengers from more congested and more environmentally polluting modes of transport. Since the extent of these benefits varies with the type of service, and the combination of price and service levels that it offers, it is difficult to reflect them simply in subsidised track access charges. But political pressures led to a situation where even where there was a good case for replacing trains with buses the government did not wish to see this happen. Thus it determined in favour of a franchising system, with fairly tightly defined public service requirements specifying minimum levels of service in terms of frequency, speed and time of day. Slots on the infrastructure were reserved for these services. The franchises also controlled some fares—namely season tickets on commuter services, and ordinary or "saver" fares (the standard walk-on leisure ticket) elsewhere, whilst—under pressure from MPs of all parties—provisions to require all passenger service providers to participate in through and interchangeable ticketing

and provision of impartial information were incorporated into their licences in order to preserve so-called "network benefits".[1]

In terms of the structure of track access charges, it was concluded that freight and open access operators should pay a negotiated charge, at least covering their avoidable costs and making as large a contribution as possible to fixed and common costs. Franchised operators should pay a variable charge equal to the cost implications of running additional trains, and a fixed charge equal to their other avoidable costs plus a share of fixed costs not covered by freight and open access operators. Whilst there was complete open access for freight, open access passenger operation was limited to origin destination pairs not already served by through services and other services that had negligible impact on franchisees. This was to make it easier to let franchises at the lowest possible levels of subsidy; if there was a risk of new entry on the most profitable parts of the franchise the subsidy needed to keep the remainder running would be increased.

This was seen as a temporary arrangement; after the initial period of franchising, moderation of competition (which greatly restricted open access entry) would be removed, and Railtrack would have no obligation to meet the needs of franchisees before giving capacity to other operators. The implications of this for the cost of franchised passenger services were to have been a risk on the Franchising Director's budget.

It became the duty of the Rail Regulator to review all aspects of access agreements, including infrastructure charges, and he first consulted on this in the document Office of the Rail Regulator (1994a).

By this time it was clear that the proposed structure of charges for franchised passenger operators was on average:

- 8 percent short run variable charge (wear and tear and electricity)
- 37 percent long term incremental cost of meeting the operators need for capacity
- 43 percent allocation of common costs (of which about half, arising at below the zone level were allocated on the basis of planned vehicle miles and half arising at national or zonal levels were allocated on the basis of budgeted revenue).
- 12 percent station and depot access charges

[1] For a thorough description of the various regulatory controls on rail passenger service providers see OPRAF (1996).

Where new access rights were required the price for these would be negotiated at a level in between avoidable cost and the value of the path to the operator on the basis that Railtrack would be entitled to a greater share of the revenue the more it was bearing risk.

The Regulator did not propose any major changes to structure, but did comment that different operators would vary in the quality of the paths they required and in their peakedness, and suggested the possibility of the variable element of the charge varying according to these factors. (ORR, 1995).

The Regulator's conclusions on the structure of track access charges were published in Office of the Rail Regulator (1994b). Whilst the Regulator argued that it would be desirable for a greater proportion of access charges to be variable with use, he did not consider it appropriate to change the structure of charges in the short term. Instead, he introduced procedures for the renegotiation of access rights and charges, in the hope that this would give Railtrack an incentive to "buy back" scarce capacity where it could put it to better use.

In order to incentives all parties a series of performance regimes were put in place. The track access agreements provided for Railtrack to compensate train operators for performance below a certain benchmark; where performance was above this benchmark the operator paid Railtrack a bonus. Operators also paid Railtrack if they were the cause of delays. There were also performance regimes between OPRAF and the TOCs which relied heavily on subsidy for their income, based on penalty payments for failures in reliability, punctuality and overcrowding. For the more commercial TOCs it was argued that commercial pressures alone were adequate.

2. The privatisation process

Over the following two years British Rail was broken up into around a hundred different companies and all were privatised. The structure which resulted is one which is unique for a rail system anywhere in the world, and which comprised: a privately owned infrastructure company, Railtrack Plc; 25 privately owned passenger franchisees, whereby passenger services are operated on contracts for a fixed number of years; privately owned rolling stock leasing companies supplying rolling stock to the passenger operators; privately owned freight operators; extensive sub-contracting including all infrastruc-

ture maintenance and renewal; an independent regulator, responsible for determining the rules for rail infrastructure charges, for the licensing of all rail companies and for approving all access agreements; and a franchising authority, the Office of Rail Passenger Franchising (OPRAF), responsible for franchising out the operation of the passenger network. The principle of the organisation was to introduce competition all along the supply chain—for the passenger market via franchising, in the market for freight operation, for the provision of the services of rolling stock supply and maintenance and infrastructure renewal and maintenance (Foster, 1994).

Franchises were let for a period of 7-15 years largely on the basis of the bid involving the lowest subsidy (or in a few cases the highest premium payment for the right to run the franchise).

By contrast, government control of freight services was minimal. Most freight operations had been sold to a single consortium, led by Wisconsin Central and named English, Welsh and Scottish Railways. Freightliner, the container and inter-modal specialist, had been sold to a management buyout. The only other freight operator was a small new entrant, Direct Rail Services, an off-shoot of the nuclear industry and which specialised in the shipment of nuclear waste. The Regulator obviously had some control via the regulation of access conditions and charges, and the government offered encouragement to the use of rail via freight facilities grants and track access grants. But otherwise, decisions on rail freight were entirely in private hands.

Reference has already been made to the important role of the regulator. Clearly by controlling license conditions and track access conditions and charges, he represented a major public control on the rail sector. However, the scope for the government to use the Regulator as a means of implementing its new policy was limited by the legal independence of the Regulator. Because the decisions of the Regulator would have a major impact on the willingness of the private sector, and especially Railtrack, to invest, it was thought necessary that he should be free of direct political control. Whereas OPRAF was clearly an instrument of government policy, taking its objectives direct from the Secretary of State, it would require a change in the law for the Secretary of State to give direct instructions to the Regulator, and it was feared that such a change would damage prospects for private investment by greatly increasing regulatory uncertainty.

A further piece of the jigsaw must be referred to, as it became the source of much debate in due course, and that is the system of safety

regulation. This was separate from both of the above. Overall responsibility rested with the Railways Inspectorate of the Health and Safety Executive. This body both approved the "safety case" (a statement of policies to achieve the necessary level of safety) of Railtrack, and investigated accidents and other serious incidents. Railtrack itself was delegated authority to approve the safety case of other rail operators and to implement necessary safety standards.

3. The Labour government's policy

When Labour came to power in 1997, it promised a new integrated transport policy, in which considerations of environment, social inclusion and integration would rank along with economy and safety as key objectives. In the pursuit of these objectives a major break in past trends with a shift from private to public transport, was promised. The strategy was outlined in the transport policy White Paper (DTP, 1998), and in more detail in the ten year plan (DETR, 2000). Specifically for rail, targets were set of a 50 percent increase in passenger kilometres and an 80 percent increase in freight tonne kilometres by the end of the ten years.

Table 1. Rail traffic on the British National Rail Network

	Total passenger kilometres	Total freight tonne km
1985-86	30.4	16.0
1986-87	30.8	16.6
1987-88	32.4	17.5
1988-89	34.3	18.1
1989-90	33.3	16.7
1990-91	33.2	16.0
1991-92	32.5	15.3
1992-93	31.7	15.5
1993-94	30.4	13.8
1994-95	28.7	13.0
1995-96	30.0	13.3
1996-97	32.1	15.1
1997-98	34.7	16.9
1998-99	36.3	17.3
1999-00	38.5	18.2
2000-01	38.7	18.1

Source: SRA (2001).

However, Labour inherited a rail system the privatisation of which had only just been completed. It also came to power with promises to reverse this process and specifically to renationalise Railtrack, the owner and operator of the rail infrastructure. It might have been expected that the route Labour would take to achieving its objectives would be the traditional "command and control" approach as in 1947. But that is not the case. Whether for purely financial reasons, or because the government had second thoughts about the wisdom of further major reorganisation in the rail industry that even then could not be guaranteed to achieve its objectives, talk of renationalisation was swiftly abandoned. Instead, Labour sought ways of achieving the necessary control and integration to achieve its objectives by revising the regulatory framework within which the railway operates.

Table 2. Government support to the rail industry

	Revenue support grants to domestic passenger services	
	Central Government Grants	**PTE Grants**
1985-86	849	78
1986-87	755	70
1987-88	796	68
1988-89	551	70
1989-90	479	84
1990-91	637	115
1991-92	902	120
1992-93	1194	107
1993-94	926	166
1994-95	1815	346
1995-96	1712	362
1996-97	1809	291
1997-98	1429	375
1998-99	1196	337
1999-00	1031	312
2000-01	847	283

Note: PTE grants are grants paid by Passenger Transport Executives for local rail passenger services in the main conurbations excluding London.
Source: SRA (2001).

When it came to the question of whether to make major changes in the structure of the industry, there was a further issue to face. Whilst there certainly had been problems, and perhaps on the whole public opinion was critical of the new structure of the industry, there

was also quite a lot happening that was positive (Nash, 2000). Passenger traffic had risen to its highest levels since before the major cuts to the rail network under Dr Beeching in the 1960s (Table 1). Freight traffic had also started to grow although not to the same extent. Whilst the form of privatisation had led inevitably to a big increase in government grants in the short term as assets were sold off and the train operating companies had to pay commercial rates for using them, subsidies (excluding receipts from the sale of assets) were rapidly declining. (Table 2).

The problems that were emerging with the system were essentially four-fold. Firstly some aspects of quality of service were a cause for concern; punctuality and reliability were declining (Table 3) and despite a high degree of public control over train service levels, through ticketing and information designed to maintain network benefits, there were problems in achieving well-integrated timetables and fares in a system with many different train operators. The biggest absurdity was the number of cases where services operated between the same points by different operators produced a combination of duplication of services a few minutes apart and then big gaps—a common problem when timetables are not co-ordinated. Certainly, the timetables presented nothing like the simplicity and regularity of the clockface Swiss Taktfahrplan, even on routes where services operated approximately at regular intervals (Railway Reform Group, 2000).

The second big problem was in the field of investment. It was argued that the level of investment, particularly by Railtrack, although increasing, remained inadequate and was not providing sufficient capacity for a growing industry. Moreover, where train operators had ordered new rolling stock there were long delays in getting it into service, partly due to problems with the manufacturers, but more especially due to difficulties in getting it through the Railtrack safety regime. Major new investment plans had to be negotiated between all the parties involved, and a plan—for instance for the modernisation of the network in the vicinity of a major bottleneck such as Leeds, Birmingham or Manchester—would involve a number of passenger and freight operators, Railtrack's suppliers, the Regulator and the Director of Franchising. Such plans were expensive and slow to negotiate, and the biggest of them—the modernisation of the key West Coast Main Line - had been the subject of massive cost increases on budget as well as serious delays.

Table 3. Public performance measure. Percentage of trains arriving on time 1997-98 to 2001-02

	Long distance operators	London and SE operators	Regional operators	All operators	London & SE peak services
1997-98	81.7	89.6	90.6	89.7	86.9
1998-99	80.6	87.9	88.6	87.9	85.3
1999-00	83.7	87.1	89.1	87.8	85.1
2000-01	69.1	77.6	81.7	79.1	73.7
2000-01Q1	84.0	88.6	89.3	88.7	87.0
Q2	80.1	87.9	87.2	87.2	86.4
Q3	47.9	57.7	70.9	63.1	50.0
Q4	59.9	76.4	78.9	76.8	70.8
2001-02 Q1	65.8	81.6	81.6	80.9	79.4
Q2	70.7	79.3	79.8	79.1	77.5

Note: The Hatfield accident, leading to severe speed restrictions through the system, happened in 2000-01, Q3.
Source: SRA National Rail Trends 2001-2.

The third problem was the financial difficulties of some of the train operators, particularly those in the less profitable parts of the industry which had built their franchises bids around big reductions in operating costs. The result was doubt as to whether the reduction in subsidy was fully sustainable or whether in fact some franchisees would go out of business, meaning that some franchises would need to be relet probably with higher levels of subsidy. In fact, the SRA moved a number of Regional franchises on to a form of annually renegotiated "cost-plus" type contracts, either because they were in danger of imminent bankruptcy or in order to facilitate renegotiation of franchise boundaries. Despite the increased subsidies involved, by 2000-2001 the losses of the regional companies had risen to GBP 81m. (Cheek, 2002), and further payments additional to those stipulated in the franchise agreements have been negotiated.

Fourthly was the concern about safety. Whilst overall most rail safety indicators continued the favourable trend that had long been achieved (Evans, 2001), two fatal accidents (Southall and Ladbroke Grove) led to grave concern; in both some aspects of the performance of the new rail operators were found to be at fault, and Railtrack itself was severely criticised for failure to act in the case of a known safety

problem with the sighting of a specific signal in the latter case. One immediate political reaction was to require Railtrack to separate off its functions relating to safety, such as the determination of group standards, into a separate non-profit making subsidiary called Rail Safety; many commentators called for a more complete separation of safety functions from commercial organisations. Whilst the process of modifying the regulation of the rail system to achieve the government's objectives was underway, during the latter part of the year 2000 the rail industry in Great Britain was plunged into crisis by a further fatal accident at Hatfield. The cause of the accident was a broken rail, which had been found to be defective by contractors in an inspection earlier in the year, but had neither been replaced nor the subject of a speed restriction. Following the Hatfield rail accident, gauge corner cracking was found extensively in rails all over the system. Railtrack imposed severe speed restrictions, which greatly increased journey times and led to reduced frequencies and poor reliability. The problems were compounded by other factors including severe flooding and shortages of rolling stock. Whilst Railtrack was seeking to deal with these problems, further difficulties appeared in terms of the overrun of several major projects further disrupting the system, and confidence in Railtrack sank. There were serious falls in traffic and profitability, from which recovery is still not complete at the time of writing, and in the light of the aftermath for Railtrack's profitability, the Secretary of State applied to the Courts to place Railtrack in administration. We will discuss later what this may mean for the future organisation of the rail system.

In order to achieve its objectives, the government needed to tackle the above problems. Quality of service needed to be improved. But above all investment in capacity and quality of the infrastructure needed to be increased. A strategic view needed to be taken of the requirements of all rail operators and customers, passenger and freight. The means the government adopted to achieve this were two-fold. Firstly, a new strategic body was to be established, the Strategic Rail Authority. This was established in shadow form by bringing together the Office of Passenger Rail Franchising, the remaining functions of the British Railways Board and some Department of Transport Environment and the Regions staff. But it had to wait for the passage of the 1999 Transport Act to be fully constituted as the SRA in February 2001. Secondly a new Regulator, known to favour greatly strengthening regulatory control, was appointed and legal provision made for him to be required to take account of the views of the Secretary of State.

4. The Strategic Rail Authority

Some people believed, and indeed some wished, that the Strategic Rail Authority would be the natural successor to the British Railways Board, planning and controlling the rail network as a whole, with the private sector companies effectively reduced to the role of contractors. However, the first Chairman appointed to SRA, Sir Alastair Morton, was a former private sector manager famous for his role in the successful completion of the Channel Tunnel with private sector finance, and not at all of that frame of mind. In his view, the SRA should "guide and lead, but not command and control" (SRA, 2001). Whilst SRA committed itself to the production of a strategic plan, this was delayed until January 2002 (SRA, 2002), by which time a new Chairman was in place. To a large extent, the SRA looked to the industry itself to provide the proposals as to how to achieve the objectives and saw itself as a facilitator for carrying out those proposals it regarded as worthwhile. Thus the Strategic Agenda (SRA, 2001) contained a menu of possible projects rather than a prescription as to what will be carried out.

The first part of the SRA strategy concerned refranchising. The SRA saw refranchising as an opportunity to agree a smaller number of longer (20 year) franchises, conditional on performance and on implementation of much more ambitious investment plans. It saw longer franchises as encouraging greater investment, although other commentators observed that short franchises might lead to companies eager to retain the franchises investing even towards the end of the franchises (Steer, 2001; Newbery and Affuso, 2000). The big issue was the question of who would bear the risk of the unexpired value of rolling stock at the end of the franchises; initially the rolling stock leasing companies were unwilling to bear this, but as time passed so they become more willing to invest without a long term, or even any, lease. SRA has the powers to bear this risk but has been reluctant to use them, except in exceptional circumstances, such as the requirement to build new suburban stock in advance of refranchising to meet requirements imposed by the Health and Safety Executive for the phasing out of Mark 1 stock.

SRA opened negotiation on a number of franchises earlier than was necessary, on the basis that the incumbent might be persuaded to relinquish the franchise early in return for the opportunity to bid for a long term more attractive franchise. It sought a wide range of proposals rather than being prescriptive on what new investment and improvements in service the offer should contain. The result was a difficult

process in which SRA had to weigh up such issues as realism and past delivery of performance against ambitious plans for the future; a much more difficult task than simply comparing the subsidy bids for a stipulated set of services. The process therefore took a lot more time than was originally expected. Moreover, the uncertainty following the Hatfield accident cannot have helped in getting competitive bids, and indeed in one case—Central Trains—the refranchising process was halted on the grounds that it was failing to produce sufficiently attractive proposals.

Secondly, SRA has become directly involved in the financing of infrastructure investment. It is clear that much of the proposed expansion cannot be justified in purely commercial terms. In the original structure of the industry, this investment would be financed by Railtrack, remunerated by the train operating company and where necessary subsidies under the franchise agreement would reflect the non-commercial element of the costs. SRA from the first doubted the ability of Railtrack to finance and manage investment on the scale necessary, and sought another way forward—the so-called "Special Purpose Vehicle". Rail infrastructure has the problem that, even where commercially justified, time horizons are long and risks high, and that makes it relatively unattractive to the private sector. By selectively intervening to provide longer term funding SRA believed it could lever in substantial private funding. The idea was that major infrastructure improvements would be financed from a variety of sources, including train operating companies, private financiers, and the SRA in the form of grants or loans, but the latter being "patient capital". At completion, Railtrack would buy the assets and recover the costs through its normal process of access charges, thus releasing capital for further projects. The first example of funding of this sort was indeed the Channel Tunnel high speed rail link. Initially, Railtrack opposed this approach, claiming that it could finance and manage all the investment itself provided that the Regulator permitted it to make appropriate profits to keep its share price reasonably high. However, following the financial crisis resulting from the Hatfield accident referred to above, Railtrack's share price fell precipitously and it accepted that it could no longer fund or manage all these projects itself; indeed it had to negotiate advancement of some SRA payments to be able to finance its activities at all.

SRA has been involved in many other initiatives, including reviewing its approach to grant aid for freight services to be more flexible, and implementing a new system of funding for small scale schemes brought

forward in partnership with local authorities (the Rail Passenger Partnership scheme). But in terms of the overall strategy, refranchising and the financing of infrastructure improvements represent the key elements of the SRA strategy.

5. The Rail Regulator

Whilst the Strategic Rail Authority takes its instructions direct from government, the Rail Regulator retains a far greater degree of independence. His principal functions are to licence all undertakings in the rail industry, and to approve Railtrack access charges and conditions. His role is quasi-judicial—i.e. to ensure fair treatment of all parties in the industry, and his independence is important in reassuring the private sector that it will not be subject to arbitrary political interference and in that way in encouraging private investment.

Reference has been made above to the reform of the regulatory system under the new Regulator. Again, there have been two key elements involved. The first is the licence conditions imposed on Railtrack. The second is the issue of track access charges and conditions.

At the time of privatisation, the philosophy was that government only has a role in securing provision of services, and that the infrastructure manager can be left to respond to market forces regarding the quantity and quality of infrastructure to provide. The original licence conditions did require Railtrack to produce an annual Network Management Statement, describing the capability of the present infrastructure and the plans for improvement, but this was solely for information—there was no obligation on Railtrack actually to carry out the proposals in question. Progressive licence modifications implemented by the new regulator were to greatly increase the importance of this document by requiring that it contain costed and timetabled proposals to "meet the reasonable needs" of the operators, and to provide for enforcement action if Railtrack failed to implement these plans. A second area of concern to the regulator was Railtrack's lack of precise knowledge of the state of its assets, and a further licence condition required Railtrack to implement a register of assets to provide this information. (ORR, 2001a). Further licence modifications, for instance to restrict Railtrack's disposal of land that may be needed for railway purposes, were proposed.

The first periodic review of track access charges started with the publication of a consultation document in December 1997 (ORR, 1997). The Regulator considered that charges should:

- incentivise Railtrack, train operators and funders to maximise the efficient use and development of the network
- avoid undue discrimination between operators
- appropriately reward Railtrack for changes in the level of output
- meet the government's overall transport objectives

Problems with the existing structure of charges were:

- negotiations for freight and open access operators were complex and time consuming, whilst negotiations on variation of access rights for franchisees were simply not working
- the charging structure for franchisees gave no incentive for economy in the use of scarce capacity and no adequate mechanism for the replacement of existing low value services by higher value ones. Operators were not adequately charged even for wear and tear, and not charged at all for congestion and opportunity cost of slots
- Moreover, circumstances had changed significantly since the charges were originally set. There had been a rapid growth in both rail traffic and train kilometres, leading to much greater congestion and requirements for investment in new capacity than had been anticipated, and it was the policy of the new government that this should continue. However incentives to expand the network were poor.
- the ability of Railtrack to negotiate charges according to the ability of a TOC to pay, led to extreme secrecy about demand on the part of TOCs to the detriment of service and investment planning.

During the review, Railtrack provided evidence of substantially higher wear and tear costs than allowed for in the existing charges, and also quantified congestion costs in fine detail by track section and time period (Gibson, 2000). Consideration was given to improving the incentive of Railtrack to expand the network by also incorporating the capital costs of expansion into the variable element of the access charge on the basis of a calculation of long run marginal cost; however, it was found that this varied enormously with the location, size and nature of the additional capacity required.

The recommendations of the Regulator at the end of the process were (ORR, 2000, 2001b):

- an increase in the variable part of the track charges to reflect the full wear and tear cost and 50 percent of the quantified congestion cost. It appears that the Regulator was concerned that including the full congestion charge would give train operators to much incentive to cut services.
- a move to a published tariff for all operators, with franchised operators continuing to pay on a two part tariff, but freight and open access operators paying only the variable element of the tariff. However, open access continued to be heavily restricted, and the Regulator subsequently suggested that where open access was permitted the entrant might be required to compensate the franchisee for loss of profits.
- an incentive payment to Railtrack based on increases in traffic in order to encourage expansion of the network. Because this was not funded through the variable part of the track access charge, there was no corresponding disincentive to train operators to expand, as there would have been had train operators paid this directly.

In the event not all of the costs falling on Railtrack as a result of these decisions were added to the fixed element of franchisees charges; the Strategic Rail Authority agreed to pay for the removal of the contribution to joint and common costs from freight operators, and a substantial part of the general increase in Railtrack's costs following reassessment of the state of the infrastructure after the Hatfield accident, through direct payment to Railtrack. This avoided a situation whereby franchisees" fixed payments would have increased, but under the terms of the franchise agreements SRA would have had to compensate them for these increases anyway. By entering into a direct financial relationship with Railtrack, arguably SRA would have more control on how the money was spent.

New entrants in the passenger sector will be treated relatively favourably, in that they must be offered the chance to operate paying only the variable element of the charge. However, the extent to which entrants are permitted to challenge franchisees head on is very limited. Currently competition is only permitted for 20 percent of the revenue of a set of flows designated by the operator and then only if deemed in the public interest. Whilst the Regulator has indicated an inclination to relax this constraint, he is considering maintaining a requirement

that the proposed entry be shown to be, on balance, in the public interest, and also considering a process whereby entrants would have to pay incumbents for loss of profits, thus in effect bearing part of the fixed costs of track access. The penalties for poor performance (and bonuses for good) were also doubled. In the case of freight services, the previous system of negotiated tariffs was replaced by a tariff based solely on variable costs, which would form the basis of all future access agreements. Fixed costs attributable to freight services, and the cost of a new volume incentive paid to Railtrack in respect of freight traffic, will be borne by SRA (ORR, 2001b). The result of this is to roughly halve the amount paid by freight operators for access to the rail network, thus offsetting some of the competitive advantage gained by road as a result of increased vehicle weight, freezing of fuel duty and reductions in vehicle excise duty. The cost to Railtrack of these changes will be compensated for by direct payment by the SRA. It remains difficult however to see how the total strategy for rail freight can achieve the targeted 80 percent growth in 10 years, especially as for the main operator the variable element of the freight access charge has substantially increased.

6. Continuing problems

By the time of the financial crisis at Railtrack referred to above, there were already a number of concerns about the way the new structure was working. The Strategic Rail Authority had only been in existence a short period of time, and that time was a period of major disruption and uncertainty for the rail network. Perhaps it is not surprising therefore that a clear plan for the future of the network did not quickly emerge. However, concern was expressed at the degree to which SRA had been content to wait for other bodies to come forward with proposals, for instance in the franchise bids. Whilst some people would support this as a way of collecting ideas, other see it as a weakness in terms of a lack of clear strategy which was delaying necessary action including the refranchising process.

As stated above, in October 2001, Railtrack was placed in administration. The outcome from this has been the emergence of a new not-for-profit company limited by guarantee (a form of private company without shareholders) with a Board representing the industry and the Strategic Rail Authority, along the lines advocated by Goodwin (2001). It is argued that such an organisation will be freed from

the dominant concern with the value of shares and the shareholders interests and thus able to represent the interests of all stakeholders in the industry more adequately, whilst still raising private sector capital in the form of loans relatively cheaply

A second major change has occurred at the Strategic Rail Authority. The financial state of Railtrack and the demands for safety investment meant further major government finance would be needed simply to keep the system going even without the ambitious plans embodied in the proposed new 20 year franchises. The Secretary of State therefore gave the Strategic Rail Authority a new set of guidance and instructions emphasising achievement of rapid gains of performance embodied in two-year franchise extensions rather than longer term refranchising. After many further changes of policy, the policy now is clearly to go for 5-8 year franchises, but with the SRA taking the lead in developing longer term strategies and investment plans. It also intends to merge franchises serving the same London terminal in order to achieve better integration of services and more efficient use of capacity.

This change of direction for the SRA was associated with replacement of its first chairman by a finance specialist from the industry, Richard Bowker, previously of Virgin Trains. Bowker has been highly critical of what he found at the SRA and has set about a major reorganisation emphasising strategic planning and service delivery (Bowker, 2002).

7. Assessment

Thus the intention is of a (slightly) smaller number of longer franchises with a strong commitment to investment, investment in rail infrastructure by government through the SRA, a greater degree of strategic direction by the SRA, tighter regulation by the regulator and the role of Railtrack very much reduced to providing, maintaining and renewing the existing infrastructure under enhanced incentives. To what extent is this regime an appropriate one?

Firstly in terms of the franchises themselves there remains a doubt about whether the PSR specifications reflect value for money. Table 4 shows the payment per passenger kilometre under the franchise agreements (it must be reiterated that part of these reflect track charges that reflect costs that would not be avoided even if the franchised services ceased to exist. Tables 5 and 6 show the estimated difference between

marginal social cost per passenger kilometre for different types of traffic in a recent study (Sansom et al., 2001). From this it seems clear that relatively modest diversion from road would be sufficient to justify the levels of subsidy for urban and main line services, but that rural services would be much more difficult to justify. On the other hand substantial subsidies would be worthwhile to divert freight traffic from road, especially since taxes on heavy goods vehicles have since been significantly reduced.

Table 4. Subsidy by market sector

	2000-01 net[a] subsidy, from SRA and PTEs combined (£m)	Passenger kilometres (bn)	Net subsidy per passenger kilometre
Strategic Routes	190	13.0	1.5p
London and South East	245	19.3	1.3p
Regional Networks	855	6.7	12.8p
Total	1290	39.0	3.3p

Note: [a] Includes premium payments from TOCs.
Source: SRA (2002).

Secondly remain a number of issues about the franchises themselves. Longer franchises arguably make investment easier to procure and give greater stability to marketing and service development. On the other hand they do weaken the pressure to perform in order to see the franchise renewed. Perhaps shorter franchises with more direction from the SRA is the best solution but much will depend on the quality of the planning SRA brings to the system. Another problem is that the current franchise agreements do not always provide appropriate incentives for the operators. For instance on loss making commuter services there is no incentive for the franchisee to attract additional traffic in the peak, even where this would be socially desirable. This is especially true given the system of fares regulation, which reduces commuter fares by 1 percent per annum in real terms, or more where performance is poor. An incentive payment per passenger kilometre differentiated by service and peak/off peak, plus reform of the system of fares regulation would address this criticism. (There is good reason to hold peak commuter fares below marginal cost on grounds of second best, but whether the current regimes holds them too low needs to be examined). It is also the

case that there is not necessarily an adequate incentive on performance even in the more commercial TOCs and SRA has tended to negotiate in some form of performance regime when negotiating these franchises.

Thirdly merging of franchises into a smaller number, and merger of franchises serving common London terminals will reduce the degree of on track competition between operators, as will continuation of moderation of competition. It is clear that smaller operators have in many cases been amongst the more innovative, and that competition has stimulated this innovation as well as leading to lower fares. On the other hand it is judged to have led to wasteful use of capacity and over provision of services, with the cost being borne either by passengers elsewhere on the system or by the taxpayer. For instance, merger of Great Western and Thames trains might see relatively short Thames trains services replaced by longer trains serving a combination of stations some currently served by Thames trains and some currently served by Great Western trains.

Fourthly, it is still not clear that there are adequate measures to make the most efficient use of track capacity. As stated above, the Regulator halved the congestion element of the new track charges. Moreover even this only allowed for pure congestion (i.e. the delays to other trains) and not the scarcity element of track capacity (the shear inability of operators to secure the slot they want). Currently use of track capacity is heavily constrained by the PSRs, whilst the Regulator in adjudicating between alternative uses of infrastructure has a set of decision criteria which give little attention to social costs and benefits. However, it is clear that Bowker intends to make this issue a top priority and has said "there will be no sacred cows" (Bowker, 2002).

Fifthly there is continuing concern about whether all the investment proposed is justifiable, and whether it can be funded even if it is (Newbery and Affuso, 2000). Currently the Strategic Rail Authority has been given a clear objective in its Instructions and Guidance from the Secretary of State to achieve the targets in the 10 year plan of a 50 percent growth in passenger kilometres and an 80 percent growth in freight tonne kilometres. This targets have remained unchanged despite the major increase in rail costs that has occurred in recent years. On the other hand all investment proposals have to meet the SRA Planning Criteria, which comprise broadly a standard cost benefit analysis plus an examination of the contribution to broader environmental, economic

and accessibility objectives. It is not clear that these criteria and the growth targets are consistent with one another.

The major West Coast Main Line project, for instance, has turned out to be much more expensive than originally budgeted for. There are particular concerns about safety investment. Following the Cullen and Uff-Cullen reports into the Hatfield, Southall and Ladbroke Grove accidents, it was recommended that Railtrack should introduce both the cheaper Train Protection and Warning System in the short run, and to install full Automatic Train Protection on all lines used by trains travelling at more than 100mph by 2010. The only way of doing the latter within the timescale in question would involve a system costing an estimated GBP 3.5b, reducing capacity by 10-15 percent and saving less than one life per annum. It has been shown that the lives lost by diversion of traffic to roads in these circumstances would far outweigh the lives saved (CFIT, 2002). However, a recent report by Railway Safety (Railway Safety, 2002) recommends a much more measured approach with no installation prior to the availability of a more sophisticated system which would actually increase capacity.

Sixthly, despite these changes, many other players have argued the case for further structural change in the industry. In all the problems discussed above, a key factor has been the relationship between the various players in the new fragmented industry—different operators, operators and Railtrack, Railtrack and its contractors. One of the many memorable phrases coined by a past Chairman of the British Railways Board, Sir Peter Parker, was the statement that railways have a habit of "falling flat on their interfaces". Essentially two views of these problems emerged. One was that the nature of the relationships between the various partners in the industry was still immature, in need of improvement, but that the problems could be solved by revisions to the contractual and regulatory arrangements and by the building up of a more mature and less adversarial partnership between the various players in the industry (Steer, 2001). The other was that fragmentation had been taken too far, and that radical reorganisation was necessary to reduce the number of interfaces between different organisations (Ford, 2001).

Table 5. Marginal cost and revenue analysis—by area type and road type (car, pence/vkm, low cost estimates)

Categories	Cost							Revenues			Difference
	Infrastructure operating cost & depreciation	Conges-tion	External accident costs	Air pollu-tion	Noise	Climate change	Total	Fuel duty	Value added tax on fuel duty	Total	Cost-revenues
Central London											
Motorway	0.01	53.75	0.01	0.57	0.04	0.11	54.5	3.86	0.68	4.5	49.9
Trunk & Principal	0.04	71.09	1.68	0.77	0.03	0.16	73.8	3.86	0.68	4.5	69.2
Other	0.08	187.79	1.68	0.87	0.04	0.19	190.6	3.86	0.68	4.5	186.1
Inner London											
Motorway	0.01	20.10	0.01	0.42	0.03	0.11	20.7	3.86	0.68	4.5	16.1
Trunk & Principal	0.04	54.13	1.68	0.61	0.04	0.16	56.6	3.86	0.68	4.5	52.1
Other	0.08	94.48	1.68	0.66	0.03	0.17	97.1	3.86	0.68	4.5	92.6
Outer London											
Motorway	0.01	31.09	0.01	0.31	0.02	0.10	31.5	3.86	0.68	4.5	27.0
Trunk & Principal	0.04	28.03	1.68	0.40	0.02	0.14	30.3	3.86	0.68	4.5	25.8
Other	0.08	39.66	1.68	0.45	0.02	0.16	42.0	3.86	0.68	4.5	37.5
Inner Conurbation											
Motorway	0.01	53.90	0.01	0.47	0.02	0.11	54.5	3.86	0.68	4.5	50.0
Trunk & Principal	0.04	33.97	1.68	0.55	0.02	0.14	36.4	3.86	0.68	4.5	31.9
Other	0.08	60.25	1.68	0.66	0.02	0.17	62.9	3.86	0.68	4.5	58.3
Outer Conurbation											
Motorway	0.01	35.23	0.01	0.25	0.02	0.10	35.6	3.86	0.68	4.5	31.1
Trunk & Principal	0.04	12.28	1.68	0.30	0.02	0.12	14.4	3.86	0.68	4.5	9.9
Other	0.08	0.00	1.68	0.32	0.02	0.13	2.2	3.86	0.68	4.5	-2.3

Table 5. Continued….

Categories	Cost							Revenues			Difference
	Infrastructure operating cost & depreciation	Conges-tion	External accident costs	Air pollu-tion	Noise	Climate change	Total	Fuel duty	Value added tax on fuel duty	Total	Cost-revenues
Urban >25 km²											
Trunk & Principal	0.04	10.13	1.68	0.25	0.02	0.12	12.2	3.86	0.68	4.5	7.7
Other	0.08	0.72	1.68	0.26	0.02	0.13	2.9	3.86	0.68	4.5	-1.6
Urban 15-25 km²											
Trunk & Principal	0.04	7.01	1.68	0.25	0.02	0.12	9.1	3.86	0.68	4.5	4.6
Other	0.08	0.00	1.68	0.24	0.02	0.12	2.1	3.86	0.68	4.5	-2.4
Urban 10-15 km²											
Trunk & Principal	0.04	0.00	1.68	0.17	0.02	0.11	2.0	3.86	0.68	4.5	-2.5
Other	0.08	0.00	1.68	0.19	0.02	0.12	2.1	3.86	0.68	4.5	-2.4
Urban 5-10 km²											
Trunk & Principal	0.04	2.94	1.68	0.15	0.02	0.11	4.9	3.86	0.68	4.5	0.4
Other	0.08	0.00	1.68	0.16	0.02	0.12	2.1	3.86	0.68	4.5	-2.5
Urban 0.01-5 km²											
Trunk & Principal	0.04	1.37	1.68	0.13	0.01	0.11	3.3	3.86	0.68	4.5	-1.2
Other	0.08	0.00	1.68	0.14	0.01	0.12	2.0	3.86	0.68	4.5	-2.5
Rural											
Motorway	0.01	4.01	0.01	0.11	0.00	0.13	4.3	3.86	0.68	4.5	-0.3
Trunk & Principal	0.04	8.48	0.30	0.10	0.00	0.11	9.0	3.86	0.68	4.5	4.5
Other	0.08	1.28	0.30	0.10	0.01	0.10	1.9	3.86	0.68	4.5	-2.7

Table 6. Marginal cost and revenue analysis by type of vehicle and time of day

Categories	*Cost*										Revenues					Difference
	Infrastructure operating cost & depreciation	Vehicle operating cost (PSV)	Congestion	Mohring effect (PSV)	External accident costs	Air pollution	Noise	Climate change	VAT not paid (PSV)	Total	Fares (PSV)	Vehicle excise duty (part)	Fuel duty	Value added tax on fuel duty	Total	Cost-revenues
Car, peak	0.05	-	13.22	-	0.78	0.18	0.01	0.12	-	14.4	-	-	3.86	0.68	4.5	9.8
Car, off-peak	0.05	-	7.01	-	0.80	0.18	0.01	0.12	-	8.2	-	-	3.86	0.68	4.5	3.6
LDV, peak	0.06	-	13.99	-	0.52	0.76	0.02	0.19	-	15.5	-	-	3.86	0.68	4.5	11.0
LDV, off-peak	0.06	-	7.07	-	0.53	0.68	0.02	0.18	-	8.5	-	-	3.86	0.68	4.5	4.0
HGV-Rigid, peak	3.82	-	26.00	-	1.40	1.84	0.06	0.44	-	33.6	-	2.25	13.11	2.29	17.6	15.9
HGV-Rigid, off-peak	3.77	-	12.75	-	1.39	1.57	0.06	0.43	-	20.0	-	2.25	13.11	2.29	17.6	2.3
HGV-Artic, peak	7.57	-	33.45	-	0.99	1.42	0.07	0.72	-	44.2	-	2.50	14.47	2.53	19.5	24.7
HGV-Artic, off-peak	7.55	-	19.81	-	0.99	1.41	0.08	0.71	-	30.5	-	2.50	14.47	2.53	19.5	11.0
PSV, peak	5.74	78.73	20.31	-14.43	3.82	3.17	0.09	0.58	13.33	111.3	76.19	0.61	5.26	0.92	83.0	28.4
PSV, off-peak	4.93	80.10	12.31	-14.86	3.69	3.15	0.09	0.55	13.49	103.5	77.10	0.61	5.26	0.92	83.9	19.6

Some options being canvassed would not require new legislation. These include the replacement of contracts emphasising penalties for non-performance with partnership arrangements based on sharing the benefits of performance. It may be that Railtrack would be willing to lease parts of the network to single operators, and that the Regulator would approve this with appropriate safeguards for other operators (the approach taken in Victoria, Australia). Railtrack might reduce its number of zones and achieve a closer alignment between zones and franchisees. All these options are being canvassed within the industry, and the industry itself might take the lead in achieving them, although some of them would require regulatory approval (Brown, 2001). In the meantime, the new chairman of SRA has begun informal measures to improve co-operation within the industry, including regular meetings of the "gang of five" (heads of SRA, ORR, Railtrack, ATOC and EWS), and similar "virtual boards" of the key stakeholders for specific geographical areas (Bowker, 2002).

8. Conclusions

Given a decision to break up the rail network and introduce competition and private ownership, the basic approach followed in Britain makes good sense. There are good economic and inevitable political reasons for the government to maintain the sort of control over passenger services provided by franchising, and for subsidy provided that it is appropriately directed and controlled. A separate infrastructure company was likely to be the easiest way of implementing this policy, so that franchisees would only need to take control of operations. Privately owner freight operators but with appropriate incentive payment for the attraction of additional traffic when this is in the public interest also seems an appropriate approach. Moreover considerable care was taken over the design of contractual arrangements throughout the system in order to provide the right incentives.

However, there have still been many practical problems. Relying on the market to provide the incentives to invest and to integrate the planning and implementation of that investment has been inadequate. The use of capacity has been wasteful; inappropriate pricing and the rigidity of many PSRs have been major factors in this. Safety has become not just the priority that it certainly should be, but also the case for investment that yields minimal safety improvements at enormous cost (and may ultimately divert traffic to road worsening the safety

record of the transport sector as a whole (CFIT, 2002). Most seriously, Railtrack as originally constituted failed to control its costs, to ensure the quality of the work of its subcontractors or to plan projects effectively.

Given the failure of Railtrack, it must be questioned whether privatisation of the infrastructure was ever sensible. The choice here is between a regulated private monopoly and a public one. It is of course possible that the pressures for efficiency on a public monopoly would have been even less, but on the other hand it would have been easier for it then to play a strategic role in the long term planning of the network, rather than concentrating on the short term performance of its share price. Also government might have been more ready to direct subsidy direct to the infrastructure, permitting something closer to true marginal cost pricing.

The reforms emerging maintain many of the strengths of the original approach to rail privatisation in Britain, but seek to address its weaknesses. The SRA, under its new leadership, looks set to play the strategic role needed, and to take action to improve capacity allocation and avoid unnecessary investment. The successor to Railtrack will hopefully not make the mistakes of its predecessor. Whilst there will no doubt continue to be political pressures leading to provision of costly services that would be better provided by bus, to investment that is excessive, particularly in safety, and there remains a lot of work to do to produce a strategic plan for the railways which is fully consistent and justifies all the investment proposed, it does appear that the greatest weaknesses of the regulation of rail the system in Britain as originally privatised are being addressed.

References

Bowker, R. (2002), Britain's railway—time for a new radicalism, the Sir Robert Reid Railway Lecture 2002, Institute of Logistics and Transport, London (www.sra.gov.uk/sra/news/releases/speech/sra_lecture_doc.pdf).

Brown, R. (2001), Power to the Operators, in Transport 2000 (2001) The Railways where do we go from here, Transport 2000, London.

Cheek, C. (2002), in Railway Strategies 11, Spring, 3.

CFIT (2002), The implementation of rail safety measures: Implications for overall safety on the UK transport system, Commission for Integrated Transports, Fact Sheet 10 (www.cfit.gov.uk/factsheets/10/index.htm).

DEPR (2000), Transport 2010—the 10 year plan, Department of the Environment, Transport and the Regions (www.dft.gov.uk/trans2010/plan/pdf/part1.pdf).

DTP (1993), Gaining access to the Railway network. The Government's proposals, Department for Transport.

DTP (1998), A new deal for transport: Better for everyone, Cm3950, Department for Transport.

Evans, A. (2001), Fatal main line accidents, Modern Railways, March, 23-27.

Ford, R. (2001), Simplification: Fewer, bigger, better, in Transport 2000 (2001) The Railways where do we go from here, Transport 2000, London.

Foster, C.D. (1994), The economics of rail privatisation, Discussion Paper 7, Centre for Regulated Industries.

Gibson, S. (2000), Charging for the Use of Railway Capacity, in C. Nash and E. Niskanen (eds.), Helsinki Workshop on Infrastructure Charging on Railways, VATT Discussion Paper 945, Helsinki.

Goodwin, P. (2001), The nine year plan for transport: What next?, Transport Planning Society, Lecture, Institute for Civil Engineers.

Nash C.A. (1988), British rail: Developments in the administration of subsidy, in J. Gretton, A. Harrison and C. Whitehead (eds.), Reshaping the Nationalised Industries Policy Journals, Hermitage, Berkshire.

Nash, C.A. (2000), Privatisation and Deregulation in Railways—an assessment of the British approach, in B. Bradshaw and H. Lawton Smith (eds.), Privatisation and Deregulation of Transport, MacMillan Press Ltd, Basingstoke.

Newbery, D. and Affuso, L. (2000), Investment in infrastructure financing and governance, Presentation at the Railroad conference, Paris, 8-9 June.

OPRAF (1996), Passenger Rail Industry Overview, Office of Passenger Rail Franchising, London.

ORR (1994a), Framework for the approval of Railtrack's track access charges for franchised passenger services, a consultation document, Office of the Rail Regulator, London.

ORR (1994b), Railtrack's track access charges for franchised passenger services. Developing the structure of charges, a policy statement, Office of the Rail Regulator, London.

ORR (1995), Railtrack's charges for passenger rail services: The future level of charges, a policy statement, Office of the Rail Regulator, London.

ORR (1997), The periodic review of Railtrack's access charges: A proposed framework and key issues, Office of the Rail Regulator, London.

ORR (2000), Periodic review of Railtrack's access charges: final conclusions, Office of the Rail Regulator, London.

ORR (2001a), Accountability of Railtrack, Office of the Rail Regulator, London.

ORR (2001b), Review of freight charging policy: provisional conclusions, Office of the Rail Regulator, London.

Railway Reform Group (2000), Perfect Timing. A national strategic timetable to make transport integration work, Railway Reform Group, York.

Railway Safety (2002), The ERTMS Programme Team Final Report, Railway Safety, London.

Sansom, T., Nash, C., Mackie, P., Shires, J. and Watkiss, P. (2001), Surface Transport Costs and Charges. Great Britain 1998, Institute for Transport Studies, University of Leeds.

Steer, J. (2001), Evolution not Revolution, in Transport 2000 (2001) The Railways where do we go from here, Transport 2000, London.

SRA (2001), A Strategic Agenda, Strategic Rail Authority, London.

SRA (2002), The Strategic Plan, Strategic Rail Authority, London.