Options for increasing competition in the Great Britain rail market: on-rail competition on the passenger rail market and contestability in rail infrastructure investment.

Final report to the Office of Rail Regulation

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Executive summary

On-rail passenger competition

The first part of this study reviews competitive options for on-rail passenger services. At present, 99% of passenger rail services are provided by franchised train operating companies, some of which operate competing services over either the same or parallel routes. The remainder are provided by ‘open access’ on-rail competitors, which have successfully applied to the ORR for track access. In authorising such services, the ORR has regard to their impact on passengers and on public subsidy to the railway sector. In practice this translates into a consideration of the proportions in which competitive services either generate new revenues or ‘abstract’ them from franchised services.

Available evidence on the impact of open access competition supports the view that passengers benefit from more frequent services which provide higher customer satisfaction and lower prices. Little evidence has been collected so far concerning the expected impact of competition on cost of service. This is likely to be limited by the degree to which train operating companies can in fact control their costs, but it is likely that exposing them to competition on some routes may improve overall productivity.

The report considers four incremental means of enhancing on-rail passenger competition and one more radical one. The options in the former category are:

- amending the current basis for evaluating open access proposals, to focus more directly on estimates of the economic benefits such competition brings and its impact on public subsidy; this more direct method of considering costs and benefits also links with a proposal noted below;

- allowing franchisees effectively to sub-contract or ‘sub-licence’ services to other providers; this would only happen if the latter could generate more revenue or provide the service more cheaply than the franchisee, but there may be (probably isolated) cases when this is so;

- extend the scope of competition among franchisees. The evidence suggests that the extension of such competition has benefited passengers and that its withdrawal has harmed them. Such competition eliminates leakage of revenues from the franchised sectors, but lower fares might increase the demand for public subsidy. This might be mitigated by positive effects on productivity. The benefits would, however, fail to materialise if the operators colluded. This possibility would be reduced if competition between ‘symmetrical’ operators were avoided;

- as in other sectors, competitive open access entrants offering profitable services might be asked to contribute to the costs of loss-making services by paying a levy on revenues or a surcharge on track access. This might be difficult to achieve directly, but a similar effect can result from conducting an auction for track access made available to open access competitors, the revenues from which would be set against the additional cost in public subsidy estimated to flow from the granting of any track rights.
We conclude that each of these methods has the potential to benefit passengers, while taking into account the other objective of the current regime to control public subsidy.

We consider in addition a more radical conceptual proposal to reduce considerably the scope of franchising and rely on competition for more services. This involves, on potentially competitive routes, inviting bids for long term rights to use the track in a combinatorial auction in which limits would be placed on what any operator can buy, in order to prevent the emergence of monopoly. After suitable changes to European legislation, such rights would be tradable, subject to caps, in the secondary market. The regime would be implemented under the supervision of a systems operator.

Only a sketch of this proposal is offered here, but we note that it could be implemented gradually and progressively over time.

*Contestability in rail infrastructure investment*

Investment in the rail infrastructure is high - Network Rail’s capital spend is around £25bn for the current 5 year period. This is a large capital budget for one national monopoly provider to dispose of. Efficiency in delivery of this investment programme is dependent on the strength of regulatory incentives which are hampered by the lack of comparative data and an ownership structure that provides weak sanctions for poor performance.

The potential gains from increased contestability for Network Rail’s investment could be significant, arising from two sources. Firstly, gains might be made from more efficient delivery by new entrants. Secondly, contestability might lead to a greater transparency of Network Rail’s performance, creating sharper incentives for its own efficiency.

This report considers these issues in the light of the theoretical literature on separation and integration and the experience of other sectors, and has drawn some high level conclusions on the most promising potential options for introducing contestability – by identifying areas where the costs from separation are the least and are therefore most likely to be outweighed by the benefits. In reaching these conclusions, the authors have also considered how the incentives of alternative providers such as Train Operating Companies (TOCs) may differ from those of Network Rail. This is important in deciding whether outcomes are likely to represent an improvement on those resulting from the current provision by Network Rail.

Although there are some forms of investment where it is unlikely that contestability would be beneficial, there are others where there may be more potential and where scope for contestability should be tested.

Considerations of co-ordination are likely to mean that Network Rail will remain the most appropriate owner, decision-taker and delivery agent for enhancements that are embedded in the existing network such as track improvements. However, in the cases of customer-facing investments (such as in stations, platforms and associated infrastructure) and of significant investments in new track or extensions, the separation that contestability brings may be less costly. Chiltern Railways already represents an example of successful transfer of procurement responsibility to a third party for this type of investment.
A critical choice in determining the form of contestability is that of the stage of the investment process at which it is introduced; in particular, it is of key importance whether the incumbent remains responsible for tendering contracts to deliver capital projects or whether a third party takes on this responsibility. Evidence from other sectors and countries suggests that, whilst both approaches involve the creation of additional transactions boundaries, the costs will tend to be larger under the latter approach, as it will involve a new body (for instance ORR or the Department for Transport – DfT – and Transport Scotland – TS) running the tender and the need for a new infrastructure for the tendering process. This has sometimes led to significant delays where this model has been implemented.

On this basis several regulators (e.g., Ofgem and Ofwat) have concluded that this approach is likely to be appropriate only for very large projects, where timing of delivery is less urgent, and where the potential benefits may be of a scale to outweigh the additional costs. Such a mechanism already exists for very large rail infrastructure projects, with DfT or Transport Scotland taking the role of procurement body.

Were ORR to take on such a role for middle to large size projects, it would have to be sufficiently well resourced and skilled to run such a process effectively. In addition, this approach would need to fit with any reforms to the franchising process for TOCs. For many projects (where it is likely that TOCs would be the alternative provider) that franchising process might offer the vehicle for such contestability, although there are doubts about whether the current DfT proposals for reforming the franchising process are sufficiently flexible and conducive to eliciting good investment proposals, providing opportunities for attracting new investors/delivery agents other than TOCs, or for more radical options involving transfer of ownership of some assets. The authors recommend an approach of carefully targeted experimentation to assess the merits in practice of a variety of approaches.

Whilst Network Rail already contracts out delivery of most enhancement projects, there should also be more scope for Network Rail to pass responsibility for procurement as well as delivery of investment to third parties such as TOCs, possibly working in consortia with parties such as developers and retailers. Network Rail should be encouraged to consider ceding responsibility for procurement at an earlier stage, such as the design stage, to ensure the maximum potential input from innovative third parties. Whilst there are good reasons for hesitating to recommend the imposition of mandatory ‘outsourcing’ requirements by ORR, the regulator should nonetheless consider enhancing its scrutiny of Network Rail’s procurement processes, and accept that compulsory outsourcing would remain a final sanction in cases of persistent poor efficiency by Network Rail.

In sum, the rail infrastructure comprises a number of different types of opportunity for investment, but contestability is most likely to deliver net benefits in the case of projects which are most ‘separable’ from the core network in terms of planning and operations and where there are few train operators to coordinate. Project scale will be an issue in deciding whether it is appropriate to introduce external tendering by ORR or DfT / TS, although in many of the ‘separable’ instances (for instance stations and track extensions) the tendering process may get absorbed into the franchising process. Finally, ORR should give consideration to increasing the regulatory scrutiny of Network Rail’s procurement of investment.
Section I. Introduction.

This report was commissioned by the Office of Railway Regulation (ORR). Its aim is to examine two aspects of competition in the Great Britain rail market:

- on-rail competition in the passenger rail market, and
- contestability in rail infrastructure investment.

The report is based upon desk research, supplemented by interviews with Network Rail, the Association of Train Operating Companies, and two train operating companies.
Section II. Variants for the introduction of on-rail competition.

1. Introduction.

The first issue addressed in this report concerns the scope for and the modalities of authorising and regulating on-rail competition for passengers. Prior to rail privatisation, and most prominently in the 1993 White Paper, competing rail services, running on monopoly tracks, were seen as a principal benefit of the process. The subsequent decades has seen a significant, in some periods almost total, withdrawal from this position, for which there are many (not mutually exclusive) explanations: the infeasibility of competitive services on a significant scale, arising from growing capacity constraints; the undesirability of such competition, which is seen as having results which are disadvantageous for consumers; and the impact of competition (which leads to reductions in fares) on the need for public spending to support loss making services and enhance and increase capacity.2

This section of the report first reviews certain background issues, including the specification of policy and regulatory objectives, relating both to outcomes and process; the operation of the franchising system; and the likely nature of on-rail competition. This is followed by a review of alternative means of inserting incremental competition in the market within a regime which is dominated by competition for the market, via franchising. This is followed by a section which outlines a more radical option for reshaping the competitive landscape. Finally, we offer an assessment of the implications of our analysis.

2. Background factors.

Defining objectives related to outcomes.

In regulatory analysis, the usual objective is a consumer-focused one, technically that of maximising consumer surplus. In some contexts, this is augmented by excess profits accruing to producers. In the provision of passenger train services, it is likely that a combination of competition in the market and competition for the market will eliminate any such excess profits, even if such profits were considered a public boon.3

The difference between rail transport and other network industries such as energy, telecommunications and water in the UK is that the latter are expected to break even, while in rail transport that is almost universally accepted as being impossible. There is therefore a need to balance increase in consumer benefits against government spending. The rationale for accepting a constraint on public subsidy to the sector (which generates a ‘shadow price’ for public spending in terms of consumer surplus) or alternatively of viewing the objective as comprising consumer surplus minus public subsidy, multiplied by a weighting factor equivalent to the above-noted shadow price, is unlikely to spring entirely from the so-called ‘excess burden’ of raising public finance4, but to result from overall public expenditure targets.

2 See S Glaister, British rail privatisation - competition destroyed by politics, CRI, 2004, for a colourful account of this process.
3 In this context, profits should be distinguished from returns to risk-taking or entrepreneurship.
4 This measures the distortionary impact on the economy of raising taxes to meet the public spending needs.
An alternative way of viewing the options, favoured in parts of the sector, is that, given an overall constraint on public spending on railways, the choice is between lower fares now, which can benefit current consumers, and investment on network enhancements, which will benefit consumers in the future.

The unusually complex nature of the objective is set out explicitly in the ORR’s statutory Section 4 duties, which include duties to:

- promote the use of the railway network for the use of passengers (section 4(1)(b)) ... and to promote competition for the benefit of railway users (section 4(1)(d)).
- to enable persons providing railway services to plan with a reasonable degree of certainty (section 4(1)(g)) and to have regard to the financial position of the Secretary of State (section 4(5)(c)).

**Defining objectives relating to regulatory processes.**

Two of the five ‘Principles of Good Regulation’ are consistency and transparency. The gloss on the former, provided by the Better Regulation Commission, includes the injunction: ‘regulation should be predictable in order to give stability and certainty to those being regulated’; transparency includes: ‘policy objectives, including the need for regulation, should be clearly and effectively communicate to all interested parties’. These requirements clearly apply to licensing procedures for new services, such as competitive on-rail passenger services, where uncertainty and inconsistency can unsettle both existing and new licensees. In some sectors, such as energy and telecommunications, there has been a trend to license all comers, subject to minimal quality standards, or to adopt ‘objective’ assignment processes for licences in limited supply, such as auctions. The latter work well where a simple, quantifiable criterion can be applied, such as the size of the bid.

This is an example of a ubiquitous need in regulation and other areas of policy to choose between or combine in various ways rules and discretion, where the latter has the potential to produce better bespoke solutions in individual cases, but at the cost of reducing predictability and (in some cases) risking breaches of impartiality – undesirable outcomes which following rules can avoid.

In the present context, the conflict arises in various ways: primarily, in taking decisions about which services to grant access, but also, secondarily, in dealing with consequences for pre-existing franchisees. In relation to the former we can see benefit in having criteria for selecting entrants which are both clear and produce the best outcome. Achieving this objective also promotes greater predictability of potential competitors for those bidding for franchises, and makes it easier to avoid pressure on government to compensate a franchisee who has fared badly when faced with competitors.

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5 Better Regulation Commission, *Five principles of good regulation*, 2000
**Observations on franchising.**

The franchising system is a fundamental determinant of the scope for its complement, unfranchised on-rail passenger competition. Under the current regime, franchised providers are in the ascendancy, providing 99% of passenger kilometres.

The following is a list of features of the operation of the franchising system for train operating companies in the UK.

1. The franchises are predominantly short-term operating rather than longer-term investment franchises.
2. Competition for franchises has been keen, with some evidence of reducing over time.
3. Throughout the period of operation of franchises, traffic growth and revenue growth have been high.
4. The evidence does not suggest that franchising has led to cost reductions, as competition for the market would be expected to do.
5. The financial performance of franchisees has been intermittently poor.
6. Where franchises have been renegotiated on a cost plus basis rather than rescinded, there is evidence that cost performance has deteriorated.
7. There are indications in bidders’ behaviour of both the ‘winner’s curse’ and of strategic behaviour.

The Department for Transport has recently published a document on the franchising system which envisages some modest extension of franchise length and more explicit procedures for the conduct of a ‘menu auction’, which gives bidders the option to propose separately priced extensions to the basic contract.

For our purposes, the most important characteristic of the franchising system is its scope. Competition for the market can be applied

- for commercially viable ‘natural monopoly’ services, where the focus may be on protecting end users from the exercise of market power, possibly by means of a ‘Chadwick auction’, in which the winner is the firm which offers the lowest price, or it may be on transferring rents from the provider to the franchiser;
- for loss-making services, where the goal is usually to identify the supplier requiring the least subsidy; this is sometimes called a reverse auction;
- for routes capable of sustaining on-rail competition, where the goal is almost certain to be to raise revenue by selling a concession amounting at least to a partial monopoly, possibly subject to some form of price control.

Train operating franchises in the UK contain combinations of these types of services. In particular, several of them contain components (probably, subject to the discussion below, significant components) of the final type, where prices are above the competitive level but rents are appropriated to cross-subsidise other activities. The decision on the scope of franchising, together with its complement, the decision about the scope of on-rail passenger competition, implicitly ‘solves’ the problem of reconciling trade-offs between consumers’ interests and the scale of the deficit.

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6 Note that we also consider below competition between franchisees.
8 See Section III of this paper for a discussion of an important exception.
Clearly, however, other outcomes would be possible if the scope of franchising were reduced to cover fewer services and to define them less rigidly. If this occurred, it would be contrary to past trends to make franchising more extensive and detailed.

The theoretical effects of on-rail competition.

The supply and demand for rail services have complex spatial and temporal characteristics. People want to travel from particular places along a route at particular times, and also often want to return to their point of departure. Capacity limits on train paths and seat availability impose constraints on the attainment of both firm strategies and consumer preferences. Timetabling thus becomes a key determinant of outcomes. On competitive routes, regulations relating to the inter-availability of ticketing can have consequences as significant as interconnection rights and obligations have in other sectors.

These and other factors relating to economies of scale, scope and density make passenger markets at best natural oligopolies and often natural monopolies. In these circumstances, we cannot automatically rely on the comforting presumption that the insertion of competition will invariably benefit end users.

In the favourable scenario, the introduction of an on-line competitor will do all of:

- offering choice of supplier to passengers
- offering a wider choice of service times
- generating lower prices charged by the entrant, and possibly, in reaction by the pre-existing operator
- introducing product differentiation
- creating incentives to cut costs on all competitors
- encouraging service and pricing innovation.

However, the outcome might in theory be as follows:

- a choice of supplier
- no expansion of choice of service times because operators synchronise their timetables\(^\text{10}\)
- no price competition
- no service quality differentiation
- rising unit costs, as more services chase a static demand
- limited innovation
- loss of network benefits through reduced integration of complementary services, with respect to interchange times and fares, for example.

\(^{10}\) This limitation of variety in a small numbers market is sometimes illustrated by competition between two ice-cream sellers on a beach patronised by evenly spread sun-bathers, each of whom is averse to walking and will buy exactly one ice cream. To minimise customers’ effort, the two sellers would locate at positions one quarter and three quarters along the length of the beach. To maximise sales, each seller will seek to put herself at a point on the beach which is closer than her rival to the majority of bathers. After some jockeying for position, they end up back-to-back at the middle of the beach, requiring bathers to walk twice as far as they would in the optimal outcome. This result, the so-called principle of minimal differentiation, works in limited conditions - as will be apparent from considering the consequences of raising the number of sellers to three. But these conditions are sometimes applicable in transport market places. See S Martin, Advanced industrial economics, 2003, Ch 4.1.
Unfortunately there is no procedure relying on a priori reasoning for discriminating among the myriad combinations of outcomes possible. Analysis or meta-analysis of scenarios constructed with ‘realistic’ models can help, but such work is difficult to assess, and the welfare effects depend on a range of factors, not least whether the competition is fringe or symmetrical.11

A less ambitious approach is implemented in a study by Ove Arup for ORR of the impact of existing fringe-competitive ‘open access’ rail services in the UK.12 It concludes that in the three cases where such services have been authorised, competition has increased traffic, often by starting to supply under-served areas; in addition, competitors provide better service and offer lower and more innovative fares. Other aspects of the study are referred to below.

One potential benefit of competition which has received little discussion is its impact on efficiency. In models with high levels of competition or contestability, productive efficiency and even dynamic efficiency are essentially given. In other market contexts, pressures to efficiency and innovation vary from very low in a monopoly regulated to cost-plus prices to highly variable in intermediate market structures. The point of franchising is to introduce contestability at regular intervals, and to maintain pressure.

The recent record in Great Britain is rather disappointing, according to one recent study.13 The study uses stochastic frontier methods to study the changes in efficiency in the franchised rail sector from the start of the process fifteen years ago. Productivity rose from 1995 to 2000, but then fell by 2006 to its original level: ‘taking into account improved wages and conditions, a given set of rail passenger services in 2006 is found to cost 12% more in real terms than it did at privatisation, and some 29% more than in 2000’ (p 24). Much of the post-2000 deterioration is the apparent result of franchises placed on a management or short term ‘renegotiated’ basis by the franchisor when the operators fell into difficulties; their costs were 20% higher than other operators during the period of alternative contract arrangements. However, the deterioration also involved a downward shift in the performance of the most efficient firms on the frontier. At the least, this raises doubts about the efficacy of for the market competition alone to promote efficiency.

This raises the question of whether more competition will not only attract more efficient entrants but also place more pressure on existing providers. Evidence from other sectors does suggest that it will. According to an Office of Fair Trading review of the evidence, competition drives productivity through three mechanisms:14

- within the firm, it puts pressure on managers to increase internal efficiency;
- between firms, it enables higher efficiency firms to increase market share at the expense of lower productivity firms, which may be forced to exit the market;
- in respect of innovation, in many situations competition will be good for it, although ‘too much’ competition may be harmful.15

11 An example is J Preston, Competition for long distance passenger rail services: the emerging evidence, Preliminary draft 2010, which makes extensive use of PRAISE, a large route-based model with a complex specification of demand which incorporates the effects of changes in schedules. The author concludes that ‘the evidence in support of competition for long distance rail services.... ...is mixed’ (p 18).
12 On rail competition analysis: key findings, Ove Arup, 2009.
14 Productivity and competition: an OFT perspective on the productivity debate, January 2007, OFT887.
15 The reference here is to the ‘inverted U-shaped’ relationship between innovation and number of firms, with innovation low in a monopoly, rising as the number of firms grows, and then declining.
Each of these effects can plausibly operate in the on-rail passenger market place. In particular, it is very unlikely that innovation will be stifled by too many competitors. At the same time, train operators in the UK rely heavily on inputs purchased from others, notably rolling stock companies and, of course, Network Rail. Much of their direct expenditure is on labour, where resistance to new working practices is likely. These considerations realistically temper the prospects for cost reduction.

Moreover, given that capacity constraints will, without a major change to the franchising system, limit the scope for open access competition, it is important to ask if the productivity stimulus would be confined to competitive routes or would penetrate the whole of a franchisee's operations. Evidence on this is necessarily limited. In the recent independent review of competition and innovation in the water industry, the present authors argued that opening up retail competition to business customers was likely to have two effects:

- to increase productivity in the supply of retail services to households, which would continue to be a monopoly; the argument being that improved business practices imposed by competition in dealing with one group of customers would spill over onto dealings with others;
- secondly, that, within a vertically integrated framework, the introduction of non-integrated retail competitors would put pressure on the upstream network provider to improve its productivity and levels of service; this arises because a group of independent retailers emerges with an incentive to improve upstream performance in support of their customers.

While it is more questionable whether competition will increase pressure on Network Rail to increase its efficiency, we would expect practices which cut costs and improve service levels to develop on competitive routes to spill over onto other routes within the same firm.

To summarise, the impact so far on consumers using routes with open access competition seems to have been unambiguously favourable, in offering choice, enhancing the number and quality of services, and lowering fares. This does not mean that all forms of competition will have similar effects, and there may be a case for guarding against dysfunctional outcomes such as bunching of departures and abandonment of thinner routes.

Secondly, despite, or because of, the disappointing effects of franchising competition to date, the assessment of competition should take account of expected effects of competition on efficiency.


We now turn to considering, in the light of the above discussion, various ways in which competition can be enhanced between on rail service providers. The selection is made on the basis of interviews with a small number of interested parties, including the ORR, experience in other sectors, and experience in other countries. In particular, we consider the following options, divided into two categories; incremental and radical, where the incremental category includes:

- amendments to current implementation of the moderation of competition
- promoting bargaining between franchisee and competitor

16 Independent review of competition and innovation in water markets, April 2009.
- increased use of overlapping franchises
- adjusting track access fees.

The more radical option considered involves shrinking the arena of franchises and opening significantly more services up to competition.

**Amending current ‘moderation of competition’ practices.**

The ‘moderation of competition’ practices have been in effect in various forms since privatisation. Their object and effect is to retain the value of franchises and to encourage investment. This is done by not granting approval to new competing services which are primarily abstractive of incumbents’ revenues without compensating benefits.\(^{17}\)

We show the impact of introducing open access competition in figures 1-3. In figure 1, before competition is introduced, the incumbent, at the fare level specified and with the average incremental cost per passenger shown\(^{18}\), makes a contribution to overheads or to cross-subsidise loss-making services shown by the area C.

In figure 2, an entrant with a (lower) cost charges a lower price, and abstracts a passengers and generates additional traffic G. This has four effects: it generates additional consumer surplus (+CS); it saves costs on meeting the needs of existing customers (+E); it reduces the incumbent’s contribution (-C)\(^{19}\); and it generates contribution for the entrant (+Ce). The unweighted algebraic sum of these is clearly positive, but in practice the loss of contribution to the incumbent, which will augment public spending, will have a higher weight.

In figure 3, a slightly differentiated entrant shifts the demand curve, most plausibly because it provides rail transport to previously underserved areas. The results: a much larger increase in consumer surplus; a much larger entrant contribution; and a higher ratio of G to A.

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\(^{17}\)See *Moderation of competition: final conclusions*. ORR May 2004.

\(^{18}\) A constant average incremental cost, as shown, is a graphical convenience, and not essential to the argument.

\(^{19}\) It should be noted that contribution can go to meet fixed or common costs, and is not equivalent to profit.
What flows from this analysis? It illustrates the importance of the distinction between the effects of movement along and a shift in the demand curve, in respect of the gain in consumer surplus. It also shows the complexity of the effects. Presumably, the principal role of contribution flowing to the entrant is to motivate entry in the first place. Once that is done, it is of little social value. On the other hand, loss of contribution by the incumbent continuously adds to public spending. There is no efficiency gain from competition illustrated in the form of a decline in the incumbent’s
and the entrant’s costs. If competition drives both cost curves downwards, there would be a further benefit across all units of output.

Another point is that, while the cost in public spending and the benefit in consumer surplus are related in some way to, respectively, the levels of abstraction (A) and generation (G), the relationship is quite complex. Losses of contribution depend on the traffic loss multiplied by the unit price - the level of contribution per passenger.

As noted above, the increase in consumer surplus per passenger depends on how well that passenger was served before the competitor showed up.

One possible response to this is to switch the focus of the test from the ratio of generation to abstraction to the underlying economic variables determining the costs and benefits shown in the figure. In effect, an analysis of this kind was undertaken by ORR consultants in relation to applications for track access for the East Coast Mainline\textsuperscript{20}.

Based on an explicit representation of the demand curve, the model estimates the increase in consumer surplus generated by allowing open access competition on various routes. This includes a valuation of changes in crowding. These benefits are augmented by estimates of other non-user benefits, for example those associated with reduced car use. Together this generates a net present value over five and ten years of economic benefits. The level of abstraction of traffic permits an estimate of net financial cost of permitting the competition.

The conventional decision criterion in the case of mutually exclusive projects, such as alternative uses of a small number of train paths, is to favour the project yielding the highest net benefit. If, however, there is a funding constraint, then projects should be selected to maximise the sum of net benefits subject to that constraint. This problem can be solved using integer programming techniques or by establishing the ‘shadow price’ for public funding associated with the constraint. As discussed below, it is also susceptible to a market solution. The problem is, however, complicated if projects come up successively rather than all at once.

**Can the problem of generating competition and efficiency be delegated to the providers?**

Again within a regime of comprehensive franchising akin to the current one, it is reasonable to ask if a franchisee might want to ‘sublicense’ a competitor. At the least, this would give consumers a choice of service. It could do more, depending on the control the competitor had over price, quality of service etc.

In the most limiting case, the franchisee could simply lease a competitor’s train and crew, determining fares and keeping all the revenue risks itself. This is common practice in air travel, where airlines often lease planes and crews, either to cover short emergencies such a strikes, but also on a longer term basis. Suppose, however, what was sublicensed was some form of access to tracks.

This would then become a commercially negotiated access pricing problem, for which the regulatory access pricing model known as the efficient component pricing rule (or ECPR) has relevance. In that model, the access price comprises the cost of supplying the service (in this

\textsuperscript{20}Making better decisions: assessment of alternative track access applications on the East Coast Mainline, mva consultancy, 2009.
case the track charge paid by the franchisee) and an additional term comprising the opportunity cost of the access right to the franchisee, which is the contribution which the franchisee would have made had it continued to provide the retail service itself, rather than allowing a competitor to do so. In a regulated context, the application of the rule has sometimes, depending upon the method of calculation, acted to eliminate all competition.

The same logic will limit the scope for such voluntary agreements to cases where the franchisee can make more profit by sub-licensing, which is only likely to arise if a competitor’s service can a) be provided more cheaply, or b) generate more passengers or attract passengers with a greater willingness to pay. But clearly no franchisee will sublicense a competitor which c) abstracts passengers from its own services, especially, d) by undercutting and sparking a price war.

We understand that there are cases where services have been sublicensed in this way, but only where the franchisee has faced rolling stock capacity constraints. In other cases the opportunity cost of using a train which otherwise would lie idle is its short run costs, which are much lower that the long run costs faced by a competitor entering the market.

Thus while this approach has some potential for enhancing productive efficiency, its impact on consumers in terms of choice, price and quality is likely to be small.

**Extending competition among franchisees.**

The problem with open access competition is that it drains resources away from the franchised operators; whereas competition between franchised operators would likely have an impact on prices, quantities and costs of supply, but would not be subject to abstraction or siphoning effects. To the extent that competing franchised operators colluded, any beneficial effect on passengers would vanish, and we would be left, probably, just with higher costs. However, collusion is most likely when the franchisees are symmetrical with respect to costs, the nature of the product and size. Franchises can be constructed to reduce the likelihood of this happening. In practice, inter-franchise competition may be between a faster and a slower route, with competition concentrated on potential ‘switchers’.

Another feature of competition between franchisees is that franchisees have to make some tickets inter-available, meaning that they can be used on any train service offering the route. To the extent that this makes the competitors more symmetrical, it may lead to greater ease of collusion. Interalvailability can also be seen as a special form of the interconnection, which operates in many regulated industries, wherever one operator lends its assets to provide services retailed by another. At present, both between franchisees and between a franchisee and an open access operator, the interconnection is one way. This means that for each flow, the lead operator sets the interavailable walk-up fares, which other operators must accept. But in principle, if there were two franchisees, the interconnection could be two-way, with each operator required to accept the other’s fares. The two models lead to different incentives. In particular, with two way interconnection and negotiated rates, the parties can agree high charges and thereby sustain a collusive retail pricing regime. This does not work with a one way relationship.

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21 This has happened in the England and Wales water sector, where the ECPR-based rule established following the Water Act 2003 has excluded all competition.

22 See Mark Armstrong, ‘The theory of access pricing and interconnection’, in M Cave et al. (eds) *Handbook of Telecommunications Economics*, vol 1, 2002. Note that the collusion result hinges on the payments being linear- ie a constant amount per unit purchased.
side in the provision of services. This can lead to gaming, but is not a plausible instrument of collusion.

Usefully, we have evidence from UK experience of the impact of introducing and withdrawing competition between franchises.\textsuperscript{23} The study for ORR identifies two types of route—those where competition has been maintained and those where changes in franchising arrangements have reduced or eliminated competition. In the case of the Birmingham to London route, competition has existed between a faster, thicker and more expensive route and a slower, thinner and cheaper one, which has reduced travel time (and is in the course of reducing it still further). The data show that traffic increased faster and revenues slower than on the control route; there was also evidence of innovative pricing. The same conclusions were reached concerning the Cambridge to London route. Only in the third route examined—Peterborough to London—were the growth rates of traffic and revenues equal to the control.

In the second category of routes, competition was diminished. On one route, Ipswich to London, the amalgamation of two franchises in 2004 eliminated competition, whereupon passenger growth fell below and revenue growth exceeded that of the control. In addition, journey times grew, frequencies declined, some passenger benefits were withdrawn and innovative plans were shelved. The other two case studies were less conclusive.

Adding the two sets of studies together, there appear to be benefits associated with competition in half of the six routes and neutral effects in the other half. The latter conclusion is of interest, as there is little evidence of the dysfunctional effects of competition discussed above. While it would be a mistake to over-interpret a small sample, the results are encouraging.

How might one build upon existing levels of inter-franchise competition? There seem to be two dangers in particular, lack or loss of variety, and collusion. The conditions for competition to minimise product differentiation, most notably by synchronising departure times, seem to be more closely fulfilled in train transport than elsewhere; in particular, the number of competitors is likely to be confined to two. Yet this tendency can be resisted by timetabling. The risk that competition will focus resources on thicker routes to the detriment of thinner flows can be dealt with through the maintenance of franchising obligations.

But will the operators compete or collude? Some authorities responded to the variety of possible outcomes in small numbers competition by accumulating sets of criteria considered likely to promote tacit collusion or collective dominance. Thus, in application to the telecommunications sector, the European Commission have listed 14 criteria.\textsuperscript{24} Better known are the criteria which emerged from the Court of First Instance judgment in the Airtours case.\textsuperscript{25} These are:

\begin{itemize}
  \item market transparency, in respect of pricing, particularly;
  \item availability of a retaliatory mechanism, if a party breaches the tacit agreement:
  \item the lack of countervailing forces, such as buyer power or additional competitors.
\end{itemize}

Although these seem to be fulfilled in respect of on-rail passenger competition\textsuperscript{26}, almost inevitably there are other factors operating in the contrary direction. Thus difference in size among competitors may prevent the emergence of a common policy, and the finite length of

\textsuperscript{23} On-rail competition analysis: key findings, Ove Arup, 2009.
\textsuperscript{25} For more details and later updating of the criteria, see Richard Whish, Competition Law, 6th ed., Ch 14.5.
\textsuperscript{26} With the possible exception of the second, where one operator is capacity constrained.
franchise contracts can lead to an expectation of a breakdown of the accord towards the end of the period – the expectation of which may be enough to bring forward the outbreak of pricing hostilities.

It is an unusual feature of inter-franchise competition that the franchising authority determines both the identity and the scope of competition. For this reason, competition can be designed to render collusion unlikely. As a first step, asymmetry should be built into the competition as far as possible. This may be promoted by separate routes, or different stopping obligations, or other factors.

**Moderating competition via ticket or track use surcharges.**

To recapitulate the discussion of objectives in Section 1, the problem can be conceived as that of maximising consumer benefits, which can be enhanced by competition and competitive prices, subject to a constraint on public funding and to the felt need to provide certain loss-making services. This is a familiar problem in the regulation of investor-owned utilities. For example, in telecommunications, where all operators are subject to the (ex ante) break even constraint which characterises the unsubsidised private sector, there is a universal service obligation requiring voice services (and soon broadband too) to be provided at any location at a uniform price despite significant variations in costs of supply. Historically, incumbent operators were also required to supply certain services, particularly, line rental, at below cost prices. These regulatory requirements created a need for subsidies for loss-making customers or loss-making services. In a monopoly regime, these could easily be sustained. If competition is permitted, then entrants will concentrate on profitable areas or services, confining the incumbent increasingly to high cost or low revenue customers. In the more lurid versions of the story, this can lead to a ‘death’ or ‘graveyard’ spiral of higher costs, higher prices, migration of customers to competitors, and implosion of demand for the incumbent’s services.

Although there is little evidence of such disastrous outcomes, in the interests of maintaining competitive parity regulators have considered means of sharing the costs of universal service among operators. This can be done in several ways. The net burden of the universal service obligation can be calculated and met from a universal service fund, to which all operators contribute, on the basis of revenues, for example. Alternatively, an additional charge can be levied on some essential input, and the revenues used to defray the cost of subsidising particular services or groups of customers. Where the network operator is the party subject to the regulatory obligation, these extra revenues are paid directly into its coffers. The so-called ‘access deficit contribution’ payable by competitors to BT in the 1990s is an example of engrossing the contribution to a loss-making service in an access charge.

How could this be read across to rail services? The goal of competitive parity between franchised and open access operators is not relevant here, because the franchising regime imposes numerous obligations on franchisees. In return for this, most of them receive a public subsidy. However, competition can increase the need for this subsidy. As noted above, this is dealt with administratively at present under the moderation of competition rules. What we are discussing here is a means of replacing that regime by requiring open access competitors to make a payment which will cancel out, in part or whole, any increase in this subsidy.

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27 Under this arrangement, the obligation to provide the loss-making service can be made contestable.
One way would be to require open access operators to pay a proportion of their revenue to cover the increase in public subsidy which their existence led too. Alternatively, an adjustment could be made to track charges as a contribution to the deficit created by the emergence of competition. This surcharge could be collected by but need not accrue to Network Rail.

The present system of track charges is that franchisees bid for contracts on the footing that they will pay charges based on the variable costs of providing track services plus an annual fixed charge, the charges being insulated against changes within the franchise period arising from regulatory reviews of Network Rail. Open access competitors pay charges periodically set by the ORR at price reviews, also based on variable costs. It is these which could be surcharged.

Is it better to set up a fund or to vary access charges? It would be a strong argument in favour of the former if higher access charges encouraged operators to switch to higher cost alternatives. Obviously a train operator cannot, as a telecommunications entrant can, switch to a completely different network. In train services, the construction of parallel tracks is unlikely, some marginal adjustment might be made, such as running longer trains less frequently. In these circumstances, it will always be better (but not necessarily much better), to surcharge an output, such as retail revenue, than an input such as track access. However, the more fundamental point is that, unlike telecommunications networks, the capacity of which is infinitely expandable at a declining marginal cost, the rail network is riddled with capacity constraints which elevate the efficient price of access to many tracks to above their accounting costs. A track surcharge which (partially) filled this gap would have the potential to enhance efficiency.

How would the charges be set? Ideally, the contribution paid by the entrant should be proportionate to the incumbent’s loss of ability to pay the cross subsidy – making the rule similar to the ECPR described above. This would mean a higher charge for a substitute, ‘abstractive’ service than for a complementary ‘generative’ one. However, there is an obvious problem associated with this approach. It is not the standard problem of a profits tax, that it weakens incentives, because it is based not on the entrant’s profits but on the franchisee’s. It is rather the administrative problem of achieving a sufficient degree of granularity in the calculations to provide the right incentives.

In the telecommunications sector, the rates of contribution to the universal service fund or, historically, the ‘access deficit contributions’ in access charges were calculated in a very by and large way. Thus the latter differed by broad service – local, national or international call – but not (for obvious reasons) by the profitability of each individual call. Contributions to universal service funds are based in an even more aggregate way on firm revenues, or revenues net of interconnection payments.

How might this work in relation to surcharges on track charges for open access train operators? Following the telecoms precedent, one could calculate an average rate of surcharge based on historic rates of substitututability/complementarity between franchised and open access services. But these would reflect past rules on the moderation of competition. If the new regime relied solely on the price mechanism, then applications for access for abstractive routes might

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29 Such ‘inefficient bypass’ might arise in telecommunications if an inflated access charge caused an operator to build its own network, in circumstances where it imposed a lower cost on the economy if the competitor used the existing. In other words, the ‘build or buy’ decision might be distorted.

30 This is an illustration of a well known result in public finance due to Peter Diamond and James Mirrlees, ‘Optimal taxation and public production I and II’, American Economic Review, 61, 1971, pp. 8-27 and 261-278.

31 In other words, an entrant using BT’s network to terminate a call had to pay BT a rate which depended on the profitability to BT of the call which the entrant had ‘captured’ from BT.
predominate. This would be fiscally costly, and may also lead to excess demand and a continuing need to ration access as now, rather than leaving it to a price mechanism.

The natural alternative would be to auction surplus train paths. We noted above that the appraisal of competing bids for on-rail competition can be undertaken by estimating the economic benefits and net financial costs of alternative services. Suppose that this calculation were accompanied by a sealed bid auction for the relevant access rights. A competitor proposing to rely heavily on ‘business stealing’ or abstraction from a franchisee would for that reason impose a high financial cost, which it might, however, be able to make up for by making a larger bid, as the bid would be ‘netted’ out from the net financial cost. By this means the objectives of competition and subsidy limitation would be at least partially reconciled.

4. A more radical option

Clearly, the scope of franchising determines the opportunities for competition. This is definitionally true when each franchise is a monopoly, but even when fringe competition is allowed it remains largely true, as franchised services pre-empt track capacity. The dominance of franchised services in Great Britain illustrates this: even after the licensing of some open access competitors, only 0.6% of train kilometres are provided by such services.

However, it is easy to imagine a much more parsimonious franchising regime. This would cover loss-making routes, where its role would be to ensure that services deemed socially necessary were provided as economically as possible. Natural monopoly routes might need some form of price control, but routes where competition is feasible would not be franchised, but left to the market.

It is worth noting that many of these ideas were in circulation before privatisation in 1993\(^{32}\), but fell victim, at a time of pessimism about passenger traffic growth, to concerns about the impact of competition on public subsidy, and also to concerns about technical feasibility. More recent developments in IT and other fields are likely to have dispelled some of the latter problems.

In this section we outline a radical alternative in which the centre of gravity shifts fundamentally in the direction of competition. If this objective were accomplished, the outcome would be quite different from today’s framework. It is, of course, possible to consider intermediate variants, or a gradual or experimental transition towards the more radical approach. This is discussed at the end of the section. But in the interests of clarity we first describe the ‘end state’ of such a reform.

Let us outline the melodramatis personae in such a reformed regime.\(^{33}\) There would be:

- a track and station provider (or providers – see Section III of this paper); it would supply network services, in the form of train paths and associated services) to TOCs;
- there would be franchised TOCs, providing loss making services on specified routes – for which purpose they would be gifted train paths as at present
- there would be price-controlled TOCs, not requiring subsidy, not subject to on-rail competition, and not subject to sufficient off-rail competition to curb their market power;
- there would be TOCs operating in markets subject to on-rail competition;

\(^{32}\) See Gaining access to the railway network. Department of Transport 1993.

\(^{33}\) Providers of maintenance, rolling stock etc are not central to the discussion and are not considered here.
— there would be a regulator ensuring that current and expanded track services, and enhancements to those services, were provided economically, efficiently and effectively, and that the network operator could recover its costs if it did so;
— there would be a franchising authority which determined, subject to government guidance, which loss-making routes required to be franchised by reverse auction, ensured the efficient operation of the franchising system; and was the residual legatee of revenues from the auction of train paths;
— there would be a system operator (SO), whose role would be to maximise the number of train paths available, impose some restrictions on how they were configured, and, with the exception of train paths required for franchised operators, supervise the auctioning and trading of such train paths;
— there is also a role for a residual legatee of auction revenues; ie for an authority to allocate the proceeds of auctions, minus the efficient costs of operating and expanding the rail network; this would be a government role, which would require the determination of subsidies to rail, and their disposition between network enhancements and subsidies to users of current franchised services.

On this schema, the franchising activity would take place in a fairly separate ‘siló’, subject to the availability of funds. The SO would allocate train paths to support the stipulated services on a ‘command and control’ basis. To the extent that there was competition for train paths between franchised and non-franchised services, the price signals emerging from the allocation process for the latter would indicate the opportunity cost of the franchised service.

Other track rights would be auctioned, in a manner and for a period of years to be discussed below. It is worth noting that in recent years, considerable attention has been focussed on the use of auctions or markets for key inputs of this kind. The examples which come to mind are airport slots, spectrum licences and water abstraction and discharge rights.

The winner of the auction would have access to a train path or paths defined by the SO. The packaging of these rights would obviously be crucial. The duties of the SO in this regard would be to:

— ensure that the network provided the maximum capacity achievable, in the interests of customers;
— have regard to the interests of customers in achieving a variety of service (this would impose restrictions on minimum service levels, especially on smaller stations on commercially desirable routes);
— have regard to the interests of customers with respect to the frequency of services provided by the same operator (this would prevent a fragmentation of services, which operators would in any case seek to avoid);
— to promote competition between TOCs in the supply of services with different characteristics and prices over the same route: this would be achieved by appropriate packaging of train paths;

34 This could be a positive or a negative number.
35 A further extension would be to require the franchisor to bid against potential providers of competitive services in a combined market place for track access. This would require the franchisor to place an explicit value on train paths for franchise services. Interestingly, the UK government has accepted a similar arrangement in the assignment of spectrum, where public and private sector spectrum users bid against one another in primary and secondary spectrum markets. See M Cave, C Doyle and W Webb, Essentials of Modern Spectrum Management, 2007, Ch 15.
to prevent the emergence of singly or jointly dominant providers, where effective competition is feasible; this would imply imposing caps on the amount of train paths which any operator can acquire and packaging paths in a way which would reduce the likelihood of collusion.

Subject to the constraints on the process implied by the above duties, the SO would conduct the auction. Any new train paths generated by track enhancements would be auctioned. Subject to appropriate legislative changes, secondary trading of paths would be permitted, probably subject to ‘soft caps’ – i.e. caps which the SO, possibly on the advice of a competition authority, has the discretion to over-ride. Where the auction generated competition within a properly defined anti-trust market, prices would be subject solely ex post competition law remedies. When it did not, price controls would be imposed. A decision would have to be made concerning the reserve price in the auction. This would clearly influence the degree to which services could be provided. It could be as low as, or even lower than, the level of operating costs only. Bids would, however, be confined to positive values. If those were not attainable in a competitive framework, the services in question would to be subject to a reverse auction through the parallel franchising process.

What form might the auction take? In recent years, there have been major developments in the theory and practice of combinatorial multi-object auctions – a process which is appropriate to auctioning train paths. These allow participants to make their bids contingent on getting a set or combination of the rights being auctioned, rather than having to bid for them individually and risk an outcome in which they are committed to buying a set of paths which does not allow them to provide a viable service. At each round the algorithm identifies the set of bids which maximise revenue. Participants can submit alternative, and mutually exclusive, bids for combinations.

Each train path might be precisely specified, and included in the auction in this form. Or a less granular procedure might be employed. To illustrate the possibilities, consider the following hypothetical procedure. Train paths on any route are divided into morning peak, evening peak and off-peak. The number of paths in each category is established. Subject to whatever caps are in place, competitors can then bid for individual, or more likely, combinations of paths in a clock auction. This treats the paths as homogeneous: ie precise times of departure are not specified.

When prices have risen to a level which equates supply and demand in each category, successful bidders can then, in a separate phase, offer supplements for specific times of departure. Or the SO can assign specific times on the basis of preferences expressed by successful bidders. Or a combination of the two can be employed. Recall that secondary trading of paths is allowed at any time, so operators can attempt to re-contract. They may also, with the approval of the SO,

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36 For a discussion of caps in another context, se, M Cave, 'Anti-competitive conduct in spectrum markets', *Telecommunications Policy*, 2010
37 See P Cramton, Y Shoham and R Steinberg (eds), *Combinatorial Auctions*, 2006.
38 Note that this is provided for illustrative purposes only, and is based upon observations of recent auctions in other fields. The authors do not warrant its feasibility.
39 A clock auction is one in which bids for (combinations of) homogeneous objects are submitted by an open outcry or sealed bid procedure. Under the former, the process continues until a price is found which equates supply and demand. Under the latter, the set of revenue maximising bids is identified when they are unsealed.
40 This process is illustrated by a proposal of the Irish spectrum regulator, under which a combinatorial clock auction would first be employed to identify successful bidders for a particular set of frequencies, and then in a second phase individual frequencies would be assigned on the basis of supplementary bids. Similar methods have been proposed for the auctioning of airport landing slots, most recently for a now abandoned auction in New York.
reconfigure the rights; thus one operator might persuade another to accept a delay in latter’s service, so that the former’s train could reach its destination sooner.

Clearly, numerous details have to be resolved to take this idea to the point of practical application. One important one is the length of the period for which rights are assigned. Too long a period may lead to ossification; too short a period may chill investment in collateral assets as the end of the licence period approaches. The latter problem is probably impossible to mitigate. The former can be addressed by making rights tradable, and by allowing the government or regulator in narrowly defined circumstances compulsorily to buy back rights.

The above outline shows how the system might work in full. But there is also scope for introducing it progressively, on a service by service basis. This is facilitated by the obvious fact that train paths between different end points are not good substitutes for one another. Thus a start could be made with the East Coast or West Coast line, and the process could be expanded or adjusted in the light of experience. The market is likely to work better the greater the number of alternative options that are feasible within it, as this permits a broader discovery process to take place. A similar progressive approach to the development of competition, based upon a ‘trust and verify’ principle, has been proposed by the present authors in a recent review of competition in the England and Wales water sector.41

5. Conclusions on on-rail passenger competition.

The fundamental problem confronted in this section arises from the nature of the present franchising system, which, in the (entirely understandable) interests of limiting public subsidy, responds to the loss-making nature of rail passenger transport by extending franchising beyond the limits of routes which, with the present system of track charges, are naturally monopolistic and in some cases loss-making, to impose monopoly on potentially competitive routes.

Attempts to move away from this position then come up against the conflict between the natural and conventional role of competition, to concentrate rivalry between producers on the highest margin activities (such ‘cream skimming’ thus lowering the price of service to consumers), and the goal in this instance precisely to avoid this natural outcome of competition by confining it to forms which are ‘generative’ of additional revenues rather than ‘abstractive’ of existing ones. This feature of the situation shapes the nature of any incremental mode of competition which specifically retains the twin goals of additional services and restrictions on public subsidy.

An important but neglected ingredient in the discussion is the effect of competition on productivity and innovation. One possible way of squaring the circle noted above is for competition to enhance static and dynamic efficiency and to reduce the need for subsidy. There is evidence from other sectors that this occurs. There is also evidence that competition for the market in Great Britain rail services has not produced similar benefits. It would assist an overall evaluation of alternatives if data were available on efficiency gains on competitive route, or within operators subject to different degrees of on-rail competition.

The incremental modes of introducing competition considered above are the following:

- a revision of the criterion for the moderation of competition which more accurately demonstrates the fundamental trade-off between economic benefits from competition

41 Independent review of competition and innovation in the England and Wales water sector, 2009.
and public subsidy, than the current focus on the relative scale of abstractive and generative effects; this method has already been realised by ORR;

- the explicit recognition of the potentially beneficial role of negotiated arrangements, broadly equivalent to out-sourcing, between a franchisee and an alternative provider of passenger services; either the production side alone could be outsourced, or both it and the revenue side. In the latter case, the franchisee would permit another operator to set charges for, market and run certain services falling within the franchise. This would only make sense if doing so enhanced the franchisee’s profit position; in other words, the alternative provider would have fully to compensate the franchisee for the loss of its contribution from the transferred services. We conjecture that such cases would be comparatively rare, but believe that removing any obstacle to taking advantage of them would be beneficial;

- extending the scope of head-to-head competition between franchisees has the advantage of keeping revenues within the circle of operators chosen and in most cases supported by the franchising body; while prices and aggregate revenues may fall, revenues will not leak outside the franchised universe. Moreover, despite the clear theoretical possibility of rail competition having some dysfunctional characteristics, an empirical study of its effects between franchisees suggests both that its introduction benefits customers and that its withdrawal damages them. However, as with any form of small numbers competition behind barriers to entry, the risk of collusion is high. It is our view that this is a valuable source of benefit to passengers which deserves careful further consideration, but that the form of competition should be designed to minimise the likelihood of tacit or explicit collusion;

- finally, competitors can be required to compensate by payment of a surcharge on ticket prices or on track access charges the losses which they impose on franchisees and thus, indirectly, the detrimental effect which they have on public subsidy. This approach, which is clearly related to the second option above, can be seen as an attempt to replace the current administrative system for authorising open access competition with one based on rationing by price. The parallel is most obvious if the method of implementation employed is simply to auction surplus train paths on any route to the highest bidder. The revenues would then be subtracted from the public subsidy requirement associated with any application for train paths from would-be open access competitors, the net figure assessed against the economic benefits of the proposer in the manner described above.

It follows from the above that we regard an extension of inter-franchisee competition a promising way forward, with potential gains from respecifying the current test for open access competition and from removing any barriers to negotiated arrangements. The surcharging option, realised through the auction mechanism proposed above also seems practicable.

The notion of auctioning train paths suggests a more radical way forward which resolves the conflict between franchising and competition by a major rebalancing between their roles. In essence, this would involve dividing train services into ‘monopoly’ and ‘potentially competitive’ components. The former would be franchised, as now. But the latter would be provided competitively after an auction of train paths for a specified period, on the basis that such paths can be resold, subject to constraints designed to prevent the emergence of monopolies. The complexity of the auction can be controlled by having two stages—a combinatorial clock auction involving temporally aggregated train paths, followed by resolution of specific operator schedules either by a market-based process or by administrative fiat exercised by a systems operator.
Only a sketch of this option is included, and its purpose is to contrast the incremental options, which essentially seek compromise between current consumer interest and the control of public subsidy within a highly dirigiste system with one which segments services between controlled and competitive. We believe that developments in IT and other fields make such a regime more practicable than when it was proposed nearly twenty years ago, but clearly many issues would have to be confronted before it became a realistic policy option. However, there is a middle ground between the incremental adaptations and the radical proposal, in the sense that increasing competition between franchisees and expanding the scope of open access competition, especially via the auction process described above, move the system in the direction of the radical proposal. Alternatively, the latter could be introduced progressively, with a running review of its effects.
Section III. Contestability of Investment

1. Introduction

Background

Maintenance, renewals and enhancement in the rail network is currently running at £24.7bn for the 5-year period to 2013/14\(^{42}\). This is on a scale equivalent to that of the recently agreed 5-year programmes for the 22 English and Welsh water companies (£22bn); it is significantly higher than that for GB’s 14 electricity DNOs (£7bn). Further expenditure is anticipated.\(^{43}\) Pressures for continuing and rising investment are apparent. The Department for Transport (DfT) projects a doubling of demand for rail transport in the next 30 years. Capacity bottlenecks are already apparent and a recent report by Green and Hall\(^{44}\) has highlighted stations as being in urgent need of upgrading.

At the same time, the UK faces a wider infrastructure investment challenge, of which rail investment is just one part. Some commentators\(^{45}\) have estimated the overall infrastructure needed in the UK over the next 20 years at some £500bn. This will present a major challenge for both financing and affordability. It comes at a time when households and businesses have to deal with the recent recession and its aftermath, there are pressures on the public finances and the cost of private finance has risen sharply.

It will continue to be a priority in rail, as it will across all infrastructure sectors, to ensure efficient investment – avoiding unnecessary schemes and gold-plating and ensuring investment flows to where it creates most value for infrastructure customers and society more widely.

Options, benefits and costs

One potent\(^{42}\) ial means of achieving efficiency is by introducing contestability. Various contestability options are available, ranging from simple outsourcing of construction to the full transfer of responsibility for delivery, financing, ownership and operation of investment assets to another party.

The benefits might be more innovation that reduces costs or improves outputs or both. This could arise from

\(^{42}\) Control Period 4 Delivery Plan Update, Network Rail, March 2010
\(^{43}\) Delivering a Sustainable Railway, DfT, July 2007
\(^{44}\) Better Rail Stations, Green and Hall, 2009
\(^{45}\) Delivering a 21st Century Infrastructure for Britain, Policy Exchange, 2009; Costing the Earth?, Ernst and Young, June 2008; Securing the UK’s energy future – meeting the financial challenge, Ernst and Young, February 2009.
- the process of competing to win the opportunity;
- widening the pool of skills that are addressing the issues;
- generating comparative market tested information with which to challenge Network Rail’s own costs, spurring further efficiency within Network Rail itself.

However, the introduction of greater contestability might introduce significant transactions costs, both through the introduction of new processes to engage alternative parties (e.g. tendering/auctioning activities) and through increasing the cost and effectiveness of investment and system coordination across the whole network.

**Incentives**

As described below, whilst investment is funded largely by Government and the passenger, with a small proportion also from third parties, delivery of investment (whether in house or via outsourcing) is predominantly through Network Rail.

There are reasons to expect that investment in rail, as in other regulated sectors, to some degree satisfies the conditions which lead to inefficient ‘gold plating’ of investments. Moreover it is widely recognised that the ability of ORR successfully to elicit efficiency from Network Rail is limited by the ownership and financial structure of Network Rail, which is a company limited by guarantee, and based on debt finance with no equity investors.\(^{46}\)

In some regulated sectors that are dominated by monopoly (water and sewerage, and electricity distribution), the regulator's ability to impose efficiency is enhanced by the use of comparative competition within the sector. There are 22 water and sewerage companies and 14 energy distribution companies. This means that in these sectors, regulatory incentives for efficiency can be sharpened by including a comparative or catch up element. Under the present structure this is not possible for Network Rail.

An important consideration when assessing the effect of opening up the financing, scoping and delivery of rail investment to other parties is to consider the type of new provider that might emerge, and whether the incentives for efficiency to which they would respond may be more effective. The strength of the incentives under different arrangements will influence the extent of the benefits of making investment contestable. A proper consideration and comparison of the incentives may reveal opportunities and at the same time expose possible pitfalls or areas where there might be unintended consequences.

**Lessons from other sectors**

In considering options for introducing contestability, we have looked at approaches to similar questions in other sectors. For instance, Ofgem has recently considered the role of enhanced contestability in the distribution network operators (DNOs), as part of its recent RPI-X@20 project reviewing the regulatory framework for energy networks. Other relevant evidence is drawn from the water sector, in particular Welsh Water, which contracts out a very high proportion of its operations and capital expenditure.

\(^{46}\)The Role of Incentives in the GB Rail Industry, CEPA, July 2006; Enhancing Incentives for Continuous Improvements in Performance: A Consultation Paper, ORR, July 2006.
2. The current framework for investment

Prior to the analysis of issues and options, we first provide some background into the current framework for investment in rail infrastructure.

The process of determining investment

The Government sets ‘High Level Output Specifications’ (HLOS) encapsulating its priorities, such as increasing capacity, improving quality of service (e.g. journey times, punctuality, etc), improving safety and securing environmental benefits. Network Rail then works with stakeholders to develop its business plan for a 5-yearly price review, including specific investment projects to deliver the high level outputs. Route Utilisation Strategies (RUSs) inform what enhancements are necessary.

A RUS considers the usage and capability of the network in relation to current and future demand. Where shortfalls in capacity are identified, the RUS will identify options for addressing them. These options may involve timetabling changes or investment. To address the requirements of funders and stakeholders, a RUS seeks to balance capacity, passenger and freight demand, operational performance, infrastructure maintenance and costs. ORR sets guidance for how Network Rail develops RUSs, including a consultation process.

The franchise contracts agreed with the Government also inform the outputs to be delivered by Network Rail.

Most investment is determined in the Periodic Review process described below, but some is not, for example

- if Government decides to procure something new/different;
- investment self-financed by operators and others;
- investment requirements by TOCs arising out of franchising agreements.

Investment by Network Rail

Network Rail owns network assets with a RAB of £34.9bn. This includes virtually all of the country’s 2,500 stations, its depots, tracks, signalling and other infrastructure.

Investment (maintenance, renewals and enhancements) of £24.7bn has been committed for the price control period from 2009 to 2014 (CP4). CP4 saw a shift from maintenance and renewals to a growth in enhancement spend, but the former still dominates total capital expenditure. A breakdown of investment is given in the table below.

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47 An introduction of HLOS can be found on the Department for Transport website at: http://www.dft.gov.uk/pgr/rail/strategyfinance/strategy/hlos/briefingnoteonthedevelopment511
48 Annual Report and Accounts, Network Rail, March 2009
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Table 1: CP4 efficient investment assumptions

Currently all maintenance is done ‘in-house’ by Network Rail following concerns in the wake of major safety incidents. Renewals expenditure and enhancement investment is nearly all outsourced by Network Rail, although only approximately half of enhancement costs are construction costs, with the rest including design costs, Network Rail overheads and possessions payments. Pre-efficiency breakdowns of renewals and enhancement expenditure, as given in PR08, can be found in Appendix 1.

**Stations**

Of the 2,500 stations in Great Britairways alln, virtually all are owned by Network Rail. The biggest and busiest 18 are managed and run by Network Rail (11 in London, one in each of six other big cities, and the station at Gatwick Airport). The other stations are “rented” to train operating companies, which are responsible for the day-to-day operations of their stations (face-to-face customer service, development of facilities and the conduct of light maintenance and repairs). In the majority of cases, the TOC which primarily operates train services at the station is responsible for its management. Network Rail is responsible for commissioning, financing and delivering major improvements to all stations.

Investment in the rail industry since privatisation has been focused on restoring reliability and increasing the number of trains, rather than improving stations. Current funding for stations, at approximately £600m per annum for the current five year plan (including specific programmes such as the National Stations Improvement Plan (NSIP)) is only sufficient to maintain stations at their current condition. One third of the money is allocated to routine asset renewal and repair. Another third will be invested in enhancing the high-payback large stations, leaving just one third for enhancing the vast majority of stations.

Green and Hall’s independent report for the DfT notes that passengers highly value better stations and recommend that station investment should be increased, focusing on

- Access (car parking, cycle facilities, local public transport, etc.)

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49 This excludes enhancement funding for Network Rail outside of the PR08 determination including project funded through the Transport Innovation Fund, projects funded by third parties (e.g., Olympics 2012) and Network Rail’s works as part of the Cross-rail project.

50 See for instance Engineering Advice on Network Rail’s Enhancement Programme, Ove Arup, June 2008

51 For an instance of an exception, St Pancras Station is owned by London and Continental Railways, although managed by Network Rail.

52 For an instance of an exception, Hinckley railway station is managed but not served by East Midlands Trains.

53 Better Rail Stations, Green and Hall, 2009
- information
- facilities
- the station environment.

Green and Hall have made a number of recommendations for enhancing investment in stations, recommending an increase in funding of £163m p.a. for 10 years from 2014. They consider that

- direct subsidy and borrowing through Network Rail will tend to be the cheapest source of funding;
- new franchise agreements should contain high conditions for customer satisfaction in stations;
- TOCs should wherever possible manage both the procurement and the project management of station upgrade work, on the grounds that they believe TOCs are more efficient at procurement of station investment than Network Rail. Where this is not possible, Network Rail should introduce a free-standing ‘Small Project’ process to reduce its currently high indirect costs and general overheads associated with procurement.

In responding to the report by Green and Hall, TOCs have supported the call for greater investment in stations, emphasising the role that this can play in assisting longer term modal shift away from more carbon intensive transport systems, in promoting demand for rail travel nationally, and assisting in regional economic growth. Indeed, Green and Hall note that many larger stations may have the potential to develop as regional development hubs whilst also pointing out that in some European countries even smaller sized stations have attracted greater commercial development than is evident at comparable stations in the UK.

Investment by alternative parties

Alternative parties (e.g. train operators, passenger transport executives (PTEs), developers) may invest in the infrastructure provided they obtain the necessary “permissions” from Network Rail. The process of third party investment is overseen by Network Rail, and conducted according to investment templates approved by ORR.\(^5\) In discussion with train operators a number of concerns have been highlighted.

\(^5\) Green and Hall state that there is “cross-industry agreement” that station procurement and project management should be conducted by TOCs.

\(^5\) There are nine template agreements that were approved by ORR in February 2010. These agreements are made between Network Rail and the third party investor. An explanatory note of each template can be found here: [http://www.networkrail.co.uk/documents/3095_TemplateAgreement.pdf](http://www.networkrail.co.uk/documents/3095_TemplateAgreement.pdf). The templates seek to

- encourage investment in rail enhancements by finding solutions that reduce barriers to entry by
  - providing third parties with options to deliver schemes under asset protection or to request Network Rail to deliver
  - establishing a framework that allows Network Rail to take risk
  - providing equitable distribution of risk
  - removing “Industry Risks” from the third parties
  - clarifying that Network Rail will be liable for contractors’ performance when it is delivering schemes
- reduce the need for time-consuming negotiations on contractual arrangements for each scheme
- provide transparency and accountability on payments to Network Rail and its obligations.
The level of investment by organisations other than Network Rail is small (£200-300m p.a.\textsuperscript{56}). It includes investments committed by train operators in franchise agreements and ring-fenced DfT funds for station improvements (e.g. the DfT’s Access for All programme).

There have been recent ‘innovations’ in investment by alternative providers, examples of which are Borders Railway, Merseytravel and Chiltern Railways. A detailed explanation of each of these examples can be found in appendix 2. These examples demonstrate a variety of types of investment by alternative providers, some of which are aided by specific circumstances (Merseytravel’s isolation from the rest of the country’s rail network), but others of which are replicable. Each demonstrates a different allocation of risk between the alternative investment providers and Network Rail.

*Procurement for very large projects*

In the UK, the procurement process for building and operating very large rail projects has been different from that for investment in the rest of the network. Examples of this are

- High Speed 1, the purpose built high speed line between London and the British end of the Channel Tunnel
- High Speed 2, the proposed high speed line between London and Birmingham and beyond to Manchester, Leeds and Scotland
- Crossrail, a west-east route through and under central London, currently under construction.

A detailed explanation of each of these examples can be found in the appendix. Funding for these projects tends to be primarily from central Government, although some other public and private financing is also used.

The Government, informed by studies in the costs of large projects\textsuperscript{57}, has concluded that the cost of constructing large projects in the UK has been and will be significantly higher than in Europe because of

- the UK’s tendency towards discrete projects meaning a lack of stability in the supply chain;
- developed skills in Europe;
- a more prescriptive approach for transposition of EU legislation into UK law compared with Europe;
- a UK tendency towards multiple sub-contracting, each commercial layer adding overheads and profit;
- a UK dependency on large external management teams;
- optimism bias\textsuperscript{58} in the UK creating self-fulfilling project price inflation.

\textsuperscript{56} [http://www.networkrail.co.uk/aspx/1536.aspx](http://www.networkrail.co.uk/aspx/1536.aspx)

\textsuperscript{57} Comparison of High Speed Lines’ CAPEX, BSL Management Consultants, 2009 [http://www.hs2.org.uk/assets/x/56773](http://www.hs2.org.uk/assets/x/56773); High Speed Rail: London to the West Midlands and Beyond, High Speed Two Limited, 2009

\textsuperscript{58} The observed systematic tendency for project appraisers to be optimistic i.e. to underestimate project costs
**Benchmarking Network Rail**

LEK Consulting published an *internal* benchmarking report on Network Rail in August 2007. It compared efficiency between regions for five categories of renewals, to a total of £686m, or 28% of the renewals budget for 2006/07. Different categories compared different sets of regions, as seen below.

The costs were normalised to leave cost differences which were considered within management’s control. An overview of the results of the study is below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Expenditure (£m)</th>
<th>Cost Saving % (BDP)</th>
<th>Cost Saving % (2nd BDP)</th>
<th>Cost Saving (£m) (BDP)</th>
<th>Cost Saving (£m) (2nd BDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track</td>
<td>332</td>
<td>8</td>
<td>6</td>
<td>28</td>
<td>16</td>
</tr>
<tr>
<td>Civils</td>
<td>118</td>
<td>25</td>
<td>9</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Estates</td>
<td>20</td>
<td>1</td>
<td>n/a</td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td>Signalling</td>
<td>212</td>
<td>15</td>
<td>12</td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td>Electrification and Plant</td>
<td>4</td>
<td>1</td>
<td>n/a</td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>686</td>
<td>13</td>
<td>9</td>
<td>91</td>
<td>52</td>
</tr>
</tbody>
</table>

**Table 4: Overview of results of LEK internal benchmarking study**

<sup>59 Internal Benchmarking Final Report, LEK Consulting, August 2007</sup>
The results show a gap between best demonstrated practice (BDP) and actual practice in other regions equivalent to 13%, or £91m of the £686m analysed in the study. Comparison with the second best region (2\textsuperscript{nd} BDP) shows a gap of 9%, or £52m.

The greatest proportional gaps between BDP and actual were in civils (25%) and signalling (15%). Estates and electrification and plant have actual practice very close to BDP in all regions.

Reasons given for the difference between BDP and actual practice were

- structural factors, such as differences in asset condition, which were not taken into account;
- statistical factors (error in measurement or in sampling, random variations);
- differences in asset management policy;
- efficiency differences.

However, it was beyond the scope of the project to explain what working practice differences explained the disparities in efficiency.

All parties agree that the process of \textit{international} efficiency benchmarking Network Rail is difficult and imprecise. This might account for why there have been numerous studies on the topic which the ORR, Network Rail and others have conducted and commissioned\textsuperscript{60}. There is significant disagreement between ORR and Network Rail about the conclusions of these studies.

ORR’s overall conclusions\textsuperscript{61}, based primarily on an Institute of Transport Studies (ITS) study, an analysis by ORR at a sub-national level and a study by BSL, is that, for maintenance and renewals, Network Rail’s efficiency gap is in the range of 30% to 50% (or more, due to ORR’s claimed conservative approach). ORR’s preferred study (ITS, including the steady state adjustment)

\textsuperscript{60} Studies include:
\textit{International Benchmarking of Network Rail’s Maintenance and Renewal Costs: Analysis Based on LIBC Dataset}, Institute of Transport Studies (ITS), 2008
\textit{Assessing the Efficiency Component of Network Rail’s Strategic Business Plan}, Ernst and Young, 2008;
\textit{Assessing Network Rail’s Scope for Efficiency Gains}, LECG, 2008;
\textit{A Response to the LECG and Horton 4 Consulting Reports on the ITS/ORR International Benchmarking Study (Based on the LICB dataset)}, ITS, 2008;
ORR Best Practice Study: A report on the programme of international visits carried of by ORR between July – October 2007, ORR, 2008;
\textit{Expected Cost of Network Ownership: Network Rail and Key LICB Comparators: Initial Results}, ORR, 2008;
\textit{Rail Infrastructure Cost Benchmarking: Brief LICB-gap analysis and cost driver assessment}, BSL, 2008;
\textit{Lasting Infrastructure Cost Benchmarking (LICB): Summary Report}, UIC, 2006;
\textit{Review of European renewal and maintenance methodologies – overview}, RailKonsult, 2008;
\textit{Further assessment of approaches to improve efficiency – overview}, RailKonsult, 2008;
\textit{Possession benchmarking exercise: Report for Office of Rail Regulation}, Lloyds Register Rail, 2006;
Various EWS efficiency studies;
\textit{Comparison of Selected Maintenance and Renewal Practices: Network Rail (UK) and North America (CN)}, Brian Abbott, 2006.

\textsuperscript{61} Periodic Review 2008, ORR
demonstrates a gap of 37% for maintenance and renewals for 2006 as compared to the upper quartile of comparators\textsuperscript{62}, as shown in the graph below.

![Graph](image)

Figure 5: Evolution of Network Rail’s efficiency score versus the upper quartile for ORR’s preferred model

Source: Figure 7.1, Periodic Review 2008, ORR

ORR claim this international benchmarking is supported by a wide range of further evidence, both quantitative and qualitative, some of which was prepared in response to Network Rail’s criticisms of ORR’s approach to international benchmarking.

3. Incentives

Introduction

It is important to understand the incentives faced by the various parties in determining and delivering investment in the network. First, this may suggest prima facie reasons as to why Network Rail may or may not currently be investing as efficiently as possible; second, it will help to identify whether opening up investment to third parties might change the incentives in a positive way; third, it may give some indication of possible unintended consequences from introducing more contestability; and finally, it will give some guidance as to how new mechanisms should be designed to improve on current incentives, including whether there are complementary changes to the regulatory framework that may be needed to secure successful outcomes.

The next section focuses on the first of these points, the others are addressed in the analysis in later sections of this paper.

\textsuperscript{62} ITS’s study is based on the LIBC dataset, which covers Network Rail and 12 other western European rail infrastructure managers.
Network Rail’s incentives

The first question is whether Network Rail has incentives to provide the right mix of investment. A fundamental point is that network investment priorities are determined through a highly planned, although increasingly consultative, process. Investment is not driven by market signals and Network Rail itself plays a central role in determining the priorities, albeit within the high level framework set by Government. This suggests potential for suboptimal allocation of investment resources by Network Rail. In the absence of market signals to provide evidence of where in the network investment will be most valued, Network Rail may have scope to favour its own priorities, although its priorities are aligned with those of Government overall. This may be underlined by the existence of a budget constraint imposed by the overall willingness of Government to invest.

Network Rail’s investment priorities are likely to reflect a combination of factors and incentives. It is distant from the passenger (in the sense that it is not ruled directly by the farebox) and whilst its investment priorities are determined by what funders ask for, its own knowledge and approach may be more engineering rather than customer focused. It may also have weak incentives to take into account the potential positive externalities in terms of carbon reduction which can be expected to accrue from a modal switch to rail from more carbon intensive modes of travel.

Its incentives are asserted to be strongly risk averse, due to a combination of its ownership and financial structure and its focus on the safety of the rail network. Although the regulatory regime encourages outperformance, the incentives may be weak in practice given that it is financed by government backed debt and that performance measures emphasise the avoidance of failures. Whilst this focus may be appropriate in some circumstances, it does suggest that there is room for further encouragement of opportunities to facilitate investment by other parties whose incentives may be more aligned to passenger demands, the growth agenda etc.

There are therefore strong a priori reasons for expecting that allocative efficiency in rail investment could be improved.

The second question is whether the present framework and incentives are likely to deliver the most cost efficient investment solutions. Gold plating of investment may be encouraged by: the partially cost plus nature of regulation; Network Rail’s risk aversion; its engineering culture; the impact of Government subsidies; the lack of pressure from either debt or equity holders; and the absence of comparative data.

It is widely recognized that many regulatory frameworks give incentives to regulated companies to prefer capital solutions over operating solutions – returns are earned on investment, not on operational expenditure, and the latter is further discouraged by a strong regulatory emphasis on monitoring and incentivising operational efficiency. It is reasonable to suppose that Network

63 Periodic Review 2008: Enhancing Incentives for Continuous Improvements in Performance: A Consultation Paper, ORR, July 2006; The Role of Incentives in the GB Rail Industry, CEPA, July 2006; Role of Incentives in the GB Rail Industry, OXERA, July 2006; Implications for Amending Franchise Agreements, NERA, July 2006
64 Regulated energy networks for the future: RPI-X@20 - Emerging Thinking, Ofgem, January 2010; http://www.watercommission.co.uk/UserFiles/Documents/Sir%20Ian%20Byatt%20College%20Hill%20(2).pdf
Rail may not be investing sufficiently in operating solutions to certain performance problems, preferring to invest in a more expensive capital solution (or avoid the expenditure at all, prioritizing other investments, as discussed above).

There is considerable a priori reason therefore for expecting that Network Rail’s productive and dynamic efficiency is suboptimal and this is generally supported by empirical evidence.

- Evidence from ORR’s benchmarking of Network Rail with (public sector) railways in Europe suggests Network Rail is considerably less efficient\(^{65}\).
- There is some evidence of concern with Network Rail’s procurement efficiency, as noted in a recent report by consultants Arup\(^{66}\). Train operators cite examples where they have procured investment for considerably less than quoted by Network Rail,\(^{67}\) although it is not clear how consistent such evidence is (and Network Rail costs include overheads that are, for instance possession payments which typically constitute 3-4% of project costs\(^{68}\)).
- The results of the above-noted internal benchmarking study\(^{69}\) which suggested substantial differences in efficiency between Network Rail’s regions.

**Train operators’ incentives**

Train operators have to date been the primary alternative source of investment in rail infrastructure, where third party involvement has occurred. As deliverers of the service to end users, they are in a position to understand better the expectations of passengers and the aspects of service that they value, and the potential for growth in demand. The franchise gives operators strong commercial incentives to increase demand and revenues within the payback period of their franchise and reduce costs\(^{70}\) (although the evidence of the latter is somewhat mixed, see Section II above). Furthermore the need to make a robust commercial case to support these investment commitments provides a strong incentive to minimize costs, understand demand and its risks and maximize revenues.

To the extent that improvements in capacity and track performance can stimulate demand growth and revenues, and reduce train operating costs, TOCs will have an incentive to seek investment in such improvements (both by Network Rail and to promote self financed investments). As noted in Section II.3 above, TOCs are protected from increases in Network Rail costs (track access charges are effectively a pass-through item for TOCs), and this may give them an incentive to support more investment by Network Rail that are funded as part of the periodic review.

It may also mean that TOCs have little interest in minimizing the impact of their own demands on Network Rail costs, or in Network Rail’s efficiency in delivering investment, including whether Network Rail should drive operating rather than capital solutions to delivery of capacity and

\(^{65}\) *International Benchmarking of Network Rail’s Maintenance and Renewal Costs: Analysis Based on LIBC Dataset*, Institute of Transport Studies (ITS), 2008

\(^{66}\) *Engineering Advice on Network Rail’s Enhancement Programme*, Ove Arup, June 2008

\(^{67}\) For example, Chiltern Railways was able to undertake desired development of Warwick Parkway station for £5m compares with a quote of £13m from NR. Source: Chiltern Railways.

\(^{68}\) *Periodic Review*, 2008, Office of Rail Regulation, p185.

\(^{69}\) *Internal Benchmarking Final Report*, LEK Consulting, August 2007

\(^{70}\) Although this is not the case if the TOC is on revenue support
performance improvements.  

(An interesting contrast is in Scotland, where Section 29E of the Water Industry (Scotland) Act 2002 allows for customers of Scottish Water to negotiate a reduction in Scottish Water’s wholesale charges where the customer can demonstrate that it would be causing a reduction in wholesale costs. In rail, this would mean flexing the track access charging arrangements.)

Incentives are complicated by the possessions arrangements. The TOCs face disruption as a result of Network Rail construction and maintenance activities on the network, for which they receive ‘possessions payments’ in compensation (See Box 1.)

Box 1. Network Rail pays compensation to train, freight and open access operators when it takes possession of the network, usually for engineering works. As of 2008, when changes were made to arrangements for possession charges, the large majority of the payments are made through mechanisms detailed in Schedule 4 to the track access contract between Network Rail and each of the operators. Schedule 4 provides, for each operator, formulaic cost and revenue compensation. The compensation mechanism aims to

- provide a consistent approach to compensating train operators for the effects of possessions, based on the degree of disruption suffered;
- provide compensation levels which accurately reflect the cost and revenue losses train operators suffer;
- incentivise Network Rail to plan engineering work early, by providing discounts for early notification;
- incentivise Network Rail to plan engineering work efficiently (by ensuring that Network Rail takes into account both the impact on its own costs and the costs of train operators when developing a possessions strategy);
- reduce transaction costs.

Typically, possession cost allowance is 3-4% of project cost. Along with Schedule 4, Schedule 8 to the track access contract provides compensation to train operators for lateness or cancellation (as opposed to possessions). The ORR have determined that Network Rail require a revenue of £712m in CP4 for schedules 4 and 8.

If the payments are not properly calibrated, this could create an incentive for TOCs to regard these payments as a source of revenue, rather than, in the interests of overall cost of network delivery, to minimize them. However, where a TOC proposes and takes responsibility for investment such costs will be internalized and the TOC will have an incentive to balance the costs of disruption to itself (though not to other TOCs facing disruption as a result) against the associated engineering costs. Hence, should a greater proportion of investment be undertaken by TOCs as opposed to Network Rail, the impact of disruptions may be reduced, representing an additional efficiency benefit from contestability.

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71 This is despite the introduction of an efficiency benefit sharing mechanism – as set out in the final determination – since as DfT does not permit TOCs to gain from these benefits, they do not affect TOC incentives.

72 Section 29E of the Water Industry (Scotland) Act 2002 (the Act) as inserted by section 21 of the Water Services etc. (Scotland) Act 2005.
Whilst the scale of possessions payments may also be reduced this would represent a benefit to Network Rail’s cost line and efficiency, rather than an economic benefit, since possessions payments are a transfer not an economic cost. However, where TOCs undertake investment that impacts other operators, this raises the question as to whether TOC investors should pay other TOCs for possession. Whether or not this means a change to the possessions payments regime or could be captured on a case by case basis as part of the terms of agreeing TOC investment would be a further issue for consideration.

**Barriers to investment by alternative providers**

The TOCs’ incentives and ability to take on long term investment in network infrastructure enhancements are constrained in a number of ways.

- First, there is the franchising system– with franchises being too short to deliver payback for many long term investments. However, partly in response to such concerns, DfT’s current Review of Franchising contains proposals to increase franchise length.\(^{73}\)

- Second, in many cases investment by TOCs will be limited by their own business and financial structures (which provide limited financial capacity to support such investment). Whilst the franchising system could be adapted to require bidders with sufficient capacity to undertake investment, this might restrict or at least change the nature of the pool of bidders. This is discussed further below.

- Third, the cost of raising finance by a TOC will generally be significantly higher than for Network Rail.\(^{74}\) This will also be true for other private sector third party investors (i.e. not backed by the taxpayer).\(^{75}\) The implication of these apparent differences in financing costs is not, however, that Network Rail should do all investment, but that in transferring responsibility for investment to third parties there is an explicit reallocation of risk from Network Rail (and the taxpayer and customer) to the providers of private capital – in the expectation of greater longer term rewards and private and social benefits.

These constraints and the incentive structure described above go a long way to explaining the current limited extent of direct third party investment in the network. In effect, a TOC is only likely to propose direct investment where it can make a business case (deriving from increased revenues and efficiency in procurement, and either a short payback period, or an extension of the franchise, and where it can finance the investment efficiently or ‘borrow’ from Network Rail). Often an enhancement may benefit other players too, and a business case might only emerge through a joint approach – which may present a greater challenge to coordinate and agree – or not at all, if the wider benefits are of a social/public nature and cannot readily be captured. As a result, many third party investments will, under the current framework, tend to be small scale.

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\(^{73}\) The Future of Rail Franchising, Department for Transport, January 2010.

\(^{74}\) The Role of Incentives in the GB Rail Industry, CEPA, July 2006; Enhancing Incentives for Continuous Improvements in Performance: A Consultation Paper, ORR, July 2006.

\(^{75}\) Although it may not be true of other potential public sector investors, eg the PTEs.
The Chiltern Railways example shows one way that these constraints may be overcome to enable third party investment on a greater scale, meeting demands that may not have been prioritized by Network Rail yet may be in passengers’ interests.

However, investments by third parties may also face resistance by Network Rail, who may prefer to do them ‘in-house’, thereby benefiting from the addition to the RAB, the retention of control over the outcome and system performance and coordination, and the repression of comparative evidence on efficiency. ORR is currently in a parallel project exploring possible ‘non price’ barriers to third party investment.

Some TOCs claim that where a TOC proposes to undertake an investment, Network Rail quotes high charges for ‘services’ that it will need to deliver, inter alia to ensure compatible operability with the rest of the system. This may render the investment unviable from a TOC perspective and lead either to abandonment of the idea or to delivery by Network Rail instead.

4 Contestability – in principle and practice.

As with many policy changes, there are a priori reasons for expecting both costs and benefits from the introduction of contestability.

The possible benefits of contestability include:
- better specification of projects and increased cost efficiency; this is a natural consequence of increasing the pool of suppliers above one;
- better alignment of investment to passenger/user priorities; this is likely to be the consequence of permitting bids from TOCs, which provide services to the traveling public, and, in the case of stations, property developers and others who are more familiar with consumer preferences in respect of non-travel related services, including shopping;
- improvements to innovation and dynamic efficiency, arising from the introduction of competitive ideas; this will also affect the degree of innovative effort put in by Network Rail;
- better comparative regulatory information for ORR, creating the potential for improved performance by Network Rail.

Downsides might include:
- reduction in scale and scope economies arising from separating a previously integrated operation; the extent of these is likely to be case-specific;
- more complex and costly coordination; the issue here is that co-ordination of activities is required in all large organisations – the choice is between undertaking it within an organization through an administrative process and performing it contractually across a transaction boundary, where separation can also sharpen conflict; the difficulty of co-ordination is likely to vary with the task at hand; for example, in the water sector, having separate organizations responsible for different parts of the network of pipes may pose few problems of co-ordination in normal times, but may severely complicate dealing with floods;

76 These alternatives are well captured in the title of a book by Oliver Williamson- Markets and Hierarchies, 1975.
two particular respects in which failures of co-ordination may manifest themselves are through delays in procurement processes arising from the organization of contests and increased delivery risk in the execution phase;

changes to the cost of capital; this particular element of cost can be affected by project-specific risk, the extent of which may vary with the degree of contestability of the project; systematic risk will depend on the nature of the activity, rather than the identity of the executant, but different contestants may face different borrowing constraints, which will be reflected in their marginal costs of capital.

In practice, contestability can be introduced in a wide range of formats. The key differentiator is the level at which decisions are taken. Here we identify two categories:

a. Contracting for projects by the incumbent – enforced or incentivised by the regulator. The range may include any or all of design/build/operation/finance. However, the assets remain in ownership of the incumbent, or are transferred back to it at the end of the contract. A particular variant of this, of interest to this study, is where the incumbent contracts with another party for delivery of a project/outcome, and the selected bidder then itself outsources elements of the contract, so that more of the decision making about how the outcome will be delivered is transferred from the incumbent to the other party. Thus much of the potential design, and procurement efficiency and innovation – and risk - lies with the chosen delivery party. That party may be chosen by tender process or through agreement. The contract may be initiated/proposed by the incumbent or the eventual deliverer.

b. Contracting for projects/outcomes by a ‘third’ party – i.e. external party such as regulator, Government or independent system operator. This is similar to the second variant above, but the responsibility for delivery of the outcome lies with the third party.

**Contracting by the incumbent**

The least radical form of contestability will be outsourcing by the incumbent of a project or scheme. Here the incumbent decides the nature of the activity to be outsourced and the new asset remains in its ownership. Outsourcing can be voluntary, in response to existing efficiency incentives, or compulsory, where a regulator or other authority places specific requirements on the incumbent that either direct outsourcing, or incentivize it more strongly e.g. requiring the incumbent to demonstrate efficiency in procurement, and/or creating a threat (that would need to be credible) to force outsourcing in the face of evidence of persistent inefficiency in procurement or self-supply.

Within this category, the scope of the outsourcing can vary, as noted above, including any or all of the following design, construction, operation, financing. Design, construction and operation of the asset may be subject to separate consecutive tenders conducted by the incumbent, or they may be packaged together. In the case where construction is combined with operation, this provides the potential for some financing also to be outsourced to the contractor, since the revenue stream then provides the return on the investment.

The choice of contract type will depend fundamentally on an assessment of the riskiness of the activity and who is best placed to bear that risk. Relevant risks for consideration on a case by case basis would include: construction cost risk (including the risk of over-runs), demand/revenue risk, risk of changed output specification, risks related to the handover or sale of infrastructure assets on expiry of the bidders contract/franchise.
The less the project is specified in detail (e.g. a broad specification of outcomes, rather than detailed output and input specifications) the greater will be the scope for innovation by the contractor along the spectrum of design, build etc. An important consideration would be whether the contractor may be more efficient and innovative in procuring elements of the project than the incumbent. However, a potential downside of more broadly specified contracts is that it may introduce a greater risk of the contractor failing to deliver the outcome, because of the reduced predictability of the delivered outputs and costs. To the extent that there may be greater difficulty in clearly defining risk allocation and accountability within contracts, this could also lead to higher potential costs in terms of contract enforcement.

Three illustrations of different facets of such contacting are given on Boxes 2-4 below.

Forcing incumbents to outsource has tended to be eschewed by regulators as an approach to attract greater efficiency and innovation. There are a number of reasons for this:

- All regulated sectors (but not rail maintenance) already demonstrate a significant degree of voluntary outsourcing, and the full range of contract types may be employed. This is seen to be in direct response to the efficiency incentives in the price cap, maximised where the incumbent is privately owned, through pressure from investors.

- Whilst a number of contract forms may be used, regulated networks, given their inherent risk aversion, may tend to prefer outsourcing of a more tightly specified project. However, this is not necessarily undesirable, and may often fit with the incumbents’ duties and incentives. Outsourcing that involves increasing delivery risk (eg where more innovative designs may be proposed) may therefore require a reassessment of those regulatory frameworks.

- It is not clear that regulatory bodies have or could acquire the required skills and insight to be well placed to assess the efficiency of outsourcing by a regulated company. Procurement by public sector organizations (from whose ranks regulatory bodies are often staffed) has an unimpressive record of efficiency (for instance the Ministry of Defence). However, to address this, it may be possible for a regulator to employ an expert procurement advisory panel to undertake the evaluation. Again, within the regulatory process of scrutinizing business plans as part of price reviews, many sectors (eg water, gas and electricity, rail) already employ such experts to review the incumbents’ business plans and costs. There are differences between sectors in how such experts are employed. A feature that may undermine the role of Reporters in the water sector is that their contracts (and payment) lie with the incumbents not the regulator.

Given the competitiveness of the infrastructure design and construction sector, there is already a considerable degree of transparency regarding the development of alternative procurement models, enabling a ready spread of best practice. The additional benefit from greater regulatory intrusion in procurement is unclear.
Box 2. Welsh Water is an example of extensive voluntary outsourcing under a price cap regime. Since 2001, the majority of Welsh Water's day-to-day business has been carried out by contractors. Significant efficiency improvements have been made to date.

However, there is now some indication that this model has run its course. In February 2010 Welsh Water announced that it is bringing back in house all its water services and northern wastewater services, currently contracted to United Utilities. United Utilities’ staff will be transferred to Welsh Water. Discussions are continuing with Kelda, Welsh Water's wastewater supplier in the south, as to their continued involvement. Welsh Water cites the reason for the change in approach is the tough operational efficiency expectations required by Ofwat’s determination requiring a “step change” in cost efficiency.

Box 3. The case of Sutton and East Surrey Water (SESW) is an example of the difficulty facing regulators in trying to assess procurement efficiency.

Under certain conditions contained within its licence agreement (the substantial effect clause), a water company is allowed to apply to Ofwat for its price limits to be reviewed when circumstances beyond the company's control change. SESW made such an application in 2008 following increased costs in energy procurement. Ofwat rejected the application and the dispute was referred to the Competition Commission, who also concluded that no adjustment should be made to the price limits.

This case shows that an assessment of purchasing efficiency is both difficult to assess a priori and not beyond dispute a posteriori.
Contracting by a party other than Network Rail

This option differs from the first, in that it would be a party other than the incumbent or other interested party that determines the need for the project, the specification of the outcome and decides who delivers the project, typically through a tendering process. That third party might be the regulator or Government. The advantage of this approach would be that it would ensure consideration of options for delivery by non-incumbents (i.e. extension of compulsory outsourcing), where otherwise the incumbent, in control of the tender process, may have incentives to maintain a greater proportion of the project ‘in-house’. It might also ensure that the project actually takes place, by relaxing constraints on capital availability, by enabling alternative bidders to come forward with a range of objectives, financial capacity and financing sources, although in principle this should be possible in the ‘Chiltern’ version of the previous option.

This option allows for the bidder to own (and operate) the new infrastructure, effectively introducing an alternative network owner. And it also provides the opportunity for existing assets to be transferred as part of the ‘package’ to the new provider – for instance, where the investment is to enhance or add to an existing asset (again, the motivation would be greater efficiency – both allocative and productive - in delivery and operation by the new party, and a spur to greater efficiency by the incumbent elsewhere in its operations).

Box 4. The Chiltern rail example described in Appendix 2 is an interesting example of how far the incumbent can itself go to transferring responsibility for design, procurement and delivery of a project to another party. Not only does this project see Chiltern taking responsibility at a very high level of outcome delivery, but the project also involves a range of financing arrangements, including the use of Network Rail effectively as a ‘bank’. This use of Network Rail financing appears appropriate in this case where the asset is to remain on Network Rail’s regulatory asset base (RAB). The emergence of this project reflected the combination of a number of circumstances that were specific to the project and the regulatory framework at the time, in particular

- the willingness of the then SRA to agree a longer franchise term for Chiltern in return for investment, which was at the time a chief objective of those in charge of railways policy;

- the particular entrepreneurialism of the Chiltern executive team;

- Chiltern’s presenting a strong core business case revolving around its projected ability to generate growth and revenues to be able to finance the majority of the investment without recourse to public finance, investment that otherwise might not have been done, due to public finance constraints – and its willingness to bear construction and revenue risk.

- The minimal disruption to be caused to the rest of the rail network and other operators in particular during construction and in interlinking the scheme to the national network – a result of its physically separate nature, and the dedicated nature of the proposed new line.

- The additional spur to competition on the Birmingham route, and the fact that this would entail limited abstraction of revenues from virgin trains, due to projected demand growth. Chiltern claim that they have managed to achieve substantial savings in procurement costs as a result of this initiative and that they have been able to
A key question in evaluating this approach is whether the incumbent is allowed to tender itself at any stage in the process. On one hand, excluding an experienced supplier is generally harmful to a contest; on the other hand, if potential competitors assume that the incumbent has a very high probability of success, they will not bother to bid.

A number of examples provide some useful insights. Several of these have been written up in detail in Ofgem’s recent RPI-X at 20 consultation papers.  

- **a)** Australia : Subsea electricity cable
- **b)** Argentina: Electricity transmission
- **c)** Ofgem: Offshore Transmission
- **d)** Electricity and gas distribution
- **e)** UK gas networks divestment
- **f)** UK rail eg Border, HS2 etc. (see earlier sections/appendix)
- **g)** Vertical integrated regional franchises/concessions (eg UK water)

The key lessons from this material are summed up as follows:

- This option can bring in external finance (many of the examples cited have this as a key feature – the cost of doing so depends very much on the contract type and process)

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77 Regulated energy networks for the future: RPI-X@20 - Emerging Thinking, Ofgem, January 2010.
78 Regulated energy networks for the future: RPI-X@20 - Emerging Thinking, Ofgem, January 2010; The use of RPI-X by other network industry regulators, CEPA, February 2009
79 Regulated energy networks for the future: RPI-X@20 - Emerging Thinking, Ofgem, January 2010; Potential scope for user participation in the GB energy regulatory framework, with particular reference to the next Transmission Price Control Review, Stephen Littlechild and Cornwall Associates, March 2009
80 http://www.ofgem.gov.uk/Networks/offtrans/Pages/Offshorettransmission.aspx
82 Regulated energy networks for the future: RPI-X@20 - Emerging Thinking, Ofgem, January 2010; The use of RPI-X by other network industry regulators, CEPA, February 2009
– It can be used to enable customers or those closer to end user to have greater say in outcome (see Argentinian example, where a ‘Public Contest’ was held for major electricity transmission asset expansions, with user groups being directly involved in proposing, tendering, approving and paying for the delivery of projects, and the Chiltern example in UK rail, discussed earlier).

– The tender process can be designed in stages to enable the incumbent to bid, in order not to exclude the incumbent if it might be the most efficient provider on account of scale/scope economies for instance, while ensuring that it is still subject to the competitive pressures of having to compete in a tender. (See the Australian example where the tender for the design of the new subsea electricity cable was won National Grid, who then were responsible for procuring the second stage tender to build, own and operate the interconnector.)

– A very important potential drawback from third party tendering is that it has frequently added significantly to delays and costs (there is evidence of this both with the UK HS1 project, the Channel Tunnel link, and with Ofgem’s Offshore Transmission Regime).

– All the examples involve large scale schemes, usually with the creation of new and largely discrete assets (i.e. ‘separable’ to a large degree from the main core of the existing network.

Ofgem draws the conclusion that this approach is likely only to be appropriate for large and discrete projects, where significant benefits can be expected to outweigh the high costs of administering the process and where time is not of the essence. This also appears to be behind the current Ofwat/Defra proposal for the financing of large infrastructure projects delivery envisaged in the Floods and Water Bill. In the rail context it suggests a continuation of a case by case approach, though providing more incentive and opportunity for proposals involving more third party delivery to be developed, and given appropriate consideration. These matters are discussed next in the next section.

5. Options for contestability in rail

Here we consider the nature of rail investment and which elements may be amenable to a more contestable approach to delivery. We then summarise the forms of contestability that might be appropriate for these types of investment. We also note some changes to the franchising and regulatory frameworks which may need to be considered alongside reforms to encourage contestability.

Rail investment can involve enhancement or renewals. Here we also make some observations on the potential for maintenance to come within the remit of contestability.

The network infrastructure is often characterized as being of two types: the ‘controlled infrastructure’, comprising the track, signaling, parts of the platform i.e. all aspects over which trains are run and safety is of paramount concern. The other ‘non-controlled’ type would include for instance stations, station car parks and much of the platforming.
In terms of enhancements and renewals to the ‘controlled infrastructure’, a further subdivision is pertinent, between:

- significant additions or enhancements to the network e.g. new lines or significant extensions to existing lines, and

- upgrades to improve the track (and hence, journey times/reliability etc) for example double tracking, signalling, electrification.

In terms of enhancement/renewals categories we have therefore identified the following types:

- Type 1 - Customer facing – stations, new platforms/ platform lengthening;
- Type 2 - Track extension – new lines, additions;
- Type 3 - Upgrades to improve track ( & journey terms/service) e.g. double tracking, signalling, electrification etc;
- Type 4 - Packages of the above, perhaps on a route or regional basis, and perhaps including maintenance.

We also consider more extensive packages that might involve a completely vertically integrated rail track and operations franchise within a specified region.

Next we consider the potential for greater contestability in each category of investment.

The first key filter is the question of separability and the costs that separation might incur in terms of coordination and compatibility of investment, system operation and delivery of network safety. This has to be set against the potential benefits of innovation and efficiency through introducing the spur of greater contestability.

There is considerable academic literature on this question. Much of it is concerned with problems of co-ordinating investment decisions made independently by separate firms, for example where one firm may refrain from making a sunk investment for fear that once it has sunk an investment its customers will drive prices down to variable cost. This problem was widely discussed in the context of a vertical merger between General Motors and a car body company, Fisher Body, where the desire to avoid a hold-up was assumed to be the motive. Subsequent analysis has shown that this was a misapprehension83.

Moreover, two reviews of empirical studies of vertical integration undertaken from a variety of theoretical viewpoints show a clear advantage for integrated solutions. Thus Lafontaine and Slade report that ‘we did not have a particular conclusion in mind when we began to collect the

evidence, and we have tried to be fair in presenting the empirical material. We are therefore somewhat surprised at what the weight of evidence says. It says that, under most circumstances, profit-maximising vertical integration decisions are efficient, not just from the firms' but also from the consumers' point of view. This is reinforced by a less extensive review by Joskow, who concludes: 'Overall, I would argue that there is substantial support in the empirical literature for various efficiency motives for vertical integration'.

In relation to regulated sectors, in 2001 the OECD adopted a rare recommendation concerning structural separation in regulated sectors. It argued for a careful balancing of the costs and benefits of structural as against behavioural interventions. This was one factor which led to a wide discussion of the pros and cons of various forms of separation in a range of sectors, including telecommunications, energy, railways and water.

The issues at stake in the present discussion are clearly vertical. Should train services and tracks be provided by the same company? Should an energy distribution business be allowed to retail energy? Should an owner of a fibre local loop be allowed to sell broadband services over it? In the present study, the issues are a mixture of the horizontal and the vertical: when 'side by side' projects relating to track and stations are being undertaken, should they be allocated to the single track operator or be contestable by others, including those involved in vertically related activities, such as train operating companies? The relevant decisions in this context are generally taken by the government or regulator, which limits the scope for delay or ex post opportunism. Nonetheless, as in other sectors, transactions costs, including the costs of contracting, are important, and there appears to be no substitute for separate examination of each category of project.

Our tentative position is that considerations of co-ordination are likely to mean that Network Rail will remain the most appropriate owner, decision taker and delivery agent for most enhancements that are embedded in the network i.e. those of type 3 above, upgrades to improve track.

This does not of course rule out Network Rail outsourcing construction and possibly some elements of design or the outsourcing activities of Type 3 investment becoming more open to regulatory scrutiny, through for instance an efficient procurement obligation. Regulatory improvements that enable greater internal comparisons to be made by the regulator may also be of relevance. ORR extend its consideration of mechanisms that encourage Network Rail to develop internal benchmarking e.g. through the establishment of a number of teams (perhaps regionally organized) with responsibilities for delivery of track upgrades, such that teams could be subject to internal comparisons. This would depend on whether economies of scope were important at national level, within different asset categories.

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87 For an overview, see J Gomez-Ibanez, Regulating infrastructure: monopoly contracts and discretion, 2003.
In terms of Type 1 (customer facing investments e.g. in stations, platforms and associated infrastructure) and Type 2 (significant investments in new track or extensions), the separation that contestability brings may be less costly. Examples clearly already exist for such investments (see Box 5) to be procured by third parties, for example the Chiltern Railways example whilst many major new investment projects are already procured this way. We do not recommend a change to the approach for large network investments (which have been outside our terms of reference), but it is apparent that recent experience for instance with HS2 suggests that a detailed review of the efficiency of the process and the outcomes would be instructive.

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**Box 5. Example - Stations**

The procurement body could put out to tender improvements at x stations as a) a package depending on the expectation of economies of scale, or b) for individual stations where a number of operators are involved rather than there just being one dominant one.

Where TOCs are likely to be the third party taking on responsibility, it is likely, because of the franchising system, that ownership would stay with NR with the assets being leased by TOCs. However, if it were conceivable that other third parties e.g. airport operators, retail operators, property developers, ie parties that would not be operating under a limited franchise, might be interested in these asset enhancements, then it may be a possibility that ownership could be transferred.

---

For Type 2 and 3 investments our assessment is that the main need is to establish a framework that more systematically and transparently encourages and permits third parties to bid for, propose and take forward such investments. This would have a number of elements, including first, addressing any barriers to contestability identified in the parallel study being conducted by ORR on third party investment. The main options are briefly outlined first, and then followed with a few further considerations.

- **Option 1:** Introducing a fall back option for the ORR, supported by procurement experts, to assess and direct procurement arrangements where Network Rail’s efficiency exhibits persistent poor performance.

- **Option 2:** Reviewing the proposals the Government has made for extending the scope for investment within the franchising system. This means facilitating proposals by TOCs, including where the TOC may form a consortium to propose delivery of an investment for instance a scheme with wider development and commercial opportunities. This is discussed below.

- **Option 3:** Enabling tendering outside the franchising system to take place. This might be developed alongside or ultimately instead of the franchising approach above. This might mean allowing for periodic tenders for type 2 and type 3 investment to be conducted at a high level of outcome definition either by ORR, DfT / TS or Network Rail, with associated facilitation of any necessary amendment to terms of existing franchises where the bid was won by an existing TOC.
Option 4: A final radical option would be to conduct carefully controlled experiment in specific region to transfer responsibility for the infrastructure and operation to an integrated third party on a long licence/franchise either via a model such as that employed in the French water industry or similar to the E and W water or electricity distribution sectors. This could also see the transfer of maintenance responsibilities.

Some considerations –

Option 1

The rationale for this option is that in the rail industry the operation of price cap incentives is expected to be weaker, given the CLG (company limited by guarantee) status of Network Rail and that its debt is government backed. Also Network Rail is a very large monopoly. The threat of regulatory scrutiny and ultimately rescinding control over procurement could add a spur to efficiency. However, the threat would have to be credible. This might be achieved by ORR conducting random ‘spot checks’ of procurement according to a set of agreed criteria and using an expert panel, independent to Network Rail. This might build on the ‘reporter’ system employed in scrutinizing NR’s investment plans although it is likely that ORR may need itself to add to its skill base.

Option 2

At its minimum this would mean ensuring that franchise bidders should be able to offer a menu of service offerings from the basic standard service requirements to those involving additional investment and associated benefits: - to passengers in terms of service, to regional economies and to the environment in terms of carbon reduction. The party reviewing the bids should evaluate all equally on a VFM basis. It is not clear that DfT’s proposals for multistage bids would deliver the appropriate VFM assessment across a level playing field or stimulate the appropriate or socially efficient bidding behavior.

Given there is likely to be an important growth driver to investment, a strong commercial case supported by passenger revenues, and potentially other third parties, such as developers, retailers and possibly other operators (for instance where a station may be redeveloped as part of a wider site development plan) is likely to be at the heart of many such proposals.

An interesting question is how Network Rail/ORR could ensure an equal playing field between operators. For instance, if franchises are renegotiated at different times, agreement to one operator’s investment plans may preempt another operator’s subsequent plans. (also see below option 3).

Option 3
At present the determination of investment is carried out within the Network Rail price review process and within the franchising renegotiation system. Widening the scope for outside investment via the franchising system as above might unnecessarily restrict the range of potential deliverers to existing or potential TOCs or the ability to leverage in outside finance and maximise development potential of the stations, for example. Option 3 would aim to address this, as well as ensuring that a reliance on the franchising approach does not overly favour existing and potential TOC franchisees (potentially of significance in the case of greater open access competition for instance). It might also help to accelerate the process of demand led investment in rail, by not restricting it to the existing price review and franchising cycles. However, against this, it would be creating a new process that could add to overall system complexity.

We identify two immediate categories for this possibility a) Type 1 customer facing: stations and associated infrastructure b) Type 2 investment where the new development comprises a largely standalone regional network, with limited connections to the existing national network, and a concentration of operations in one operator.

This approach could also consider the ownership or long lease of certain new and existing assets being transferred to new investors.

**Considerations relevant to both Options 2 and 3**

Where public funding is also part of the mix being bid for, this should be directly related to the appropriation of external net benefits. In this context, it may be inappropriate to give significant weight to regional development benefits which are simply transfers from other regions. In addition, care will be needed in the assessment phase to ensure that value for money for local taxpayers (where for instance a PTE is putting up funds) is properly assessed and scrutinized.

It will be important to bidders that clear criteria are set out by which bids will be assessed.

The responsibilities of the franchisee in delivering the investment should also be clear. A presumption that the franchisee would deliver the investment (i.e. be responsible for design, procurement, construction and delivery) should be the starting position. Operational responsibility should be open for negotiation. In the case of station investments, this may require review of Network Rail’s landlord rights and responsibilities, or the development of longer term fuller repair, maintenance and enhancement leases.

There should be clear criteria against which Network Rail should be able to argue, on grounds of integration benefits, to retain elements of the process ‘in-house’. It should identify categories of investment (building in more detail on our high level suggestions earlier regarding types 1 and 2 investment) that it considers a priori would be more or less likely to be easily ‘separable’ at different parts in the delivery cycle or where integrated packages of investment in assets of different types would allow for greater efficiency overall in system development.
It is vital to ensure that Network Rail does not receive any advantage over competitors in contests as a result of its privileged access to capital markets.

Finally, in addition to the above proposals a number of further regulatory changes merit consideration which could encourage a more demanding threshold level of efficiency at Network Rail which rival proposals would have to meet:

- the further development by Network Rail of internal zonal benchmarking would provide a fuller basis for evaluating outcomes, based on contestability, by providing a fuller comparative data set;
- whether the present management incentive plan, linked to efficiency, can be enhanced to drive further improvement;
- changes in track access charging arrangements are needed to ensure TOCs have an incentive to minimize Network Rail costs (i.e. a review might be needed of the current pass through of track access charges).

4. Conclusions on contestability of investments

This section of the paper has established that there are a number of theoretical and empirical grounds for believing that Network Rail’s approach to investment in enhancements and renewals will not be optimal. Conceptually, these range from features of the company itself (its governance structure), its regulatory regime, and the broader regulatory regime affecting TOCs. Empirical data from benchmarking and other exercises suggest the same conclusion.

This does not mean, of course, that any other body would do it better. Nor does it necessarily make it desirable to make rail investments contestable. The approach taken in this report is to examine experience in the GB rail sector and in other sectors, and to identify features of investment project which make them especially susceptible or non-susceptible to the introduction of contestability.

In relation to characteristics of investment projects, we regard separable customer-facing investments as most likely to benefit from contestability. These include the development of stations, for example by property companies, and the extensions or enhancements to tracks utilized predominantly by a single train operator. Complex upgrades to tracks which continue to be kept in operation by Network Rail to meet the needs of a variety of TOCs by a variety of operators are less suitable for the introduction of contestability.

On this basis, we recommend a regulatory reform which builds on the recent report on stations and the DfT’s proposals for changes to the franchising system to permit greater experimentation with separable track and station enhancements. This may involve either a tendering process conducted by another organization than Network Rail, which might be the ORR, strengthened by additional procurement expertise, or a procurement process conducted by Network Rail under ORR supervision which would give the contractor greater freedom to design and build the scheme.

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88 This practice is widespread in continental Europe, where the government usually has a stake in the property company.
Appendix 1. Breakdown of Network Rail’s renewals and enhancement expenditure

<table>
<thead>
<tr>
<th>Renewals</th>
<th>£m (2006-7 prices), pre-efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Track</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Signalling</strong></td>
<td></td>
</tr>
<tr>
<td>Conventional resignalling</td>
<td>1217</td>
</tr>
<tr>
<td>Minor works and life extension</td>
<td>444</td>
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<tr>
<td>Level crossing renewals</td>
<td>209</td>
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<tr>
<td>ERTMS</td>
<td>350</td>
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<tr>
<td>Mechanical locking refurbishment</td>
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<tr>
<td>Other (safety and central costs)</td>
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<tr>
<td><strong>Total Signalling</strong></td>
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<tr>
<td><strong>Civil engineering</strong></td>
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</tr>
<tr>
<td>Under-bridges</td>
<td>675</td>
</tr>
<tr>
<td>Over-bridges</td>
<td>283</td>
</tr>
<tr>
<td>Earthworks</td>
<td>462</td>
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<tr>
<td>Major structures</td>
<td>144</td>
</tr>
<tr>
<td>Tunnels</td>
<td>146</td>
</tr>
<tr>
<td>Culverts</td>
<td>37</td>
</tr>
<tr>
<td>Footbridges</td>
<td>17</td>
</tr>
<tr>
<td>Retaining walls</td>
<td>30</td>
</tr>
<tr>
<td>Coasts/estuary defenses</td>
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</tr>
<tr>
<td>Other</td>
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</tr>
<tr>
<td><strong>Total Civil Engineering</strong></td>
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<tr>
<td><strong>Operational property</strong></td>
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<td>Managed Stations</td>
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<tr>
<td>Franchises stations</td>
<td>767</td>
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<tr>
<td>Light maintenance depots</td>
<td>73</td>
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<td>Lineside buildings</td>
<td>89</td>
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<tr>
<td>National distribution service depots</td>
<td>4</td>
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<tr>
<td>Maintenance delivery buildings</td>
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<td><strong>Total Operational property</strong></td>
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<td><strong>Electrification renewals</strong></td>
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<td><strong>Telecommunications</strong></td>
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<td><strong>Plant and machinery</strong></td>
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<tr>
<td><strong>Other renewals</strong></td>
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<td>Information management</td>
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<tr>
<td>Corporate Offices</td>
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<tr>
<td>Committed discretionary schemes</td>
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<td>Other misc schemes</td>
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<td><strong>Total Other Renewals</strong></td>
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<tr>
<td><strong>Total Renewals</strong></td>
<td>12456</td>
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</table>

* Includes deferral from CP3: £9m electrification, £253m telecoms, £16m plant & machinery.

Table A1.1: Breakdown of Network Rail’s assumed renewals expenditure
### Table A1.2: Breakdown of Network Rail’s assumed enhancement expenditure

Source: Periodic Review 2008, ORR

<table>
<thead>
<tr>
<th>Enhancement</th>
<th>£m (2006-7 prices), pre-efficiency</th>
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</thead>
<tbody>
<tr>
<td><strong>E&amp;W HLOS Baseline Project funding</strong></td>
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<tr>
<td>Access for all</td>
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</tr>
<tr>
<td>King’s Cross</td>
<td>167</td>
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<tr>
<td>West Coast - Salford-Colwich</td>
<td>364</td>
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<tr>
<td>West Coast - Bletchley-Milton K</td>
<td>107</td>
</tr>
<tr>
<td>West Coast Power Supply</td>
<td>235</td>
</tr>
<tr>
<td><strong>Total E&amp;W HLOS Baseline Project Funding</strong></td>
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</tr>
<tr>
<td><strong>E&amp;W HLOS Specified projects</strong></td>
<td></td>
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<tr>
<td>Thameslink</td>
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<tr>
<td>IEP</td>
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<tr>
<td>NRDF</td>
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<td>NSIP</td>
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<tr>
<td>SFN</td>
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<tr>
<td>Reading</td>
<td>448</td>
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<tr>
<td>Birmingham New St</td>
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<td><strong>Total E&amp;W HLOS Specified projects</strong></td>
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<td><strong>E&amp;W HLOS Capacity Metric Funding</strong></td>
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<td>HLOS London and other urban areas capacity metric</td>
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<tr>
<td>Passenger-km and HLOS London capacity metric</td>
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<td><strong>E&amp;W HLOS Performance improvements</strong></td>
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<td><strong>Other E&amp;W Projects</strong></td>
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<td>Scotland HLOS</td>
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<td>Other Scotland Projects</td>
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<tr>
<td><strong>Total Enhancement</strong></td>
<td>7,739</td>
</tr>
</tbody>
</table>
Appendix 2: Three cases of alternative investments.

**Borders Railway**

The Borders Railway will re-establish passenger railway services for the first time since 1969 from Edinburgh through Midlothian to Tweedbank in the Scottish Borders. It will add 35 miles of new passenger railways. 7 new stations will be built.

The Borders Railway will be delivered by working in partnership with the private sector. The project will be primarily funded by Transport Scotland but will also have finance from the private sector, with scheduled repayments made by the Scottish Government. In addition, there will be a capped contribution from the City of Edinburgh, Midlothian and Scottish Borders Councils.

The present estimate of costs is £235m – £295m at 2012 prices. A Not for Profit Distributing Model is being used for this project, in order to avoid what have been seen as excessive profits generated in earlier PPP/PFI schemes.

A competition to Design, Build, Finance and Maintain (DBFM) the railway will be held by Transport Scotland. The assets will not be owned by Network Rail.

**Merseytravel**

Merseytravel is responsible for issuing franchises to the operators of the Merseyrail system, Merseyside’s commuter rail network. Merseytravel, ultimately controlled by locally elected councillors, is unique in this respect, as it is the only body in England able to award a rail franchise; all others are awarded by government (eg DfT, Transport Scotland and Transport for London). This unique arrangement was created because the Merseyrail electrified system is isolated from the rest of the national rail network, with no through passenger services to/from outside the network.

In 2003 Merseytravel awarded a 25 year franchise to a consortium of Serco and NedRailways. As a result of its isolation from the rest of the rail network, the franchise-holder, supported by Merseytravel, is keen to adopt vertical integration of other aspects of the railway. Network Rail would transfer its infrastructure assets to Merseytravel on a 125 year lease. Merseytravel would then sub-lease to the franchise holder, who would take over responsibility for not only the operation of Merseyrail, but also for maintenance of the track and stations from Network Rail.

**Chiltern Railways - Project Evergreen**
In 2002 Chiltern was granted a 20-year franchise, which, at the time, was longer than for any other TOC (now superseded by Merseyrail’s 25 year franchise). As part of the franchise agreement, Chiltern is required to deliver long-term investment in the railway for the benefit of both passengers and the community. Project Evergreen is the name given by Chiltern to this investment programme, which has rolled out in three phases.

Financing of each stage has been differently structured. Funding for the project has come from a variety of sources, including a significant investment being made by Chiltern Railways as a commercial venture, with capital costs funded out of operating profits. The type of investment being made on the latter basis includes Project Evergreen 2 (capacity enhancement between London and Bicester) and Project Evergreen 3, Phase 1 (a railway between Bicester and Oxford; station works at Bicester Town, Islip and Oxford; a new station at Water Eaton Parkway). For major rail assets (e.g. the new line and infrastructure in Evergreen 3), Chiltern will cover the construction cost and delivery risks, and the assets will then be transferred to Network Rail in stages on agreed dates for a pre-agreed sum, forming part of Networks Rail’s RAB. On termination of Chilterns franchise, if transferred to another operator, any remaining repayments to Network Rail will be transferred, and the new franchisee will bear the ongoing costs of maintenance, and financing the RAB.
Appendix 3: Very large rail projects.

High Speed 1

London and Continental Railways (LCR), a private consortium of companies, was selected in 1996 by the UK Government to construct the high speed line between London St Pancras and the British end of the channel Tunnel. LCR is the sole owner of the Channel Tunnel Rail Link (CTRL, branded “High Speed 1”) and the British arm of the Eurostar operation. LCR were contracted to finance the project themselves privately, backed by income from Eurostar operations, but financial difficulties forced LCR to sell £1.6bn of Government backed bonds in 1998. Further financial difficulty resulted in the Government taking over ownership of LCR in June 2009. The Government intends to break up the company, selling off individual parts to recoup Government investment and to allow for the introduction of competition on the line, previously monopolised by Eurostar.

Management, operation and maintenance of the entire line, including St Pancras station, are undertaken by Network Rail.

HS1’s regulation is outside of the standard UK national economic regulation. However, as far as possible, the operation of the line is subject to normal regulatory provision\(^8^9\), including the provision for periodic reviews by ORR of the operation, maintenance and renewal charges.

High Speed 2

High Speed 2 is a proposed new railway linking London to Birmingham before splitting to serve Manchester and Leeds.

Capital funding will be primarily from the central Government. Other public bodies might also contribute, such as Local Authorities, Regional Development Agencies and the EU. Contributions will also be made by private sector.

Crossrail

Crossrail is a west-east route through and under central London connecting Maidenhead and Heathrow to Shenfield and Abbeywood via the West End, City of London and Canary Wharf. Construction commenced in 2009 as is expected to be completed in 2017 at a cost of £16bn.

\(^8^9\) [http://www.rail-reg.gov.uk/server/show/nav.2351](http://www.rail-reg.gov.uk/server/show/nav.2351)
Funding for Crossrail is not through normal price review process. Crossrail will be built by Crossrail Limited, a company that is fully owned by Transport for London. Funding is primarily from Government, although other sources of funding have been secured, for instance from BAA. Debt financing has been obtained from the EIB.

International cost comparisons for large projects

HS2 Ltd (a company set up by Government to consider the case for the High Speed 2 project) have conducted and commissioned studies to compare the cost of large high speed rail projects in the UK and in Europe. HS2 Ltd and the Government have concluded that the cost of constructing high speed rail in the UK is significantly higher than in Europe. This can be explained, in part, by

- European projects avoiding major station development;
- Urban routes incurring lower land costs in Europe.

Taking these factors into account, however, UK unit rates for construction are typically up to double those being achieved in mainland Europe. Possible explanations include:

- UK has discrete projects meaning a lack of stability in the supply chain;
- Developed skills in Europe;
- A more prescriptive approach for transposition of EU legislation into UK law compared with Europe;
- A UK tendency towards multiple sub-contracting, each commercial layer adding overheads and profit;
- A UK dependency on large external management teams;
- Optimism bias in the UK creating self-fulfilling project price inflation.

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90 Comparison of High Speed Lines’ CAPEX, BSL Management Consultants, 2009
http://www.hs2.org.uk/assets/x/56773; High Speed Rail: London to the West Midlands and Beyond, High Speed Two Limited, 2009