

Reduction in Schedule 4 and Schedule 8 payment rates

Analysis of Incentive and Financial Effects

Final report for consultation

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1 Executive Summary

1.1 The Schedule 4 and Schedule 8 regimes are mechanisms within track access contracts between Network Rail and train operators which are designed to compensate train operators for the financial effects which occur when the level of disruptive possessions and performance respectively deviates from predetermined benchmark levels. This study examines the effect of deliberately setting Schedule 4 and Schedule 8 payment rates so they are below 100% of the revenue and cost impact of service disruption.

1.2 The Schedule 4 and 8 regimes are primarily compensation regimes, but they also, in principle, have the effect of providing incentives to Network Rail and train operating companies (TOCs) with respect to possession planning and performance. The study has identified a number of impacts of setting the payment rates below 100%:

- | There would be a risk to franchised train operators associated with the uncertainty in future possession requirements and the future performance of Network Rail and other operators. This would be reflected in the value of franchise bids. For Schedule 4, medium and high estimates of the total loss in franchise value for all TOCs over a Control Period, should rates be reduced by 25%, are £19m and £39m respectively, and in the case of Schedule 8 these estimates are £11m and £94m.
- | There would be a financial effect on non-franchised passenger operators and on freight operators as their protection against the effect of possessions or poor performance would reduce. For freight operators, a reduction in Schedule 4 rates by 25% could lead to a total loss of income in the range of £10m to £17m over a Control Period. For non-franchised passenger operators and freight operators in total, medium and high estimates of the risk to income over a Control Period from a reduction in Schedule 8 rates by 25% are £1m and £10m respectively.
- | There would potentially be a change in behaviour on the part of train operators and Network Rail as the change in rates would change the value of actions which influence possessions and performance. In practice, the extent of such behaviour change would be small.
- | Train operators would be likely to resort to other mechanisms, in particular the Sustained Planned Disruption and Sustained Poor Performance regimes, to obtain compensation for disruptive possessions or poor performance.

1.3 Each of these impacts is explained in turn below.

Impact on franchise bids

1.4 Under a reduction in rates, operators would benefit if possessions were less than expected or if Network Rail performance were better than benchmark. However, if the reverse were the case, operators would not be fully compensated against disruptive possessions or against poor performance, therefore the uncertainty in the future level of possession activity and performance represents a risk to operators. The way in which a bidder for a franchise would price the risk would depend on a number of factors, including attitude to risk, the size of the risk in relation to the expected margins in the franchise, the degree of faith the bidder

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has in forecasts of future possession activity and performance levels, and their assessment of the approach of rival bidders.

- 1.5 The estimate of the value of the risk is therefore subject to a high degree of uncertainty. The charts below indicates the potential range of the risk premium over a Control Period, aggregated for all operators, for both a 10% and a 25% reduction in payment rates. They also show the effect when Schedule 4 and 8 payment rates are included in the proposed Route-level Efficiency Benefit Sharing Mechanism, under which train operators would share in cost efficiencies achieved by Network Rail. The best estimate of the value of the risk premium is shown by the white stripe. In the case of Schedule 8, we would expect that the most likely outcome of a rate reduction would lie towards the lower end of the range.

FIGURE 1.1 POTENTIAL LOSS IN FRANCHISE VALUE: SCHEDULE 4 (ALL TOCS)

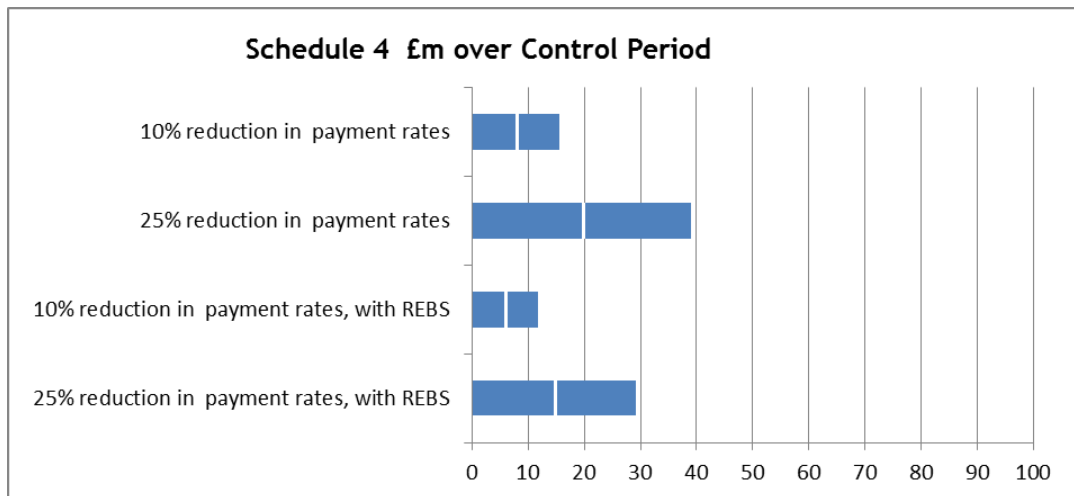
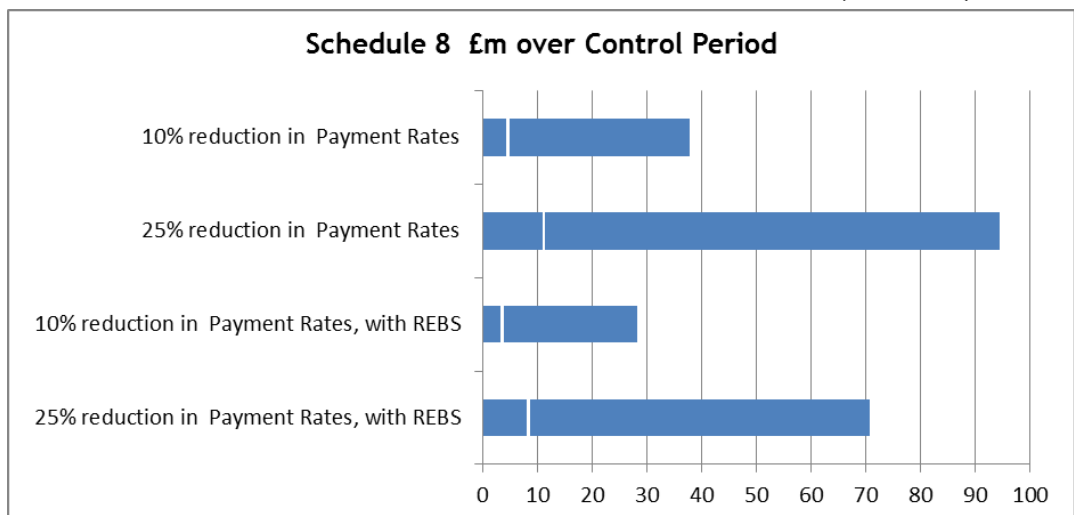


FIGURE 1.2 POTENTIAL LOSS IN FRANCHISE VALUE: SCHEDULE 8 (ALL TOCS)



Financial risk to non-franchised operators

- 1.6 For non-franchised operators, including freight operators, a reduction in rates would have a direct effect on income, which would impact on profits¹. For freight operators, income under Schedule 4 would reduce. If Network Rail performance were better than benchmark levels then freight and open access passenger operators would benefit from a reduction in Schedule 8 rates. However, if performance were worse than benchmark levels then income under Schedule 8 would reduce for freight and open access passenger operators. A reduction in rates therefore represents a risk to freight and open access passenger operators.
- 1.7 The charts below indicate the potential range of the impact over a Control Period, aggregated for all operators, for both a 10% and a 25% reduction in payment rates, and show the effect when Schedule 4 and 8 payment rates are included in the Route-level Efficiency Benefit Sharing Mechanism, with the medium value of the risk shown by the white stripe.

¹ Schedule 4 and 8 payments received constitute income. Reductions in such payments, other things being equal, will reduce profits.

FIGURE 1.3 POTENTIAL LOSS OF INCOME SCHEDULE 4: FREIGHT OPERATORS

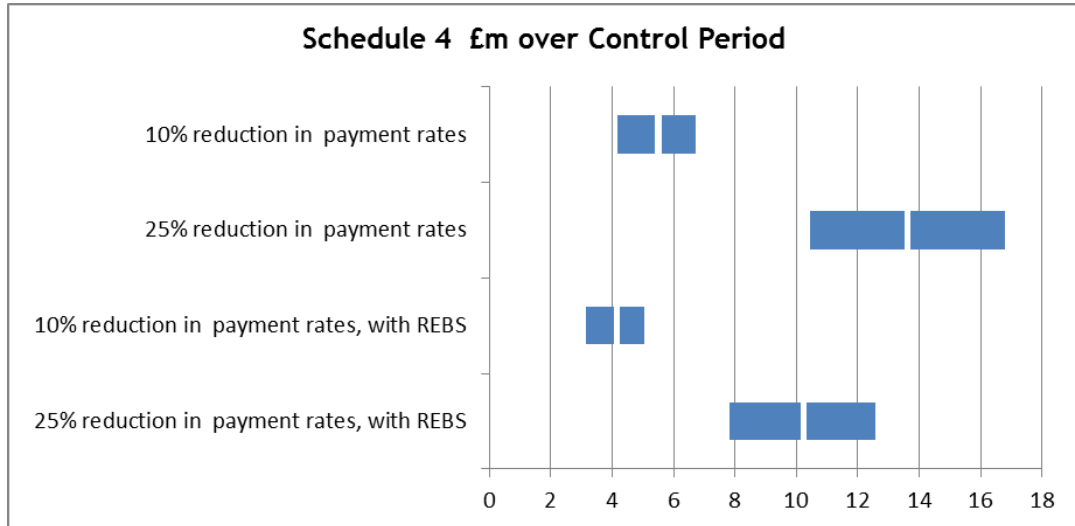


FIGURE 1.4 POTENTIAL RISK TO INCOME SCHEDULE 8: FREIGHT OPERATORS

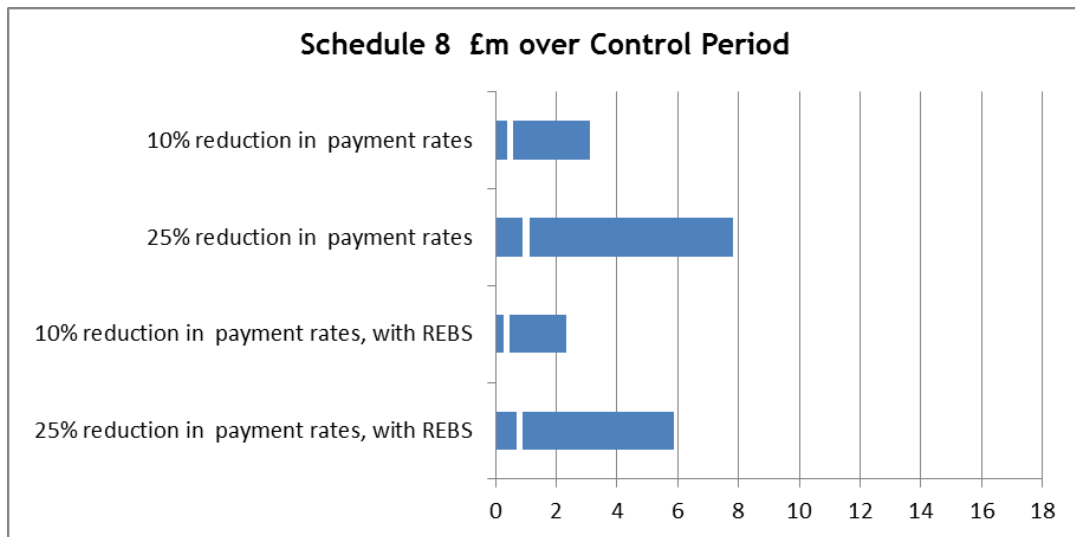
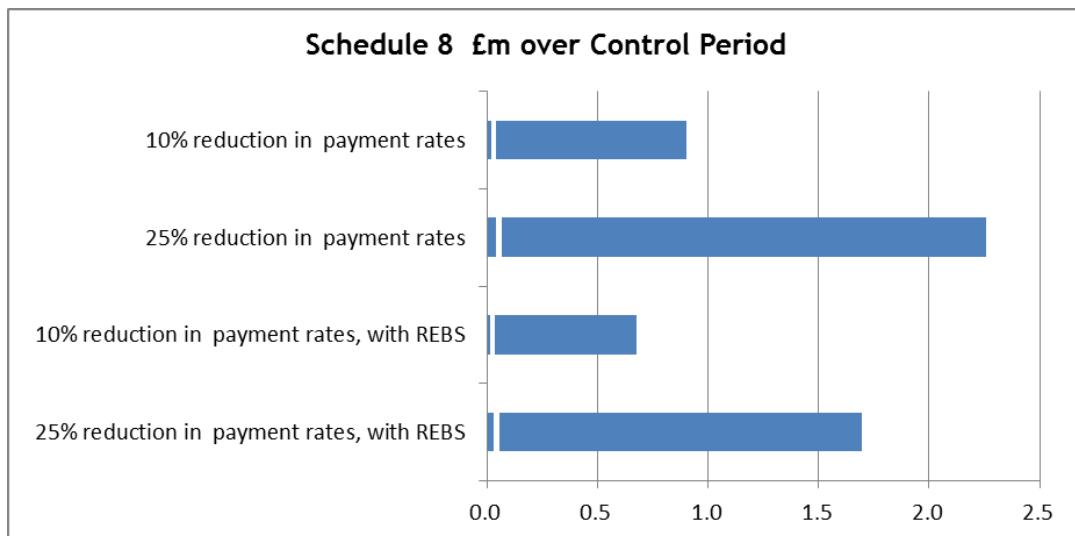


FIGURE 1.5 POTENTIAL RISK TO INCOME SCHEDULE 8: OPEN ACCESS PASSENGER OPERATORS



Behaviour change

- 1.8 The conclusion arising from consultations with the rail industry and Department for Transport during this study, and from the discussions at the Schedule 4 and 8 industry groups, is that there is a consistent view that the level of Schedule 4 and Schedule 8 payments do not provide strong incentives on behaviour. Hence, the consensus among stakeholders is that, if implemented, the proposal to reduce rates would not lead to a significant change in behaviour by Network Rail or train operators. This is because there are other, stronger, incentives which include:
- | Regulatory targets;
 - | Reputational risk; and
 - | Risk of loss of business.
- 1.9 Current industry arrangements involve collaborative working between Network Rail and train operators, for example through Joint Performance Improvement Plans, which reduce the importance of the signals provided by payments under the performance and possession regimes.
- 1.10 It is possible that a reduction in Schedule 4 rates would lead to greater challenge to Network Rail regarding its possession requirements, although train operators have indicated that they would not increase their possession planning resources in order to do this.
- 1.11 Under the Network Rail process for performance planning, the level of Schedule 8 payments does not influence its performance levels. Schedule 8 payments may influence the choice of schemes at a tactical level, but this impact is related more to the relative than to the absolute level of Schedule 8 rates.
- 1.12 An analysis of the business case for train operators deploying additional resources to challenge Network Rail regarding its possession requirements indicates that, under a reduction in Schedule 4 rates, any potential benefit is unlikely to exceed the cost for the majority of train operators.
- 1.13 An analysis of the business case for train operators deploying additional resources (train crew and rolling stock) in order to reduce the delay caused by Network Rail incidents indicates that in all cases examined, the cost would exceed the financial benefit, and a change in Schedule 8 rates would not alter this conclusion.
- 1.14 In isolation a reduction in Schedule 8 rates could theoretically reduce the attractiveness to train operators of running additional services. An analysis of the effect of a change in Schedule 8 rates shows that the impact would probably be too small to have a material deterrent effect on running incremental services. If the capacity charge paid to Network Rail were reduced in line with Schedule 8 rates, the attractiveness of running additional services could increase, but again this effect would be small.

Use of other mechanisms

- 1.15 The Sustained Planned Disruption and Sustained Poor Performance regimes exist to compensate operators when the level of disruption or poor performance exceed a certain level. These mechanisms have seldom been used in CP4, but there is potential for a significant increase in the incidence of claims under these regimes if rates are reduced. They are more complex to apply than Schedules 4 and 8, and

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their use would involve additional costs in the preparation and negotiation of claims.

- 1.16 It would be possible to control the number of claims by adjusting the threshold at which these regimes could be invoked, but there would then be the potential for claims under part G of the Network Code since a change in the condition of the network can qualify as a Network Change. This again would involve additional complexity and cost.

Summary of key conclusions

- 1.17 The key conclusions from the study are that:
- | Schedules 4 and 8 function adequately as a compensation mechanism.
 - | A change in rates would dilute this function, with potential costs in terms of the value of franchises, and actual costs in terms of loss of profits to non-franchised operators.
 - | Levels of Schedules 4 and 8 payment rates currently have only a weak incentive effect, given other incentives on both Network Rail and train operators, and a reduction in rates is unlikely to change this position.

2 Introduction

Purpose of the report

- 2.1 Steer Davies Gleave has been commissioned by the Office of Rail Regulation (ORR) to undertake a study of the effects of reducing Schedule 4 and Schedule 8 payments rates to less than 100% of their full compensation value. This report describes the findings of the study and the methodology employed and presents our conclusions on the likely effects of the proposed change.

Scope of work

- 2.2 The study considers the impact of a 10% and 25% reduction in both Schedule 4 and Schedule 8 payment rates faced by both passenger and freight operators. The impacts we have identified fall into two principal categories:

- | Financial effects on the level of franchise bids, and on the income of open access operators; and
- | Changes in the behaviour of Network Rail and train operators in terms of minimising disruption.

- 2.3 Accordingly, we have undertaken:

- | Analysis of the additional risk to the income of train operators under a change in rates, and an assessment of how this would affect the pricing of franchise bids, together with a calculation of the associated changes in the income of open access passenger operators and freight operators.
- | Identification of the actions that train operators and Network Rail might take in response to a reduction in rates and quantitative analysis of the associated benefits and costs. This part of the study is based on a combination of our own assessment of potential impacts, a programme of interviews with train operators, Network Rail and the Department for Transport (DfT), and quantitative analysis of the expected effects of a change in rates on potential changes to operator behaviour.

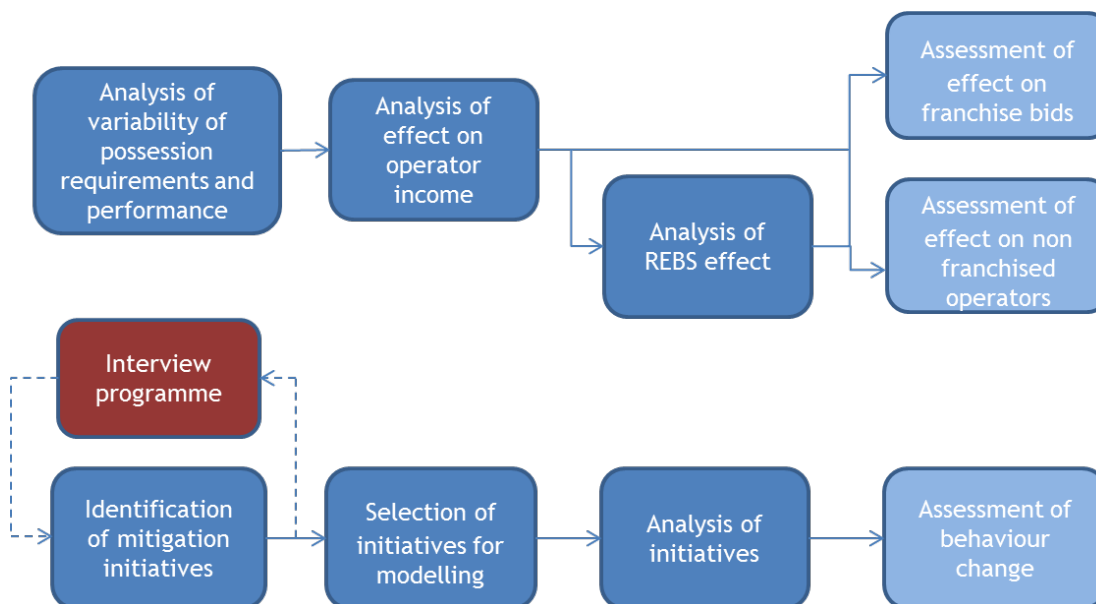
- 2.4 Figure 2.1 below illustrates the methodology applied in the two parts of the study.

- 2.5 We consider the impact of changes to the rates in each schedule in isolation as well as the possible interactions if, say, Schedule 4 rates were modified and Schedule 8 rates left as they currently stand. In addition, we consider a number of other issues, in particular:

- | Interactions with the Sustained Poor Performance (SPP) and Sustained Planned Disruption (SPD) regimes;
- | The impact of the policy in a scenario in which the proposed Route-level Efficiency Benefit Sharing (REBS) arrangements are in place; and
- | The timing of potential effects, recognising that franchised passenger operators are protected from regulatory changes to the Track Access Agreement (TAA) under the provisions of Schedule 9 of the Franchise Agreement.

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FIGURE 2.1 STUDY METHODOLOGY



- 2.6 We have undertaken the study at a time when Schedule 4 and Schedule 8 payment rates for Control Period 5 (CP5) have not yet been calibrated. Our analysis is therefore based on prevailing rates in CP4, and any results must be qualified accordingly. Modification of the analysis to reflect the introduction of revised rates is beyond the scope of the study, although we consider that some of the results could be reassessed relatively easily once the new rates have been set.

Structure of report

- 2.7 The remainder of the report is structured as follows:
- | Section 3 describes the Schedule 4 and 8 regimes;
 - | Section 4 considers the financial effect of a change in rates on franchise bids and on non-franchised operators;
 - | Section 5 investigates potential behaviour change as a result of a change in rates; and
 - | Section 6 assesses whether this behaviour change might be seen in practice.
- 2.8 The report contains appendices as follows:
- | Appendix A: Organisations contacted in the interview programme; and
 - | Appendix B: Glossary

3 Schedule 4 and Schedule 8 Regimes

Description of Schedule 4 and 8 regimes

Schedule 4 regime

- 3.1 From time to time it is necessary for Network Rail to undertake engineering work which involves taking a possession on a section of route. When a possession is taken, the route section is not available for normal train traffic. Train operators will incur costs as a result of diverting trains, and/or providing rail replacement bus services, and may incur a loss of revenue if the alternative arrangements result in some customers choosing not to travel. Schedule 4 of the TAA defines the mechanism whereby Network Rail compensates freight and passenger train operators for the financial impact of disruptive possessions.
- 3.2 For passenger operators, the determination of compensation depends on the length of the possession as follows:
- | Type 1 possessions (less than 60 hours) - a formulaic approach is applied in the calculation of liquid damages, covering both revenue loss and the additional costs of rail replacement bus services;
 - | Type 2 possessions (60 - 120 hours) - a formulaic approach is similarly applied but there is scope for some negotiation of compensation to cover additional costs, subject to the train operator demonstrating a case; and
 - | Type 3 possessions (longer than 120 hours) - both revenue loss and additional costs (which may include costs other than replacement bus services) can be negotiated.
- 3.3 The payment rates used in the formulaic calculation are equivalent to those used in the determination of compensation for unplanned disruption under Schedule 8, but are adjusted according to how much notice of a possession a train operator receives. When long notice of a possession is given the corresponding compensation payment is reduced on the grounds that the likely impact on long term customer behaviour will be less.
- 3.4 Franchised passenger operators pay a predetermined access charge supplement, determined by ORR at the time of each Periodic Review of outputs and charges, to cover a proportion of the estimated cost to Network Rail of the Schedule 4 regime over a Control Period. Passenger open access operators can opt not to pay the access charge supplement and therefore receive compensation only for very long possessions or sustained disruption.
- 3.5 Freight operators do not pay an access charge supplement and only receive compensation for significant disruption. Payment is not automatic and operators make individual claims for compensation, based on pre-determined liquidated sums.

Schedule 8 regime

- 3.6 Where an infrastructure failure causes delay to a train service, the train operator will suffer a financial loss because the delay will adversely affect customer perception of service reliability and reduce their willingness to use the service

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over the long term. In a similar way, a delay caused by a train operator has the potential to delay other operators' services, and cause them financial loss.

- 3.7 Under Schedule 8 of the TAA, Network Rail pays compensation to train operators for average minutes lateness (calculated to include an allowance for cancellations) for which it is responsible above a defined benchmark, and receives a payment from train operators when performance is better than benchmark. Train operators similarly pay Network Rail for their share of average minutes lateness when their share of measured performance is worse than benchmark and receive payments when it is better than benchmark
- 3.8 In the case of the passenger regime, payment rates to operators in respect of Network Rail-caused delay are set to reflect the estimated long term fare revenue losses arising from poor performance, and are calculated using service specific parameters. Payment rates to Network Rail in respect of operator-caused delay are calibrated to cover payments to and from other train operators for lateness arising from TOC-on-TOC delay. Compensation for delays caused by one train operator impacting on another is paid in accordance with the "star model", whereby the perpetrator operator pays a sum to Network Rail in respect of delay to its own trains, and Network Rail pays the victim operator according to the delay the victim operator experiences. The payment rates are set such that average payments received and made by Network Rail over the control period should balance out. At present, Network Rail performance is below benchmark level for the majority of train operators, and in 2011/12 there was a net payment from Network Rail to train operators.
- 3.9 In the case of the freight regime, payment rates to operators are based on the financial effects of lateness and cancellation, and the bonus rate for performance better than benchmark is 50% of the compensation rate for performance worse than benchmark.
- 3.10 There are provisions in the regimes for negotiated payments in the case of Sustained Poor Performance and Sustained Planned Disruption.

Function of the Schedule 4 and 8 regimes

- 3.11 The Schedule 4 and 8 regimes function primarily as compensation mechanisms. However, in principle they have the effect of providing incentives to Network Rail and operators with respect to possession planning and performance improvement.

Compensation mechanism

- 3.12 As a compensation mechanism, payment rates are intended to reflect the financial impact, at the margin, from either possessions or lateness, such that train operators are fully compensated. In this way, franchised passenger operators are protected against the uncertainty in future possession requirements, and against uncertainties in performance of Network Rail and other operators, and the value of the franchise is thereby maintained. The regimes similarly provide open access passenger operators and freight operators with a degree of protection from loss of profit arising from poor performance and possessions.
- 3.13 The majority of payments under the regimes are calculated formulaically and made automatically. This avoids the costs associated with preparing and negotiating claims for individual incidents.

- 3.14 A reduction in rates to levels below 100% of the estimated financial impact would dilute the extent to which the regimes act as a compensation mechanism. Such a reduction would therefore introduce a risk associated with uncertainty in future possession requirements, and with uncertainties in the performance of Network Rail and other operators, potentially reducing the value of a franchise to some degree. Franchise bidders could be expected to factor this reduction into their bids, resulting in an increase in the required subsidy or a decrease in the expected premium payment.
- 3.15 A reduction in rates could also increase the extent to which operators sought to obtain compensation under arrangements for Sustained Poor Performance and Sustained Planned Disruption. This would involve an increase in costs to the industry.

Incentive mechanism

- 3.16 The Schedule 4 regime provides an incentive to Network Rail to plan its work in such a way as to minimise disruptive possessions, and for operators to co-operate with Network Rail to agree to possessions. The Schedule 8 regime provides an incentive both to Network Rail and to operators to improve train performance.
- 3.17 Any reduction in Schedule 4 rates to a level below 100% of the estimated financial impact would, in principle, encourage Network Rail to increase the number and/or length of possessions where this would allow engineering work to be carried out more efficiently. Conversely, a reduction in rates could be expected to encourage operators to challenge Network Rail more rigorously and seek to reduce the number and/or length of possessions.
- 3.18 Any reduction in Schedule 8 rates to a level below 100% of the estimated financial impact would in principle reduce the incentive on both Network Rail and train operators to cut delays of which they are the cause. Conversely, any positive Schedule 8 payments reduce the incentive on train operators to minimise the delay arising from incidents caused by Network Rail, since actions taken to mitigate delays carry a cost, and the Schedule 8 payment foregone when the delay is mitigated might exceed the difference between the revenue gain from mitigating the delay, and the cost.
- 3.19 The extent to which these effects would be seen in practice will depend on the strength of the incentives provided by the Schedule 4 and Schedule 8 regimes compared with other drivers of network availability and performance. The potential effects of reducing the rates are considered in detail in Section 5 below.

4 Financial Impact of a Change in Rates

Overview

- 4.1 A reduction in Schedule 4 and 8 rates would have financial impacts for train operators:
- I There would be a risk to franchised train operators associated with the uncertainty in future possession requirements and the future performance of Network Rail and other operators. This could be reflected in the value of franchise bids.
 - I There would be a financial effect on non-franchised passenger operators and on freight operators as their protection against the effect of possessions or poor performance would reduce.
- 4.2 This section evaluates those effects, and considers the effect of the REBS mechanism (explained at the end of this section) on their magnitude. The estimates of the magnitude of these effects are shown in tables 4.1 to 4.4 below, and are shown in graphical form in section 1.

Impact on franchise bids

- 4.3 In principle, access charge supplements (with respect to Schedule 4) and performance benchmarks (with respect to Schedule 8) are set at each Periodic Review of outputs and charges so that the expected value of net payments under each regime is zero. Hence, if actual possessions and performance over a Control Period were as forecast, the expected financial impact of a change in rates would be neutral for both Network Rail and franchised train operators.
- 4.4 However, in practice there will be some deviation from the forecast level of possessions and performance. To the extent that Schedule 4 and 8 rates accurately reflect the financial impact of possessions and poor performance, franchised passenger operators are currently protected against uncertainties in performance of Network Rail and other operators, and against the uncertainty in future possession requirements. With reduced rates, operators would become partly exposed to this uncertainty and the associated financial risk. If Schedule 4 and 8 rates are already undercompensating operators, for example where there has been a substantial increase in traffic since rates were set², a reduction in rates would increase this risk.
- 4.5 The way in which the risk would be reflected in franchise bids would depend on bidders' perceptions of the reliability of the forecasts of possession requirements and performance, as well as attitudes to risk. While some bidders might be prepared to absorb the risk, others might seek to estimate its magnitude, and price it into their bids. Any increase in franchise costs to compensate for risk would represent a net cost to the industry, and could possibly be passed on to tax payers.

² In these circumstances the rates would underestimate the marginal revenue loss.

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4.6 In principle, assessing this risk would require an understanding of the probability distribution of possessions and of performance outcomes around the Schedule 8 benchmark, service group by service group. However, based on our experience of supporting franchise bidders in the assessment of performance risks, we consider that in practice they would develop “rules of thumb” to inform an understanding of possible impacts on Schedule 4 and Schedule 8 income. These would typically be based (in the case of Schedule 8 for example) on analysis of historic performance as well as projections of future performance in order to establish a range of possible outcomes. In choosing an appropriate outcome to factor into the bid price, a bidder would also consider the impact on the competitiveness of the bid, taking account as far as possible of the approaches that could be taken by other bidders.

4.7 Given that REBS is designed to achieve a closer degree of co-operation between Network Rail and train operators, and hence gives operators greater influence over Network Rail’s performance, the risk premium would potentially be lower within the ranges shown under REBS than without REBS.

Impact of change in Schedule 4 rates

4.8 A reduction in Schedule 4 rates would reduce the income to franchised operators. On the assumption that there would be a compensating change to the access charge supplement, the effect would be neutral if possessions were at the level forecast at the beginning of the Control Period.

4.9 However, given the uncertainty in the level of possessions in the future the reduction in rates would introduce a risk to train operators. We have calculated the potential magnitude of the associated risk premium under three possible approaches to assessing and incorporating the risk.

- | Bidders might choose to absorb the risk and implicitly assume that future possessions will be at the forecast level.
- | Bidders might make a high level estimate of the risk by assuming that the divergence between forecast and actual levels of possession will be at a similar level in each year of the Control Period to the historical variability of the level of possessions.
- | Bidders might make a medium estimate by assuming that the divergence between forecast and actual levels of possessions will apply for half of the time during the Control Period and that possessions will be at the expected level for the remaining half of the time.

4.10 The implied range of the risk premium is shown in table 4.1. The table shows the total (undiscounted) effect over one Control Period, aggregated for all operators. Figures show the effect when all operators have been re-franchised under the new payment rates (so for example, if a franchise were let at the start of CP5 for ten years and the total risk premium were £1m, this would equate to £500,000 per Control Period) The table shows values both without and with REBS in place. In the second case, the figures shown are an assessment of the effect of the rate reduction alone, assuming that REBS is in place, and do not include the effect of REBS itself. As explained below, the effect of REBS itself would be to dilute payment rates by 25% when Network Rail is outperforming on costs.

TABLE 4.1 SCHEDULE 4: POTENTIAL LOSS IN FRANCHISE VALUE

£M OVER CONTROL PERIOD	Rates reduced by 10%	Rates reduced by 25%	Rates reduced by 10% with REBS in place	Rates reduced by 25% with REBS in place
Low value of risk premium	0	0	0	0
Medium value of risk premium	8	19	6	15
High value of risk premium	16	39	12	29

4.11 It would be unlikely, given the competitive discipline imposed by franchise procurement, that all franchises would incorporate a risk premium at the high level. Equally, it would be unlikely that the risk would be fully absorbed in all franchises, as the size of the risk in some cases could be significant compared with profit margins expected. While the estimate of the value of the risk is necessarily subject to a high degree of uncertainty the medium value would present a reasonable central estimate of the likely magnitude of the effect.

4.12 For comparison, we estimate that the high value of the risk premium under a 100% reduction in Schedule 4 rates would be £156m without REBS, and £117m with REBS.

Impact of change in Schedule 8 rates

4.13 On the assumption that performance benchmarks will be reset at the beginning of a new Control Period, such that there is no net payment if performance is at its expected level, a reduction in Schedule 8 rates would not affect expected payments.

4.14 However, given the uncertainty in future performance, the reduction in rates would introduce a risk to train operators analogous to that discussed above in relation to Schedule 4.

4.15 We have calculated the potential magnitude of the associated risk premium under three possible approaches to assessing and incorporating the risk. These are not exhaustive but reflect the range of potential responses to risk that might be observed.

- | Bidders might choose to absorb the risk and implicitly assume that future performance will be at benchmark level.
- | Bidders might make a medium estimate of the risk by assuming that Network Rail will fail to achieve the forecast level of performance improvement in the forthcoming Control Period, but, instead, makes no improvement. We have based the estimate of the medium risk on the difference between the forecast level of performance improvement for CP5 and no improvement in CP5 .
- | An alternative assessment might be made by looking at deviation from benchmark of the Network Rail performance level observed over the current Control Period. Bidders might make a high estimate of the risk by assuming that the average level of deviation from benchmark of Network Rail performance

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over the forthcoming Control Period will be similar to the deviation during the current Control Period³. We have based the estimate of the high risk on the deviation from benchmark performance in CP4.

- 4.16 The implied range of the risk premium is shown in table 4.2. The table shows the total (undiscounted) effect over one Control Period, aggregated for all operators. Figures show the effect when all operators have been re-franchised under the new payment rates. Again, we have calculated the impacts both with and without REBS in place.

TABLE 4.2 SCHEDULE 8: POTENTIAL LOSS IN FRANCHISE VALUE (ALL TOCS)

£M OVER CONTROL PERIOD	Rates reduced by 10%	Rates reduced by 25%	Rates reduced by 10% with REBS in place	Rates reduced by 25% with REBS in place
Low value of risk premium	0	0	0	0
Medium value of risk premium	4	11	3	8
High value of risk premium	38	94	28	71

- 4.17 The future rate of performance improvement is forecast to be slower than has been seen in the past. The Initial Industry Plan supporting document (Train Service Performance) shows a 0.3 percentage point improvement for the Public Performance Measure (PPM) from the end of CP4 to the end of CP5, as opposed to the CP4 PPM trajectory, which showed a 1.9 percentage point improvement. The scope for actual performance improvements to fall short of the forecast should therefore diminish, and so bidders might consider that the medium value of risk premium was more appropriate, particularly given the competitive discipline imposed by a franchise procurement.
- 4.18 As with Schedule 4, it would be unlikely that all franchises incorporate a risk premium at the high level. Equally, it would be unlikely that the risk would be fully absorbed in all franchises, especially in the case of operators running over complex, shared parts of the network whose performance is particularly vulnerable to the effect of poor performance by Network Rail and other operators.
- 4.19 Should benchmarks be set to a level at which there was a payment if performance was at the level forecast within the High Level Output Statement (HLOS), franchised operators would be protected from the effect of this payment under the provisions of Schedule 9 of the Franchise Agreement. However, they would still be exposed to the risk associated with performance deviating from the benchmark level, so we would not expect the results above to be affected by a non-neutral benchmark level.

³ A particularly risk averse bidder might also consider other indicators of the potential deviation from benchmark, for example the maximum deviation observed over a control period. However, as noted above, depending on the associated impact on performance payments, a highly risk averse approach could have an adverse impact on the competitiveness of the bid. We consider that the three approaches explained above illustrate the range of outcomes that might be considered by a bidder in a competitive bidding environment, although we note that other approaches are possible.

4.20 For comparison, we estimate that the high value of the risk premium under a 100% reduction in Schedule 8 rates would be £377m without REBS and £283m with REBS.

4.21 The sums shown above may be compared with the forecast premium payments (for England and Wales), indicated in the 2012 HLOS, of £1.5bn over CP5.

Timing of effect

4.22 A change in payment rates will only affect the risk premium for franchises as they are re-let.

4.23 All franchises, with the exception of Chiltern and Merseyrail, are due to be re-let by the end of CP5. In 2011/12, the franchises to be re-let accounted for 99% of Schedule 4 payments to all passenger operators. In that year they accounted for 99% of the total (absolute) payment to / from franchised operators under Schedule 8 in respect of Network Rail performance, and 96% of the total payment in respect of operator performance. Therefore, in CP6 the effect of the change in rates would be almost fully felt.

Financial impact on non-franchised operators

4.24 A reduction in Schedule 4 rates would cause a reduction in income, and hence an impact on profit, to freight operators, and a reduction in Schedule 8 rates would cause the risk of a loss of income, and hence an impact on profit, to open access and freight operators without any opportunity to recover that loss through franchise payments⁴. Such operators would have no opportunity to seek compensation for the change since for them there is no equivalent of the Schedule 9 mechanism available to franchised operators.

4.25 The tables in this section show estimated values for the impact on freight and open access operators both with and without REBS in place. In the second case, the figures shown are an assessment of the effect of the rate reduction alone, assuming that REBS is in place, and do not include the effect of REBS itself.

Impact of change in Schedule 4 rates

4.26 Table 4.3 shows the range of potential loss of income, aggregated for all freight operators. The low, medium and high values are based on historic levels of possession requirements.

⁴ As noted in Section 1, Schedule 4 and 8 payments received constitute income. Reductions in such payments, other things being equal, will reduce profits.

TABLE 4.3 SCHEDULE 4: POTENTIAL LOSS OF INCOME

£M OVER CONTROL PERIOD	Rates reduced by 10%	Rates reduced by 25%	Rates reduced by 10% with REBS in place	Rates reduced by 25% with REBS in place
Freight operators low value	4	10	3	8
Freight operators medium value	5	14	4	10
Freight operators high value	7	17	5	13

Impact of change in Schedule 8 rates

- 4.27 As before, on the assumption that performance benchmarks are reset at the beginning of a new Control Period, such that there is no net payment if performance is at its expected level, a reduction in Schedule 8 rates would not affect expected payments to non-franchise operators passenger operators. In the case of the freight regime the bonus rate for performance better than benchmark is 50% of the compensation rate for performance worse than benchmark, so fluctuations around the benchmark level have the effect that freight operators would receive a net payment from Network Rail.
- 4.28 However, the reduction in rates would again introduce a risk to train operators of a loss in income should Network Rail performance be worse than benchmark. We have assessed the high value of potential risk on the basis of the deviations of Network Rail performance from benchmark which were experienced during CP4. The medium value is assessed on the basis of the effect of Network Rail failing to meet its forecast improvement in performance in CP5. Table 4.4 shows the potential risk to income aggregated for all freight and all open access passenger operators.
- 4.29 For comparison, the total annual income of the freight operators is of the order of £700m and that of the open access passenger operators is £40m.

TABLE 4.4 SCHEDULE 8: POTENTIAL RISK TO INCOME

£M OVER CONTROL PERIOD	Rates reduced by 10%	Rates reduced by 25%	Rates reduced by 10% with REBS in place	Rates reduced by 25% with REBS in place
Freight operators low value	0	0	0	0
Freight operators medium value	0.4	0.9	0.3	0.7
Freight operator high value	3	8	2	6
Open access passenger operators low value	0	0	0	0
Open access passenger operators medium value	0.02	0.04	0.01	0.03
Open access passenger operators high value	1	2	1	2

Effects of Route-level Efficiency Benefit Sharing

- 4.30 The REBS mechanism is designed to encourage train operators to work with Network Rail to identify and implement initiatives to improve Network Rail's efficiency, by allowing them to share the benefits of such improvements. The REBS mechanism, and in particular the way in which it will interact with alliancing arrangements entered into by Network Rail and train operators, whereby Network Rail and its alliance partner intend to share the outperformance or underperformance arising from the alliance, is the subject of a consultation launched by ORR in May 2012.
- 4.31 Where a Network Rail Route outperforms in terms of its expenditure (i.e. its expenditure falls below a baseline set by ORR) the operators share 25% of the outperformance. Where a Network Rail Route underperforms in terms of its expenditure the operators share 10% of the underperformance. An individual operator's share of REBS is based on its relative share of variable usage charges paid on the route.
- 4.32 The impact of a change in rates will be affected if a REBS arrangement is in place. If Schedule 4 and Schedule 8 payments are included within REBS, then, where Network Rail is outperforming against its expenditure benchmark, any Schedule 4 or Schedule 8 payment by Network Rail will reduce that outperformance, which will in turn reduce the share of outperformance received by the operator. Similarly, where Network Rail is underperforming, any payment by Network Rail

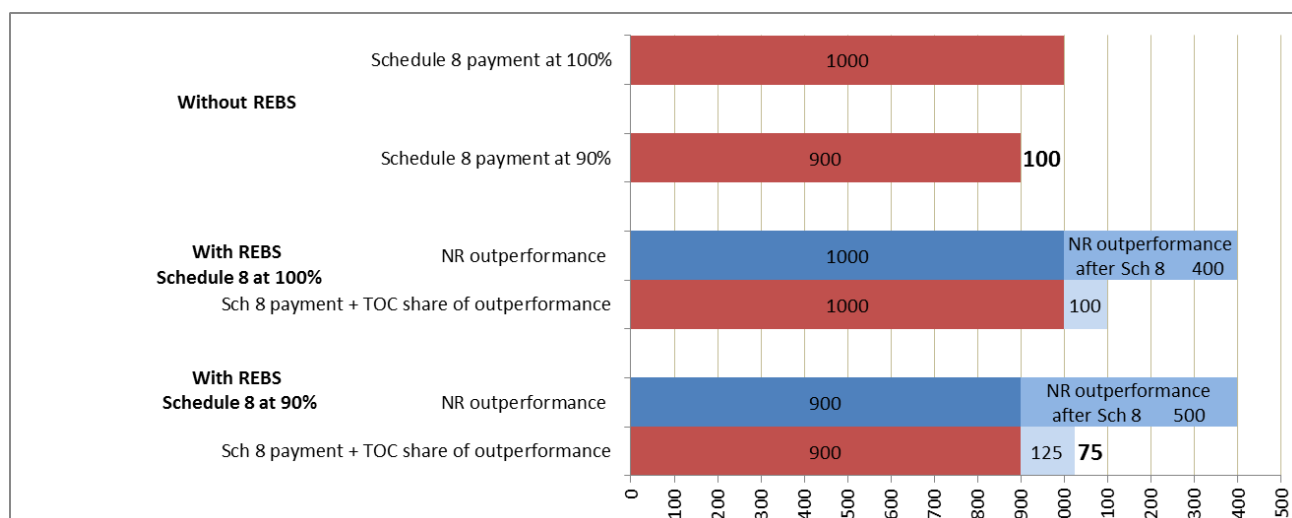
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will exacerbate its underperformance, increasing the share of the underperformance paid by the operator.

4.33 A REBS arrangement would therefore dilute the effect of Schedule 4 and Schedule 8 payments. For the purpose of assessing the effect of a rate reduction, we have assumed the case where Network Rail is outperforming, given that it is the expectation of ORR⁵ that there is more likely to be outperformance. In this case the effect of REBS would be to dilute any Schedule 4 and Schedule 8 payments on the Network Rail route by 25%.

4.34 The example below illustrates the way in which REBS would dilute the effect of a change in Schedule 8 rates, in the simple case where there is one operator on the Network Rail Route. In the example, a reduction of 10% in the Schedule 8 rate would reduce the payment to the train operator by £100 if REBS were not in place. With REBS, the Network Rail outperformance on costs including Schedule 8 would increase if Schedule 8 rates were reduced, and hence the train operator's share of the outperformance would increase. The net effect of a 10% payment rate reduction under REBS would be a £75 reduction in income for the train operator.

FIGURE 4.1 ILLUSTRATION OF REBS EFFECT



⁵ Aligning Incentives to Improve Efficiency Update and Further Consultation Document, May 2012, para 2.4

5 Evidence for Behaviour Change

Initial assessment

- 5.1 In so far as Schedule 4 and Schedule 8 act as an incentive to the behaviour of operators and Network Rail, a change in rates could lead to a change in behaviour. We considered various measures that might be adopted by passenger and freight train operators in response to a change in Schedule 4 and Schedule 8 payment rates. We also considered how Network Rail's behaviour might change in response to modified incentives. The aim was to identify a range of theoretically rational responses and no attempt was made at the initial stage to rule options out on grounds of practicality or cost. We then made a quantitative assessment of measures which train operators might take in order to mitigate the effect of a change in rates, the results of which are reported in Section 6.

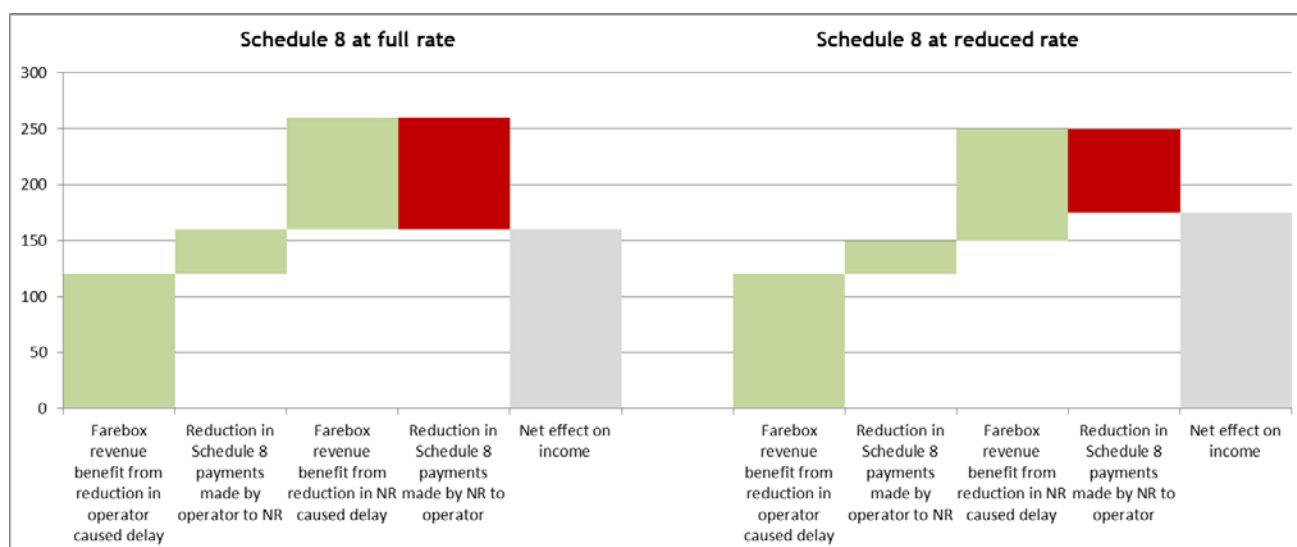
Passenger train operators

- 5.2 A reduction in Schedule 4 rates could have the following impacts, designed to reduce the revenue loss from planned disruption:
- | A greater willingness to take action to minimise service impacts, for example by diverting services where possible rather than providing rail replacement bus services;
 - | The introduction of a higher quality, more integrated rail replacement bus service, possibly with some buses travelling direct to key destinations in order to reduce the extension to normal journey times;
 - | Employment of additional staff to provide a higher quality of service to passengers during disruption, for example by providing information and advice on how to complete their journeys as fast as possible; and
 - | The introduction of promotional fares in order to win back lost traffic following a possession.
- 5.3 While these actions might be prompted by a reduction in Schedule 4 rates, the reduction would not in itself alter their value.
- 5.4 In addition, a reduction in Schedule 4 rates might lead to less willingness to agree possessions that significantly affect the service, with a greater preference for short possessions over an extended period rather than long possessions that disrupt services over a whole day or a number of days and are more noticeable to passengers. In this case, a reduction in rates would increase the value to train operators of achieving less disruptive possessions, and could encourage them to employ additional staff to facilitate this.
- 5.5 A reduction in Schedule 8 rates would potentially incentivise operators to take actions to reduce the impact of Network Rail caused delays by mitigating the effect of incidents. We identified the following possible responses to a reduction in rates:
- | A greater emphasis on contingency planning and the development of contingency timetables;
 - | Deployment of additional staff to support incident recovery;

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- I More collaborative working with Network Rail, for example through multi-skilling of train operator staff to enable them to provide additional operational support during disruption; and
 - I Deployment of additional rolling stock and train crew to mitigate the effects of delays and reduce cancellations.
- 5.6 A measure taken by a train operator to mitigate the effect of incidents would generally impact on incidents caused by the operator as well as those caused by Network Rail, and the following effects would be seen:
- I An increase in farebox revenue arising from the reduction in operator caused delay;
 - I A reduction in Schedule 8 payments made by the operator to Network Rail, in respect of operator caused delay;
 - I An increase in farebox revenue benefit from reduction in Network Rail caused delay; and
 - I A reduction in Schedule 8 payments made by Network Rail to operator, in respect of Network Rail caused delay.
- 5.7 Figure 5.1 below, using hypothetical numbers, but reflecting typical values for the relative magnitudes of the components of the net effect, illustrates the way in which a reduction in Schedule 8 rates could increase the benefit to a train operator of measures to mitigate the impact of incidents.

FIGURE 5.1 EFFECT OF SCHEDULE 8 RATE REDUCTION ON THE BENEFIT OF DELAY MITIGATION MEASURES



- 5.8 There are other potential responses:
- I There could be less investment in measures to reduce TOC-on-self delay as lower payments rates would tend to weaken the business case for investment of this kind.
 - I If Schedule 8 rates were reduced without a compensating reduction in the capacity charge, there could be less willingness to run incremental train services as lower payment rates would reduce Schedule 8 payments to operators in respect of reactionary delays (which tend to increase when additional services are run) where the primary cause was the fault of Network

Rail. If the capacity charge were reduced in line with Schedule 8 rates, there could be greater willingness to run incremental train services as operators would be paying less in respect of the effect on the performance of other operators.

- 5.9 It is also possible that a reduction in compensation under the Schedule 4 and Schedule 8 liquidated damages mechanisms might lead to greater resort to the SPD and SPP arrangements, which provide for negotiated (and hence possibly higher) compensation. However, both mechanisms can only be triggered in specific circumstances and typically absorb significant management time.

Freight train operators

- 5.10 Freight train operators could be expected to be similarly reluctant to agree possessions if Schedule 4 rates were reduced. However, it is difficult to identify mitigation measures since there would generally be no scope for offering substitute services. If the service were not available or seriously disrupted, freight customers would be likely to switch to competitive road-based freight transport, and there could be no guarantee that they would return after the disruption was over. It is possible that diversionary routes are available, and there might be some additional incentive to secure these if less compensation under Schedule 4 were available. A reduction in Schedule 8 rates might similarly encourage a greater focus on contingency planning and the deployment of additional rolling stock and train crew.

Network Rail

- 5.11 In principle, a reduction in Schedule 4 rates would reduce the incentive on Network Rail to plan possessions in order to minimise disruption to passenger and freight services. Possessions planning could become less efficient as it would be possible to take longer possessions or provide less notice for a given cost. Coupled with the incentive on train operators to resist possessions, noted above, this could result in more disputes.
- 5.12 If Schedule 8 rates were a significant driver of Network Rail behaviour, a reduction in rates might encourage it to reduce investment in infrastructure maintenance and performance improvement measures, although maintenance levels are also driven by the need to meet asset condition benchmarks. It might also be less willing to collaborate with train operators through Joint Performance Improvement Plans (JPIPs) and other mechanisms intended to promote joint working to reduce delays. The management of delay in real time might similarly be less effective, although this outcome seems particularly unlikely as the impact of, say, less robust contingency planning arrangements would be difficult to predict and could lead to major unplanned disruption carrying a heavy penalty (notwithstanding the reduced payment rates).

Findings from stakeholder interviews

- 5.13 Our interview programme included a number operators of different types of franchise (long distance, London and South East (LSE) and regional) as well as freight and open access passenger operators. We also spoke to Network Rail, DfT and to the Association of Train Operating Companies. The views expressed in the interviews, and our understanding of their implications, are described below. A list

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of organisations included in the programme, together with a list of questions asked, is provided in Appendix A.

5.14 The aim of the interviews was to:

- | Establish a baseline position in terms of the effectiveness of the Schedule 4 and Schedule 8 regimes as currently operated.
- | Seek views on the effects of a change in payment rates, differentiating between the operator and Network Rail elements in the case of Schedule 8.
- | Obtain views on the likely efficacy and/or value of the various possible mitigation measures identified.
- | Understand possible interactions with other industry mechanisms and initiatives, including SPP, SPD, REBS and (in the case of one party) alliancing.

Passenger train operators

5.15 Train operator representatives interviewed included Managing Directors and performance and production managers. The passenger train operators interviewed have suggested that in practice a reduction in Schedule 4 and/or Schedule 8 rates would be unlikely to generate positive incentives overall. There was a strong consensus around the following observations:

- | There are other mechanisms that drive possessions planning and performance improvements, in particular company reputation, Schedule 7 of the Franchise Agreement and the JPIP process. These tend to be more powerful incentive mechanisms than Schedule 4 and 8. Irrespective of formal incentive mechanisms, train operators have a desire to offer a good quality service to their customers.
- | Train operators already work closely with Network Rail to minimise the effect of possessions and to improve performance. There is already challenge to Network Rail with respect to possession requirements, and this can lead to less disruptive arrangements being found. Train operators do not see the level of their own possession planning resources as a constraint on the achievement of efficient possession arrangements, and would not increase these resources in response to a reduction in Schedule 4 rates.
- | Schedule 4 (especially) and Schedule 8 rates are already below the full compensation level, and therefore any behaviour that might be incentivised by this approach can already be observed.
- | Operators recognise that bus substitution is unpopular, and seek to avoid it where possible. Many customers choose not to travel if a rail service is substituted with bus services, and there is little or no prospect of retaining the associated revenue loss simply by improving the quality or speed of the bus journey.
- | A reduction in rates of 10% or 25% would be insufficient to incentivise significant effort or investment since, even if the lost compensation could be fully offset by increased revenue, this would not cover the costs of the measures required to reduce disruption further.

5.16 Individual operators made some further observations:

- | Schedule 4 rates significantly undercompensate in instances where journeys are disrupted on most or all weekends. In these circumstances the notification factor (which reduces the compensation payment when long notice of

possessions in given) is not appropriate, as passengers do not have the opportunity to avoid disruption even if they are able to be flexible as to which weekend they travel on.

- | It is acknowledged that Network Rail and operators need to make further progress in achieving a 7-day railway and in planning and coordinating disruptive possessions more effectively, but it is considered that Schedule 4 as a tool will neither aid nor hinder this.
- | Where operators share routes, there are conflicting requirements between them. For example, Saturday afternoon is relatively quiet for long distance operators, but busy for local operators. Hence local operators favour possessions on a Sunday, but these are more disruptive for long distance operators.
- | Instructions to controllers would not be changed if Schedule 8 rates were reduced.
- | The train operator tends not to base the business case for investment in performance improvements on estimates of revenue increases since the relationship between performance and revenue at the level of individual schemes is seen as being uncertain. In the case of heavily subsidised franchises, the scope for raising revenue by improving performance is anyway limited. However the business case for investment may depend on an anticipated reduction in Schedule 8 payments under the train operator element of the regime.

5.17 In addition, the Managing Director of South West Trains noted that the alliance arrangement with Network Rail currently in place has fundamentally changed behaviour such that a relatively marginal change in payment rates could not be expected to have any effect. The financial arrangements underpinning the alliance effectively eliminate the conventional incentives and encourage a more collaborative approach. A further major benefit of the alliance is that it has encouraged a much greater focus on sub-threshold delay, which was previously largely overlooked by both parties as it did not drive performance payments.

5.18 While similar alliancing arrangements would not necessarily be appropriate across the national network, this experience suggests that if they were to apply more widely the incentives created would be such as to render any marginal changes to Schedule 4 and Schedule 8 largely ineffective.

5.19 In summary, the passenger train operators expressed a consistent view that Schedules 4 and 8 are seen primarily as compensation mechanisms and a change to rates would not lead to a change in behaviour. This is because there are already other incentives in place which are driving improvements in network availability and performance, and collaborative working within the industry facilitates such improvements. An analysis of the effect of potential changes in behaviour (set out in Section 6 below) provides reinforcement of the view that a change in rates would not significantly alter behaviours.

Freight train operators

5.20 Freight train operators, represented by planning and performance managers, also argued that payment rates are already set too low to provide full compensation, noting that there will anyway be a one-off reduction in the year 2013/14 in order to offset an estimated over-payment by Network Rail earlier in CP4. A reduction in

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Schedule 4 rates could lead to less willingness to agree to possessions and could have the effect of discouraging the closer working arrangements currently being sought. Freight operators would not increase possession planning resources in response to a reduction in Schedule 4 rates.

- 5.21 The balance of views from freight operators is that, as commercial businesses in competition with road freight, they already have a strong incentive to improve performance and minimise disruption, and that a reduction in payment rates would simply reduce the level of available compensation without changing behaviour. Significant investment in additional train crew and rolling stock could not be justified by a reduction in rates as the level of these resources has already been optimised relative to the service provided and the cost of further investment would be too high.
- 5.22 There is a belief that the industry is making progress, through the Freight Performance Board (which includes freight operators and Network Rail) and through freight operator involvement in JPIPs.
- 5.23 The view of freight operators was also that a reduction in Schedules 4 and 8 rates would not lead to significant behaviour change, as there are strong commercial drivers for performance.

Network Rail

- 5.24 We spoke to a Route Director, and to performance and possessions planning managers within Network Rail's route organisation, recognising that key decisions affecting disruption due to possessions and delays have now been devolved to the route level. We also spoke to the Performance Analysis Manager at Network Rail Headquarters. Network Rail representatives have suggested that a reduction in Schedule 4 and/or Schedule 8 rates would be unlikely to cause a significant change in its own behaviour or the way in which it works with train operators. The following observations were made:
- | The industry has matured and Network Rail and train operators work closely together to improve both possession planning and performance.
 - | Regulatory targets provide a stronger incentive on Network Rail than the performance regimes.
 - | Reputation is a strong driver of performance for both Network Rail and train operators.
 - | In times of disruption, decisions on service recovery are not driven by Schedule 8 rates. Rather, they take into account passenger satisfaction, adopting a joint decision-making process with the operator.
 - | Schedule 4 management has been transferred to the Routes, and this has brought about a greater focus on possessions and care in their use. A National Planning Integration Team ensures that possessions are coordinated so that complementary routes are not blocked simultaneously.
 - | Schedule 8 payments are used in some cases to assess initiatives to improve performance. This could influence the prioritisation of schemes at a local level, but is not likely to influence the overall level of performance.
- 5.25 It was also suggested that a reduction in Schedule 4 rates might cause train operators to resist possessions or perhaps encourage them to seek longer possessions (type 2 and 3) where alternative compensation arrangements apply. A

reduction in Schedule 8 rates might cause train operators to seek compensation under the SPP regime, or under part G of the Network Code.

- 5.26 Alliancing involves the sharing between Network Rail and the Operator of outperformance on costs compared with a baseline; this will reduce the effect of any change in Schedule 4 and Schedule 8 rates.
- 5.27 At a strategic level, Network Rail's overall performance levels are driven by the HLOS for each Control Period. Network Rail's planning process can be summarised as follows:
- | The effect on delay minutes of factors which change performance, such as asset maintenance and renewal, JPIPs, major projects, changes to capacity, changes to train service levels and actions by operators, is estimated.
 - | The overall change in delay minutes caused by these factors is calculated and applied to the forecast base level, to provide a forecast of the absolute number of delay minutes in each year of the Control Period.
 - | Using established relationships, the PPM and level of cancellations and serious lateness for each operator is forecast on the basis of the forecast delay minutes.
 - | If the forecast PPM is not within HLOS targets (including a contingency to allow for risk around the forecasts) the process is iterated, by reverting to the "owners" of the actions which influence performance.
- 5.28 The level of Schedule 8 rates is not seen to have any influence on the overall level of performance in the plan.
- 5.29 When making expenditure to improve performance, effort is concentrated on the busier parts of the network; this is driven, among other factors, by the requirement for value for money.
- 5.30 In summary, Network Rail do not see the levels of Schedule 4 and 8 as having a significant impact on their behaviour, either at a strategic or operating level. As with the train operators, they have other, stronger, drivers of performance. They did have a significant concern that undermining the function of these Schedules as compensation regimes would cause train operators to seek compensation through other mechanisms which would be more complex and more costly to administer.

Department for Transport

- 5.31 The DfT views were provided by the Programme Manager, Periodic Review, and the Performance Monitoring and Analysis Manager. DfT sees Schedules 4 and 8 primarily as compensation mechanisms - they are an outcome of performance / network availability levels rather than a driver. DfT have seen no evidence that the improving trajectory of performance benchmarks has in itself caused an improvement in performance. DfT acknowledged that there is a concern that operators may be less rapid in their recovery from Network Rail caused incidents, but are not aware of any hard evidence to support this. JPIPs, regulatory targets and reputation were said to be more important as drivers for improved performance.
- 5.32 There are various bodies responsible for delivering performance expectations. The main industry body is the National Task Force (NTF), including owning groups, Network Rail, ORR and DfT. It meets every period and encompasses a number of workstreams and sub-groups. Ministerial engagement is primarily through the

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Performance Delivery Group (PDG), which is chaired by the Rail Minister and includes representatives of operators, Network Rail, NTF and ORR. This group ensures that the industry can draw on ministerial support when required (e.g. in relation to cable theft). Possessions issues have also on occasion been discussed in PDG, although this is outside its normal scope, and in ad hoc ministerial meetings with the industry.

- 5.33 DfT would expect bidders to price in the risk associated with a reduction in Schedule 4 and Schedule 8 payment rates (given they are no longer fully protected against uncertainty surrounding future possessions requirements / performance levels) in addition to any direct loss of income.
- 5.34 In DfT's view, a change in Schedule 8 is unlikely to have much impact on train operator behaviour, partly because of resource constraints. A change in Schedule 4 rates might lead to an improvement in possession planning as there would be less incentive for operators to accept short term changes. There is a perception that there are occasions when buses unnecessarily substitute for trains, one that the industry does not accept. There are limits - caused by network constraints - to the extent to which bus substitution can be avoided. Possession Disruption Index (PDI) targets also have the potential to drive better possession planning, although the measure, as currently defined, is not necessarily the best way to achieve this. Better co-ordination between Network Rail and train operators over access requirements, as seen in the South West Trains/Wessex alliance, may also be productive.
- 5.35 Franchise agreements now incorporate a delay minutes and cancellation regime, whereby operators are required to take remedial action if operator-caused delay minutes or cancellations breach a threshold.
- 5.36 The DfT's view is that if changes were made to reduce Schedule 8 payment rates, this would not deliver any benefits that would be worth the increased financial impact for Government (taking into account that such a change would have revenue support implications as well as implications for franchise payments).

6 Analysis of Incentive Effects

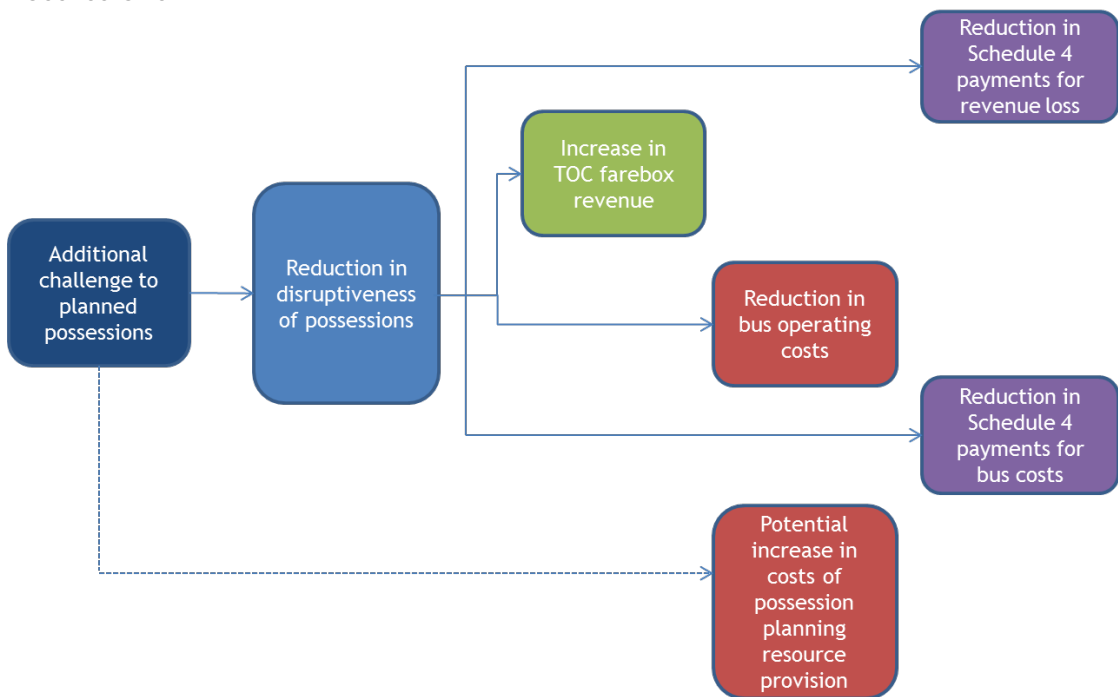
Overview

- 6.1 In this section we assess potential changes in behaviour which might result in a change to Schedule 4 and Schedule 8 rates. We have identified a number of measures which might theoretically be taken to mitigate a change in rates, and made an assessment of how such measures might be implemented, together with a quantitative estimate of the benefit of the measures, in order to investigate whether they would be worthwhile to train operators. In practice there is a variety of ways in which the measures might be implemented; we have made an assessment of a representative sample, covering a full range of train operators, which allows an estimate to be made of the magnitude of the benefits.

Change in response to Schedule 4 rate reduction

- 6.2 Train operators have stated that they would not increase possession planning resources in response to a Schedule 4 rate reduction. However, in order to test this claim we have made an estimate of the benefit to train operators if the provision of additional possession planning resources were to enable a reduction in the disruptiveness of possessions. The scenario we tested envisaged that a proportion of long (20-32 hour) possessions could be substituted by a series of shorter (8 hour) and less disruptive possessions.
- 6.3 The length of possessions is influenced by the work required to be done within them, and in most cases it would not be practical or economical to break long possessions into a series of shorter possessions. However, it is conceivable that there is a small number of long possessions which could be broken up, and that a reduction in Schedule 4 rates might provide an incentive for train operators to provide additional resources to work with Network Rail to achieve this. We have tested the effect of a change in rates if the proportion of the long possessions that could be substituted with a series of shorter and less disruptive possessions were 10%, which represents our judgement of the order of magnitude of an upper bound of the proportion that could be so substituted.
- 6.4 The effect on operators would be:
- | An increase in revenue associated with reduced disruption.
 - | A reduction in Schedule 4 payments in respect of revenue loss caused by disruption.
 - | A reduction in the cost of providing rail replacement bus services.
 - | A reduction in Schedule 4 payments in respect of bus service costs.
- 6.5 Where Schedule 4 rates are set to provide 100% compensation, the effect of a reduction in disruptive possessions will be neutral; when the rates are reduced, there is a net benefit to train operators. The effect is illustrated in figure 6.1 below.

FIGURE 6.1 EFFECT OF HYPOTHETICAL REDUCTION IN DISRUPTIVE POSSESSIONS



6.6 Table 6.1 below shows two scenarios. The first is where the reduction in disruptive possessions could be achieved without additional possession planning staff, and the second is where the reduction would require additional staff, and such staff would be employed only by those train operators where the value of reducing long possessions exceeds the notional cost of the additional staff, estimated at £60,000 per operator. In the second scenario, therefore, the benefits would be lower. The first row of the table shows the total net benefit to operators (including both revenue increase and reduced bus costs) of the reduction in long possessions under a 10% and 25% reduction in Schedule 4 rates. The second row shows the cost of additional possession planning staff, where applicable. The fourth row shows an estimate of the value of time and road decongestion benefits (societal benefits) using WEBTAG⁶ values.

⁶ WEBTAG is the Department for Transport’s website for guidance on the conduct of transport studies

TABLE 6.1 POTENTIAL VALUE OF REDUCTION IN LONG POSSESSIONS

	Benefit of reduction in length of 10% of 20-32 hour possessions if no additional staff required		Effect of reduction in length of 10% of 20-32 hour possessions for those TOCs where value exceeds cost of additional staff	
	Schedule 4 rates reduced by 10%	Schedule 4 rates reduced by 25%	Schedule 4 rates reduced by 10%	Schedule 4 rates reduced by 25%
Total for all TOCs £m.				
Annual benefit to TOCs before cost of additional possession planning staff	0.2	0.5	0	0.21
Annual cost of additional possession planning staff	0	0	0	0.18
Annual net benefit to TOCs	0.2	0.5	0	0.03
Annual value of time and decongestion benefits	1.5	1.5	0	0.6
Total of net annual benefits to TOCs and value of time and decongestion benefits	1.7	2.0	0	0.6
Total of net benefits to TOCs and value of time and decongestion benefits, over a complete Control Period	8.4	10.0	0	3.2

- 6.7 These figures do not represent a guaranteed or even likely outcome of a reduction in Schedule 4 rates, but they provide an estimate of the order of magnitude of the benefits which would accrue if there were inefficiencies in possession arrangements which could be unlocked by additional train operator challenge prompted by a change in rates. The analysis shows that the potential benefits are small. If a 10% reduction in long possessions were achievable, the benefit would be less than the notional cost of employing an additional member of staff for all train operators in the event of a 10% reduction in Schedule 4 rates, and would exceed the cost for three train operators in the event of a 25% reduction in Schedule 4 rates. If all train operators were to employ an additional member of staff, the

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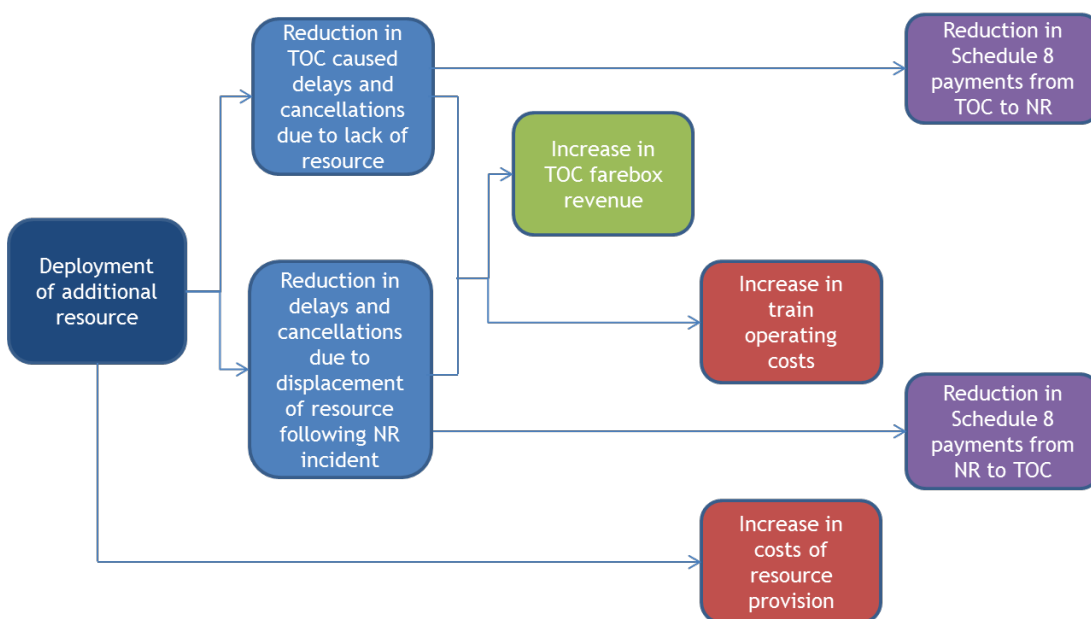
annual net benefit to them would be -£1m in the case of a 10% reduction in rates, and -£0.7m in the case of a 25% reduction in rates.

Change in response to Schedule 8 rate reduction

- 6.8 Train operators have stated that they would not deploy additional resources to mitigate delays in response to a Schedule 8 rate reduction. However, given that Schedule 8 payments are generally dominated by payments relating to Network Rail performance, the most likely response to a reduction in rates would be to seek to reduce the delay caused by Network Rail incidents. We therefore tested the effect of the provision of additional resources by operators which would enable them to recover more rapidly from Network Rail caused incidents (as well as providing more resilience in their own performance.)
- 6.9 The effect of providing additional resources would be:
- | Additional farebox revenue generated by the reduction in delays and cancellations
 - | Additional costs of providing the spare resource
 - | Additional train operating costs arising from fewer cancellations
 - | A reduction in Schedule 8 payments made by the operator to Network Rail, in respect of operator caused delay and reduction in Schedule 8 payments made by Network Rail to operator, in respect of Network Rail caused delay.

The effect is illustrated in figure 6.2 below.

FIGURE 6.2 EFFECT OF DEPLOYING ADDITIONAL RESOURCES



- 6.10 In order to make an estimate of the benefit to train operators of deploying additional resources to ensure more robust performance, we split the most diverse operators into component parts, according to the service type (long distance, regional and LSE) and then for each operator (or sub-operator), we identified a number of strategic locations - totalling between one and four per operator - at which it would be most effective to deploy standby train crew and / or rolling stock. These standby resources would reduce cancellations and delays due to late starts arising both from operator causes and as a reaction to Network Rail causes.

For each service group, we made an estimate of the proportion of cancellations and delays due to late starts which would be avoided by the deployment of additional resources. The estimate was based on:

- | The location of the standby resource relative to the routes operated on the service group.
- | The proportion of Network Rail caused late start delays and cancellations which are reactionary (and could therefore potentially be avoided by spare resource.)
- | The peakiness of the service - services which have a high peak demand are likely to have spare resources available in off-peak periods, hence additional spare resources would only be of benefit in the peak.

- 6.11 We used our Schedule 8 Delay and Cancellations Payments Model to estimate the impact of the consequent improvement in performance on operator revenue and Schedule 8 payments.
- 6.12 For each location we calculated the cost of providing the spare resource, based, in the case of rolling stock, on the type of unit most likely to be deployed, and we calculated the train operating cost associated with cancellations avoided based on a typical destination that would be served from that location.
- 6.13 Our analysis indicates that for each individual location examined, the reduction in Schedule 8 payments by 25% would increase the benefit of additional train crew by less than £110,000 p.a., while the provision of additional train crew would typically cost in the region of £300,000 p.a.
- 6.14 Table 6.2 shows the estimated cost and benefit of spare train crew for operators grouped by Long Distance, Regional and LSE types. In the Schedule 8 columns (showing the change in Schedule 8 payment as a result of the performance effect of deploying spare train crew), a negative figure indicates a worsening from the point of view of the train operator. The total net benefit to the operator is equal to the additional farebox revenue, less the increase in cost, plus the schedule 8 effect.

TABLE 6.2 ESTIMATED COST AND BENEFIT OF SPARE TRAIN CREW

£m p.a.	Additional farebox revenue	Increase in cost	Change in Schedule 8 payment with rate reduction of:			Total net benefit to operator with rate reduction of:		
			0%	10%	25%	0%	10%	25%
Total for TOC types								
Long Distance	2.0	3.5	-1.3	-1.2	-1.0	-2.7	-2.6	-2.4
Regional	1.3	5.2	-0.4	-0.3	-0.3	-4.3	-4.2	-4.2
LSE	2.4	4.2	-1.3	-1.2	-1.0	-3.2	-3.1	-2.8
TOTAL	5.7	12.9	-3.0	-2.7	-2.2	-10.2	-9.9	-9.4

Analysis of Incentive and Financial Effects

- 6.15 Table 6.3 shows the estimated cost and benefit of spare rolling stock for TOCs grouped by Long Distance, Regional and LSE types.

TABLE 6.3 ESTIMATED COST AND BENEFIT OF SPARE ROLLING STOCK

£m p.a.	Additional farebox revenue	Increase in cost	Change in Schedule 8 payment with rate reduction of:			Total net benefit to operator with rate reduction of:		
			0%	10%	25%	0%	10%	25%
Total for TOC types								
Long Distance	13.2	13.5	-8.0	-7.2	-6.0	-8.3	-7.5	-6.3
Regional	3.9	7.9	-2.0	-1.8	-1.5	-5.9	-5.7	-5.4
LSE	5.2	11.6	-3.3	-2.9	-2.4	-9.7	-9.4	-8.9
TOTAL	22.3	33.1	-13.2	-11.9	-9.9	-24.0	-22.7	-20.7

- 6.16 In all cases, the reduction in Schedule 8 payments by 25% would increase the benefit of additional rolling stock, with train crew at each individual location examined, by between £0 and £1,000,000 p.a. The cost of provision of the train crew and rolling stock (including rolling stock operating cost) would typically lie in the range of £400,000 to £4,000,000 p.a., depending on the number and type of trains employed. In none of the cases examined did the additional benefit exceed the cost.
- 6.17 These figures indicate that, on the basis of the locations examined, the cost of providing additional resources in order to mitigate the effect of operator and Network Rail delays exceeds the benefits to the operator. This applies both at current Schedule 8 rates, and when rates are reduced by 10% or 25%.

Effect on benefit of incremental services

- 6.18 A change in Schedule 8 rates could potentially affect the benefits to train operators of running incremental train mileage. This is because additional train services tend to increase the amount of reactionary delay, and a reduction in Schedule 8 payment rates would reduce the payments to operators in respect of reactionary delays where the primary cause was the fault of Network Rail. The extent to which additional train services increase reactionary delay will depend on the nature of these services and the part of the network on which they run. We have assessed the effect of a rate change in the case where an additional 1% of train miles causes a 2% increase in reactionary delay (i.e. at the margin, reactionary delay is proportional to the square of traffic intensity). Table 6.4 below shows an estimate of the extent to which a reduction in the payment rate will increase the net cost to the operator of running an incremental train mile.

TABLE 6.4 IMPACT OF SCHEDULE 8 RATE REDUCTION IN ISOLATION ON THE NET COST OF AN INCREMENTAL TRAIN MILE

Average increase in net cost of running incremental train mile (pence)	Reduction in Schedule 8 rate	
	10%	25%
Operator type		
Long Distance	17	42
Regional	3	7
LSE	10	25

6.19 While the figures for a particular incremental service would depend on the route sections on which it operates, the table shows that the change in net cost is likely to be small in relation to both the incremental train operating costs and revenue. Hence, a change in Schedule 8 rates in isolation is unlikely to have a significant impact on the propensity of train operators to run incremental services.

6.20 If the capacity charge paid to Network Rail (which is designed to help neutralise the increased Schedule 8 risk to Network Rail of accommodating additional traffic) were reduced at the same time as Schedule 8 rates, then the reduction in the capacity charge paid by the operator would generally exceed the reduction in Schedule 8 payments, since the capacity charge rates would be set to reflect the reactionary delay caused to other operators as well as the operator introducing the new service. In this case the reduction in rates would increase the incentive to run additional services. Table 6.5. below show an estimate of the benefit of running an additional train mile when Schedule 8 rates and the capacity charge are reduced.

TABLE 6.5 IMPACT OF SCHEDULE 8 RATE AND CAPACITY CHARGE REDUCTION ON THE NET COST OF AN INCREMENTAL TRAIN MILE

Average change in net cost of running incremental train mile (pence)	Reduction in Schedule 8 rate:	
	10%	25%
Operator type		
Long Distance	-5	-13
Regional	-2	-6
LSE	-3	-7

6.21 Again, these figures are likely to be small in relation to both the incremental train operating costs and revenue. Hence, a change in Schedule 8 rates accompanied by a change in the capacity charge is unlikely to have a significant impact on the propensity of train operators to run incremental services.

Analysis of Incentive and Financial Effects

Use of other mechanisms

- 6.22 Other mechanisms exist which provide for payment of a negotiated compensation sum under certain circumstances.
- 6.23 For possessions, there is a Sustained Planned Disruption (SPD) regime, which is triggered if the revenue loss exceeds a certain proportion of service group revenue. The mechanism was designed to apply to approximately 1% of possessions. In practice, there have been only three successful claims in CP4. It might be expected that more claims would be made if payment rates were reduced, but this could be controlled through the threshold at which the mechanism applies.
- 6.24 For performance, there is a Sustained Poor Performance (SPP) regime, which is triggered if Network Rail performance falls below a certain level. In CP4, a considerable number of operators have been above the threshold.
- 6.25 There have been three claims under SPP in CP4, of which one was settled, one was withdrawn and one is pending. If Schedule 8 rates were reduced, there would be the potential for a larger number of claims, with attendant cost to the operator in preparing, and Network Rail in assessing, them. Again, this could be controlled through resetting the threshold at which the mechanism applies. It would be necessary to set the threshold at such a level that the mechanism were rarely applied in order to avoid the risk of SPP effectively replacing the Schedule 8 regime for a significant number of train operators.
- 6.26 Part G of the Network Code deals with Network Change. Following the Hatfield accident it was held by the Rail Regulator that a change in the condition of the network could in principle be said to be a Network Change, and hence be compensated under Part G. If Schedule 8 rates were reduced, then in the absence of any change to the Network Code, there could be claims under Part G for poor performance falling outside the provisions of SPP.

Interaction between Schedule 4 and Schedule 8 regimes

- 6.27 It would be possible to change the payment rates for the two regimes in different ways. In this case, the incentives on Network Rail would in principle depend on the relative change in rates. Delays caused by possession overrun fall under the Schedule 8 regime. Hence, if Schedule 4 rates rose in relation to Schedule 8 rates, this would incentivise Network Rail to reduce the contingency allowed in possessions for work taking longer than expected, and therefore increase the risk of possession overrun. Conversely, if Schedule 8 rates rose in relation to Schedule 4 rates, this would incentivise Network Rail to increase the contingency allowed in possessions for work taking longer than expected, and therefore lower the risk of possession overrun. However, given the other incentives on Network Rail in relation both to possession management and performance, the extent to which these theoretical effects would be seen in practice is likely to be very limited.

APPENDIX

A

INTERVIEWS WITH STAKEHOLDERS

List of organisations interviewed

ATOC

Cross Country Trains

DB Schenker

DfT

Direct Rail Services

East Coast Trains

Freightliner

GB Railfreight

Grand Central

Northern Rail

South West trains

Analysis of Incentive and Financial Effects

Questions included in interviews with TOCs/FOCs

Schedule 4 rates reduced

What action would TOC take?

Would you increase possession planning resources in reaction to a change in rates?

What scope is there for improvement by

- | Closer co-operation with NR / other TOCs
- | Resource planning (rolling stock/crew)
- | Divert trains rather than bus
- | Changes to timetable (e.g. Sunday trains via alternative routes where many weeks of possession)
- | Greater focus on blockades rather than possessions

What additional cost would you anticipate?

What benefits (quantifiable) would you anticipate?

Do you perceive any additional risk (for potential inclusion in assessment of franchise bids)?

What do you think / fear NR would do?

Schedule 8 rates reduced

What action would TOC take?

What scope is there for improvement by

- | Closer co-operation with NR / other TOCs
- | Resource planning (rolling stock/crew)
- | Contingency planning
- | More robust timetable

What additional cost would you anticipate?

What benefits (quantifiable) would you anticipate?

Do you perceive any additional risk (for potential inclusion in assessment of franchise bids)?

What do you think / fear NR would do?

How often do you invoke SPP - would it increase if rates were changed?

In general - what measures do you take for service resilience and how do you evaluate them?

APPENDIX

B

GLOSSARY

Glossary

CP	Control Period - a five year period over which track access charges are set
DFT	Department for Transport
FOC	Freight Operating Company
HLOS	High Level Output Statement - a statement by the Secretary of State for Transport (for England and Wales) and Scottish Ministers (for Scotland) of the outputs required from the railway
JPIP	Joint Performance Improvement Plan - a joint plan by Network Rail and a train operator to improve performance
LSE	London and South East
NR	Network Rail
NTF	National Task Force
PDG	Performance Delivery Group
PPM	Public Performance Measure - the percentage of trains arriving at their destination within a specified lateness margin - generally 5 or 10 minutes depending on service type
REBS	Route-level Efficiency Benefit Sharing
SPD	Sustained Planned Disruption
SPP	Sustained Poor Performance
TAA	Track Access Agreement
TOC	Passenger Train Operating Company
WEBTAG	The Department for Transport's website for guidance on the conduct of transport studies

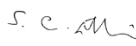
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