



OFFICE *of the*  
RAIL REGULATOR

**THE PERIODIC REVIEW OF RAILTRACK'S  
ACCESS CHARGES:**

**INCREMENTAL OUTPUTS  
TECHNICAL CONSULTATION**



# *Contents*

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<b>1. Introduction.....</b>	<b>1</b>
<b>2. Background.....</b>	<b>3</b>
<b>3. Review of IOS costings.....</b>	<b>9</b>
<b>4. Contractual arrangements.....</b>	<b>21</b>
<b>Appendix A: Consultation questions .....</b>	<b>29</b>





# 1. Introduction

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## Introduction

- 1.1 The Regulator's December 1999 provisional conclusions on Railtrack's revenue requirements were qualified in a number of important areas. In particular the revenues he projected related only to the sustained network outputs. There was therefore no allowance for the enhancements which the Shadow Strategic Rail Authority (SSRA) indicated, in its December 1999 Incremental Output Statement (IOS), that it wanted Railtrack to cost in its 2000 Network Management Statement (NMS).
- 1.2 The purpose of this document is to discuss the Regulator's provisional assessment of the appropriate charges for the incremental outputs so that the SSRA can make a decision about whether it wishes to fund these outputs as part of the periodic review. It considers the following issues:
- Chapter 2: background to the development of IOS schemes and their costing;
  - Chapter 3: the Regulator's review of Railtrack's costing; and
  - Chapter 4: the potential arrangements for charging for these enhancements.
- 1.3 Railtrack, the SSRA, and the Regulator are all undertaking significant work on the IOS in the next few months. The SSRA and Railtrack are also currently discussing a programme of incremental improvements to station facilities: this programme is not covered in this document. The outcome of this work will be reflected in the Regulator's final conclusions on the periodic review.
- 1.4 The questions for consultation are summarised in Appendix A. Consultation responses should be sent to:

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**by 30 June 2000.** Respondents should indicate clearly if they wish all or part of their responses to remain confidential to the ORR. Otherwise it is expected that they will be published in the ORR library and on its website and they may be quoted from by the Regulator. Where a response is made in confidence, it should be accompanied by a statement which can be published, placed in the ORR library and on its website and quoted from by the Regulator, summarising the submission but excluding the confidential information. The Regulator may also publish the names of respondents in future documents or on the ORR's website, unless a consultee clearly indicates that he wishes his name to be withheld.

## 2. *Background*

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### Introduction

2.1 The SSRA, in conjunction with relevant stakeholders, identified 335 incremental improvements in output throughout the network which it may wish to procure during the next control period. These outputs were specified in a letter from the SSRA to Railtrack on 14 December 1999 in the form of three Incremental Output Statements (IOS). This letter was also published as Appendix E to the Regulator's December 1999 periodic review document. This chapter provides an overview of the relevant development of the IOS programme since July 1999.

### Initial development of the IOS programme

2.2 The SSRA initiated the IOS programme in July 1999 through a series of Train User Group (TUG) workshops. These meetings involved passenger and freight train operators, PTEs, the Scottish Parliament and the Welsh National Assembly. The meetings were route-based and led to the identification of potential incremental outputs. There was a second round of zonal meetings between October and December 1999 at which Railtrack provided its initial responses to the IOS. There was then a shortlisting process.

2.3 The consultation and shortlisting exercise generated a total of 335 potential IOS schemes. Table 2.1 shows the breakdown of this total between zone and type of scheme. The schemes can be split into three groups, according to their objectives:

- **capacity:** an increase in capacity between specified points on the rail network;
- **journey time:** journey time reductions, expressed either in terms of a reduction from existing journey times or in terms of an absolute journey time; and
- **operational flexibility:** generally these schemes have been specified in terms of particular infrastructure improvements rather than the outputs required from the scheme. Typically these schemes require local layout changes, for instance provision of additional crossovers or re-commissioning of station platforms.

**Table 2.1: Potential IOS outputs by zone and type**

<b>Zone</b>	<b>Capacity outputs</b>	<b>Journey time outputs</b>	<b>Operational flexibility outputs</b>	<b>Total outputs per zone</b>
<b>East Anglia</b>	8	7	8	23
<b>Great Western</b>	14	21	45	80
<b>London &amp; North-Eastern</b>	22	17	7	46
<b>Midland</b>	10	10	25	45
<b>North-West</b>	8	15	13	36
<b>Scotland</b>	16	22	11	49
<b>Southern</b>	9	27	20	56
<b>Total</b>	87	119	129	335

### **Refinement of the IOS programme**

2.4 Railtrack's response to the IOS programme has been developed through a number of discrete development stages, termed "builds", relating to the following submissions:

- Build 1 represents the state of the IOS programme set out in the NMS 2000;
- Build 2 is set out in Railtrack's IOS submission to the Regulator of 31 March 2000; and
- Build 3 is set out in Railtrack's IOS submission to the Regulator of 19 May 2000.

2.5 Railtrack was required to indicate the development status of each IOS scheme in its submissions. As previously agreed with the Regulator, the development status is expressed as a level between 0 and 5, where level 0 indicates that a conceptual idea for a scheme exists and level 5 represents the level which Railtrack would normally expect to reach before contracting to offer scheme outputs for a fixed price, based on the target cost estimate.

2.6 Railtrack put in place a programme management process to ensure delivery of initial scheme cost estimates as part of the 2000 NMS. Railtrack's zonal teams were required to develop an appropriate solution for each IOS. For some IOS schemes, timetabling solutions were possible. However, the majority of IOSs were found to require

infrastructure improvement. The zonal teams were responsible for producing basic cost estimates which were processed by Railtrack's Central Programme Team (CPT) to produce a cost estimate for the NMS as an indicative price at Build 1.

2.7 Railtrack was required to produce a more detailed submission at Build 2 in order that SSRA could use the cost estimates to evaluate the schemes in terms of value for money. This submission, received on 31 March 2000, contains details of the scope for each scheme and an indicative P80 cost (i.e. there was estimated to be an 80% probability that the actual cost would be less than these estimates). Railtrack classified all 335 IOS schemes according to its assessment of the technical feasibility of undertaking each scheme:

- Group 1 (104 schemes): outputs which are relatively straightforward to deliver, anticipated in the first half of the second control period;
- Group 2 (155 schemes): outputs which are more complex to deliver, anticipated in the second half of the second control period;
- Group 3 (9 schemes): outputs which it is not technically feasible to deliver with the constraints specified;
- Group 4 (55 schemes): outputs which overlap significantly with existing network development commitments, or operator aspirations which are currently being developed, which Railtrack proposes to deliver as an integrated part of a free-standing enhancement proposal; and
- Other (12 schemes): outputs which were duplicated in the original list of requirements.

2.8 A series of zonal "round-table" workshops were held in April 2000 to allow train operators and funders to comment on Railtrack's proposals for delivering the required outputs and to give their own views on priorities.

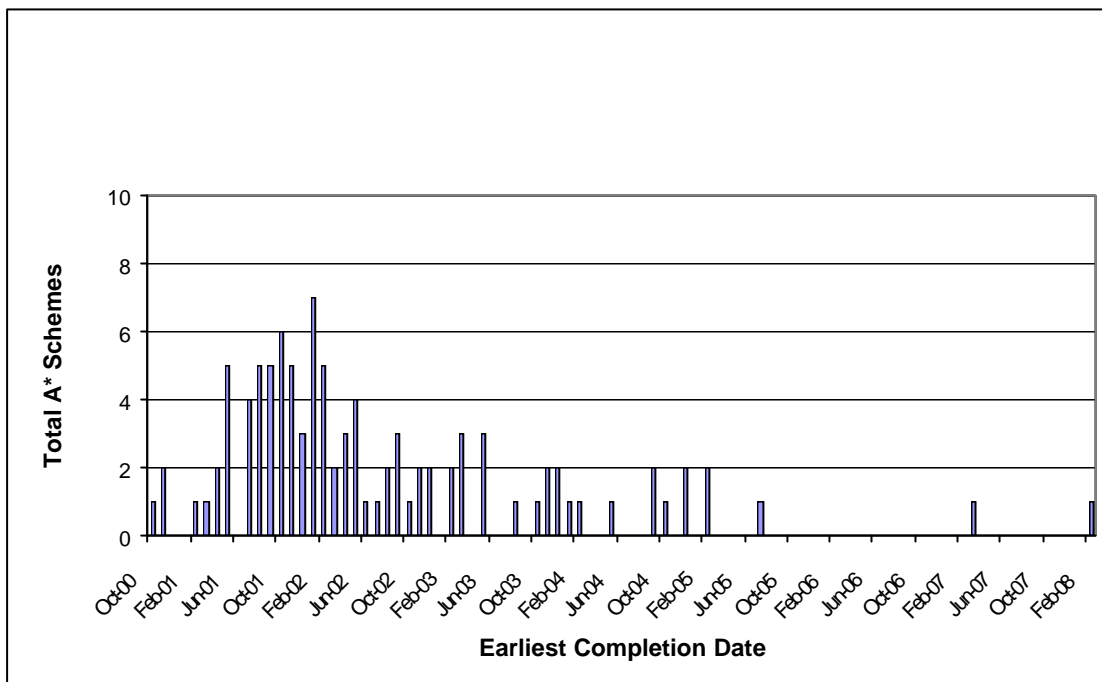
2.9 The SSRA used the cost estimates provided by Railtrack in its 31 March 2000 submission to carry out a shortlisting process, based on the SSRA's estimate of the value for money offered by each scheme. On 5 May 2000 each of the 335 IOS schemes was allocated by SSRA to one of three categories:

- Category A\* (117 schemes) are those which the SSRA wished Railtrack to prioritise in terms of ongoing development work;
- Category A (94 schemes) are those which the SSRA has continued to evaluate and which it expects Railtrack to continue to develop but with a lower priority than for the category A\* items (Category A schemes could be reallocated to A\* as further information on costs and benefits becomes available); and
- Category B (124 schemes) which the SSRA did not wish Railtrack to develop any further as part of the IOS process, although these schemes could be taken forward in future by some other means such as route strategy developments or franchise replacement.

2.10 Although there is no direct correlation between Railtrack's group classification and SSRA's categories, almost all the schemes classified by Railtrack into Group 3 or 4 fall into SSRA's category B.

2.11 The expected roll-out of the IOS programme is illustrated in the figure below, which shows Railtrack's estimated earliest completion date for the schemes in the SSRA's A\* category. The figure shows dates for all schemes at Build 3 in the A\* category for which Railtrack estimated the duration of work: there are several outputs which can be delivered without infrastructure work.

**Figure 2.1: Railtrack's earliest completion dates for all A\* schemes**



2.12 The costings put forward by Railtrack at Build 2 and Build 3 are discussed in the following chapter.

**Station improvements**

2.13 The SSRA has been working with Railtrack since January 2000 to develop proposals for schemes to deliver enhanced facilities at stations. This category of incremental improvements was discussed in SSRA's letter to Railtrack of 14 December 1999, published as Appendix E to the Regulator's December 1999 periodic review document. Railtrack was required to respond in the 2000 NMS.

2.14 While this program is still at a relatively early development stage, the SSRA has begun to evaluate options for which Railtrack has produced costs. These options are focused in the following areas:

- safety and security (including in particular improvements in CCTV coverage of station areas);
- comfort: improvements to waiting rooms, weather shelters and toilets; and
- customer information systems, such as real-time operational information.

2.15 The aim of the station improvement programme is to identify some schemes which meet the following criteria:

- they provide improvements which can be delivered early and bring tangible benefits to passengers;
- they can be incorporated in a programme approach to ensure consistency of process and reduce individual scheme costs;
- they have clear and measurable outputs against an agreed starting point; and
- they provide value for money.

## 3. *Review of IOS costings*

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### Introduction

- 3.1 Railtrack has provided two submissions to the Regulator, at Build 2 and Build 3, which set out its cost estimates for the IOS schemes. At Build 2, cost estimates were provided for all 335 schemes. At Build 3, Railtrack has provided cost estimates only for the schemes in SSRA's A\* and A categories, a total of 211 schemes.
- 3.2 Railtrack's Build 2 submission summarises the IOS schemes according to the financial provision required to deliver each of the groups which are described in paragraph 2.7 above. Railtrack's cost estimates at the P80 level indicate a requirement of £470 million for Group 1 (compared to £650 million given in the NMS), £3,750 million for Group 2 (up from £2,000 million in the NMS) and £2,110 million for Groups 3 and 4 (down from £3,000 million in the NMS). The net effect of these changes was that the overall provision of £5,650 million given in the NMS was increased to £6,330 million. Railtrack argues that this reflects a better understanding of likely delivery costs following further refinement of its estimates.
- 3.3 The Regulator, assisted by his consultants Booz Allen & Hamilton (BAH), has undertaken a review of the cost estimates put forward by Railtrack at both Build 2 and Build 3, in terms of the efficiency and robustness of the estimates. A copy of the BAH report, incorporating its comments on both Build 2 and Build 3, is available from the ORR website.
- 3.4 This chapter summarises the cost estimation process and issues arising from the assessment. Given that Railtrack is continuing to refine its costings against very tight timescales, the Regulator's assessment of these costs should be regarded as work in progress. So far, he has focussed primarily on ensuring that the methodology for estimating costs is sound and has proposed a number of high level adjustments to Railtrack's estimates.

### Railtrack's approach to cost estimation

- 3.5 Railtrack's cost estimates at Build 2 were constructed using a two-stage process:
- zonal teams were responsible for producing basic cost estimates; and

- these estimates were processed by Railtrack's Central Programme Team (CPT) to produce final cost estimates.

3.6 BAH's assessment of Build 2 focussed on the process used to build up the cost estimates and a detailed analysis of a sample of 27 schemes. This identified a number of concerns relating to both the zonal cost estimate and the CPT overlays and risk analysis.

#### *Zonal cost estimation*

3.7 Cost estimates at the zonal level were produced by asset category using Railtrack's MultiEst estimation database, which combines work volumes with unit rate information and adjustments for specific circumstances to give a project price. BAH's assessment of these estimates identified a number of concerns which Railtrack was required to correct in its subsequent analysis:

- some MultiEst-based signalling estimates were replaced by higher figures on the basis of the professional judgement of zone signalling specialists (who argued that MultiEst estimates would not take account of local circumstances);
- there was no separate estimation of renewals content or accelerated renewals from genuine enhancement expenditure;
- potential operating and maintenance cost savings had not been identified; and
- for certain schemes where no physical works were deemed necessary by a zone, the cost of delivering increased capacity equivalent to a congestion charge had been put forward.

#### *Central programme team estimation*

3.8 The zonal estimates were processed by the CPT to overlay a number of project overheads in a consistent manner. Table 3.1 shows the percentage overlays for each overhead category.

3.9 A further overlay applied by the CPT rather than at zone level relates to risk and contingency. A proxy for a full Quantified Risk Assessment (QRA) was derived from estimates of the minimum and maximum likely outcomes provided by the zones. The methodology assumed a uniform probability distribution between the minimum and

maximum points. As the assumed probability distribution was uniform, the P80 figure was equivalent to the sum of the minimum estimated cost plus four fifths of the difference between the minimum and maximum costs. Following discussion with the Regulator, mean estimates were reported as well as P80 estimates (half way between the minimum and maximum estimates).

**Table 3.1: Project overhead factors at Build 2**

Category	Overlay
Sponsor team costs	1.5%
Project management & delivery management	15.0%
Feasibility	1.0%
Design development*	6.0%
TOC compensation	10.0%
Construction insurance	2.5%
Property/land costs	Nil
Transport & Works Act (if applicable)	7.5%

\*Except for signal design costs, which are included in zonal estimates

3.10 BAH highlighted a number of concerns with these overlays and Railtrack was required to correct these in its subsequent analysis:

- blanket project overhead assumptions as presented in Table 3.1 above appeared unreliable in some cases (e.g. a TOC compensation overlay of 10% seemed high given the nature of the schemes being put forward);
- possible double-counting of risk contingencies, where contingencies appeared to have been applied at the zonal level before the central risk overlay was applied; and
- while the process for assessing risk contingencies was transparent, it is not clear to the Regulator that the process is consistent with the QRA carried out for other Railtrack enhancement projects at a similar stage of development.

3.11 Railtrack did not take account of potential synergies between schemes. The estimated costs therefore represent the cost of stand-alone schemes developed individually rather than, for example, as part of a package of schemes on a certain route designed to satisfy a route strategy. Programming and supply chain issues have also not been taken into account. Railtrack has stated it would expect to deal with these issues at

level 5 development status (although this may be beyond the scope of the periodic review in most cases).

### *Overall assessment*

3.12 In overall terms, Railtrack developed a rigorous programme control process which resulted in good progress against very challenging targets. However, some of the estimation processes used have tended to overstate the estimated costs. Some of these issues have been taken into consideration at Build 3 and are discussed further below.

### **Build 3 IOS cost estimates**

3.13 Build 3 incorporated a number of refinements to the methodology used to derive the Build 2 estimates (although Railtrack only had a short time in which to take account of BAH initial comments). In particular:

- the “round-table” consultation exercises undertaken at a zonal level during April 2000 informed further scheme scoping and costing for Build 3 (e.g. some amendments to scheme scope provided by the SSRA were taken into account);
- some refinement of project overhead factors has been undertaken (e.g. asset-specific factors have been applied for project feasibility and design costs, as suggested by BAH); and
- limited allowance has been made for dependencies between schemes, for cases where the same output is provided by two separate IOS schemes.

3.14 Table 3.2 summarises Railtrack's estimate of the total cost of the IOS schemes in categories A and A\*. The A\* outputs comprise 117 schemes with a total estimated P80 cost at Build 3 of £788 million at P80 and £704 million at the mean estimate. Table 3.3 shows that Railtrack has been able to achieve level 4 status for only a minority of the A\* schemes.

**Table 3.2: Railtrack estimated cost of A\* schemes at Build 3**

Lead Zone	£ million @ P80		£ million @ mean	
	A* schemes	A schemes	A* schemes	A schemes
East Anglia	£30	£75	£27	£69
Great Western	£129	£489	£115	£406
London & North-Eastern	£128	£628	£111	£534
Midland	£37	£37	£32	£34
North-West	£140	£220	£134	£209
Scotland	£93	£117	£85	£106
Southern	£231	£134	£201	£117
<b>Total</b>	<b>£788</b>	<b>£1700</b>	<b>£704</b>	<b>£1475</b>

In this analysis, one A\* output (16.001 London – Norwich journey time, with an estimated P80 cost of £167 million) has been excluded since SSRA has indicated that there is little prospect of it proceeding in its present form.

**Table 3.3: Development status of A\* IOS schemes at Build 3**

Level	Number of schemes
0	3
1	16
2	58
3	36
4	4
Total	117

### Assessment of Build 3 cost estimates

- 3.15 BAH's assessment of Build 3 costs focussed primarily on the SSRA's A\* schemes plus those schemes in category A which were in the original sample used to assess Build 2. BAH conducted a quantitative assessment of Railtrack's cost estimates for these schemes and proposed a number of adjustments to Railtrack's estimated costs. As well as extensive industry experience, BAH's assessment has drawn on its recent experience with the West Coast Route Modernisation project.
- 3.16 Based on this analysis, the Regulator is presently minded to make a number of adjustments to Railtrack's cost estimates. The remainder of this section discusses these adjustments in more detail.

*Zonal cost estimates*

- 3.17 Based on the BAH report and the subsequent modifications made by Railtrack, the Regulator believes that the estimation processes used for the development of the programme are generally sound. Some costs will change significantly as solutions are worked up in detail, but in many cases these changes should be covered through the QRA process. The Regulator intends to continue to monitor the application of these processes, on a sample basis, as further information becomes available.
- 3.18 Railtrack has estimated that the net annual maintenance cost for all A\* outputs (when fully implemented) would be £2.34 million per annum, excluding incremental wear-and-tear costs. This figure has not yet been subject to detailed audit. Similarly, Railtrack refers to a net annual saving of operating costs for all A\* outputs (when fully implemented) of -£0.4m, and one-off redundancy costs of +£0.5 m. These costs are relatively small in the context of the total programme of A\* schemes, but may require review in some specific cases.
- 3.19 Railtrack's Build 3 estimates identified some specific sums for planned renewals in the first two years of the second control period which would be avoided as a result of carrying out the IOS scopes of work. It also claims that an allowance has been included for potential savings in AMP type renewals in later years. However, there are examples from the sample of schemes which BAH have reviewed where, although the zonal team has previously identified significant renewal elements, no sum has yet been included in relation to accelerated renewals. It will be necessary for the Regulator to examine this issue further to ensure that all Level 4 estimates make specific reference to the question of renewals which are either accelerated or eliminated as a result of an IOS output. The Regulator is unable to estimate the impact of this factor at the present time.
- 3.20 As noted above, Railtrack has priced each scheme on a stand-alone basis. However, 69 of the A\* outputs (59% of the total) are on routes which have a total of 4 or more A\* outputs. Integration of these outputs should achieve savings, in terms of eliminating duplication and in terms of packaging for procurement, and also in terms of the combination of risks. Railtrack has not yet attempted to quantify these factors. BAH have advised the Regulator that the total saving might be in the order of 5 – 10%, based on BAH's experience of similar programmes.

### *Adjustments to CPT overhead assumptions*

3.21 BAH has also proposed a number of adjustments to the overhead assumptions used by the CPT.

- Sponsor team costs: Railtrack has assumed sponsor team costs equal to 1.5% of the zonal cost estimate. This compares with 1.0% for the West Coast Route modernisation (WCRM) project. It is credible that the figure could be higher for the IOS programme than for WCRM, because the IOS comprises a large number of relatively small schemes. Nevertheless, a significant part of the sponsor team costs comprise zonal staff costs which are included in Railtrack's operating cost base. BAH has therefore proposed a range of 1 – 1.5%. The Regulator also recognises that abortive sponsor team costs for those IOS outputs which were not taken forward will generally need to be included in the RAB.
- Design costs: BAH's report on Build 2 identified the fact that a blanket figure of 6.0% was being used for design costs (apart from signal design costs, which are included in the zonal estimates). For Build 3, Railtrack has used specific feasibility and design development costs for each class of asset. BAH has concluded that the figures currently used for Build 3 appear to be appropriate. As with sponsor team costs, the Regulator recognises that abortive design and development costs for those IOS outputs which are not taken forward will generally need to be financed and could be included in the RAB.
- Project management costs: Railtrack proposes a mark-up of 15% on the base capital cost of all schemes. It appears that the 15% figure is based on historic data, and that some saving on this should be possible by using appropriate procurement arrangements. The Regulator understands that an 8% overlay factor is consistent with Railtrack's accepted best practice for zonal project delivery costs.
- Insurance costs: Railtrack has applied a standard percentage mark-up of 2.5% for construction insurance. However, no such figure has been applied for WCRM. Railtrack has not yet provided any justification for this figure. In BAH's experience 2.5% would be appropriate for schemes where it was necessary to insure against third party risks, which is not the case for any of the IOS schemes analysed to date. BAH has therefore assumed a range of 0 – 1.5% at this stage; and

- TOC compensation costs: Railtrack has applied a standard mark-up of 10% for TOC compensation costs. For three schemes reviewed by BAH in one zone, the zone's estimates for TOC compensation were in the range 2.0% – 2.5%. BAH has asked Railtrack to provide evidence to support its assertion that the 10% estimate is typical of the compensation paid by Railtrack to operators under Network Change for a broad spectrum of project types. The Joint Project Team report on the West Coast Route Modernisation states that there are only a limited number of projects undertaken in recent years for which TOC compensation has been applicable. Furthermore, BAH have advised the Regulator that they would expect many IOS schemes to be completed within the Rules of the Route, and that the majority of schemes within the A\* Category are low- to medium-cost projects which should not trigger compensation payments as high as 10%. The possessions regime is currently under review, but BAH's present assumption, given the evidence from one zone reviewed and assuming the existing possessions charging regime, is that the level of TOC compensation will be 5% on average.

#### *Other efficiency savings*

- 3.22 Railtrack's cost projections are based, implicitly at least, on current (i.e. 2000/01) levels of efficiency. The Regulator has discussed the potential for improvements in efficiency elsewhere (see the December 1999 periodic review document). Over a period of years, he would expect Railtrack to achieve significant efficiency improvements relating to enhancement projects as well as in opex, maintenance and renewal.
- 3.23 Given the expected profile of costs provided to the Regulator, annual savings of 3 – 5% would reduce the overall cost of A\* schemes by 7– 10% or £51 – 81 million. However, given the other adjustments referred to above, the Regulator does not presently propose to make any further adjustment for these potential savings. This issue would, however, need to be taken into account when considering the appropriate treatment of risk and contingencies.

#### *Risk and contingencies*

- 3.24 As explained above, Railtrack has derived P80 and mean cost estimates from assumptions about the likely range of costs and an assumption that the distribution is uniform. For the A\* schemes in aggregate, this results in mean cost estimate which includes a 27% risk premium over the original zonal estimate. Similarly, the P80

estimate includes a further premium of 15% over the mean. These figures result from the uniform probability distribution which has been used by Railtrack.

- 3.25 As more of the IOSs are developed to level 4/5 status, specific risks will be quantified in more detail. The overall spread of risk can therefore be expected to diminish. In addition, as mentioned in 3.20 above, it can be expected that the spread of risk of the total programme will be less than for the sum of the individual schemes. In practice, there may be some correlation between the risks associated with different schemes, particularly in the light of the fact that the cost estimates have been derived using a consistent methodology.
- 3.26 The April 2000 periodic review document set out the Regulator's view that, for enhancement projects which have been developed to level five, the capital cost should be based on the mean estimate from the QRA process. He argued that, since the risks should be well understood by this stage, this would include a specific allowance for any identified asymmetric risks. He also indicated that, if Railtrack were to commit to a fixed price before level five, this may increase the estimated mean cost from the QRA process and that there may be a case for including some contingencies for unidentified risks.
- 3.27 Until recently, Railtrack proposed the use of the P80 figure as the basis for developing target costs, with the difference between the P80 and the estimated mean cost acting as a proxy for the appropriate contingency. However, its response to the April 2000 periodic review document acknowledged that it would be more consistent with practice in other sectors to provide a percentage mark-up on the mean cost estimate. Railtrack's latest proposal is that all projects should be subject to a contingency of 15 – 25% (depending on the risk and nature of the project) over the mean cost estimate from a QRA once level five has been reached and that there should be an element of risk sharing if actual costs vary from the target cost estimate.
- 3.28 Railtrack has questioned the Regulator's view that it would be up to Railtrack to ensure that the QRA process takes account of all relevant risks. In particular it argues that, even where risks have been identified, the lack of historical information makes it impossible to quantify either the probability of the issue arising or the distribution of the potential consequences. Other interested parties have also argued that the transparency and predictability of the process for establishing the cost of enhancements would be improved if the Regulator were to give more detailed guidelines in relation to the way in which these risks would be provided for.

- 3.29 The Regulator is considering how he can clarify this issue and he intends to publish further guidance in conjunction with his final conclusions. This will have direct implications for the treatment of IOS enhancements. For illustrative purposes, however, he has assessed the cost of each A\* scheme at both the mean and at P80 (which in aggregate corresponds to the mean plus 10 – 15%). The estimates can of course be expected to change as the schemes are developed and therefore the process of applying the adjustments across all A\* schemes should be viewed as an approximation.
- 3.30 The BAH view at this stage is that the average Railtrack risk contingency figures of 41% (at the P80 level) and 27% (for the mean) are considered to be at the upper level of risk values expected from the original zonal estimates. The range of schemes within the IOS package includes projects which, although at varying stages of scoping and planning, cover standard types of enhancement schemes. Therefore an average risk contingency of around 30% (at the P80 level) and 20% (for the mean) would be more reasonable. Risk values consistently higher than the 20% to 30% range may be associated with novel elements or lack of scope.

### Conclusions and next steps

- 3.31 Railtrack currently estimates the P80 cost of A\* schemes to be £788 million at Build 3. The adjustments referred to in the previous section are summarised in Table 3.4 below (no adjustment has been made for the impact on operating, maintenance and renewal costs). If these adjustments are applied to the zonal estimates for A\* schemes, the estimated cost falls to £578 million at P80 or £534 million at the mean. In addition, Appendix E to BAH's report shows the equivalent estimated costs for each individual A\* scheme (plus the Category A schemes which were included in the sample at Build 2). The way in which these costs are translated into charges is discussed in the following chapter.

**Table 3.4: Proposed adjustments to IOS scheme costs by component**

Item	Railtrack	BAH mean
<b>Interdependencies</b>	-	-10.0%
<b>Sponsor team</b>	1.5%	1.0%
<b>Design (average figure)</b>	4.0%	4.0%
<b>Project management</b>	15.0%	8.0%
<b>Insurance</b>	2.5%	-
<b>TOC compensation</b>	10.0%	5.0%
<b>P80 risk</b>	41.4%	30.0%
<b>Mean risk</b>	26.5%	20.0%

3.32 Given that Railtrack is continuing to refine its costings against very tight timescales, the Regulator's assessment of these costs should be regarded as work in progress. He has focussed primarily on ensuring that the methodology for estimating costs is sound and has proposed a number of high level adjustments to Railtrack's estimates. Comments are invited on Railtrack's cost estimates, the adjustments proposed by the Regulator and the appropriate treatment of risk and contingencies (assuming that fixed prices are established at either level 4 or level 5).

3.33 In order to establish prices for IOS enhancements as part of the periodic review, the Regulator requires further input from both the SSRA (to finalise the list of schemes to be included) and from Railtrack (to refine its cost estimates for these schemes). The Regulator proposes that:

- Railtrack should provide further cost information (Build 4) at the end of June 2000 (at the same time as responses to this consultation);
- SSRA should provide its shortlist for further development by 12 July 2000;
- Railtrack should provide its final costings (Build 5) by 18 August 2000; and
- SSRA should make a final decision based on these costings.



## 4. *Contractual arrangements*

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### Introduction

4.1 This chapter sets out the Regulator's provisional views on appropriate contractual arrangements relating to IOS enhancements which are included within the scope of the periodic review. The key questions are as follows:

- Who should bear construction cost risk?
- Who should bear delivery risk?
- How should the cost of finance during construction be recovered?
- Over what period should the cost be recovered?
- How should the enhanced capacity or capability of the network be reflected in operators' contractual rights?

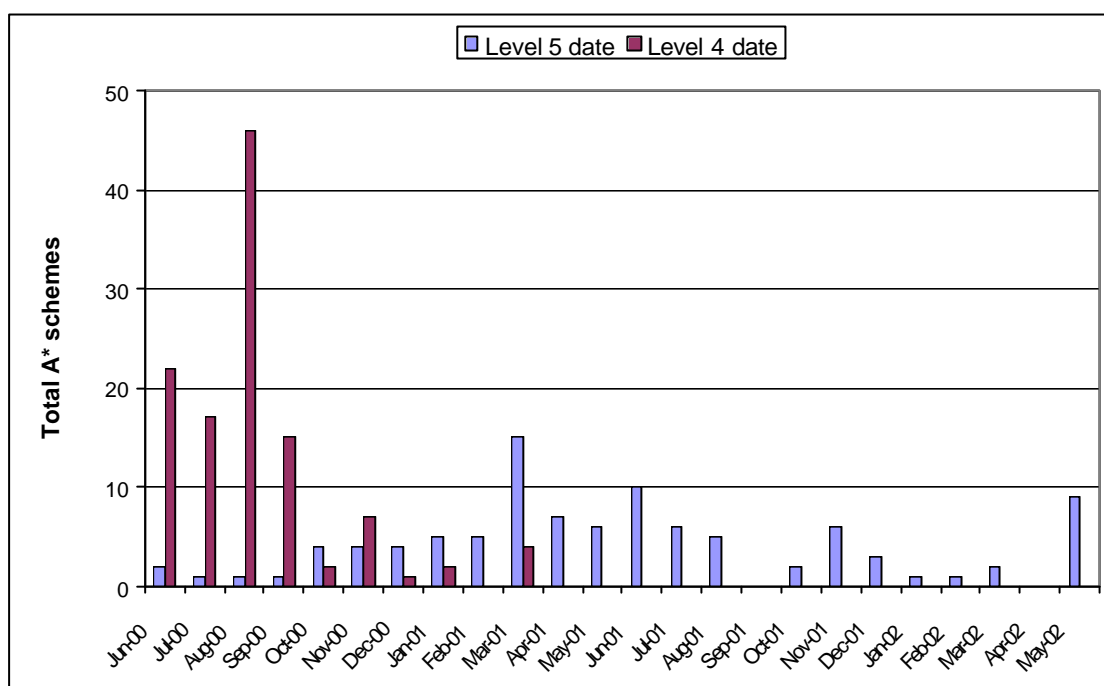
### Construction cost risk

4.2 The December 1999 and April 2000 periodic review documents set out the Regulator's view on the appropriate default allocation of risk between Railtrack and its customers. In summary, the Regulator proposed that Railtrack should generally bear construction/delivery risk and that operators/funders should generally bear both long and short term demand risk. He also indicated that it would generally be preferable for enhancements to be specified in terms of outputs rather than inputs. Most respondents agreed with these principles and the Regulator considers that they should also apply to IOS enhancements.

4.3 However, Railtrack argues that it is important for it to be in a position to understand all the costs and risks before it commits to a fixed price. As explained in the April 2000 periodic review document, it has developed a five-point scale representing progressive stages in project development. Figure 4.1 below shows that it expects to reach level four for 73% of A\* schemes in August 2000 but that only 46% of the A\* schemes are expected to be developed to level five before April 2001. A and B schemes would require further time to develop to this level.

4.4 The Regulator is due to publish final conclusions on the periodic review in September 2000 for implementation in April 2001. Establishing a fixed price for all IOS enhancements as part of the periodic review could therefore impose additional risks on Railtrack and this would need to be reflected in higher charges. Where there is significant uncertainty about the scope of the project, such an allocation of risk may not be efficient.

**Figure 4.1: Railtrack's proposed level 4 and level 5 dates for A\* schemes**



4.5 An alternative approach, which could be used for some or all IOS schemes, would be to establish indicative prices based on existing information as part of the current periodic review, but to provide for these prices to be adjusted when firm cost projections are available. This approach would give Railtrack an incentive to ensure that work on these schemes progresses as quickly as possible, without imposing unnecessary risks on the company or requiring its customers to pay a significant risk premium. This could be implemented through either:

- a narrowly defined interim review of the fixed prices applicable to each IOS. This could be completed in advance of most of the construction works but when significant further information is available about the projected costs (e.g. by July 2001). If schemes were withdrawn as a result of further information on the costs, Railtrack would generally need to be compensated for the development costs; or

- the next periodic review when information will be available on both the ex ante level five cost projections and the ex post actual cost of the schemes (i.e. in 2006). If this review took account of actual expenditure (subject to an efficiency review) as well as the final cost estimates, this would effectively transfer part of the risk associated with cost overruns to the SSRA.

4.6 Where the cost of an enhancement is highly uncertain (e.g. it has not been developed to level four) and the costs are relatively large (e.g. the projected costs are more than, say, £10 million), it may be preferable for this enhancement to be dealt with under the terms of the Railways Act 1993, outside the scope of the periodic review. In particular, SSRA may not be willing to commit to such schemes without a fixed price. Priority should therefore be given to developing at least level 4 costings for A\* schemes which are expected to cost more than £10 million.

### **Delivery risk and finance during construction**

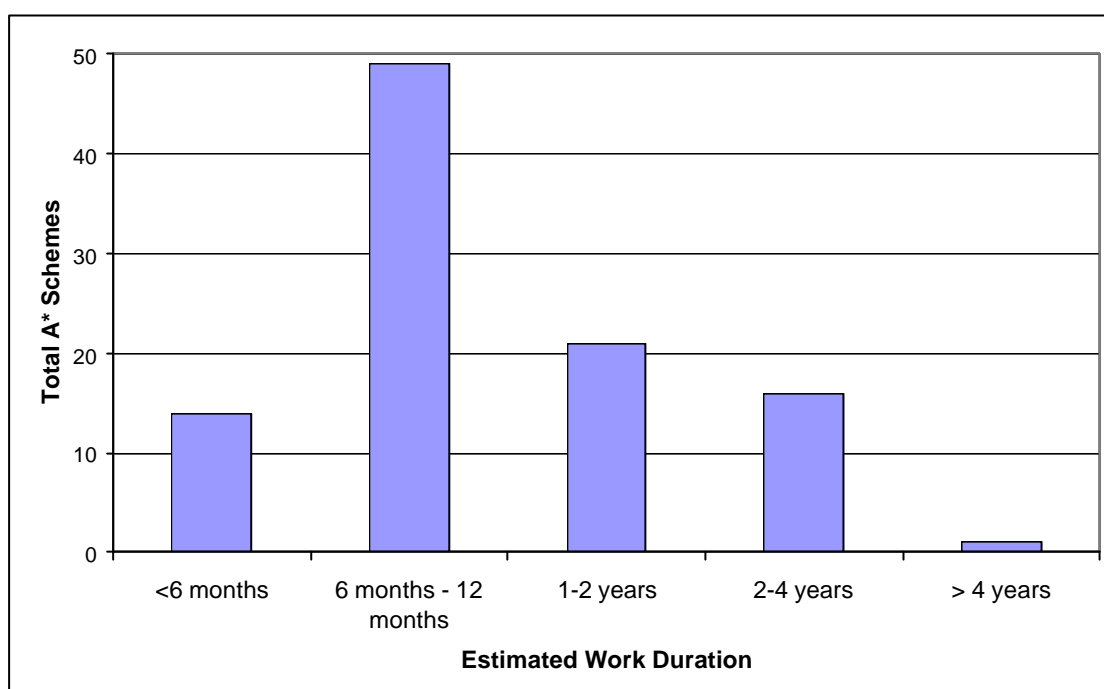
4.7 The default allocation of risks referred to above implies that payment for IOS enhancements should be linked to delivery of the final outputs. *In extremis*, this could mean that Railtrack would not receive any remuneration for a particular scheme until it was complete. Depending on the scale of the overall IOS programme and the construction period for each project, this could have a significant impact on Railtrack's finances.

4.8 In practice, however, most individual schemes are relatively small with only a short period between commencement of the works and expected completion. Figure 4.2 below shows that 54% of A\* schemes at Build 3 were expected to be completed within one year (the average duration was expected to be 13 months). In addition, fewer than half of the schemes with an expected duration of more than 12 months were expected to cost more than £10 million. Further reductions in the lags and/or the estimated costs should be achievable when the potential for packaging schemes together is taken into consideration (over half of the A\* schemes are on routes which have 4 or more A\* IOSs).

4.9 One option for dealing with relatively large schemes with long construction periods, would be to provide for staged payments. However, this could distort incentives and would create significant additional complexity which would not be appropriate for IOS enhancements (if phased payments are necessary for some schemes, these enhancements could still be dealt with outside the scope of the periodic review). An alternative approach would be for the expected cost of finance during construction for

all IOS enhancements to be recovered over the next control period (through the general fixed charge) rather than being capitalised into the asset base. This would maintain a strong incentive for timely delivery while ensuring that the IOS enhancements do not compromise Railtrack's financial position.

**Figure 4.2: Estimated duration of works for A\* schemes**



### Financing period

4.10 Once the enhancement has been delivered, the relevant cost would be included in the RAB. The subsequent profile of revenues associated with that enhancement would then depend on the way in which these enhancements are depreciated. There are three main options:

- no depreciation – equivalent to the proposed treatment of existing assets, resulting in a perpetual capital charge equal to the cost of capital;
- annuity depreciation – resulting in a constant capital charge over a period of say 25 years (depreciation plus the cost of capital); and
- straight line depreciation – resulting in a constant depreciation charge over a period of say 25 years and therefore a front-end loaded capital charge.

4.11 Railtrack has expressed a preference for the first or second option. Of these, annuity depreciation over a relatively short period of years would result in the strongest cash-flows to Railtrack (and the greatest initial outlay for the SSRA). However, there would be no effect on the net present value of the cash-flows. Provided that the allowed rate of return is equal to Railtrack's cost of capital and there are no other financing constraints, this choice should not therefore have any impact on either Railtrack's ability to finance an enhancement or the SSRA's willingness to pay for it. However, given the Regulator's section 4 duties, he has to consider the implications for the financial position of Railtrack and the Franchising Director. This issue will need to be assessed further in the light of the Regulator's conclusions on the periodic review as a whole.

## **Contractual rights**

### *Arrangements for payment*

4.12 The proposed arrangements for payment for IOS enhancements, conditional on delivery of the outputs, can be implemented through the periodic review process (without necessarily changing operators' contractual rights).

4.13 This can be achieved by including a provision in Schedule 7 of the relevant access agreement(s) for the fixed charge to increase by a predetermined amount when the Regulator is satisfied that the enhanced outputs have been delivered. It would also be possible to provide for pro rata adjustments to the extent that the outputs are partially delivered and have value to the beneficiary. In establishing whether (and to what extent) the outputs have been delivered, the Regulator would have regard to evidence submitted by Railtrack, the relevant operator(s) and the SSRA. Payment would not depend on whether the increased capacity or capability is used by operators.

### *Operators' rights*

4.14 It is widely recognised that empowered train operators should have the additional outputs and rights resulting from delivery of the outputs reflected in their contracts. The train operators will then be, in effect, the agents of the SSRA in ensuring delivery of the IOS by Railtrack. The mechanism for achieving this is being developed in conjunction with the model clauses for track access agreements and relates to the proposed introduction of operator specific Local Output Statements (LOSs). The responses to the Regulator's emerging issues document published in April 2000 generally supported the idea of LOSs and the Regulator is currently minded to

introduce provisions for track access agreements to establish the required process for developing these statements. In particular, this would require Railtrack to include the following outputs in any LOS, if requested by the relevant operator:

- those outputs for which it has been paid; and
- those outputs for which there is a commitment to payment, within the period covered by the LOS.

4.15 The outputs in each operator's LOS would be subject to the Access Condition G (network change) in terms of their effect on other operators and Access Condition D (changes to Rules of the Route/Plan). Railtrack would therefore be obliged to propose the changes to the network under Part G of the access conditions and any changes to the relevant Rules of the Route/Plan.

4.16 Given this, operators would have the option of entering into new access agreements with Railtrack (or amending their existing agreements) to make use of the incremental capacity or capability of the network. Such agreements would, of course, require regulatory approval and would need to be in place in order for a TOC to make use of the outputs. Since the payment arrangements would have been established as part of the periodic review, there would be no need for negotiation about charging matters (or any other changes to Schedule 7). However, the Regulator would expect to see a clear definition of the additional rights which the operator was seeking to obtain and an illustration of their relationship with the IOS.

4.17 These additional rights would be contingent on the delivery of the IOS. If Railtrack failed to deliver the local output, the operator would have the remedy of seeking an order for specific performance. This would be the principal method of operator enforcement of IOS delivery. The fact that payment would be contingent on delivery would also provide a strong incentive. Of course, once the Schedule 5 rights were accommodated in a timetable, operators would be entitled to compensation for non-delivery through the performance regime in Schedule 8 of their track access agreement.

### **Conclusions and next steps**

4.18 The potential charges for A\* schemes are illustrated in Table 4.1 below. This is based on the adjusted costs referred to in the previous chapter and a range of assumptions relating to the discount rate and depreciation. In addition, Appendix E to BAH's

report shows the equivalent range of charges for each individual A\* scheme (plus the Category A schemes which were included in the sample at Build 2).

**Table 4.1: Illustrative charging implications of A\* schemes**

1998/99 £ million		Railtrack	BAH mean
7% annuity	Mean cost	49	37
	P80 cost	55	40
7.5% annuity over 25 years	Mean cost	53	40
	P80 cost	59	43

- 4.19 Consultees are invited to comment on the appropriate contractual arrangements, including the appropriate allocation of risk, financing assumptions and the way in which enhanced capacity and capability is reflected in operators' contractual rights. In particular, the Regulator is considering whether or not the prices established as part of the periodic review should be subject to adjustment at a narrowly defined review to be completed around July 2001 or at the next periodic review.



## ***Appendix A: Consultation questions***

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1. Comments are invited on Railtrack's cost estimates, the adjustments proposed by the Regulator and the appropriate treatment of risk and contingencies (assuming that fixed prices are established at either level 4 or level 5).
2. Consultees are invited to comment on the appropriate contractual arrangements, including the appropriate allocation of risk, financing assumptions and the way in which enhanced capacity and capability is reflected in operators' contractual rights. In particular, the Regulator is considering whether or not the prices established as part of the periodic review should be subject to adjustment at a narrowly defined review to be completed around July 2001 or at the next periodic review.