

**REGULATORY IMPACT ASSESSMENT (FINAL)**

**RAILWAYS AND OTHER GUIDED TRANSPORT  
SYSTEMS (SAFETY) REGULATIONS 2006**

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## PURPOSE AND INTENDED EFFECT

### ISSUE

1. The purpose is to reshape key elements of the existing framework for rail safety driven by European requirements, Public Inquiry recommendations and 'Better Regulation' considerations. As part of the EU's desire to revitalise the railways in line with its common transport policy, the EU is creating conditions in which rail transport can be efficient and compete with other transport modes. Several EC measures are aimed at creating an integrated European railway. This proposal will enable the UK rail industry to be part of this single European railway by implementing the safety management provisions of the EC Railway Safety Directive (2004/49/EC)<sup>1</sup>. Specifically the new framework for rail safety will:
  - implement aspects of the Railway Safety Directive. The purpose of the Directive is to have a common approach to safety, maintaining national standards of rail safety in line with EU requirements, striving for continuous improvement only where reasonably practicable, while the European railway becomes integrated (interoperability<sup>2</sup>). The proposal does not seek to achieve an initial step change in safety. The Directive explicitly covers both passenger and worker safety. In the future the UK must be able to respond to Common Safety Targets (CSTs) to be achieved through Common Safety Methods set by a new European Rail Agency. (The CSTs will be set in light of factors already considered in the UK e.g. risk to passengers and workers, technical and scientific progress, costs and benefits, and societal acceptance of risk);
  - conclude outstanding recommendations from recent public inquiries on the management of railway safety; and
  - bring together and streamline key elements of the existing requirements to secure greater proportionality to risk and reduce costs - three sets of existing regulations will be replaced by one.
2. The risks addressed are not new – the potential for multiple fatality accidents arising from railway collisions or derailments and for serious injuries to individual passengers and workers arising from the operation of trains and infrastructure - are well known. Major incidents are rare, but where they occur they have a large impact on individuals, society and the national economy arising directly from the deaths and injuries sustained as well as from physical disruption of the railway and indirectly by undermining public confidence in the operation of a key part of the national infrastructure. There is much statistical

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<sup>1</sup> The Directive deals both with regulation of safety and investigation of accidents and incidents on the community's railways. This RIA deals with safety management only.

<sup>2</sup> There are three Directives on interoperability (96/48/EC Interoperability of the trans-European high-speed rail system; 2001/16/EC Interoperability of trans-European conventional rail system and 2004/50/EC Amending Directive on Interoperability. Implementation of these is being led by DfT.

data on rail safety, which shows a general trend of improvement that has been sustained following privatisation in 1994. (Data are available from HSE’s Annual Reports on safety on the railways in Great Britain and RSSB: Annual Safety Performance Report 2002/03). Although rail is a relatively safe means of transport, in terms of passenger fatalities it is not as safe as bus and coach travel as shown in Table 1.

Table 1 – Fatality Rates Across Different Modes of Transport

Mode	Passenger fatalities per billion passenger:		
	kilometres	journeys	hours
Motor cycle / moped	123	1,910	4,890
Foot	47	43	210
Pedal cycle	35	140	430
Car	2.9	39	120
Rail	0.4	10	21
Bus / coach	0.3	3	7
Air	0.01	23	5
Notes: Data for rail and air are 10-year averages 1992-2001; data for bus/coach are 5-year averages 1997-2001; other data for 2001; data for air includes intercontinental travel.			

Source: Rail Safety and Standards Board Annual Safety Performance Report 2002/3, quoting unpublished DfT figures updated to 2001.

(<http://www.rssb.co.uk/pdf/railrepo0203/ASPR02-03.pdf>)

3. Implementation of the safety management provisions of the Directive requires replacement of the Railways (Safety Case) Regulations 2000, which while broadly comparable in intention and effect, are different in detail. For example, the permissioning regime in the Directive uses a two-part safety certificate and authorisation scheme in which certificates and authorisations are issued by the safety authority with a maximum of 5 years validity, are revocable, and while changes in arrangements need to be notified to the safety authority, no formal agreement is needed. The safety authority will be the HSE until the Government implements the changes proposed as a result of the recent Government Rail Review. In contrast the present safety case regime involves one ‘one-off’ acceptance of a safety case, which is reviewed after 3 years, there is no provision for revocation, and duty holders have to agree ‘material revisions’ of their arrangements with HSE before making the changes.
4. While the current Railways (Safety Case) Regulations require duty holders to describe and follow a safety management system, the Directive requires railway operators to establish a safety management system that addresses the risks arising from railway operation. The current arrangements in Great Britain are presently supplemented by specific requirements to:

- control risks arising from the introduction of new and altered trains and infrastructure (The Railways and other Transport Systems (Approval of Works Plant and Equipment) Regulations 1994) (ROTS). These regulations require HSE approval for individual items of railway work, plant and equipment. They are being progressively replaced by the European interoperability requirements, but will continue to apply to, for example, local lines, metros such as London Underground and Docklands Light Railway, heritage railways and trams; and
- control the risks from workers undertaking safety critical work (The Railways (Safety Critical Work) Regulations 1994) require employers to ensure that employees are competent and fit if they undertake safety critical work, that they carry a formal means of identification, and are not allowed to work such hours as could cause fatigue which could endanger safety.

## **OBJECTIVES**

### 5. Specific objectives are to:

- transfer the interoperable rail industry from the existing system of railway safety cases to the new European system of safety certification and authorisation within a limited time period of possibly 2 years of the new requirements coming into force;
- reduce by [possible estimate 25%] the number of railway operators that have to seek formal permission from the safety regulator to work on the railway [these will be mainly infrastructure maintenance contractors working outside the running rail system];
- produce a set of minimum requirements for a safety management system as the basis of safety certification / authorisation that is more streamlined, better targeted, less bureaucratic, and quicker for duty holders (which should reduce costs for them given that they are charged for assessments). This will also reduce the amount (not yet quantifiable) of HMRI inspector resource presently devoted to assessment of safety cases, and redirect it towards checking by inspection 'on the ground' that operators are properly controlling the risks arising from their operations;
- for the parts of the railway industry outside the European interoperable railway (i.e. the non-interoperable railway e.g. London Underground Ltd (LUL), tramways, heritage railways), remove the existing requirement for formal approval by the safety regulator before the introduction of new or altered works, plant or equipment, and replace it by a more targeted requirement on duty holders to obtain safety verification from a competent person;

- require those who manage, supervise or control the performance of safety critical work e.g. holders of safety certificates / authorisations or their contractors, to ensure that they have arrangements in place that ensure safety critical workers are competent, fit and risks arising from fatigue are adequately managed;
- change the definition of ‘safety critical work’ from broad job titles to the actual tasks that are safety critical to the safety of the railway;
- remove the requirement for safety critical workers to carry a formal means of identification, resulting in a saving to the industry;
- in the light of recent research, to change the requirements relating to fatigue to extend the provisions to include other factors and not just hours of work; and
- as discussed in paragraph 2, maintain existing levels of railway safety and only where reasonably practicable, continually make improvements gauged by trends in passenger and worker fatalities, and precursor events e.g. signals passed at danger and broken rails.

**RISK ASSESSMENT**

6 The number of fatalities, major injuries and over-3-day injuries throughout 2001 to 2003 in the railway are shown in Table 2 below.

7. Table 2: UK fatalities, major injuries and over-3-days injuries on the railway<sup>3</sup>

	Reported data			Estimated reporting rate	Estimated actual average
	2001/02	2002/03	Average		
Fatalities	32	50	41	100%	41
Major Injuries	351	349	350	100%	350
Over-3-Days Injuries	2023	2080	2052	70%	2931

8. Table 3, 4 and 5 below show the breakdown of the data in Table 2 by railway operation.

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<sup>3</sup> Sources for reported injuries and fatalities in Table 2 to Table 5 are: ‘Railway safety – HSEs Annual Report on the safety record of the railways in Great Britain during 2001/02, Appendix 2’ and ‘HSE’s annual report on railway safety 2002/03’ (see <http://www.hse.gov.uk/railways/statistics.htm> ). Data cover national railway, London Underground, trams, heritage railways. They do not include injuries to passengers`.

Table 3: UK fatalities, major injuries and over-3-days injuries: interoperable railway

	Reported data			Estimated reporting rate	Estimated actual average
	2001/02	2002/03	Average		
Fatalities	25	42	33.5	100%	33.5
Major Injuries	315	304	309.5	100%	309.5
Over-3-day injuries	1467	1581	1524	70%	2177

Table 4: UK fatalities, major injuries and over-3-days injuries: tramways

	Reported data			Estimated reporting rate	Estimated actual average
	2001/02	2002/03	Average		
Fatalities	3	3	3	100%	3
Major Injuries	1	4	2.5	100%	2.5
Over-3-Days Injuries	16	25	20.5	70%	29

Table 5: UK fatalities, major injuries and over-3-days injuries: people movers, metros, heritage and minor railways

	Reported data			Estimated reporting rate	Estimated actual average
	2001/02	2002/03	Average		
Fatalities	4	5	4.5	100%	4.5
Major Injuries	35	41	38	100%	38
Over-3-Days Injuries	540	474	507	70%	724

## OPTIONS

9. Seven different options have been considered. Most of the proposed options imply amendments to three current sets of regulations: the Railways (Safety Case) Regulations (RSCR), the Railways (Safety Critical Work) Regulations (RSCWR) and the Railways and Other Transport Systems (Approval of Works, Plant and Equipment) Regulations (ROTS). Each option is described and analysed in relation to the impact they have on each of these regulations.
10. The option that is adopted in the draft regulations is Option 7 below. Options 1-6 represent a series of technically feasible options, which add to the existing legal framework a successively greater number of the changes represented in Option 7. All options are costed in this RIA, in the interests of transparency and to enable comparisons to be made between different options.

### OPTION 1

- RSCR: apply new regulations concerning safety management, safety certificate and safety authorisation to ‘interoperable’ railway (Network Rail, Train Operating Companies, Freight Operating Companies, contractors operating trains outside possessions). Retain RSCR for metros, heritage and minor railways.
- RSCWR: unchanged.
- ROTs: revoke without replacement.

### OPTION 2

- RSCR: apply new regulations concerning safety management, safety certificate and safety authorisation to ‘interoperable’ railway (Network Rail, Train Operating Companies, Freight Operating Companies, contractors operating trains outside possessions). Retain RSCR for metros, heritage and minor railways.
- RSCWR: unchanged.
- ROTs: unchanged.

### OPTION 3

- RSCR: apply new regulations concerning safety management, safety certificate and safety authorisation to ‘interoperable’ railway (Network Rail, Train Operating Companies, Freight Operating Companies, contractors operating trains outside possessions) and tramways. Retain RSCR for metros, heritage and minor railways.
- RSCWR: unchanged.
- ROTs: unchanged.

**OPTION 4**

- RSCR: apply new regulations concerning safety management, safety certificate and safety authorisation to ‘interoperable’ railway (Network Rail, Train Operating Companies, Freight Operating Companies, contractors operating trains outside possessions) and tramways. Retain RSCR for metros, heritage and minor railways.
- RSCWR: unchanged.
- ROTS: revoke and replace with system of standard compliance conducted by notified bodies.

**OPTION 5**

- RSCR: apply new regulations concerning safety management, safety certificate and safety authorisation to ‘interoperable’ railway (Network Rail, Train Operating Companies, Freight Operating Companies, contractors operating trains outside possessions) and tramways. Retain RSCR for metros, heritage and minor railways.
- RSCWR: duty on those who are controllers of safety critical work, extend scope of safety critical work, introduce a requirement that ‘assessors’ of competence and fitness are impartial and objective in their assessments, extend provisions on fatigue through a new ACoP.
- ROTS: revoke and replace with system of standard compliance conducted by notified bodies.

**OPTION 6**

- RSCR: apply new regulations concerning safety management, safety certificate and safety authorisation to ‘interoperable’ railway (Network Rail, Train Operating Companies, Freight Operating Companies, contractors operating trains outside possessions) tramways, people movers, metros, heritage and minor railways. Revoke RSCR entirely.
- RSCWR: duty on those who are controllers of safety critical work, extend scope of safety critical work, introduce a requirement that ‘assessors’ of competence and fitness are impartial and objective in their assessments, extend provisions on fatigue through a new ACoP.
- ROTS: revoke and replace with system of standard compliance conducted by notified bodies.

**OPTION 7**

- RSCR: apply new regulations concerning safety management, safety certificate and safety authorisation to ‘interoperable’ railway (Network Rail, Train Operating Companies, Freight Operating Companies, contractors operating



trains outside possessions) tramways, people movers, metros, heritage and minor railways. Revoke RSCR entirely.

- RSCWR: duty on those who are controllers of safety critical work, extend scope of safety critical work, introduce a requirement that ‘assessors’ of competence and fitness are impartial and objective in their assessments, extend provisions on fatigue through a new ACoP.
- ROTS: reduce scope and introduce verification by competent person.

## **INFORMATION SOURCES AND BACKGROUND ASSUMPTIONS**

11. Information on costs and benefits have been collected from industry sources (questionnaires were sent out to affected companies and at the time of writing HSE has had 7 full responses and 21 partial responses), Her Majesty’s Railway Inspectorate, Bomel Limited, ‘Evaluation of the Railways (Safety Case) Regulations’, 2004<sup>4</sup>, the Department for Transport’s Economic Note No. 1<sup>5</sup>, ‘The costs to Britain of workplace accidents and work-related ill health in 1995/96’ (HSE,1999), HSE’s annual report on railway safety in 2001/02 and 2002/03<sup>6</sup>, sources within HSE and comments received on the HSC’s Discussion Document ‘Safety on the Railway – Shaping the Future’ and Consultative Document ‘Proposals for new safety regulations for railways and other guided transport systems.’
12. Costs have been discounted at a rate of 3.5%<sup>7</sup>. Health and safety benefits have been uprated by 2%, then discounted at 3.5%, giving an effective discount rate of 1.5%. Costs and benefits have been calculated over a ten year appraisal period starting in 2005 when the regulations are due to be introduced.
13. 2003 is the price base year. The choice of base year does not affect the balance of costs and benefits or the conclusions that flow from them. Unless otherwise stated, all cost figures represent present values over the entire appraisal period. Per annum (henceforth, p.a.) figures are normally given in brackets.
14. Costs and benefits are estimated assuming that there is full compliance with existing duties and that there will be full compliance with the proposed regulations (this assumption is further discussed in the uncertainty section).
15. It has been assumed that there will be no new entrants during the appraisal period except for tramways and people movers.

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<sup>4</sup> Bomel Limited, ‘Evaluation of the Railways (Safety Case) Regulations’, 2004.  
<http://www.hse.gov.uk/research/rrhtm/rr192.htm>

<sup>5</sup>[http://www.dft.gov.uk/stellent/groups/dft\\_rdsafety/documents/page/dft\\_rdsafety\\_026183.hcsp](http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_026183.hcsp)

<sup>6</sup> <http://www.hse.gov.uk/railways/annualreport0203/annualreport.pdf>

<sup>7</sup> [http://www.hm-treasury.gov.uk/media/05553/Green\\_Book\\_03.pdf#page=1](http://www.hm-treasury.gov.uk/media/05553/Green_Book_03.pdf#page=1)

16. Some of the costs to businesses are opportunity costs that are reflected by the loss of output as a result of carrying out new duties. It is assumed that the loss of output is approximately equal to the time spent on carrying out the duty multiplied by the average wage (adding 30% for superannuation and employers' National Insurance contributions<sup>8</sup>).
17. It has been assumed that the number of injuries per year over the appraisal period is equal to the average number of injuries in 2001/02 and 2002/03.
18. Further information on the assumptions made in this RIA is provided below.

## **EQUITY AND FAIRNESS**

19. Like the existing regulatory requirements, the proposal will place duties on transport operators to have in place the necessary arrangements to establish and maintain safe operation in regard to passengers, other members of the public, and staff. The effect of these arrangements is broadly similar to those in place now, and will not have a differential impact on any societal groups.

## **ATYPICAL WORKERS**

The new regulations will cover some agency workers that are currently excluded, in particular with respect to safety critical work. We expect the number of workers that will come into scope under the new regulation to be relatively small.

## **BENEFITS**

### **HEALTH AND SAFETY BENEFITS**

#### Option 1

20. There may be some health and safety benefits from a refocusing of inspectors' priorities away from assessing safety cases and approvals towards inspecting. The present value cost of all accidents on the interoperable railway is £1.32 billion<sup>9</sup> over the appraisal period (£154 million p.a.). It has not been possible to estimate what share of this cost will be saved under this option.

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<sup>8</sup> This follows Cabinet Office guidance.

<sup>9</sup> The total cost of accidents on the interoperable railway has been calculated by multiplying the number of injuries and fatalities shown in Table 3 by their respective unit cost. Unit costs have been taken from the Department for Transport's Highways economic note no. 1 2002 and uprated to the year 2003 by nominal GDP per capita. The resulting cost of a fatality is £1,336,810 while major and over-3-days injuries have been estimated to entail a cost of £150,205 and £11,583, respectively.

21. Revoking ROTS may yield some disbenefits as a scheme to verify/approve equipment used on non-interoperable railways is removed. It has not been possible to estimate the size of these disbenefits.

Option 2

22. There may be some health and safety benefits from a refocusing of inspectors' priorities away from assessing safety cases and towards inspecting. The present value cost over the appraisal period of the accidents that this option would contribute to reduce is £ 1.10 billion (£127 million p.a.).

Option 3

23. Health and safety benefits under this option are the same as under option 2 plus those accruing from bringing tramways into scope. The present value cost of fatal, major and over-three-day injuries in the tramway sector is £44 million over the appraisal period (£5 million p.a.). It is not possible to estimate the reduction in tramway accidents that this option will achieve.

Option 4

24. Health and safety benefits under this option are the same as under option 3 plus those accruing from replacing the ROTS Regulations with a system of standard compliance control conducted by notified bodies. These benefits should flow from refocusing of HSE inspectors' priorities away from approvals and towards inspecting. It is not possible to quantify these benefits.
25. However, we are able to estimate the cost to society of all injuries and fatalities occurring on the interoperable and non-interoperable railway (see Table 2). The total present value of all injuries and fatalities over the appraisal period amount to about £1.32 billion (£154 million p.a.).

Option 5

26. Health and safety benefits under this option are the same as under option 4 plus those accruing from introducing new safety critical work regulations. Health and safety benefits are expected to arise mainly from the extension of scope of the new safety critical work regulations (additional tasks to be considered safety critical and more workers to be covered under the new regime) and from the requirements contained in the new ACoP.
27. The inclusion of additional tasks implies that some health and safety benefits will accrue to those covered by the current regulations as competence, fitness and fatigue will need to be taken into account for these tasks. The increase in the number of workers covered implies that the injury and fatality rates of those not covered by the current regulation will decrease to the same level of those that were previously covered. Unfortunately, only aggregate safety statistics are available, and it is therefore not possible to quantify the health and safety benefits associated with the extension of scope element of the new safety critical work regulations.

28. However, we are able to estimate the cost to society of all injuries and fatalities occurring on the railway (see Table 2). The total present value of all injuries and fatalities in the railway sector over the appraisal period amount to about £1.32 billion (£154 million p.a.). However, the reduction in fatalities and injuries (and associated cost) on the railway that the new set of safety critical work regulations will bring about is not quantifiable.

Option 6

29. Health and safety benefits under this option are the same as under option 5 plus those accruing from bringing people movers, metros, heritage and minor railways into the scope of the amendments to the safety case regulations.
30. The present value cost of all fatalities/injuries on people movers, metros, heritage and minor railways is £188 million over the appraisal period (£22 million p.a.). It is not possible to estimate the reduction in this cost that will be attained by option 6.

Option 7

31. Health and safety benefits under this option are the same as under option 6 plus those accruing from reducing the scope of ROTS, instead of introducing a system of standard compliance control conducted by notified bodies. Benefits could flow from refocusing inspectors' priorities away from approvals and towards inspecting. It has not been possible to estimate their size.
32. The cost to society of all injuries and fatalities occurring on the railway has a present value of about £1.32 billion (£154 million p.a.).

**OTHER BENEFITS**

33. No other benefits have been identified under any of the options.

**TOTAL BENEFITS**

34. All considered options are expected to deliver health and safety benefits (with some disbenefits associated with the revoking of ROTS in option 1). However, for none of the options has it been possible to quantify these benefits.

## **COSTS**

### **BUSINESS SECTORS AFFECTED**

#### Option 1

35. Network Rail, 34 train operating companies (TOCs), 11 freight operating companies (FOCs), and 6 large contractors (infrastructure maintenance or track renewal companies that operate trains outside possessions) fall within the scope of this option. Network Rail employs about 30,000 staff and the majority of TOCs employ between 1,000 and 3,000 workers<sup>10</sup>.
36. Revoking ROTS means that all businesses that currently fall within the scope of ROTS and do not form part of the interoperable railway will fall within the scope of this option. They include 9 tramways, 5 metros, 148 heritage railways and 4 people movers. In addition to these businesses, one tramway per year and one people mover every other year are expected to enter operation during the appraisal period.

#### Option 2

37. Under option 2 all businesses affected under the previous option are covered with the exception of those affected by ROTS, as, in this case, these regulations are left unchanged instead of being revoked.

#### Option 3

38. In addition to the businesses affected under option 2, the tramway sector is covered.

#### Option 4

39. Businesses affected are the same as under option 3 plus those affected by the change in ROTS and not covered by the previous option (that is, people movers, metros, heritage and minor railways). The replacement of ROTS with a compliance system means that an estimated 10 notified bodies will also be affected.

#### Option 5

40. Businesses affected are the same as under option 4 with the addition of any other business carrying out safety critical work. This includes 35 smaller contractors and about 100 companies belonging to the UK railway supply industry.

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<sup>10</sup> TOCs data taken from "The comprehensive Guide to Britain's Railways", 6<sup>th</sup> edition. A small number of harbour railways may be caught by the scope of the proposals because they form part of the interoperable railway. The cost for these railways has not been estimated because it is not known how many harbour railways form part of the interoperable railway and it is possible that Network Rail will become the infrastructure manager for these railways

Option 6

41. Businesses affected are the same as under option 5, however, people movers, metros, heritage and minor railways will have to comply with the amendments to the safety case regulations. Currently, 18 have the 148 heritages and minor railways possess a safety case and the remaining 130 railways are exempted from the safety case regulations. Option 7

41. This option will cover all businesses affected by option 6 plus an estimated 15 independent competent people to provide verifications.

**COMPLIANCE COSTS FOR A 'TYPICAL' BUSINESS**

42. In this section we look at (a) the impact on individual businesses of the proposed changes to the RSCWR (options 5 to 7); (b) the impact of applying the changes to the RSCR to Tics, tramways, people movers and heritage railways; (c) the impact of the different changes to ROTS on tramways; (d) familiarisation costs for individual businesses. When analysing the impact of the different set of regulations on the various businesses, we do not include familiarisation as this is dealt with separately.

**(A) IMPACT OF THE NEW SAFETY CRITICAL WORK REGULATIONS ON INDIVIDUAL BUSINESSES (OPTIONS 5 TO 7)**

43. Four different types of costs have been identified in association with the proposed new safety critical work regulations. (1) Placing a duty on those in control of safety critical work; (2) extending the scope of safety critical work; (3) introducing 'assessors' of competence and fitness; and (4) extending provisions on fatigue and introducing a new ACoP. The new safety critical work regulations will also yield some cost savings as the duty to issue ID cards to safety critical workers is removed.

*Duty on those in control of safety critical work*

44. The previous regulations placed duties on employers and the self-employed. The proposed regulations will now place duties on those who manage, supervise or control staff undertaking safety critical tasks. This change would mean that agency staff, supervisors of those undergoing practical training in safety critical work and volunteers would now be classed as safety critical.

*Extending the scope of safety critical work*

45. The definition of safety critical work will now focus on those tasks, which are considered critical to the safety of the railway. This will include some new tasks that stakeholders have identified as needing to be included e.g. installation of components, receiving and relaying of safety critical communications and controlling the supply of electricity to vehicles and the transport system.

*Introduce assessors of competence and fitness*

46. The proposals will include a duty for safety critical workers to be assessed by a person who is competent to make an impartial and objective assessment. Indications are that duty holders already use assessors for competence and fitness e.g. occupational health professionals. It has been difficult to obtain accurate figures for the number of new assessors that will be required for those already in scope of the existing definitions. The extension of scope will require new assessors of competence and fitness. Based on industry sources, it is estimated that the cost of training a medical practitioner is £500 and that between 0 and 2 medical practitioners will need training in each company. So, the additional cost per business should lie between £0 and £1,000 (£0 and £116 p.a.).

*Extend provisions on fatigue and ACoP*

47. The main costs stemming from the new provisions and ACoP are: (i) provision of information on risks to health and safety owing to fatigue and on their arrangements for managing fatigue; (ii) review of fatigue management arrangements when there is reason to doubt their effectiveness; (iii) recording of actual hours worked and (iv) active management of overtime and shift exchanges. Many firms already comply with these requirements through their chosen implementation of the current safety critical work regulations. Information from these firms suggests the following annual costs per head: (i) £ 1, (ii) £ 0.03 and (iii) £24. No cost information is available for (iv) (one industry source declared no identifiable costs). For the purpose of this RIA we set the cost of (iv) at £5 per worker per year. The impact of the ACoP on individual businesses will depend on their size and on the extent to which they already comply with the requirements in the existing ACoP.
48. The regulations cover a wide range of businesses of different nature. Moreover, even companies running similar businesses (as TOCs, FOCs, etc.) appear to be very heterogeneous. As a result, the actual cost of the extension of scope incurred by each business varies substantially across firms. This is because (a) new safety critical workers (captured by extending the scope and by placing duties on those in control of safety critical work) will be unevenly distributed across companies and (b) different companies have different unit costs.
49. As for (a), data provided by a sample of companies, which employ about 29,000 safety critical staff, suggest that the total number of safety critical workers will increase by 7.5%. However, the majority of the companies in the sample have stated that their number of safety critical employees will not increase once the new regulations are introduced. This suggests that a large share of the increase in safety critical workers will be concentrated in a relatively small number of firms. In particular, among the firms that will register an increase in their number of safety critical staff, one firm expects the number to increase from 2 to 10-30, another firm foresees nearly a trebling in their safety critical staff while the remaining firms predict increases between 22% and 70%.
50. As for (b), the ranges of the costs that firms incur for the different cost items associated with the extension of scope are given in the following table

Table 6: unit cost of extending the scope of the safety critical work regulations and placing duties on those in control of safety critical work

	Cost per additional safety critical worker p.a.
Training	£76 to £455
Competence assessment	£45 to £1,136
Fitness assessment	£23 to £150
Record keeping	£23 to £144
Sharing of information	£5 to £59
Total	£172 to £1,944

51. So, as far as extending the scope and placing duties on those in control of safety critical work are concerned, the actual impact on individual businesses will largely depend on how many additional safety critical workers they will have and on their unit costs.
52. Finally, the cost savings associated with the removal of ID cards. Industry data suggest that the costs per worker per year of issuing ID cards lies between £0.7 and £82. Firms that decide to no longer use ID cards are expected to make savings per safety critical worker within this range.

**(B) IMPACT OF THE AMENDMENTS TO THE SC REGULATIONS ON SOME TYPICAL BUSINESSES**

Train Operating Companies (options 1 to 7)

*Costs*

53. There are four costs that will be imposed on TOCs: (a) the cost of establishing a safety management system (SMS) and gaining a safety certificate, (b) the cost of notifications to a safety certificate, (c) the cost of resubmitting a safety certificate every five years, (d) the cost of producing an annual report to HSE. The cost of these requirements for the typical TOC is estimated at £25,000 to £42,000, £650 to £6,500, £23,000 to £40,000, and £3,500 respectively. These are the costs for existing TOCs so the cost of establishing a SMS and gaining a safety certificate is less than the cost of a new safety certificate.
54. TOCs will also incur costs from making substantial changes to their safety certificates but it is assumed that these costs will be completely offset by no longer being required to make material changes to their safety cases.



*Cost Savings*

55. There are three sources of cost savings for TOCs: (a) the removal of the requirement for a three year safety case review, (b) the removal of the requirement for an annual external audit and (c) harmonisation of the safety certificate Part A across the EU. The cost of three-year reviews is estimated at £42,000 to £133,000<sup>11</sup>.
56. It has not been possible to quantify the cost savings from no longer being required to have an annual external audit or the cost savings from EU harmonisation.

*Net Costs*

57. The present value of the cost of options 1 to 7 for a typical TOC is minus £81,000 to £50,000 (minus £9,400 to £5,800 p.a.)<sup>12</sup>.

Tramways (options 3 to 7)

*Costs*

58. There are two costs that will be imposed on tramways by options 3 to 7: (a) the cost of establishing a SMS and (b) the cost of maintaining a SMS. Although many tramway operators say they already have a SMS, the costs of these requirements for a typical tramway have been estimated at £12,300 to £21,000 and £1,600 to £15,700 respectively.
59. The total cost for a tramway is £13,800 to £36,700 (£1,600 to £4,300 p.a.).

People movers (options 6 and 7)

*Costs*

60. There are three costs that will be imposed on people movers: (a) the cost of establishing a SMS and gaining a safety certificate, (b) the cost of notifications and substantial changes to a safety certificate and (c) the cost of a five year resubmission of a safety certificate. The cost of these requirements is estimated at £14,000, £470 to £4,700, and £6,600 respectively.
61. The total cost for a people mover is £21,100 to £25,400 (£2,500 to £2,900 p.a.).

Heritage Railways (options 6 and 7)

62. We consider a heritage railway shifting from being exempted under the SC Regulations to being required to establish a SMS only.

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<sup>11</sup> This cost range has been taken from the Evaluation of the Railway (Safety Case) Regulations with outliers excluded where appropriate.

<sup>12</sup> The upper bound for net costs has been estimated by subtracting the upper cost saving bound from the lower cost bound. The lower bound for net costs has been estimated by subtracting the lower cost saving bound from the upper cost bound.

*Costs*

63. There are two costs that will be imposed on this group of heritage railways: (a) the cost of establishing a SMS and (b) the cost of maintaining a SMS. The cost of these requirements to the typical heritage railway is estimated at £21,000 and £810 to £8,100 respectively.

*Cost Savings*

64. There are cost savings for this group of heritage railways from no longer being required to meet the conditions to be exempted from the safety case regulations. The cost savings from this are estimated at £17,000 (£2,000 per annum).

*Net Costs*

65. The net cost for a heritage railway shifting from being exempt to being required to establish a SMS is minus £4,400 to £2,900 (minus £510 to £340 p.a.).

**(C) IMPACT ON TRAMWAYS OF CHANGES TO ROTS**

66. Tramways have been selected as the typical business affected by the proposed regulations because between 1998 and 2003 the time taken by HSE on approvals for tramways was greater than the time spent on approving equipment for metros, heritage railways, or people movers.

Option 1

*Costs*

67. No additional costs.

*Cost Savings*

68. There are two cost savings: (a) the removal of the requirement for approvals and (b) the removal of the simplified procedure for minor works. These cost savings amount to between £126,000 and £152,000 (£14,700 to £17,700 p.a.).

*Net Costs*

69. As there are no additional costs, net costs are equal to cost savings.

Options 4 to 6

*Costs*

70. The following costs will be imposed upon tramways by options 4 to 6: (a) the cost of appointing a notified body, (b) the cost of producing an application for a verification, (c) the cost of the notified body verifying the piece of equipment, (d) the cost of producing a technical file, (e) the cost of issuing a verification declaration and (f) the cost of applying to the HSE for an authorisation.

71. The cost of appointing a notified body has been estimated under the assumption that senior managers earning £19.20 per hour<sup>13</sup> (excluding non-wage labour costs) take 40 hours to appoint a notified body. This yields a present value cost of appointing a notified body of £1,000.
72. The cost of producing an application for a verification is assumed to be the same as the current cost to firms of producing an application for an approval. Under the assumption that a tramway will spend between half and one times as many hours preparing an application as HSE spends approving applications, the present value cost of producing an application is £5,600 to £11,200.
73. The cost of a notified body verifying a piece of equipment has been estimated under the assumption that a notified body will cost between one and two times the cost of an approval by HSE. The present value cost of verifications is £100,000 to £199,000.
74. It has not been possible to estimate the cost of establishing a technical file (certificate and technical drawings), of issuing a verification declaration or of gaining an authorisation from HSE. The first two of these costs are likely to be small.

*Cost Savings*

75. There are two cost savings: (a) the removal of the requirement for HSE to make approvals and (b) the removal of the simplified procedure for minor works. To estimate these cost savings it has been assumed that applications for approvals and for minor works are produced by middle managers earning £13 per hour (excluding non-wage labour costs). The cost saving from the removal of the simplified procedure for minor works has a present value of £21,000 to £42,000 and the cost saving from the removal of approvals has a present value of £105,000 to £111,000.

*Net Costs*

76. The resulting net cost to tramways of the changes to ROTS envisaged by options 4 to 6 is minus £46,100 to £85,000 (minus £5,400 to £9,900 p.a.).

Option 7

*Costs*

77. There are two costs: (a) the cost of an independent competent person performing a verification and (b) the cost of preparing an application for a verification.
78. The following assumptions have been made to estimate the cost of a verification: (1) the number of hours spent on verification will be twenty percent less than the number of hours currently spent on approvals because the scope of the regulations will be reduced with regard to risk, (2) a middle manager earning

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<sup>13</sup> New Earnings Survey, 2003.

£13 per hour (excluding non-wage labour costs) prepares the verification application and (3) the independent competent person charges the current HSE rate of £150 per hour<sup>14</sup>.

79. The present value cost of verification is estimated at £84,200 to £88,700 over the appraisal period.

*Cost Savings*

80. There are three sources of cost savings: (a) the removal of the simplified procedure for minor works, (b) the removal of the requirement for HSE to approve new equipment and (c) a potentially less bureaucratic set of arrangements. To estimate these cost savings it has been assumed that applications for approvals are produced by middle managers earning £13 per hour (excluding non-wage labour costs).
81. The cost saving from the removal of the simplified procedure for minor works has a present value of £21,000 to £42,000 and the cost saving from the removal of HSE approvals has a present value of £105,000 to £111,000.
82. It has not been possible to estimate the potential cost savings for some duty holders from reduced bureaucracy because it is not known what the scale of the savings will be, or how many firms will be able to make these savings.

*Net Costs*

83. The resulting net present cost to tramways of the changes to ROTS contained in option 7 is minus £68,200 to minus £37,700 (minus £7,900 to minus £4,400 p.a.).

**(D) FAMILIARISATION COSTS FOR INDIVIDUAL BUSINESSES**

84. Data on familiarisation cost have been provided by a few companies with reference to option 7. The range of costs spans from no cost at all to £1 million. If we use the number of safety critical workers as a proxy for company size, the estimated average familiarisation cost turns out to be around £38 per safety critical worker. Familiarisation costs are one-off implementation costs.
85. It seems reasonable to assume that the familiarisation costs range associated with the other 6 options is either equal or narrower than the one estimated for option 7. In particular, we would expect familiarisation costs to be far lower for options 1 to 3, as they imply a limited change in the regulations. For the same reason, option 4 should also entail relatively small familiarisation costs, while option 5, which includes the changes to the safety critical work regulations, should have familiarisation costs not much lower than those associated with option 7. Option 6 should have roughly the same familiarisation costs as option 7.

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<sup>14</sup> The cost of an independent competent person is likely to increase for some businesses and fall for others who perform verification internally.

## TOTAL COMPLIANCE COSTS TO BUSINESS

86. For each option, we first look at familiarisation costs and then at the specific costs associated with the proposed changes to each set of regulations (RSCR, RSCWR and ROTS).

### OPTION 1

87. As explained above, the only information about familiarisation that is available and comes from industry sources is related to option 7. Familiarisation costs for option 1 are assumed to be much smaller than for option 7 as option 1 entails changes to only one set of regulations (the safety case regulations). Specifically, we assume that familiarisation costs under option 1 are equal to 25% of the familiarisation costs imposed by option 7. That is, £574,000 to £656,000 (£67,000 to £76,000 p.a.).
88. The remaining costs to business associated with this option are those associated with the changes in the safety case regulations plus those arising from revoking ROTS. These are outlined below.

#### Costs associated with changes to the safety case regulations

*Cost: shifting from Safety Case Regime to a Safety Management System (SMS) and Safety Certificate/Authorisation Regime*

89. The cost of establishing a SMS and safety certificate or authorisation<sup>15</sup> is expected to be less than the cost of establishing a safety case because less detailed information is required. It has been estimated that the cost of establishing a safety certificate is 70% of the cost of a new safety case, i.e., 70% of £70,000 to £120,000 for TOCs and FOCs, 70% of £40,000 to £100,000 for large contractors and 70% of £1,050,000 for Network Rail<sup>16</sup>. The cost of transforming a safety case into a safety certificate is estimated at half the cost of establishing a new safety certificate<sup>17</sup>.
90. In addition to this cost businesses will be required to resubmit their safety certificate every five years (replacing the three year safety case review discussed below as a cost saving), make substantial changes to their safety certificate and notify the HSE of smaller changes to their safety certificate.

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<sup>15</sup> From this point onwards 'safety certificate' will be used to include 'safety authorisation' (the equivalent term for the infrastructure managers) and the establishment of an SMS meeting the Directive's requirements.

<sup>16</sup> The cost of producing and gaining acceptance of a safety case has been taken from 'The evaluation of the Railway (Safety Case) Regulations' except for Network Rail. There is significant cost variation between businesses so ranges have been used which exclude outliers where appropriate.

The cost of producing a safety case for Network Rail has been estimated by HSE because the cost of £5.1 million in the evaluation of the safety case regulations is very high.

<sup>17</sup> £25,000 to £42,000 for TOCs and FOCs, £368,000 for Network Rail and £14,000 to £35,000 for large contractors.

91. It has been estimated that a five-year resubmission will cost a quarter of the cost of establishing a new safety certificate<sup>18</sup> and the cost of a notification is a tenth of the cost of a material revision<sup>19</sup>.
92. The cost of substantial changes to a safety certificate has not been estimated because it is expected that they will completely offset the cost saving from no longer being required to make material revisions to their safety case.
93. Costs have been estimated assuming that a notification is made every other year.
94. The total cost of shifting from the safety case regime to the safety certificate regime is £2.9 to £5.0 million (£340,000 to £580,000 p.a.)<sup>20</sup>

*Cost: Annual Report<sup>21</sup>*

95. The cost of producing an annual report has been calculated assuming that the report takes three days (24 hours) to write by a middle manager earning £13 per hour (excluding non-wage labour costs). This suggests that the present value cost to Network Rail, TOCs, FOCs and large contractors of producing annual reports is £182,000 (£21,500 p.a.).

*Cost: Modified Duties on Network Rail*

96. Under the proposed regulations some of the specific duties placed on Network Rail to monitor train operations and to make recommendations to HSE will be removed. It is expected that the cost saving from the removal of these duties will be offset by new requirements on Network Rail to involve railway undertakings and to continue to undertake some monitoring activity.

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<sup>18</sup> £12,000 to £21,000 for TOCs and FOCS, £184,000 for Network Rail and £7,000 to £18,000 for large contractors.

<sup>19</sup> £150 to £1,500 for TOCs and FOCS, £1,000 to £7,000 for Network Rail and £400 to £1,500 for large contractors.

<sup>20</sup> This cost is the sum of: (1) the one off cost of transforming a safety case into a safety certificate, (2) the recurring cost of five year resubmissions, and (3) the recurring cost of notifications.

- (1) The cost of transforming safety cases into safety certificates has been calculated as the sum of the cost of the transformation multiplied by the number of firms for the IC, TOCs, FOCs and large contractors.
- (2) The annual cost of five year resubmissions is the sum of the cost of five year resubmissions multiplied by the number of firms for the IC, TOCs, FOCs and large contractors, divided by 5 to spread the cost of reviews evenly over the appraisal period.
- (3) The annual cost of notifications is the sum of the cost of a notification multiplied by the number of firms for the IC, TOCs, FOCs and large contractors, divided by 2 to spread the cost of notifications evenly over every other year (notifications have been estimated to be made every other year).

<sup>21</sup> The annual cost has been calculated as follows: the number of firms required to make annual reports has been multiplied by the estimated number of hours required to make a report and the wage rate (adding 30% for non-wage labour costs).

*Cost Savings*

97. There are five sources of cost savings: (a) the removal of the requirement for a three year review, (b) small contractors being taken out of the scope of the regulations, (c) the removal of the requirement for annual external audits, (d) harmonisation of the safety certificate Part A across the EU and (e) removal of charter exemptions.
98. The cost of a three-year review has been estimated at £11,000 to £35,000 for TOCs and FOCs, £103,000 for Network Rail and £9,000 to £40,000 for large contractors<sup>22</sup>. The present value cost saving from removing three year reviews is £1.9 to £5.5 million (£220,000 to £640,000 p.a.)<sup>23</sup>.
99. Small contractors taken out of the scope of the regulations will make cost savings from not being required to undertake a three-year review or to submit material changes to their safety cases. Assuming material changes are submitted every other year the present value cost saving for small contractors is £115,000 to £753,000 (£13,000 to £87,000 p.a.)<sup>24</sup>.
100. It has not been possible to estimate the cost saving from the removal of the duty to have an annual external audit and from the harmonisation of Part A of the safety certificate across the EU<sup>25</sup>.
101. Charter exemptions are assumed to cost the same as an exemption for a heritage railway (£3,500). There are currently about 70 exemptions each year. The cost saving from charters being excluded has a present value of £3.62 million (£420,000 p.a.)<sup>26</sup>.
102. The present value of all cost savings is £5.6 to £9.9 million (£650,000 to £1.1 million p.a.).

*Net Costs*

103. The net present cost of the changes to the safety case regulations contained in option 1 is minus £6.8 million to minus £470,000 (minus £785,000 to minus £54,000 p.a.). The changes consist in replacing, for the interoperable railway, the

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<sup>22</sup> These cost ranges have been taken from 'The Evaluation of the Railway (Safety Case) Regulations' (except Network Rail) with outliers excluded where appropriate.

<sup>23</sup> The annual cost saving has been calculated as follows: the cost of a three year review has been multiplied by the number of firms (for IC, TOC, FOC and large contractors) and divided by 3. Costs have been divided by 3 to spread the cost of a 3 year review over the appraisal period.

<sup>24</sup> The annual cost has been calculated as follows.

- (1) The cost of a 3 year review has been multiplied by the number of firms and divided by 3. Costs have been divided by 3 to spread the cost of a 3 year review over the appraisal period.
- (2) The cost of a material change multiplied by the number of firms divided by two. Costs have been divided by 2 to spread the cost of material revisions over the appraisal period (firms have been estimated to make one material revision every other year)

<sup>25</sup> Cost savings from harmonisation are likely to be small because only a small number of firms operate in both the UK and other EU member states.

<sup>26</sup> The annual cost has been calculated as follows: the estimated number of charter exemptions per year has been multiplied by the estimated cost of a charter exemption.

current safety case regime with a less burdensome safety certificate regime.  
Hence, none of the costs are policy costs.

Costs associated with changes to ROTS

*Costs*

104. No additional costs to business.

*Cost Savings*

105. There are two cost savings from the revocation of ROTS without replacement: (a) the removal of the requirement for HSE approvals<sup>27</sup> and (b) the removal of the simplified procedure for minor works. The present value of these cost savings is £2.8 to £3.3 million (£321,000 to £387,000 p.a.)<sup>28</sup>.

*Net Costs*

106. As there are no additional costs, net costs are equal to cost savings. Since the changes to the ROTS Regulations consist in revoking them, none of the costs are policy costs.

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<sup>27</sup> HSE does not charge for approvals for Heritage Railways so there is no cost saving for Heritage Railways.

<sup>28</sup> To estimate (b) it has been assumed that (i) the number of hours firms spend preparing for the simplified procedure is between 1 and 1.33 times the number of hours spent by HSE on approvals, (2) The number of hours HSE spends on the simplified procedure is between 0.1 and 0.2 times the number of hours firms spend preparing for the simplified procedure, and (3) new firms spend the average number of hours preparing for the simplified procedure (the expected length of time firms spend preparing divided by the number of firms).

The cost saving from the removal of HSE approvals has been calculated as follows:

- (1) current firms: the annual cost saving from approvals is the number of hours HSE spends on approvals per year multiplied by HSE's charge rate, plus, the number of hours firms spend preparing for approvals (between a half and one times the number of hours HSE spends on approvals) multiplied by the wage rate (adding 30% for non-wage labour costs).
- (2) new firms (one tramway per year and one other guided system every other year): the annual cost saving from approvals is the average number of hours HSE spends on approvals for tramways and other guided systems (divided by two because one other guided system enters the market every other year) per year multiplied by HSE's charge rate and the number of firms in the market, plus, the number of hours firms spend preparing for approvals (between a half and one times the number of hours HSE spends on approvals) multiplied by the wage rate (adding 30% for non-wage labour costs) and the number of firms in the market.

The cost saving from the removal of the simplified procedure for minor works has been calculated as follows:

- (1) current firms: the annual cost saving from the simplified procedure is the number of hours HSE spends on the simplified procedure multiplied by HSE's charge rate, plus, the number of hours firms spend preparing for the simplified procedure multiplied by the wage rate (adding 30% for non-wage labour costs).
- (2) new firms (one tramway per year and one other guided system every other year): the annual cost saving from the simplified procedure is the average number of hours HSE spends on the simplified procedure for tramways and other guided systems (divided by two because one other guided system enters the market every other year) per year multiplied by HSE's charge rate and the number of firms in the market, plus, the number of hours firms spend preparing for the simplified procedure multiplied by the wage rate (adding 30% for non-wage labour costs) and the number of firms in the market.



107. The resulting total costs to business of option 1 are minus £9.5 to minus £2.6 million (minus £1.1 million to minus £300,000 p.a.). All these costs are implementation costs.

## OPTION 2

108. Familiarisation costs are assumed to be the same as under option 1, that is, £574,00 to £656,000 (£67,000 to £76,000 p.a.).

109. Since the only difference between option 2 and option 1 is that ROTS are left unchanged instead of being revoked, all remaining costs to business of option 2 are the same as those arising from the changes to the safety case regime under option 1. Hence, total cost to business of option 2 is minus £6.2 to £0.2 million (minus £718,000 to £22,000 p.a.). All these costs are implementation costs.

## OPTION 3

110. Total familiarisation costs are assumed to be equal to 30% of the familiarisation costs imposed by option 7. That is, £688,000 to £787,000 (£80,000 to £91,000 p.a.). This is 5% more than under the previous option as additional firms (namely, tramways) will have to familiarise themselves with the new regulations.

111. The remaining costs to business are the same as for option 2 with the addition of the costs imposed on tramways by the extension to them of the amendments to the safety case regulations. These costs are outlined below.

### Costs to tramways associated with changes to the safety case regulations

#### *Costs*

112. Costs to tramways arise from establishing and maintaining a SMS. This cost has been estimated under the following assumptions: the cost of establishing a SMS is half the cost of a metro establishing a SMS and gaining a safety certificate<sup>29</sup>, the cost of maintaining a SMS is half the cost to a metro of making substantial changes and notifications<sup>30</sup>, the costs of maintaining a SMS are incurred from the second year onwards and one tramway enters operation every year of the appraisal period.

113. The total cost to tramways of establishing and maintaining an SMS is estimated at £260,000 to £800,000 (£30,000 to £93,000 p.a.)<sup>31</sup>.

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<sup>29</sup> £12,000 to £21,000 for a tramway.

<sup>30</sup> £400 to £4100 every year.

<sup>31</sup> There are two sets of costs to this duty, the costs to current firms and the cost to new firms.

(1) Current firms: the one off cost of establishing a SMS has been calculated by multiplying the number of firms by the cost of establishing a SMS. The annual recurring cost of maintaining a

114. The resulting total cost to business of option 3 is minus £5.8 to £1.1 million (minus £675,000 to £130,000 p.a). Total policy costs lie between £129,000 and £401,000.

#### OPTION 4

115. Familiarisation costs are assumed to be equal to 45% of the familiarisation costs imposed by option 7. That is, £1.0 to £1.2 million (£120,000 to £137,000 p.a.). This is 15% more than under the previous option as a new set of regulations amending the current ROTS is introduced.

116. The remaining costs to business associated with this option are the same as for option 3 plus the costs arising from the changes in ROTS. These costs are outlined below.

#### Costs associated with changes to ROTS

##### *Costs*

117. The following costs need considering: (a) the cost of appointing a notified body, (b) the cost of producing an application for a verification, (c) the cost of the notified body verifying the piece of equipment, (d) the cost of producing a technical file, (e) the cost of issuing a verification declaration, (f) the cost of applying to the HSE for an authorisation and (g) the cost of a notified body being certified by UKAS.

118. The cost of appointing a notified body is assumed to be the same as the cost of 40 hours for a senior manager earning £19.20 per hour (excluding non-wage labour costs). This has a present value cost of £179,000 (£21,000 p.a.)<sup>32</sup>.

119. The cost of producing an application for a verification is assumed to be the same as the current cost to firms of producing an application for an approval. Under the assumption that businesses will spend between half and one times as many hours preparing an application as the HSE spends approving, the present value cost of producing an application is £123,000 to £246,000 (£14,000 to £29,000 p.a.)<sup>33</sup>.

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SMS (incurred from year 2 onwards) is the cost of maintaining a SMS multiplied by the number of firms.

- (2) New firms: The one off cost of establishing a SMS is incurred each year of the appraisal period (it has been assumed that one firm enters the market each year). There is an annual recurring cost of maintaining a SMS for each new firm in the year following its entry into the market.

<sup>32</sup> This one off cost has been calculated as follows:

- (1) Current firms: the number of firms multiplied by the number of hours to perform this task and the wage rate (adding 30% for non-wage labour costs).  
 (2) New firms (one tramway every year and one other guided transport system every other year): the number of firms entering the market per year (1.5) multiplied by the number of hours to perform this task and the wage rate (adding 30% for non-wage labour costs).

<sup>33</sup> This cost has been calculated using the same methodology as for calculating the cost to firms of preparing for an approval.

120. The cost of the notified body making a verification is estimated at between one and two times the cost of HSE making approvals. The present value cost of this is estimated at £2.2 to £4.4 million (£254,000 to £507,000 p.a.)<sup>34</sup>.
121. The cost of a notified body being certified by UKAS has been estimated under the following assumptions: (1) there are 10 notified bodies, (2) each notified body becomes certified for two transport systems and (3) certification costs between £1,500<sup>35</sup> and £11,500<sup>36</sup>. The estimated cost to notified bodies of becoming certified is between £30,000 and £230,000 (£3,500 to £27,000 p.a.)<sup>37</sup>.
122. It has not been possible to estimate the cost of businesses establishing a technical file (certificate and technical drawings), of issuing a verification declaration and of gaining authorisations from HSE. The cost of establishing a technical file and issuing a verification declaration are likely to be small.

#### *Cost Savings*

123. There are two cost savings: (a) the removal of the requirement for HSE approvals and (b) the removal of the simplified procedure for minor works. To estimate these cost savings it has been assumed that applications are produced by middle managers earning £13 per hour (excluding non-wage labour costs). The cost saving from the removal of HSE approvals and simplified procedure for minor works has a present value of £2.8 to £3.3 million (£321,000 to £387,000 p.a.)<sup>38</sup>.

#### *Net Costs*

124. The net present cost associated with the changes to the ROTs regulations is minus £814,000 to £2.3 million (minus £94,000 to £262,000 p.a).
125. The resulting total cost to business of option 4 is equal to minus £6.3 to £3.8 million (minus £729,000 to £438,000 p.a.). Total policy costs are the same as under the previous option and lie therefore between £129,000 and £401,000.

### OPTION 5

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<sup>34</sup> This annual cost has been calculated as follows:

- (1) Current firms: the number of hours HSE spends on approvals multiplied by HSE's charge rate and a factor of 1 to 2 (it has been assumed that notified bodies compliance checking will cost between one and two times as much as HSE approval).
- (2) New firms (one tramway every year and one other guided transport system every other year): the average number of hours HSE spends on approvals for a tramway and half the average number of hours for other guided systems multiplied by HSE's charge rate, a factor of 1 to 2, and the number of new firms in the market per year.

<sup>35</sup> For an existing notified body to become certified to provide verifications for metros, heritage or other guided transport systems. Source UKAS.

<sup>36</sup> For a new entrant to the market to become certified to provide verifications for metros, heritage or other guided transport systems. Source UKAS.

<sup>37</sup> This cost has been calculated as follows: the number of notified bodies multiplied by the number of competencies each notified body becomes certified in and the cost of becoming certified.

<sup>38</sup> These costs have been calculated as set out above under option 1.

126. Familiarisation costs are assumed to be equal to 80% of the familiarisation costs imposed by option 7. That is, £1.8 to £2.1 million (£213,000 to £244,000 p.a.). This is 35% more than under the previous option as a new set of regulations amending the current safety critical work regulations is introduced.
127. The remaining costs to business associated with this option are the same as for option 4 plus the costs arising from the changes in the safety critical work regulations. These costs are outlined below.

Costs associated with changes to the safety critical work regulations

*Costs*

128. According to Network Rail there are no more than 100,000 workers that are currently covered by the existing safety critical work regulations. On this basis it has been assumed that the number of safety critical workers currently covered lies between 80,000 and 100,000. Using the 7.5% figure mentioned in the 'compliance cost for a typical business' section yields additional 6,000 to 7,500 safety critical workers. On top of these workers, around 6,000 volunteers working in the heritage railway sector will be affected.
129. As far as the new ACoP is concerned, we assume that a number of companies corresponding to 50% to 70% of all safety critical workers already comply with it. Hence, the total costs are calculated by multiplying the total cost per worker per year given in the 'compliance cost for a typical business' section (i.e., ca. £30 in total) by 30%-50% of all safety critical workers under the new regulations. This yields £6.7 to £14.0 million (£780,000 to £1.6 million p.a.).
130. As far as medical competence costs are concerned, it has been difficult to obtain an accurate figure for the number of medical practitioners that will need training. A rough estimate places this number between 50 and 100. As training has been costed at £500 per head (see 'compliance cost for a typical business' section), this gives a total cost of between £25,000 and £50,000 (£2,900 and £5,800 p.a.)
131. The cost to business resulting from the extension of scope and from placing duties on those who supervise, control and manage safety critical staff, is calculated by multiplying the average unit costs of the items listed in Table 6 by the number of additional safety critical workers (volunteers excluded). The result of this exercise is summarised in Table 7.
132. As for the 6,000 volunteers in the heritage railway sector, it is expected that a large proportion of them (specifically, between 40% and 60%) are already currently trained and assessed for their competence and fitness. It is also expected that heritage railways already comply with some of the provisions of the ACoP. To account for this, it has been assumed that heritage railways will incur between 40% and 60% of the cost per worker estimated in the 'compliance cost for a typical business' section. As a result of these assumptions the extension of scope provisions will entail a cost of £13.0 to £19.5 million (£1.5 to £2.3 million p.a.), while total ACoP costs will be around £624,000 to £936,000 (£72,000 to £109,000 p.a.). This yields a total cost to heritage railways of £13.6 to £20.5 million (£1.6 to £2.4 million p.a.).

133. Total cost savings to business stemming from the removal of ID cards are derived by multiplying the range £1-£8 for the cost per worker per year of issuing ID cards<sup>39</sup> by 50% of the estimated total number of workers covered by the current safety critical work regulations. This yields a cost saving between £344,000 and £3.5 million (£40,000 and £410,000 p.a.). The choice of only 50% of the current safety critical workers as a basis for estimating this cost saving reflects the expectation that some companies will retain the ID card system although they will no longer be legally obliged to do so.

Table 7: Total cost to business of extending the scope of the safety critical work regulations and placing duties on those in control of safety critical work.

	Average cost per additional safety critical worker p.a.	Cost per year for all additional safety critical workers (£ million)	Present value over appraisal period (£ million)
Training	£243	£1.5 to £1.8	£12.6 to £15.7
Competence assessment	£228	£1.4 to £1.7	£11.8 to £14.7
Fitness assessment	£67	£0.4 to £0.5	£3.5 to £4.3
Record keeping	£72	£0.4 to £0.5	£3.7 to £4.6
Sharing of information	£20	£0.1 to £0.2	£1.0 to £1.3
Total	£630	£3.8 to £4.7	£32.6 to £40.8

134. Total cost to business of option 5 lies between £44.0 and £79.6 million (£5.1 and £9.2 million p.a.). This results from adding together costs stemming from changes to the safety critical work regulations, familiarisation costs and the non-familiarisation costs of the previous option. Policy costs amount to between £49.6 and £75.3 million (£5.8 and £8.7 million p.a.) and correspond largely to the costs of the changes to the safety critical work regulations.

<sup>39</sup> In the 'compliance cost for a typical business' section a larger range was mentioned, namely £0.7 to £82. However, most companies cited costs lower than £10, hence the choice of a narrower range.

## OPTION 6

135. Familiarisation costs are assumed to be equal to the familiarisation costs imposed by option 7. That is, £2.3 to £2.6 million (£267,000 to £305,000 p.a.). This is 20% more than under the previous option to account for the extension of scope of the amendments to the safety case regulations.
136. The remaining costs to business associated with this option are the same as for option 5 plus the costs arising from the extension of scope of the changes to the safety case regulations. These are outlined below.

Costs associated with extension of scope of new safety case regulations

137. The extension of scope will concern people movers, metros, heritage and minor railways.

*Costs: Establishing a SMS and Gaining a Safety Certificate (people movers)*

138. People movers are currently outside the scope of the safety case regulations. These businesses will be required to undertake the following: (a) establish a SMS and gain a safety certificate, (b) make notifications and (c) make substantial changes to their safety certificate and (d) resubmit their safety certificate every five years. To estimate these costs it has been assumed that the costs of people movers will be similar to the costs of heritage railways because they are both relatively small operations.
139. The unit costs of establishing a SMS and gaining a safety certificate, making a notification, making a substantial change and a five year resubmission are estimated at £14,000, £10 to £100, £100 to £1,000, and £3,500 respectively.
140. The present value cost of establishing a SMS and gaining a safety certificate is £157,000 to £184,000 (£18,000 to £21,000 p.a.)<sup>40</sup>. Half of these costs are assumed to be policy costs.

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<sup>40</sup> The cost is composed of two elements: the costs to current peplemovers and the cost to new peplemovers.

- (1) Current peplemovers: the one off cost of establishing a safety certificate is the number of firms multiplied by the cost of establishing a safety certificate. The annual cost of making notifications (incurred from year one) is the number of firms multiplied by the cost of making a notification divided by 2 (it has been estimated that notifications will be made every other year). The annual cost of making substantial changes (incurred from year one) is the number of firms multiplied by the cost of making a substantial change divided by 2 (it has been estimated that substantial changes will be made every other year). The annual cost of making a five year review (incurred from year one) is the number of firms multiplied by the cost of a five year review divided by 5 (to spread the cost of a five year review over the appraisal period).
- (2) New peplemovers: the cost of establishing a safety certificate is incurred every other year (one peple mover enters the market every other year). The annual cost of making notifications (incurred from the first year of entry) is the number of firms in the market in that year multiplied by the cost of making a notification divided by 2 (it has been estimated that notifications will be made every other year). The annual cost of making substantial changes (incurred from the first year of entry) is the number of firms in the market in that year multiplied by the cost of making a substantial change divided by 2 (it has been estimated that

*Costs: Shifting from Safety Case Regime to a Safety Management System (SMS) and Safety Certificate Regime (metros, heritage and other minor railways)*

141. Metros, heritage and other minor railways that currently have safety cases will be required to establish a SMS and gain acceptance of a safety certificate. Metros, heritage and other minor railways will incur the cost of (a) shifting from a safety case to a safety certificate, (b) having to re-submit a safety certificate every five years, (c) making substantial changes to safety certificates and (d) making notifications to a safety certificate. It has been assumed that the cost of substantial changes is completely offset by the current cost of making material revisions to their safety case.
142. To estimate the cost of these changes to metros the following assumptions have been made: the costs for London Underground are the same as a TOC, the cost for other metros of transforming their safety cases into safety certificates is a quarter of 70% of the cost for a TOC<sup>41</sup>, the cost of a five year review is a quarter of the cost of gaining a new safety certificate for a metro<sup>42</sup> and the cost of a notification is a tenth of the cost of a material revision<sup>43</sup> or half the cost of notifications for a TOC.
143. The present value cost of these changes for metros is £138,000 to £251,000 (£16,000 to £29,000 p.a.)<sup>44</sup>.
144. To estimate the cost of these changes for heritage and other minor railways that have safety cases the following assumptions have been made: the cost of transforming a safety case into a safety certificate is half of 70% of the cost of establishing a safety case<sup>45</sup>, the cost of a five year review is a quarter of the cost

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substantial changes will be made every other year). The annual cost of making a five year review (incurred from the first year of entry) is the number of firms in the market in that year multiplied by the cost of a five year review divided by 5 (to spread the cost of a five year review over the appraisal period).

<sup>41</sup> £12,000 to £21,000

<sup>42</sup> £6,000 to £11,000 every five years

<sup>43</sup> £75 to £750 every two years

<sup>44</sup> This cost has been calculated as follows:

- (1) The one off cost of transforming a safety case into a safety certificate is the estimated cost (note LUL has higher costs) multiplied by the number of firms.
- (2) The annual recurring cost of a five year review is the cost of a five year review (note LUL has higher costs) multiplied by the number of firms divided by 5 (to spread the cost of five year reviews over the appraisal period).
- (3) The annual recurring cost of notifications is the cost of notifications (note LUL has higher costs) multiplied by the number of firms divided by 2 (it has been estimated that one notification will be made every other year).

<sup>45</sup> £7,000. The Heritage Railway Association in their response to the Discussion Document stated that the cost of producing and gaining acceptance of a safety case for a heritage railway is closer to £20,000 than the £9,000 to £12,000 in the Discussion Documents RIA. The figure of £20,000 has therefore been used as a basis to arrive at this figure (£7000).

of gaining a new safety certificate<sup>46</sup> and the cost of a notification is a tenth of the cost of a material revision<sup>47</sup>.

145. The present value cost of these changes for heritage and other minor railways that have safety cases is £235,000 to £242,000 (£27,000 to £28,000 p.a.)<sup>48</sup>.

*Costs: Heritage Railways Shifting from Exemption to Establishing and Maintaining a SMS (heritage and other minor railways)*

146. Heritage and other minor railways that are currently exempted from having a safety case under the safety case regulations will be required to establish and maintain a SMS under the proposed regulations. The cost of establishing a SMS for these railways is assumed to be 60% of the cost of a safety case (£12,000). The cost of maintaining a SMS is estimated at half the cost to metros of making substantial changes and notifications (£850 to £8,500 every year).

147. The present value of these costs is £2.0 to £5.6 million (£229,000 to £655,000 p.a.)<sup>49</sup>. Half of these costs are considered to be policy costs.

*Cost Savings: Shifting from Safety Case Regime to a Safety Management System (SMS) and Safety Certificate Regime (metros, heritage and other minor railways)*

148. Metros, heritage and other minor railways with safety cases will make cost savings from the removal of the requirements for a three-year review and for external annual audits.

149. The cost of a three-year review for a metro has been estimated at half the cost of a three-year review for a TOC<sup>50</sup>. The cost of a three year review for heritage and other minor railways with safety cases is estimated at between £1,000 and £6,000 every three years.

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<sup>46</sup> £3,500 every five years

<sup>47</sup> £10 to £100 every two years

<sup>48</sup> These cost have been calculated as follows:

- (1) The one off cost of transforming safety cases into safety certificates is the number of firms multiplied by the cost of transforming a safety case.
- (2) The annual recurring cost of five year reviews (incurred from year 1) is the number of firms multiplied by the cost of a five year review divided by 5 (to spread the cost of a five year review over the appraisal period).
- (3) The annual recurring cost of notifications (incurred from year 1) is the number of firms multiplied by the cost of making notifications divided by 2 (it has been estimated that one notification is made per year per firm).

<sup>49</sup> These costs have been calculated as follows:

- (1) The one off cost of establishing a SMS is the number of firms multiplied by the cost of establishing a SMS.
- (2) The annual recurring cost of maintaining a SMS (incurred from year 2 onwards) is the cost of maintaining a SMS (the cost of substantial changes and notifications under the assumption one of each is made every other year) multiplied by the number of firms (it has been estimated that firms will make one substantial change and one notification every other year).

<sup>50</sup> £5,500 to £17,500 every three years



150. The cost saving from the removal of the three-year review requirement is estimated at £95,000 to £301,000 (£11,000 to £35,000 p.a.)<sup>51</sup> for metros and £52,000 to £310,000 (£6,000 to £36,000 p.a.)<sup>52</sup> for heritage and other minor railways.

151. It has not been possible to estimate the cost savings from the removal of the requirement for an external annual audit.

*Cost savings: Shifting from exemption to establishing and maintaining a SMS (heritage railways)*

152. The cost of gaining exemption for heritage railways is assumed to be a sixth of the cost of establishing a SMS every year<sup>53</sup>. The present value of this cost saving is £2.2 million (£260,000 p.a.)<sup>54</sup>.

*Net Costs*

153. The resulting net present cost associated with the extension of scope of the amendments to the safety case regulations is minus £467,000 to minus £6.75 million (minus £784,000 to minus £54,000 p.a.).

154. Total cost to business of option 6 lies between £44.1 and £84.0 million (£5.1 and £9.8 million p.a.). Policy costs amount to between £50.6 and £78.2 million (£5.9 and £9.1 million p.a.).

OPTION 7

155. Familiarisation costs for this option have been estimated on the basis of the information provided by a sample of companies. To calculate the total cost to business of familiarisation the stated and estimated familiarisation cost of the sample companies have been scaled up by using a fraction of the total number of safety critical workers caught by the new regulation. The use only of a fraction (namely, the range 70% - 80%) of all workers accounts for the fact that some companies have declared that they will not incur any familiarisation costs. The estimated familiarisation costs amount to between £2.3 and £2.6 million (£267,000 and £305,000 p.a.).

156. The remaining costs to business associated with this option are the same as for option 5 plus the costs arising from the reduction of scope of ROTS and the use of independent competent persons for verification minus those associated with the system of standard compliance contained in option 5.

<sup>51</sup> This annual cost saving has been calculated as follows: the cost of a three year review (note LUL has higher costs) multiplied by the number of firms divided by 3 (to spread the cost of a 3 year review over the appraisal period).

<sup>52</sup> This annual cost saving has been calculated as follows: the cost of a three year review multiplied by the number of firms divided by 3 (to spread the cost of a 3 year review over the appraisal period).

<sup>53</sup> £3,500 every three years.

<sup>54</sup> The annual cost savings has been calculated as follows: the number of firms has been multiplied by the cost of an exemption divided by three (to spread the cost of an exemption over the appraisal period).

Costs associated with reduction of scope of ROTS

157. The only cost from this option is the cost of verification by an independent competent person. This cost has been estimated under the following assumptions: (1) the number of hours spent on verification will be 20% less than the number of hours currently spent on approvals because the scope of the regulations will be reduced with regard to risk, (2) a middle manager earning £13 per hour (excluding non-wage labour costs) prepares the verification application and (3) the independent competent person charges the current HSE rate of £150 per hour. The resulting cost of verifications has a present value of £1.8 to £1.9 million (£214,000 to £226,000 p.a.)<sup>55</sup>.

*Cost Savings*

158. There are three cost savings: (a) the removal of the simplified procedure for minor works, (b) the removal of the requirement for approvals by HSE and (c) a potentially less bureaucratic system. To estimate these cost savings it has been assumed that applications for approvals are produced by middle managers earning £13 per hour (excluding non-wage labour costs).

159. The present value of the cost saving from the removal of HSE approvals and the simplified procedure for minor works is £2.8 to £3.3 million (£321,000 to £387,000 p.a.)<sup>56</sup>.

160. It has not been possible to estimate the potential cost savings for some duty holders from reduced bureaucracy because it is not known what the scale of the savings will be or how many firms will be able to make these savings.

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<sup>55</sup> This cost has been estimated as follows:

- (1) Current firms: the annual cost of the competent person is the number of hours HSE spends on approvals multiplied by 80% and the HSE charge rate. The cost to firms is the number of hours HSE spends on approvals multiplied by 80%, 0.5 to 1 (the estimated number of hours firms spend preparing for verifications compared to competent persons) and the wage rate (adding 30% for non-wage labour costs).
- (2) New firms (one tramway per year and one other guided system every other year): the cost per year of the competent person is the average number of hours HSE spends on approvals for tramways and other guided systems (divided by 2 for other guided systems because one enters the market every other year) multiplied by 80%, the HSE charge rate and the number of new firms in the market in that year. The cost per year to firms is the average number of hours HSE spends on approvals for tramways and other guided systems (divided by 2 for other guided systems because one enters the market every other year) multiplied by 80%, 0.5 to 1 (the estimated number of hours firms spend preparing for verifications compared to competent persons), the wage rate (adding 30% for non-wage labour costs) and the number of new firms in the market in that year.

<sup>56</sup> These costs have been calculated as set out above under option 1.

*Net Costs*

161. The resulting net present cost is minus £1.5 million to minus £0.8 million (minus £174,000 to minus £96,000 p.a.). None of these costs are policy costs.

162. Total cost to business of this option is therefore £43.4 to £81.0 million (£5.0 to £9.4 million p.a.). Policy costs are the same as under option 6, that is, £50.6 to £78.2 million (£5.9 to £9.1 million p.a.).

163. Total cost to business for each option broken down by set of regulations and familiarisation is given in the tables below.

**Table 8a - Total cost to business of each option broken down by set of regulations and familiarisation: present value over appraisal period (£ million)**

		<b>RSCR</b>	<b>ROTS</b>	<b>RSCWR</b>	<b>Familiaris.</b>	<b>TOTAL</b>
<b>Opt. 1</b>	<b>Min</b>	-6.8	-3.3	0	0.57	-9.5
	<b>Max</b>	-0.5	-2.8	0	0.66	-2.6
<b>Opt. 2</b>	<b>Min</b>	-6.8	0	0	0.57	-6.2
	<b>Max</b>	-0.5	0	0	0.66	0.2
<b>Opt. 3</b>	<b>Min</b>	-6.5	0	0	0.69	-5.8
	<b>Max</b>	0.3	0	0	0.79	1.1
<b>Opt. 4</b>	<b>Min</b>	-6.5	-0.8	0	1.03	-6.3
	<b>Max</b>	0.3	2.3	0	1.18	3.8
<b>Opt. 5</b>	<b>Min</b>	-6.5	-0.8	49.4	1.84	44.0
	<b>Max</b>	0.3	2.3	74.9	2.10	79.6
<b>Opt. 6</b>	<b>Min</b>	-6.8	-0.8	49.4	2.29	44.1
	<b>Max</b>	4.3	2.3	74.9	2.62	84.0
<b>Opt. 7</b>	<b>Min</b>	-6.8	-1.5	49.4	2.29	43.4
	<b>Max</b>	4.3	-0.8	74.9	2.62	81.0

**A negative number indicates a cost saving**

**Table 8b – Total cost to business of each option broken down by set of regulations and familiarisation: per annum values (£ '000)**

		<b>RSCR</b>	<b>ROTS</b>	<b>RSCWR</b>	<b>Familiaris.</b>	<b>TOTAL</b>
<b>Opt. 1</b>	<b>Min</b>	-785	-387	0	67	-1,105
	<b>Max</b>	-54	-321	0	76	-300
<b>Opt. 2</b>	<b>Min</b>	-785	0	0	67	-718
	<b>Max</b>	-54	0	0	76	22
<b>Opt. 3</b>	<b>Min</b>	-755	0	0	80	-675
	<b>Max</b>	39	0	0	91	130
<b>Opt. 4</b>	<b>Min</b>	-755	-95	0	120	-729
	<b>Max</b>	39	262	0	137	438
<b>Opt. 5</b>	<b>Min</b>	-755	-95	5,744	213	5,108
	<b>Max</b>	39	262	8,700	244	9,244
<b>Opt. 6</b>	<b>Min</b>	-795	-95	5,744	267	5,120
	<b>Max</b>	496	262	8,700	305	9,762
<b>Opt. 7</b>	<b>Min</b>	-795	-172	5,744	267	5,043
	<b>Max</b>	496	-96	8,700	305	9,405

**A negative number indicates a cost saving**

## **COSTS TO HSE**

164. Costs to HSE are roughly the same under all options.

## **POLICY DEVELOPMENT**

165. The cost of policy development is expected to be equivalent to the cost of employing a band 4 member of staff every year of the appraisal period. Using the mid point of the pay bracket for a band four member of staff (£25,000 per year) the present value cost of policy development is £213,000.

## **EVALUATION**

166. As part of the policy development process the HSE will evaluate the impact of the proposed regulations. The evaluation is expected to take place 5 years after the implementation of the regulations at a cost of around £100,000. This has a present value cost of £87,000 (£10,000 p.a.)

## **STAFF TRAINING**

167. It is expected that all inspectors in Her Majesty's Railway Inspectorate (HMRI) will receive 2 days training and all other HMRI staff will receive half a days training. Under these expectations, the cost of training HMRI staff has been estimated at £150,000 (£18,000 p.a).

168. The total cost to HSE under all options considered is £452,000 over the appraisal period (£52,500 p.a).

## **OTHER COSTS**

169. No other costs have been identified under any of the options.

## **ENVIRONMENTAL IMPACTS**

170. No significant environmental impacts are expected under any of the options.

## **TOTAL COSTS TO SOCIETY**

171. Total costs to society are equal to the sum of total costs to business and total cost to HSE for each option. These costs per annum and over the entire appraisal period are shown in the following tables.

**Table 9a - Total cost to society, balancing percentage and policy costs: present value over the appraisal period (£ million)**

		Cost to business	Cost to HSE	Total cost to society	Balancing percentage*	Policy costs
Opt. 1	Min	-9.5	0.5	-9.1	-0.68%	0
	Max	-2.6		-2.1	-0.16%	0
Opt. 2	Min	-6.2		-5.7	-0.53%	0
	Max	0.2		0.6	0.06%	0
Opt. 3	Min	-5.8		-5.4	-0.47%	0.1
	Max	1.1		1.6	0.14%	0.4
Opt. 4	Min	-6.3		-5.8	-0.44%	0.1
	Max	3.8		4.2	0.32%	0.4
Opt. 5	Min	44.9		44.4	3.36%	49.6
	Max	80.2		80.0	6.05%	75.3
Opt. 6	Min	45.0		44.5	3.37%	50.6
	Max	84.7		84.5	6.39%	78.2
Opt. 7	Min	44.3		43.9	3.32%	50.6
	Max	81.6		81.4	6.15%	78.2

\* A negative balancing percentage indicates an increase in injuries/fatalities.

**Table 9b – Total cost to society, balancing percentage and policy costs: per annum values (£ '000)**

		Cost to business	Cost to HSE	Total cost to society	Balancing percentage*	Policy costs
Opt. 1	Min	-1,105	52.5	-1,052	-0.68%	0
	Max	-300		-247	-0.16%	0
Opt. 2	Min	-718		-666	-0.53%	0
	Max	22		74	0.06%	0
Opt. 3	Min	-675		-622	-0.47%	15
	Max	130		183	0.14%	47
Opt. 4	Min	-729		-677	-0.44%	15
	Max	438		490	0.32%	47
Opt. 5	Min	5,217		5,160	3.36%	5,759
	Max	9,317		9,297	6.05%	8,747
Opt. 6	Min	5,229		5,173	3.37%	5,882
	Max	9,835		9,815	6.39%	9,085
Opt. 7	Min	5,151		5,095	3.32%	5,882
	Max	9,477		9,457	6.15%	9,085

\* A negative balancing percentage indicates an increase in injuries/fatalities

## SMALL FIRMS IMPACT TEST

172. HSE has liaised closely with the Heritage Rail Association in developing its proposals, and has considered its comments and also some responses from other minor railways such as cliff railways. Many of these railways will be small firms. In relation to the proposals on safety management and certification, the cost impact will be small, because nearly all of these railways will be exempt from safety certification requirements because of a low-speed threshold (40 kph) in the regulations. In relation to safety verification, these railways will incur some additional cost, because they are exempt from HSE fees for assessing applications for approvals under ROTS (due to their low speed), and the cost of employing competent persons to undertake safety verification will therefore be a new cost for these railways. These costs will be incurred only if a railway wishes to introduce new infrastructure or vehicles, or alterations, which introduce significant new risks.

## COMPETITION ASSESSMENT

173. The proposed regulations may impose costs on the railway sector but no adverse competition effects are expected: competition in the sector is currently highly regulated, one of the aims of the proposed regulation is to reduce the regulatory burden on the sector, and the regulations are not expected to affect businesses disproportionately.

174. The markets in which TOCs and the IC operate are highly regulated with a number of government bodies setting fares, access charges and granting franchises. The proposed regulations are not expected to reduce the level of competition in these markets further.

175. The markets in which FOCs and IMCs operate are less highly regulated so there is greater scope for adverse competition effects from the proposed regulations. The FOC sector is dominated by a small number of businesses but FOCs operate in the market for transportation that is significantly larger. In this larger market, the presence of other operators indicates there is competition but the proposed regulations will affect FOCs disproportionately compared to other non-rail transportation businesses. Hence, there may be a potential competition impact on the transportation sector but this will be mitigated since the proposed regulations could lead to lower safety case/ certificate and ROTS costs.

176. No adverse competition effects are expected in the track maintenance contractor market because the proposed regulations are not expected to have a disproportional impact on businesses operating in these markets. The proposed regulations will reduce costs for some operators by taking them outside the scope of the proposed regulations, and costs are expected to be proportional to the size (and complexity) of business operations.

177. The changes to the safety critical work regulations (options 5 to 7) may have a differential impact on firms. Some firms will see their number of safety critical workers increase by a large number while for other firms the proposed changes



will have no impact at all<sup>57</sup>. To the extent that these firms are competing in the same market, it could be argued that the regulations will have a differential impact. However, the changes that are likely to have an asymmetric impact concern the extension of scope and the duty of controlling staff undertaking safety critical work. If the differential impact is due to the extension of scope, it could indicate that firms affected and firms not affected may not be in direct competition with one another as their staff carry out different tasks. If the differential impact stems from the duty of controlling staff undertaking safety critical work, it could be argued that the new regulations remove an unfair competitive advantage that firms employing large numbers e.g., agency staff have over firms that are making no use of them.

## BALANCE OF COSTS AND BENEFITS

178. Since the benefits expected to arise from the different options are not quantifiable (see benefits section), it has not been possible to calculate the balance between costs and benefits. However, the balancing percentage for each option has been worked out (see Tables 9a and Table 9b). This shows the percentage reduction in the number of accidents required for benefits to balance costs.

## UNCERTAINTIES

179. There are a number of uncertainties associated with the above cost/benefit analysis. The main ones relate to the following factors: (1) compliance levels; (2) small sample size from which costs arising from the changes to the safety critical work regulations and familiarisation were estimated; (3) the relative cost of safety certificates and safety cases; (4) total number of additional workers covered following the changes to the safety critical work regulations; (5) number of businesses that will stop using ID cards and (6) the cost of Professional Indemnity Insurance for an independent competent Person. Although the railway safety critical work regulations will result in benefits to society, it is difficult to quantify benefits resulting from 7) the reduction in costs arising from fewer non-fatal injuries to passengers, 8) less damage to the infrastructure, 9) less damage to rolling stock and 10) fewer disruptions arising from safety failures.

## COMPLIANCE

180. Throughout the analysis 100% compliance has been assumed. This assumption is likely to hold for changes to the safety case regulations as most firms will need to gain a safety certificate to operate and only a small number of firms will be exempted. However, compliance with the changes to ROTS and to the safety critical work regulations will not necessarily be full. Specifically, it has been estimated that the level of compliance with current ROTS is 80%. If the same level of compliance applies to the different options and is extended to the changes to the safety critical work regulations, costs to society will be lower. The precise impact on each option is shown in the following table.

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<sup>57</sup> See 'compliance cost for a typical business' section.

**Table 10 - Total cost to society with 100% compliance for RSCR, 80% for ROTS and 80% for RSCWR: present value over appraisal period (£ million)**

		COST TO BUSINESS				TOTAL SOCIETY	Balancing percentage
		RSCR	ROTS	RSCWR	Familiar. <sup>58</sup>		
Opt. 1	Min	-6.8	-2.7	0	0.52	-8.4	-0.64%
	Max	-0.5	-2.2	0	0.59	-1.6	-0.12%
Opt. 2	Min	-6.8	0	0	0.57	-5.7	-0.53%
	Max	-0.5	0	0	0.66	0.6	0.06%
Opt. 3	Min	-6.5	0	0	0.69	-5.4	-0.47%
	Max	0.3	0	0	0.79	1.6	0.14%
Opt. 4	Min	-6.5	-0.7	0	0.93	-5.8	-0.44%
	Max	0.3	1.8	0	1.06	3.7	0.28%
Opt. 5	Min	-6.5	-0.7	39.6	1.59	34.4	2.60%
	Max	0.3	1.8	59.9	1.82	64.3	4.86%
Opt. 6	Min	-6.8	-0.7	39.6	1.99	34.5	2.61%
	Max	4.3	1.8	59.9	2.27	68.7	5.19%
Opt. 7	Min	-6.8	-1.2	39.6	1.99	34.0	2.57%
	Max	4.3	-0.7	59.9	2.27	66.2	5.01%

181. Costs to business and society are lower for each option and so is the balancing percentage when compared with the full compliance case.

<sup>58</sup> Compliance with familiarisation has been set equal to 90% for option 1, 100% for options 2 and 3, 90% for option 4, 87% for options 5, 6 and 7. The rates of compliance with familiarisation have been derived from the expected rates of compliance with RSCR, ROTS and RSCWR.

## DATA RECEIVED

182. As noted in the information sources and background assumptions section, at the time of writing HSE has received full responses to its request for information from 7 companies. Partial responses were obtained from an additional 21 businesses. The low number of responses has a negative impact on the robustness of the estimates.

## COST RATIO BETWEEN SAFETY CASES AND SAFETY CERTIFICATES

183. The ratio between the cost of establishing a safety case and the cost of establishing a safety certificate and SMS is uncertain. It has been estimated that safety certificates will cost 70% of the cost of a safety case because less detailed information will be required for a safety certificate. If however this estimate is incorrect, and safety certificates have the same cost as safety cases then the costs due to the amendment to the RSCR shown in the first column of Tables 8 to 10 should be replaced by the figures in Table 11.

**Table 11: RSCR Cost to Business if cost of a Safety Certificate equals cost of a Safety Case**

		Present value of costs (£ million)	Annual costs (£ '000)
Opt. 1, 2	Min	-7.1	-820
	Max	0.0	-6
Opt. 3, 4, 5	Min	-6.7	-780
	Max	0.9	106
Opt. 6, 7	Min	-7.1	-828
	Max	4.8	560

184. Increasing the cost of a safety certificate to 100% increases the cost to business of each option by between £0.3 and £0.6 million over the appraisal period.

## NUMBER OF SAFETY CRITICAL WORKERS

185. There is uncertainty about the additional number of safety critical workers that will be covered once the new regulations are implemented. Responses from a sample of companies suggest an increase by 6,000 - 7,500 people. However, one industry source argued that the impact will be much larger, namely by a factor of 10. If this was true, the cost of the new safety critical work regulations would lie between £348 and £451 million (£40.4 to £52.4 million p. a.).

## **REMOVAL OF ID CARDS**

186. There is uncertainty about the number of companies that will continue to use ID
187. ID cards, despite the fact that they will no longer be a legal requirement. The assumption was made that 50% of all current safety critical workers will continue to carry ID cards. The corresponding saving was estimated at between £344,000 and £3.5 million (£40,000 and £410,000 p.a.). This would double if all industry were to stop using ID cards and be equal to zero if, instead, all businesses decided to retain their ID card system.

## **PROFESSIONAL INDEMNITY INSURANCE**

188. Professional Indemnity Insurance covers people who sell their knowledge and skills to others against any mistakes or negligence. In the case of independent competent persons the regulations will require of them to exercise knowledge and skills to carry out verification. Insurance costs depend on a large number of factors, in particular turnover of business, amount of liability to be insured against, whether that liability includes public and employers liability and whether the insurance covers trackside work. All these factors and the wide range of projects competent persons could be called upon to verify mean that estimating costs is difficult. Using information from insurance industry experts the scale of professional indemnity insurance might be broadly as follows. A competent person with a turnover of £100,000, covered for professional indemnity, public and employer liability of £5 million each without trackside work covered could expect to pay between £10,000 and £15,000 per annum, equating to a charge to the customer of £10 to £15 per hour. These costs are not included in the tables in this RIA, but they would not make a large difference to the totals.

## **ENFORCEMENT AND SANCTIONS**

189. As with the present permissioning requirement involving safety cases, railway operation will be prohibited unless an application has been made to, and accepted by HSE. The existing level of compliance with this basic provision is high. Not only is the requirement well established and known by all parties within the rail industry, it is also formally linked into the checks applied by other regulators such as the Office of the Rail Regulator (ORR) in issuing licences and Strategic Rail Authority (SRA) in issuing franchises. Liaison between SRA, ORR and HSE (or their successor bodies) will continue to be important.
190. HSE inspectors will continue to be able to call upon a range of sanctions including the use of improvement and prohibition notice (with associated appeal processes), and if appropriate prosecution. In addition, HSE inspectors will also have the power to revoke a certificate or authorisation. Revocation is expected to be a last resort reserved for the most serious cases where there is clear evidence that an organisation is unable to maintain an effective safety management system and so should no longer be allowed to operate a railway. Where revocation is under consideration there would be a right of appeal.

## **CONSULTATION (September – November 2004)**

191. The proposals for the architecture of the regulations arose from analysis of a long iterative process with rail industry stakeholders, which included their involvement in the evaluation studies on the safety case and the safety critical work regulations and which culminated in the HSC's Discussion Document (DD) "Safety on the Railway – Shaping the Future." Following the production of the DD, HSE worked towards developing the consultative document and a part of this process involved holding meetings with the Confederation of Passenger Transport, the Heritage Rail Association, the Project Steering Group with representatives from the SRA, ORR, DfT, RSSB, Passengers and Trade Unions as well as with the Safety Critical Stakeholder Working group which has representatives across the industry. The Consultative Document was launched on 6 September and throughout the consultation period HSE held further open meetings and bilaterals with interested parties. The Consultation period closed on 27 November.

192. HSE analysed the responses and presented a paper that highlighted emerging concerns of the industry on the proposed regulations to HSC on 7 December (HSC/04/132). Since the production of this paper, HSE has conducted a detailed analysis of responses for which the findings have been taken into account in the development of the final regulatory package including this regulatory impact assessment.

## **FURTHER CONSULTATION (September – November 2005)**

193. Following completion of this RIA in February 2005, a further consultation was carried out on the safety verification aspects of the draft regulations. This was in response to the Department of Transport's proposals to implement European Directives on interoperability, which included provisions for verification on the mainline railway network and therefore interface with these regulations.

194. A new approach to safety verification for these regulations was proposed, as it became clear that the interoperability procedures would be applied to a more limited scope than previously envisaged. It was therefore proposed that safety verification would be extended to cover the whole railway network, including the mainline, except where interoperability procedures applied. Further to this, the safety verification requirements would be built in to the Safety Management System, with less prescriptive requirements on process, which would reduce bureaucracy.

195. The impact of this revision has been assessed to range from cost neutral to potential cost savings of approximately £9 million, depending on the extent of the application of safety verification instead of interoperability. A summary of the impact of this revised approach, presented as a range of values, is included in Annex 1 of this RIA, but has not been incorporated into the headline figures.

## **IMPLEMENTATION OF OTHER PARTS OF THE RAILWAY SAFETY DIRECTIVE (ACCESS)**

196. The impact of providing the right of access to training facilities (Article 13 of the Railway Safety Directive) was considered as part of the initial partial Regulatory Impact Assessment (RIA) for the Railways Infrastructure (Access and Management) Regulations 2005 ("Access and Management Regulations" - SI. 2005/3049). It was originally intended that these requirements would be implemented through those Regulations. However, consultees raised concerns about the implementing provision and Department for Transport lawyers advised that the Article could not be implemented until the rest of the Safety Directive was transposed. This was because the regulation referred to terms and concepts, such as safety critical tasks, that would not legally exist until the Regulations to transpose the Safety Directive became law.

197. The relevant provisions were therefore removed from the Access and Management Regulations and their impact is not included in the final RIA for those regulations. Given that the Department is now providing access to training facilities through the Railways (Access to Training Services) Regulations, the Department has produced a stand-alone RIA, at Annex 2, drawing on material from the initial partial RIA for the Access and Management Regulations and the consultation responses.

198. The annexed stand-alone RIA mentioned above does not form part of the proposals discussed and assessed in this document. It is annexed to this document as part of a wider package to implement the Railway Safety Directive and will be incorporated into the Explanatory Memorandum for that Directive.

## **ARRANGEMENTS FOR MONITORING AND EVALUATION**

199. The current specific regulations on safety cases<sup>59</sup> and safety critical work<sup>60</sup> have been subject to evaluation by use of external contractors. The Railways Safety Case Regulations were subject to a full impact evaluation. This information will provide a baseline for future evaluation of the new regulations. A quinquennial review of the proposed regulations is expected in 2010. However, any monitoring or evaluation of the proposed regulations could be subject to change as a result of the transfer of rail safety responsibility from HSE to the Office of Rail Regulation in 2006.

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<sup>59</sup> <http://www.hse.gov.uk/research/rrhtm/rr192.htm>

<sup>60</sup> Business Strategy Group- report for the HSE-Evaluation of the Railways (Safety Critical Work) Regulations 1994. <http://www.hse.gov.uk/railways/scwreport.htm>

## SUMMARY AND RECOMMENDATION

200. The following table summarises the impact of each option. Option 7 is recommended because it reflects the changes introduced in options 1-6 and is expected to yield the greatest health and safety benefit.

Option	Total cost per annum (£ '000)		Total policy costs per annum (£ 000)		Percentage change in accidents necessary for benefits to balance costs	
	MIN	MAX	MIN	MAX	MIN	MAX
1	-1,052	-247	0	0	-0.68%	-0.16%
2	-666	74	0	0	-0.53%	0.06%
3	-622	183	15	47	-0.47%	0.14%
4	-677	490	15	47	-0.44%	0.32%
5	5,160	9,297	5,759	8,747	3.36%	6.05%
6	5,173	9,815	5,882	9,085	3.37%	6.39%
7	5,095	9,457	5,882	9,085	3.32%	6.15%

## MINISTERIAL DECLARATION

201. ['I have read the Regulatory Impact Assessment and I am satisfied that the benefits justify the costs']

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