

**INTERNAL GUIDANCE
ON COST BENEFIT
ANALYSIS (CBA) IN
SUPPORT OF SAFETY-
RELATED INVESTMENT
DECISIONS: CONCLUSIONS**

29 February 2008



OFFICE OF RAIL REGULATION

Contents

Executive Summary	1
1. Introduction	3
2. Analysis of respondents' comments	5
Analysis of respondents' comments on the use of CBA guidance	5
3. Comments outside the remit of our guidance	15
Respondents' comments that are outside ORR's regulatory remit	15
4. Review of our policy position on SFAIRP	17
ANNEX 1	19

Executive Summary

1. From 5 November 2007 to 14 January 2008, we conducted a consultation with key stakeholders from across Britain's rail industry and other interested parties on our review of our existing *Internal guidance on the use of cost benefit analysis (CBA) in support of so far as is reasonably practicable (SFAIRP) investment decisions*, which included an updated version of the guidance. We have since decided to modify this title to reduce the scope for confusion with our more general guidance on the application of SFAIRP. The new title is: *Internal guidance on the use of cost benefit analysis (CBA) in support of safety-related investment decisions*.
2. To provide context for the CBA guidance, we also made available an amended version of our *Internal guidance and general principles for assessing whether health and safety risks on Britain's railways have been reduced so far as is reasonably practicable (SFAIRP)*. While this revised some out of date material it was not subjected to a policy review, and was not a formal part of our consultation exercise. We intend to review our policy on SFAIRP in 2008-09.
3. We considered carefully the 15 responses that we received from stakeholders to our consultation – see annex 1 for a list of all respondents – and this document discusses the issues that respondents raised, and sets out ORR's response and the thinking behind our position.
4. Respondents' most significant comments fall into two broad categories concerning:
 - the treatment of costs and benefits in a CBA; and
 - wider comments on the application of health and safety law and how it is, or should be, applied by ORR.
5. Generally, we were able to reflect most respondents' comments through drafting changes. For example, we changed the introduction to the lists of costs and benefits that we would expect to see in a CBA, to make it less prescriptive. However, we did not agree with some other comments made by respondents; possibly the most significant of these is that we do not think that the decision on whether or not to 'net off' commercial benefits against costs

should be left to the discretion of the duty holder. Other points are covered in the rest of this document.

1. Introduction

- 1.1 This document sets out our conclusions on our review of *Internal guidance on the use of CBA in support of safety-related investment decisions*, and includes the final guidance, which comes into effect on 29 February 2008 – see: <http://www.rail-reg.gov.uk/server/show/nav.1118>.

Background

- 1.2 On 1 April 2006, ORR merged with the Health and Safety Executive's (HSE) HM Railways Inspectorate (HMRI) and railway safety policy functions to become the integrated economic, health and safety regulator for Britain's railways. As a part of the merger, we inherited two internal guidance documents related to the use of CBA in support of making safety decisions in respect of railways: *HSE principles for Cost Benefit Analysis (CBA) in support of ALARP decisions* and *HMRI Specific Cost Benefit Analysis (CBA) Checklist*. We also inherited *HMRI ALARP guidance and general principles*, which covered more general interpretation of health and safety law.
- 1.3 We reviewed this guidance and proposed that we should clarify that the rates used for discounting future costs and benefits in CBAs applied to commercial organisations as well as to the public sector.
- 1.4 As a result of our review we also updated the guidance to reflect the merger of railway economic and health and safety regulation. Apart from changing references from HSE to ORR, the main revisions we made were:
- using the phrase *so far as is reasonable practicable* (SFAIRP), the legal test from the *Health and Safety at Work Act*, rather than *as low as is reasonably practicable* (ALARP). The term ALARP is sometimes used to describe the legal requirement to manage health and safety risks. We, like HSE, treat SFAIRP and ALARP as amounting to the same thing, but it is preferably to use the phrase found in the relevant legislation; and
 - revising the treatment of financing costs, moving to a common price base and the removal of the rule-of-thumb gross disproportion multipliers.

Consultation

1.5 Our formal consultation¹ with a broad selection of stakeholders ran from 5 November 2007 to 14 January 2008.

Structure of this document

1.6 This document is structured as follows:

- chapter 2 analyses key comments we received from respondents as part of our consultation and sets out our conclusions;
- chapter 3 sets out the comments we received which were outside the scope of our consultation; and
- chapter 4 sets out how we intend to more generally review our policy position on SFAIRP.

¹ See Sarah Straight's letter of 5 November 2007 [<http://www.rail-reg.gov.uk/upload/pdf/risk-CBA-let-051107.pdf>]

2. Analysis of respondents' comments

Analysis of respondents' comments on the use of CBA guidance

- 2.1 We received 15 responses from respondents during our consultation – see annex 1 for a list of respondents. All 15 responses are available from our website – see: <http://www.rail-reg.gov.uk/server/show/nav.1118>.
- 2.2 It is possible to group respondents' comments on the CBA guidance into four categories:
- general comments about the guidance;
 - the treatment of costs in CBAs;
 - comments about health and safety law and how it is, or should be, applied by ORR; and
 - comments outside the scope of our consultation – see chapter 3.

General comments about the guidance

Reference to RSSB's *Taking Safe Decisions* industry guidance

Respondents' views

- 2.3 RSSB and others suggested that we make explicit reference to its "*Taking Safe Decisions*" suite of guidance documents in our guidance because it represented the heavy rail industry consensus on how safety and commercial decisions should be taken. However, light rail respondents wanted the guidance to reflect that its stakeholders extended beyond the heavy rail sector.

ORR's consideration

- 2.4 Our internal guidance and RSSB's *Taking Safe Decisions* industry guidance are different because our health and safety remit extends beyond RSSB's 'heavy rail' membership and also because it may well be that opinions of interpretations of the law differ.

- 2.5 For the convenience of users, we plan to add a weblink to RSSB's *Taking Safe Decisions* industry guidance from ORR's risk management webpage.

Limitation of ORR's role in economic regulation

Respondents' views

- 2.6 Respondents from the tram sector asked that our guidance reflect that ORR was not generally an economic regulator of Britain's light rail industry.

ORR's consideration

- 2.7 The guidance is aimed at the use of CBA in support of safety-related decisions, as reflected in its revised title, and is therefore relevant to all rail industry sectors.

The effect of economic growth on DfT's VPF

Respondents' views

- 2.8 Network Rail suggested that: *"If in future DfT [Department for Transport] was to increase the VPF [statistical value of a prevented fatality] significantly beyond that determined by economic growth, we would expect further consultation on its impact on safety cost benefit analysis"*.

ORR's consideration

- 2.9 If DfT were to increase the VPF significantly beyond that determined by economic growth then we might need to review our guidance to ensure it was still appropriate.

The treatment of costs in CBAs

The actual costs of finance

Respondents' views

- 2.10 Some respondents supported the changes we made to reflect the actual costs of financing. Other felt that market price adjustment to costs of 20.9%

(covering Value Added Tax etc) might push an investment decision slightly over the strict legal threshold.

ORR's consideration

- 2.11 We made this adjustment because we think it is right that costs and benefits are treated consistently. In fact, this modification has a limited impact when compared to the uncertainty in most cost benefit analyses and the margin of judgement required in deciding if a measure need not be undertaken because it is *grossly disproportionate*.

The costs to be included in a CBA

Respondents' views

- 2.12 Both RSSB and London Underground were concerned that the guidance on what should be included in a CBA was too prescriptive. For example London Underground said: *"The validity of certain factors in CBA may vary significantly on a case by case basis and the guidance should not constrain the legitimate application of relevant factors by appearing over prescriptive and/or detailed."*

ORR's consideration

- 2.13 We believe that the costs we have identified are the right ones for most circumstances. However we recognise the need for some flexibility and we have therefore amended the introduction to the list of costs from "These costs should include" to "In general we would expect these costs to include".

Dealing with uncertainty in CBA calculations

Respondents' views

- 2.14 RSSB and others suggested that: *“Where costs and or cost savings cannot be estimated with confidence the duty holder may judge that it is not appropriate to include them in a CBA being undertaken to support a SFAIRP decision”.*

ORR's consideration

- 2.15 We recognise that there may be uncertainties about costs used in a CBA. However, the guidance makes clear (paragraph 24) that where this is the case estimates should be used. High and low values or sensitivity analysis techniques can be used as appropriate to test confidence in the estimates used.

'Netting off' commercial benefits against costs

Respondents' views

- 2.16 Network Rail suggested that: *“The decision on whether or not to ‘net off’ commercial benefits against costs should ... be left to the discretion of the duty holder”.*

ORR consideration

- 2.17 We disagree because we believe that expenditure avoided as a result of a safety investment reduces the cost of that investment.

Comments about health and safety law and how it is, or should be, applied by ORR

The difference between safety and commercial decisions

Respondents' views

- 2.18 RSSB and others generally supported the guidance where it stated that: “A CBA cannot form the sole determinant of a SFAIRP decision...”, but wanted this expanded to explain that some decisions, while they may have some safety benefit, are actually made for business reasons, i.e. they go beyond what is required by health and safety law. For example, the installation of the European Railway Traffic Management System is expected to improve safety, but the primary driver for this upgrade is its delivery of performance and capacity benefits.
- 2.19 A respondent from the tram sector suggested that the costs listed were not applicable for decisions of a non-safety-related nature.
- 2.20 RSSB and several other respondents suggested that the text in the original draft: “*should clarify that wider commercial decisions are outside of the scope of a SFAIRP assessment and are not a concern for ORR inspectors*”. Another respondent thought that ORR would not expect that “*wider business benefits*” should be “*included in the base safety case CBA*”.
- 2.21 RSSB suggested an additional paragraph alongside the original text:
- “Duty holders may also apply a CBA approach to support decisions they make which are not necessary to meet the SFAIRP duty, but are being considered as commercially beneficial. These types of CBA might include a range of benefits, such as business benefits and possible improvements in a company’s reputation. They should not be confused with CBA undertaken in support of SFAIRP decisions and are not a concern for inspectors.”*

ORR's consideration

- 2.22 Our guidance concerns CBAs in support of decisions initiated for a safety-related purpose. We do not consider that schemes with mainly commercial

benefits need to be initiated to achieve small safety benefits and we have amended the text to make this clear (see paragraph 9).

More practical guidance on the costs to benefits ratio

Respondents' views

2.23 Passenger Focus requested more detailed practical guidance on the cost to benefit ratio that ORR would accept as part of a SFAIRP assessment.

ORR's consideration

2.24 We (and most of the rail industry and other safety regulators) have moved away from previous use of precise rule-of-thumb multipliers, towards emphasising the need to apply professional judgement on a case-by-case basis to investment decisions. Each health and safety investment decision is different; therefore simplistic algorithms (such as multiplying the VPF by a fixed number) are not a substitute for the application of professional judgement.

2.25 The legal obligation to comply with the SFAIRP test falls on duty holders because they are best placed to make such judgements. Duty holders must be satisfied on a case-by-case basis that the SFAIRP test is being met.

Fatalities and Weighted Injuries ratios

Respondents' views

2.26 RSSB and others noted that the weighting that RSSB uses for non-reportable minor injuries and Class 2 trauma events had changed from those quoted in the table in the original draft.

2.27 In addition, the tram and metro sectors commented that they used different ratios from those used by the heavy rail sector. For example, LUL use 1:100, and not RSSB's 1:200 as the ratio of fatalities to minor injuries.

ORR's consideration

- 2.28 We note that some found the table unhelpful and so we have removed it. We have added a sentence (see paragraph 13) which acknowledges that duty holders use different ratios, and as an example included the one used by London Underground.

Safety investments which give benefits beyond the end of a franchise

Respondents' views

- 2.29 RSSB and others requested a statement concerning the funding for safety measures which extend beyond the franchise period (i.e. where the CBA suggests that the investment is not *reasonably practicable* if benefits are only assumed to flow for the remainder of a franchise, but is *reasonably practicable* if benefits are assumed to flow for as long as the investment is in use).
- 2.30 RSSB suggested a new paragraph: *"Costs and benefits should be assessed over the expected life of the measure. Where a franchise is due to terminate prior to the point at which a potential investment would be justified on cost-benefit grounds, agreement will need to be obtained from the Department for Transport (DfT) as the franchising authority to establish funding arrangements to allow justifiable measure to be put in place."*

ORR's consideration

- 2.31 We do not consider that it would be appropriate to amend the guidance in this way, because CBA calculations are based on economic rather than financial principles.
- 2.32 We believe that all stakeholders would like all appropriate safety investments to be made. We are working with DfT on this issue.

Acknowledging contractual relationships in CBAs

Respondents' views

- 2.33 Network Rail suggested that the paragraph on costs *"...should be amended to acknowledge that, where contractual relationships exist, it may be appropriate for one duty holder to consider cost implications on other duty holders."*

ORR's consideration

- 2.34 We disagree. Duty holders should take account of all the appropriate costs to themselves (including the costs of compensation they pay) but not costs to others.

References to individual risk

Respondents' views

- 2.35 RSSB and others suggested that the reference to 'individual risk' in the benefits section should be removed and replaced with references to 'collective risk'.

ORR's consideration

- 2.36 We have removed the reference to 'individual risk' from the benefits section. It was included because we thought it might be helpful, but we recognise that it reduced the clarity of the text for some readers.

Gross disproportion and the *Edwards* judgment

Respondents' views

- 2.37 Lloyd's Register Group suggested that references to *gross disproportion* should be changed to 'proportionate', because a proportionate response to risks was one of the key principles of the Better Regulation Task Force. They suggested that the reason for using *grossly disproportionate* in the past was in response to the high level of uncertainty in decisions about risk management. They felt that improved risk management tools have reduced the levels of uncertainty and increased understanding of safety consequences. Lloyd's Register Group went on to suggest that: "*Any residual uncertainty can be taken into account when reviewing whether the benefits outweigh the costs when the output of the analysis lies on or about the threshold decision point.*"
- 2.38 Passenger Focus noted that the *Edwards vs. the National Coal Board* case was in 1949 and therefore predated the *Health and Safety at Work Act 1974* and that it used loose terminology and offered little guidance to health and safety duty holders. They sought further clarification on the degree of disproportion that qualifies as being 'gross'.

ORR's consideration

- 2.39 The judgment in *Edwards vs. NCB 1949* remains British law. Parliament used the phrase *reasonable practicability* in the 1974 Act, in the light of the *Edwards* judgment. If it had intended a different test it would have used different words. The *Edwards* judgment remains the law until the Courts overrule it.
- 2.40 In deciding whether the disproportion between costs and benefits is gross, we would expect duty holders to pay particular attention to the level of uncertainty in the assessment of costs and benefits, and to the range of potential safety consequences.

Benefits to third parties

Respondents' views

- 2.41 Passenger Focus noted, on the chapter on the costs included in CBAs, that "*If benefits to third parties are to be included it seems odd that costs ...are not to be taken into account.*" Also, "*Because of the complex contractual structure involved... costs of related parties need to be included. A proposed change may have cost implications for owner, operator and maintainer with only one being the duty holder.*"

ORR's consideration

- 2.42 We disagree. We consider our approach to be correct and consistent with the legal test because the assessment compares the net costs, to the duty holders, against the safety benefits to society.

3. Comments outside the remit of our guidance

Respondents' comments that are outside ORR's regulatory remit

3.1 Some respondents asked questions and made suggestions that go beyond the scope of our guidance note.

Non-safety investment appraisal criteria

Respondents' views

3.2 The tram sector said that some non-safety investment decisions are “governed by DfT or other governmental appraisal methods which may vary from ORR's approach”. These investment decisions must be made against the applicable appraisal criteria.

ORR's consideration

3.3 We recognise that other appraisal methods may be appropriate for decisions initiated for non-safety-related purposes; ORR's guidance concerns the use of CBA in support of safety-related decisions on Britain's railways.

Discounted cash flows

Respondents' views

3.4 A respondent from the tram sector said: “Discounted cash flow calculations have to be done in appropriate way using the rates appropriate to parties. It cannot be correct to always use government discount rates.”

ORR's consideration

3.5 We recognise that non-safety discounted cash flow calculations may use different rates as appropriate. The advice provided in our guidance is aimed at explaining to ORR's inspectors how to use discount rates in CBAs that have been done to inform safety-related decisions. Safety investments are required

because they give benefits to society not just to the parties involved in a commercial decision; therefore societal discount rates should be used.

Other uses for CBAs

Respondents' views

- 3.6 Lloyd's Register Group suggested that the section on comparison of costs and benefits and judgement of SFAIRP *"should recognise that decisions are not made in isolation and that one of the benefits of the output of this [cost benefit] analysis is the ability to prioritise spend and resources on the areas with the best safety payback"*.

ORR's consideration

- 3.7 We agree that decisions are often not made in isolation. However, our guidance refers to those investments made for a safety-related purpose, i.e. those taken wholly or mainly for safety-related reasons.

4. Review of our policy position on SFAIRP

Review of ORR's *Internal guidance and general principles for assessing whether health and safety risks on Britain's railways have been reduced so far as is reasonably practicable*

- 5.1 In order to provide context to our consultation on the amended *Internal guidance on the use of cost benefit analysis (CBA) in support of safety-related investment decisions guidance*, we also provided an amended version of our *Internal guidance and general principles for assessing whether health and safety risks on Britain's railways have been reduced so far as is reasonably practicable* (the *SFAIRP guidance*). This document provides more general guidance to ORR's inspectors on how we approach health and safety law and related principles.
- 5.2 Several respondents made comments on the *SFAIRP guidance* and on other wider matters related to the application of SFAIRP. We intend to consider these as part of our policy review of SFAIRP in 2008-09.

ANNEX 1

Respondents to ORR's consultation on ORR's Internal guidance on cost benefit analysis (CBA) in support of safety-related investment decisions

1	Neil Scales	Merseytravel
2	Edmund Cullen	Department for Transport (DfT)
3	Anson Jack	Rail Safety and Standards Board (RSSB)
4	David Weir	Association of Train Operating Companies (ATOC) and all 24 of its Train Operating Companies
5	Phil Agulnik	Health and Safety Executive (HSE)
6	David Burton	London Underground Limited (LUL)
7	Chris Wadey	Angel Trains
8	Richard Gostling	Railway Industry Association (RIA)
9	Rod Reid	Network Rail
10	Andrew Edwards	South West Trains
11	John Cartledge	London TravelWatch
12	Paul Cheeseman	Lloyd's Register Group
13	Chris Moss	HSBC
14	P. G Hewitt	UK Tram (and its members)
15	Charles Tomlinson	Tramtrack Croydon Ltd