Office of Rail Regulation

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Draft Monitoring Report 1 – Baseline Data Collection 2006/07

BOMEL CONSULTANTS

OFFICE OF RAIL REGULATION

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CONTENTS

EXECUTIVE SUMMARY			**vi**
1.	**INTRODUCTION AND BACKGROUND**		**1**
	1.1	INTRODUCTION	1
	1.2	CONTEXT OF THE STUDY	1
	1.3	PROJECT OBJECTIVES	1
	1.4	SCOPE OF WORK (MONITORING REPORT 1)	2
	1.5	SCOPE OF THIS REPORT (MONITORING REPORT 1)	2
2.	**EVALUATION APPROACH**		**4**
	2.1	INTRODUCTION	4
	2.2	OVERARCHING PROJECT METHODOLOGY	4
	2.3	EVALUATION PLAN	5
	2.4	LINKING OUTCOME MEASURES TO THE OBJECTIVES OF THE ROGS	6
	2.5	ESTABLISHING THE BASELINE	8
	2.6	ESTABLISHING THE COUNTERFACTUAL	9
	2.7	IDENTIFYING THE CONFOUNDING FACTORS	9
	2.8	COST-BENEFIT ANALYSES	9
3.	**MONITORING AND EVALUATION PLAN**		**11**
	3.1	INTRODUCTION	11
	3.2	STAKEHOLDER BRIEFING WORKSHOP	11
	3.3	DEVELOPMENT OF ROGS OBJECTIVES	11
	3.4	MONITORING AND EVALUATION PLAN	14
4.	**BASELINE EXISTING INFORMATION REVIEW**		**19**
	4.1	INTRODUCTION	19
	4.2	RAILWAY SAFETY REGULATION	19
	4.3	RAILWAY INDUSTRY STRUCTURE	20
	4.4	RAIL INDUSTRY SAFETY PERFORMANCE DATA 2006	22
	4.5	REVIEW OF COST DATA	31
5.	**BASELINE INFLUENCE NETWORK WORKSHOP**		**42**
	5.1	INTRODUCTION	42
	5.2	WORKSHOP METHODOLOGY	42
	5.3	WORKSHOP PARTICIPANTS	45
	5.4	DETAILED FINDINGS	46
	5.5	CONCLUSIONS	57
6.	**BASELINE ROGS SURVEY**		**58**
	6.1	INTRODUCTION	58
	6.2	DEVELOPMENT OF THE SURVEY	58
	6.3	PRESENTATION OF FINDINGS	60
	6.4	SURVEY SAMPLE	62
	6.5	SURVEY FINDINGS – COMPLETED BY ALL SURVEY RESPONDENTS	63
	6.6	SURVEY FINDINGS – COMPLETED BY DUTY HOLDERS ONLY	75
	6.7	SUMMARY OF SURVEY FINDINGS	105

7. CONCLUSIONS AND FINAL ROGS BASELINE MEASURE 2006/07 113
7.1 INTRODUCTION 113
7.2 MAPPING BASELINE DATA TO ROGS OBJECTIVES AND OUTCOME MEASURES 113
7.3 DETAILED MAPPING 121

8. REFERENCES 132

APPENDIX A INFLUENCE NETWORK BRIEFING NOTE TO PARTICIPANTS

APPENDIX B ROGS BASELINE SURVEY ISSUED TO INDUSTRY

GLOSSARY OF TERMS

- **Duty holder** – refers to a transport operator (or 'undertaking') with a duty to comply with some or all of the elements of ROGS. These transport operators include: mainline railways; non-mainline railway and other transport systems operating above 40kph (for example, light rail, metro systems); non-mainline railway and other transport systems operating below 40kph (for example, heritage railway); tramways; some types of sidings; work in engineering possessions; and work in depots.

- **Non-duty holder** – a rail oriented organisation working in the rail industry that does not have a duty to comply with any element of ROGS. for example, passenger groups or trade unions.

- **Organisation** – the term organisation is used to refer to all organisations operating within the rail industry, whether or not they have a duty to comply with ROGS.

EXECUTIVE SUMMARY

INTRODUCTION

This report has been prepared by BOMEL Limited (BOMEL) for the Office of Rail Regulation (ORR) and describes the first stage in a project designed to monitor and evaluate the performance and impact of the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS). ROGS are a set of national regulations which define the safety management regime adopted across all UK rail companies from October 2006. This report presents the collection and development of a baseline measure, against which future performance data will be compared.

EVALUATION APPROACH AND OBJECTIVES

ORR commissioned BOMEL to carry out the project to collect a range of performance measures including safety performance, safety culture and cost data over a three-year period. This will start with the collection of a robust baseline measure. At the end of this three-year period the data will be fully evaluated to determine the nature and extent of any identifiable changes which may be attributable to the introduction of the new regulatory regime. A value for money exercise will also be undertaken.

In order for ORR to have confidence in the evaluation findings, the overall evaluation approach must be robust and in line with Government recommended best practice for conducting evaluations. In planning and conducting the evaluation, the following will be identified:

- **The underlying objectives of the ROGS** against which its impact is to be measured.
- **The key outcome measures** associated with each of these objectives. For ROGS to be considered to have made an impact, positive indicators of these outcome measures will need to be sought as part of the evaluation.
- **The baseline measure** against which the potential impact of ROGS has to be measured.
- **The counterfactual** which provide an indication of what would have happened if ROGS had not been implemented.
- **The costs and benefits** associated with the implementation of ROGS, and how these may best be evaluated against the counterfactual.

In considering the required evaluation approach, the overarching project objectives are to:

1. Develop a plan for the monitoring and evaluation of ROGS that enables clear and robust conclusions to be reached, reflecting the impact on all categories of duty holder for each objective of ROGS.
2. Establish a robust baseline making best use of the data already available.
3. Gather data at several points in time in relation to impact, confounding factors and cost.
4. Analyse and evaluate the data to assess the effectiveness of ROGS in terms of value for money.

5. Produce an evaluation report based on the data gathered, drawing out lessons to be learnt and providing conclusions on the effectiveness of ROGS and recommendations in terms of the role of the ORR.

This current report addresses and reports on Objective 1 and Objective 2.

ROGS OBJECTIVES

To be able to develop a comprehensive evaluation plan detailing outcome measures and associated indicator data, a clear set of ROGS objectives have been set down. These objectives were based on the original aims for ROGS as documented in the related literature.

The ultimate objective of ROGS is to:

Maintain national standards of rail safety in line with EU requirements and strive for continuous improvement

This ultimate objective translates into the following five intermediate objectives and subsidiary intermediate objectives for ROGS:

1. Implement a large part of the safety management provisions of the EC Railway Safety Directive (RSD) (2004/49/EC), which is intended to harmonise the approach to regulating railway safety across the European Union (EU). This will include having a common approach to safety across the EU covering both passenger and worker safety.

    1a. transfer the mainline rail industry from a system of railway safety cases to a system of safety certification and authorisation

    1b. ensure that the UK can respond to Common Safety Targets (CSTs) in the future, to be achieved through Common Safety Methods set by the European Rail Agency

2. Simplify domestic UK rail safety Regulatory structure by replacing three sets of regulations with one.

    2a. reduce the number of railway operators that have to seek formal permission from the safety regulator to work on the railway

    2b. 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

    2c. change the distribution of HMRI inspector resource from the 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

3. Place a duty on operator companies and infrastructure managers to co-operate and ensure that the interface (in its widest sense) is being managed effectively to ensure system safety.

    3a. transport operators and infrastructure managers need to work together to ensure system safety

3b. transport operators should identify appropriate forms of co-operation that complement the measures they are taking to comply with their own safety duties

4. Extend broadly similar requirements to railways not covered by the RSD ("non-mainline railways"), as well as to some other guided transport systems.

4a. for the parts of the railway industry outside the mainline railway (i.e. the non-mainline railway including 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

4b. replace this requirement with a more targeted requirement on duty holders to obtain safety verification from an independent competent person

5. Replace the Safety Critical Work Regulations 1994 (SCWR) and implement requirements on those carrying out all types of safety critical work. Under ROGS the legal scope has increased as a wider range of work is now covered.

5a. 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

5b. safety critical tasks must be carried out by a person assessed as being competent and fit for work

5c. remove the requirement for safety critical workers to carry a formal means of identification

5d. require a change in approach from simply controlling the number of hours for preventing fatigue to one of requiring arrangements to be implemented that control risks from a wide number of factors, such as the pattern of working hours and roster design

These objectives formed the basis for the development of the overarching monitoring and evaluation plan. Each objective spawned a set of outcome measures. These outcome measures are items that we would expect to see occur and / or change if ROGS are achieving their overall aims and objectives. Alongside each set of outcome measures information is therefore required in order to assess the extent to which the ROGS objectives have been achieved.

MONITORING AND EVALUATION PLAN

In order that the project collects the appropriate outcome indicator data from a range of sources (to allow for later triangulation of findings) an evaluation plan was developed to guide the information gathering activities. This plan is presented in the following table and refers to the ROGS intermediate objectives and subsidiary intermediate objectives outlined in the section above. Next to each set of intermediate objectives it is indicated where information will be collected to indicate the extent to which they have been achieved.

Overarching Monitoring and Evaluation Plan

Ultimate objective		**Data source**					
"Maintain national standards of rail safety in line with EU requirements and strive for continuous improvement only where reasonably practicable"							
Intermediate objective	**Subsidiary intermediate objectives**	**HMRI / ORR data**	**RSSB Annual Safety Performance Report**	**Cost data (existing RSCR and new ROGS)**	**ROGS specific survey**	**Safety culture survey**	**Influence Network Workshop**
1.	**1a.**	✓	-	-	✓	-	-
	1b.	✓	✓	-	-	-	-
2.	**2a.**	✓	-	-	✓	-	-
	2b.	✓	-	✓	✓	-	✓
	2c.	✓	-	-	✓	-	✓
3.	**3a.**	-	-	-	✓	-	✓
	3b.	-	-	-	✓	-	✓
4.	**4a.**	✓	-	-	✓	-	✓
	4b.	-	-	-	✓	-	✓
5.	**5a.**	-	-	-	✓	-	✓
	5b.	-	-	-	✓	✓	✓
	5c.	✓	-	✓	✓	-	-
	5d.	-	-	-	✓	-	✓

Key:
✓ = indicator data should be obtained from this source
- = indicator data unlikely to be obtained from this source

ESTABLISHING THE 2006/07 BASELINE

In order to establish the 'state of play' prior to ROGS fully coming into force, a baseline measure of the key outcome measures was collected. This involved gathering information from various data sources as specified in the evaluation plan presented above. The following two approaches were adopted to gather the baseline data:

- A desktop review of existing information (including (but not limited to) a review of the RSCR evaluation and survey cost data and RSSB and ORR safety performance data)

- Primary research with representative rail industry stakeholders (e.g. ROGS and safety culture survey and an Influence Network workshop)

This current report presents the baseline data gathered. At the end of this three-year period data will be compared against this baseline measure in order to determine the nature and extent of any identifiable changes that are likely to be attributable to the introduction of the new regulatory regime.

EARLY FINDINGS

This current study was designed to develop a baseline measure against which future data could be compared. However, in conducting the ROGS survey with representative rail industry stakeholders, some early indicative feedback was gathered with regard to the potential impact of ROGS. These key early findings were as follows:

- The largest percentage (50% - 13 out of 26) of respondents to the ROGS survey felt ROGS had already changed the way safety is managed in their organisation.

- Reasons given to explain why ROGS had changed the way safety was managed included: creating the need for better company standards rather that the content of the Railway Safety Case; increased focus on certain specific issues such as managing fatigue in safety critical workers; review of existing systems with a fresh pair of eyes; and placing a greater requirement on the organisation to have a robust SMS in place.

- The majority (54% - 14 out of 26) of survey respondents felt ROGS had made a difference to safety related decision making. For example, ROGS had initiated a review of change management processes, helped companies with prioritisation, and refocused efforts in the areas of safety critical work, licensing and fatigue.

- Reasons given to explain why ROGS had made a difference to safety related decision making included: provided help with prioritisation; led to a review of internal management of change processes; and caused some minor changes to safety decision criteria and safety cost benefit models, arising from ORR's assessment of SMS.

- The majority (69% - 18 out of 26) of respondents agreed or strongly agreed that standards of safety have, so far, been maintained under ROGS.

- The majority (77% - 20 out of 26) of survey respondents felt that the help and support received from ORR had been either excellent or good.

1. INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

This report has been prepared by BOMEL Limited (BOMEL) for the Office of Rail Regulation (ORR) and describes the first stage in a project designed to monitor and evaluate the performance and impact of the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS).

1.2 CONTEXT OF THE STUDY

The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) define the safety management regime adopted across all UK rail companies from October 2006. The Office of Rail Regulation (ORR) wanted to establish monitoring and evaluation arrangements for ROGS to monitor and evaluate both their performance and their overall impact. In order to conduct this effectively ORR commissioned BOMEL to carry out the project which involves collecting and developing a baseline measure, followed by three further data collection activities over a three-year period. A range of performance measures will be gathered including: safety performance; indicators of safety culture; and cost data and these will be analysed to assess whether there have been any noticeable changes in the rail industry which may be attributable to the introduction of the new regulatory regime.

1.3 PROJECT OBJECTIVES

The overarching objectives of the three-year monitoring and evaluation project are to:

1. Develop a plan for the monitoring and evaluation of ROGS that enables clear and robust conclusions to be reached, reflecting the impact on all categories of duty holder for each objective of ROGS.

2. Establish a robust baseline making best use of the data already available.

3. Gather data at several points in time in relation to impact, confounding factors and cost.

4. Analyse and evaluate the data to assess the effectiveness of ROGS in terms of value for money.

5. Produce an evaluation report based on the data gathered, drawing out lessons to be learnt and providing conclusions on the effectiveness of ROGS and recommendations in terms of the role of the ORR.

This current report addresses and reports on Objective 1 and Objective 2.

1.4 SCOPE OF WORK (MONITORING REPORT 1)

Development of an overarching monitoring and evaluation plan and collection of a baseline measure is translated into a series of structured work activities, as follows:

1. **Develop evaluation plan** – identify ROGS objectives and link to outcome indicators in order to assess ROGS performance and impact.

2. **Review existing baseline data** - make the best use possible of existing data to develop a baseline.

3. **Influence Network (IN) workshop** - obtain a baseline qualitative risk profile by the use of an Influence Network workshop.

4. **Baseline ROGS survey** - obtain a baseline for ROGS specific and cultural issues via a questionnaire based survey.

5. **Reporting** - issue an Interim Report to ORR.

This current report constitutes Activity 5.

1.5 SCOPE OF THIS REPORT (MONITORING REPORT 1)

The project objectives and associated work activities have been addressed throughout this report as follows:

- Section 2 describes the overarching evaluation approach.

- Section 3 presents the initial evaluation plan; developed to structure the evaluation process.

- Section 4 presents the main findings from the review of existing information.

- Section 5 describes the Influence Network workshop held with key rail industry representatives and designed to gather a qualitative profile of safety in the rail industry.

- Section 6 outlines the findings from the ROGS baseline survey. This includes a collection of data on safety performance, indicators of safety culture, and cost.

- Section 7 gathers findings from all the data gathering activities and maps them against ROGS objectives and outcome measures, therefore presenting a final baseline measure for 2006/07.

- Section 8 highlights the references used in this report.

- Appendix A contains a copy of the Influence Network briefing note issued to workshop participants.

- Appendix B contains a copy of the ROGS baseline survey issued to industry.

2. EVALUATION APPROACH

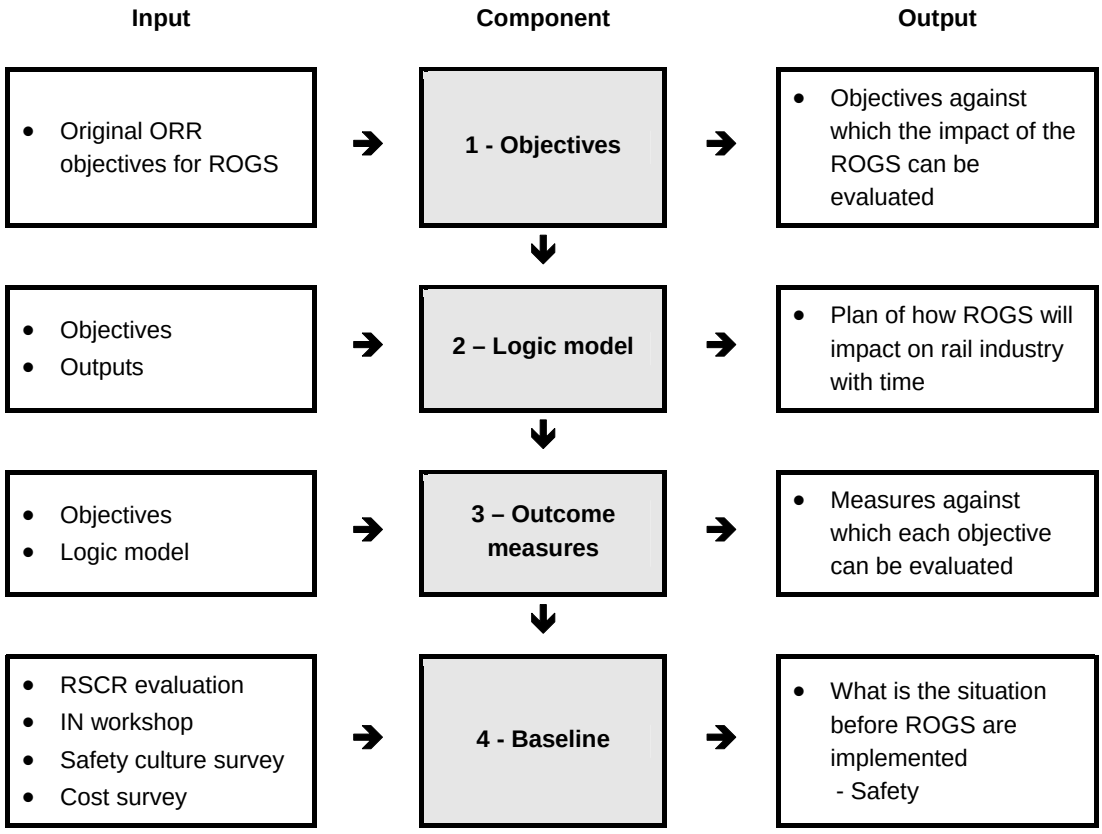
2.1 INTRODUCTION

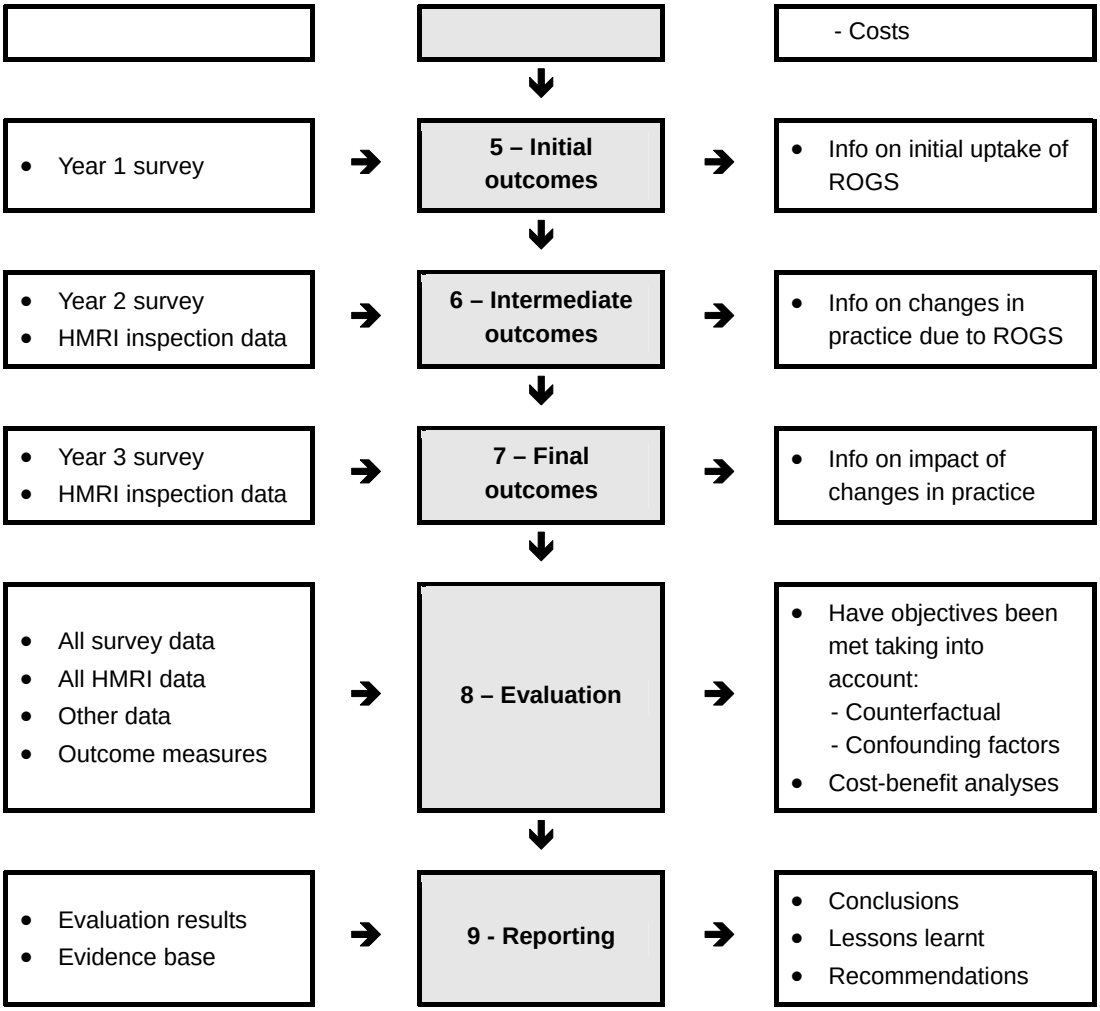
In order to monitor and evaluate the performance and impact of ROGS it is important that the overall evaluation approach adopted is robust and in line with Government recommended best practice for conducting evaluations. In the absence of a robust approach, ORR will not be able to have full confidence in the evaluation findings. To put this first Monitoring Report and subsequent reports in context, this following section outlines the overall approach that will be adopted across the full three-year period of the evaluation.

2.2 OVERARCHING PROJECT METHODOLOGY

The monitoring and evaluation project will span across a three-year period, starting with the development of an overarching evaluation plan and collection of baseline data (Monitoring Report 1), followed by further data gathering activities in Year 1, 2 and 3. Information (or 'output') from each stage of the evaluation project will feed into (or 'input') the next stage. Ultimately all of the information gathered over time will be analysed to assess the extent to which ROGS have achieved their overall aims and objectives, and whether they can be considered value for money. Figure 1 highlights this overarching evaluation project methodology.

Figure 1 Overarching evaluation project methodology





The project activities addressed and presented within this current Monitoring Report 1 reflect the first four components within Figure 1, from outlining the objectives to developing the baseline. Subsequent monitoring reports will address the remaining components in Figure 1.

2.3 EVALUATION PLAN

The Treasury in the *Green Book – Appraisal and Evaluation in Central Government* indicates that an evaluation should include:

- An assessment, quantified, where possible, of what happened.
- A comparison with the outturn target.
- A comparative assessment of one or more counterfactuals (in this case what would have happened without the implementation of ROGS).

The *Green Book* then suggests that:

"The evaluation should assess the success of the project, programme or policy in achieving its objectives, and also how this achievement has contributed to wider outcomes. If the objectives were not achieved, the evaluation should establish why that was the case."

The *Green Book* requires the results of an evaluation to address:

- Why the outturn differed from that foreseen in the appraisal.
- How effective the activity was in achieving its objectives, and why.
- The cost effectiveness of the activity.
- What the results imply for future management or policy decisions.

In planning an evaluation, it is essential to identify:

- **The underlying objectives of ROGS** against which its impact has to be measured.
- **The key outcome measures** associated with each of these objectives. For ROGS to be considered to have made an impact, positive indicators of these outcome measures will need to be sought as part of the evaluation.
- **The baseline** against which the potential impact of ROGS has to be measured.
- **The counterfactual** which provides an indication of what would have happened if ROGS had not been implemented.
- **The costs and benefits** associated with the implementation of ROGS, and how these may best be evaluated against the counterfactual.

2.4 LINKING OUTCOME MEASURES TO THE OBJECTIVES OF THE ROGS

ROGS will have one 'Ultimate Objective' and, underpinning this, a series of 'Intermediate Objectives'. To ascertain whether ROGS have been effective in meeting these Intermediate Objectives, a series of outcome measures are required for each objective. These outcome measures are intended to relate to the key factors which, if achieved, indicate that the outcome of ROGS has met both the Ultimate Objective and the Intermediate Objectives. In order to provide a robust evaluation, the data will be taken from several data sources to provide triangulation. This is the approach used successfully in the evaluation of the Railway (Safety Case) Regulations 2000 (RSCR), and is illustrated in Figure 2.

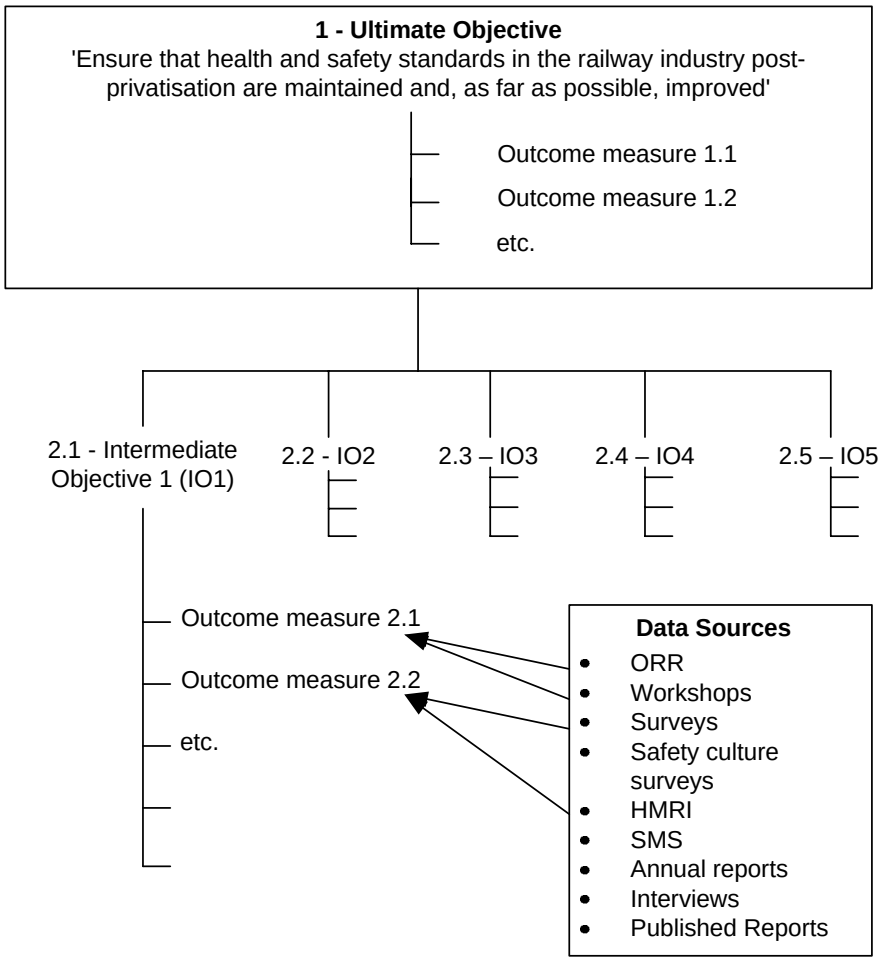


Figure 2 Linking outcome measures to objectives

Best practice in evaluation as defined by the Treasury requires the outcome measures to be:

- Specific
- Measurable
- Achievable
- Relevant
- Time-bound

Whilst a wide range of outcome measures may be identified, it is good practice to limit the number of outcome measures for each objective to around two or three.

In an ideal world, ROGS would have an immediate effect on the rail industry. However, given the high-level nature of the requirement of ROGS and the time that it takes for the effects of changes to take place, the impact route will be less direct, as shown in Figure 3. The monitoring and evaluation plan needs to be designed to identify and assess these intermediate steps involved in ROGS making an impact.

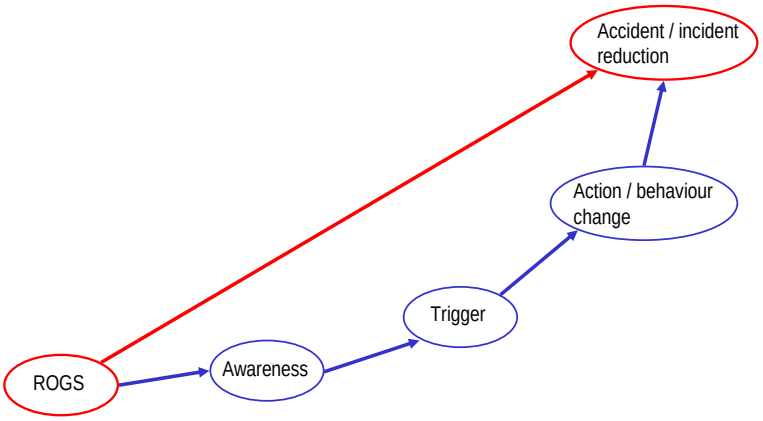


Figure 3 The impact route for the ROGS

BOMEL's preferred approach is to develop an Intervention Logic Model, enabling identification of the types of issues that will need to be identified as part of the evaluation. The framework of the Intervention Logic Model is shown in Table 1.

Table 1 Intervention Logic Model for ROGS

Steps in the Intervention Logic Model	Comments
What are the inputs?	• The resources that could be used elsewhere • Costs of implementing ROGS
What are the outputs?	• What activities are taking place and who is involved • Contents of the SMS, training, communication
What do we expect the initial outcomes to be?	• Changes in knowledge, awareness, etc.
What do we expect the intermediate outcomes to be?	• Changes in behaviour such as improved cooperation; risk based approaches to SMS, initial integrity and safety critical work reduction in exposure to risks
What impact on outcome targets do we expect?	• No rise in the number of incidents and accidents • Implementation of the RSD • Stable, mature SMS systems • Reduced barriers to trade • System Safety Maintenance

2.5 ESTABLISHING THE BASELINE

The baseline against which the impact of the ROGS will be evaluated essentially has three components:

- The costs of complying with the previous RSCR regime.

- The risk profile / safety performance of the rail industry before ROGS fully came into force.

- The attitudes of the rail industry towards the broader issues (including safety culture and co-operation) before ROGS fully came into force.

2.6 ESTABLISHING THE COUNTERFACTUAL

The counterfactual can be viewed as what would have happened if ROGS had not been introduced. In such a case, it is likely that the existing regulatory framework (the Railway Safety Case Regulations (RSCR)) would have continued.

A reasonable assumption would be to assume that the risk and safety profile would have remained reasonably constant from the level achieved with the RSCR since the RSCR were first introduced in 1994 and amended in 2000, 2001 and 2003. The RSCR evaluation results would thus form the counterfactual for the evaluation of ROGS.

2.7 IDENTIFYING THE CONFOUNDING FACTORS

The confounding factors are those factors that may have an impact on the overall objectives of ROGS, but are not necessarily a result of ROGS. The net impact of ROGS is thus the TOTAL impact MINUS the impact of the confounding factors. Confounding factors can usually be identified, however, it is more challenging to evaluate the exact extent of their impact. These factors must therefore be borne in mind when designing the evaluation activities.

2.8 COST-BENEFIT ANALYSES

The costs of complying with ROGS will be collected at a number of stages for a range of duty holders. These costs will need to be combined to provide:

- An estimate of the costs of complying with ROGS at each stage of implementation for each type of duty holder.

- An estimate of the costs of complying with ROGS for the rail industry as a whole.

It is important to note that this evaluation will be judged in light of the NET costs to the rail industry of implementing the ROGS, NOT the TOTAL costs. The NET costs can be estimated as follows:

$$\textit{Net cost} = \textit{Total cost of complying with ROGS} - \textit{Baseline costs of complying with RSCR}$$

The benefits will be estimated from the value of prevented fatalities over the period of the evaluation. The approach used in the evaluation of the RSCR will be used whereby:

Value of fatalities	=	*Average number of fatalities per significant train incident*	x	*Predicted number of significant train incidents*	x	*Average million train miles*	x	*Value of preventing a fatality*

As with the costs, the benefits will be taken as the NET benefit that can be associated with implementing ROGS, NOT the TOTAL benefits. **The NET benefits can be estimated as follows:**

$$Net\ benefit = Total\ benefit\ since\ implementation\ of\ ROGS - Counterfactual$$

In this way, a correction is made for the benefits that would have happened anyway if ROGS had not been implemented.

The costs and benefits will be judged against the following criteria:

- The costs to industry in implementing ROGS are not in gross disproportion to the benefits gained.

- The costs do not exceed (or are similar) to the attributed monetary benefits.

Ranges of the cost and benefit estimates will be presented in order to ascertain to what extent these criteria have been satisfied. Both tangible and intangible costs and benefits will be addressed where appropriate and compatible with the data received.

3. MONITORING AND EVALUATION PLAN

3.1 INTRODUCTION

The development of an overarching evaluation plan is imperative in ensuring the most appropriate outcome data is collected to provide an indication of the extent to which ROGS have met their intended aims and objectives. This following section presents ROGS overarching and subsidiary objectives, and maps this against a plan of where the appropriate outcome data will be collected during the term of the evaluation study. This section also includes an overview of the introduction of this evaluation project to the rail industry.

3.2 STAKEHOLDER BRIEFING WORKSHOP

Much of the outcome data that will be collected to assess the extent to which ROGS have met their aims and objectives will be collected from rail industry stakeholders. It was therefore important that BOMEL and ORR briefed key stakeholders about the project in its earliest stages to gain their early buy-in and support and generate the quantity and quality of outcome data required.

In order to brief key stakeholders BOMEL attended an Industry Liaison Group meeting chaired by ORR on 11th May 2007 at the Association of Train Operating Companies (ATOCs) offices in central London. The meeting was used by BOMEL to:

- **Introduce the evaluation and monitoring project** – so that the industry is aware of the project and appreciates its rationale and value.
- **Outline the evaluation plan** – and receive feedback from the stakeholders.
- **Outline the key ROGS objectives** - and receive feedback from the stakeholders.
- **Facilitate industry buy-in to the project** - and establish dialogue with stakeholders.
- **Seek information** - to enhance / supplement data collected from ORR.
- **Seek survey participants** – to ensure stakeholders are expecting to receive the ROGS survey and are willing to take part.
- **Seek participants** – in particular, for attendance at the Influence Network workshop.

3.3 DEVELOPMENT OF ROGS OBJECTIVES

3.3.1 Introduction

To be able to develop a comprehensive evaluation plan detailing outcome measures and associated indicator data, a clear set of ROGS objectives needed to be set down. To ensure

these objectives were based on the original aims for ROGS, related literature was reviewed. It was also critical that the objectives were agreed by ORR, as these objectives will spawn a set of outcomes measures and thus shape the overall evaluation project. The success of ROGS will then be evaluated on the basis of the data collected which indicate the extent to which its outcomes have been met.

3.3.2 Literature reviewed

To ensure that the objectives for ROGS were based firmly in the original aims and objectives as stated in the early literature surrounding their conception, the following sources of literature were reviewed:

- Office of Rail Regulation (ORR). *Invitation to Tender: For The Provision of Consultancy Services for the Monitoring and Evaluation of Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS)*, Reference: ORR/CT/334/MEROT, December 2006[1]

- Office of Rail Regulation (ORR). *The Railways and Other Guided Transport Systems (Safety) Regulations 2006: Guidance on Regulations*, April 2006[2]

- Regulatory Impact Assessment (Final). *Railways and Other Guided Transport Systems (Safety) Regulations 2006*, Annex B, http://www.rail-reg.gov.uk/upload/pdf/rogs-ria.pdf[3]

- ROGS Implementation Briefing, *Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS), Implementation Briefing*, December 1 2006[4]

3.3.3 ROGS objectives

Considering the ROGS aims and objectives outlined in the literature highlighted above, the following set of aims and objectives were identified by BOMEL, and agreed by ORR.

The overarching aim of the Railway Safety Directive (RSD) is to:

Meet the EU objective to improve the competitiveness of rail as a transport mode in order that it can compete with other transport modes (and in turn will reduce the environmental impact of transport)[3,4] and to be part of a single European railway[3]

The **ultimate objective** of ROGS is to:

Maintain national standards of rail safety in line with EU requirements[3] and strive for continuous improvement

This ultimate objective translates into the following five **intermediate objectives** and **subsidiary intermediate objectives** for ROGS:

1. Implement a large part of the safety management provisions of the EC Railway Safety Directive (RSD) (2004/49/EC), which is intended to harmonise the approach to regulating railway safety across the European Union (EU)[2,3]. This will include

having a common approach to safety across the EU covering both passenger and worker safety[3].

1a. transfer the mainline rail industry from a system of railway safety cases to a system of safety certification and authorisation[3].

1b. ensure that the UK can respond to Common Safety Targets (CSTs) in the future, to be achieved through Common Safety Methods set by the European Rail Agency[3].

2. Simplify domestic UK rail safety Regulatory structure[4] by replacing three sets of regulations with one.

2a. reduce the number of railway operators that have to seek formal permission from the safety regulator to work on the railway[3]

2b. 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[3]

2c. change the distribution of HMRI inspector resource from the 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[3]

3. Place a duty on operator companies and infrastructure managers to co-operate and ensure that the interface (in its widest sense) is being managed effectively to ensure system safety[1].

3a. transport operators and infrastructure managers need to work together to ensure system safety[1]

3b. transport operators should identify appropriate forms of co-operation that complement the measures they are taking to comply with their own safety duties[1]

4. Extend broadly similar requirements to railways not covered by the RSD ("non-mainline railways"), as well as to some other guided transport systems[2].

4a. for the parts of the railway industry outside the mainline railway (i.e. the non-mainline railway including 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[3]

4b. replace this requirement with a more targeted requirement on duty holders to obtain safety verification from an independent competent person[3]

5. Replace the Safety Critical Work Regulations 1994 (SCWR) and implement requirements on those carrying out all types of safety critical work. Under ROGS the legal scope has increased as a wider range of work is now covered.

5a. 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[3]

5b. safety critical tasks must be carried out by a person assessed as being competent and fit for work[1]

5c. remove the requirement for safety critical workers to carry a formal means of identification[3]

5d. require a change in approach from simply controlling the number of hours for preventing fatigue to one of requiring arrangements to be implemented that control risks from a wide number of factors, such as the pattern of working hours and roster design.

3.4 MONITORING AND EVALUATION PLAN

After having set down the ultimate and intermediate objectives for ROGS, it was possible to develop up an outline monitoring and evaluation plan. This plan mapped the data sources against each of the intermediate objectives to illustrate where data could be obtained that would provide an indication of the extent to which each objective had been achieved. The evaluation plan and mapping process is presented in Table 2.

It should be noted that at this stage clear outcome measures have not been included. These are presented in Section 7.

Table 2 Evaluation Plan: mapping ROGS objectives against data sources

Ultimate objective		**Data source**					
"Maintain national standards of rail safety in line with EU requirements and strive for continuous improvement"							
Intermediate objective	**Subsidiary intermediate objectives**	**HMRI / ORR data**	**Safety performance data**	**Cost data (existing RSCR and new ROGS)**	**ROGS specific survey**	**Safety culture survey**	**Influence Network Workshop**
1. Implement a large part of the safety management provisions of the EC Railway Safety Directive (RSD) (2004/49/EC), which is intended to harmonise the approach to regulating railway safety across the European Union (EU). This will include having a common approach to safety across the EU covering both passenger and worker safety.	1a. transfer the mainline rail industry from a system of railway safety cases to a system of safety certification and authorisation	✓	-	-	✓	-	-
	1b. ensure that the UK can respond to Common Safety Targets (CSTs) in the future, to be achieved through Common Safety Methods set by the European Rail Agency	✓	✓	-	-	-	-
2. Simplify domestic UK rail safety Regulatory structure by replacing three sets of regulations with one.	2a. reduce the number of railway operators that have to seek formal permission from the safety regulator to work on the railway	✓	-	-	✓	-	-
	2b. 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	✓	-	✓	✓	-	✓

Ultimate objective		Data source					
"Maintain national standards of rail safety in line with EU requirements and strive for continuous improvement"							
Intermediate objective	**Subsidiary intermediate objectives**	**HMRI / ORR data**	**Safety performance data**	**Cost data (existing RSCR and new ROGS)**	**ROGS specific survey**	**Safety culture survey**	**Influence Network Workshop**
	2c. change the distribution of HMRI inspector resource from the 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	✓	-	-	✓	-	✓
3. Place a duty on operator companies and infrastructure managers to co-operate and ensure that the interface (in its widest sense) is being managed effectively to ensure system safety.	3a. transport operators and infrastructure managers need to work together to ensure system safety	-	-	-	✓	-	✓
	3b. transport operators should identify appropriate forms of co-operation that complement the measures they are taking to comply with their own safety duties	-	-	-	✓	-	✓
4. Extend broadly similar requirements to railways not covered by the RSD ("non-mainline railways"), as well as to some other guided transport systems.	4a. for the parts of the railway industry outside the mainline railway (i.e. the non-mainline railway including 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	✓	-	-	✓	-	✓
	4b. replace this requirement with a more targeted requirement on duty holders to obtain safety verification from an independent competent person	-	-	-	✓	-	✓
5. Replace the Safety Critical Work Regulations 1994 (SCWR) and implement requirements on those carrying out all types of safety critical work.	5a. 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	-	-	-	✓	-	✓

Ultimate objective		Data source					
"Maintain national standards of rail safety in line with EU requirements and strive for continuous improvement"							
Intermediate objective	**Subsidiary intermediate objectives**	**HMRI / ORR data**	**Safety performance data**	**Cost data (existing RSCR and new ROGS)**	**ROGS specific survey**	**Safety culture survey**	**Influence Network Workshop**
Under ROGS the legal scope has increased as a wider range of work is now covered.	5b. safety critical tasks must be carried out by a person assessed as being competent and fit for work	-	-	-	✓	✓	✓
	5c. remove the requirement for safety critical workers to carry a formal means of identification	✓	-	✓	✓	-	-
	5d. require a change in approach from simply controlling the number of hours for preventing fatigue to one of requiring arrangements to be implemented that control risks from a wide number of factors, such as the pattern of working hours and roster design	-	-	-	✓	-	✓

Key:

✓ = indicator data should be obtained from this source

- = indicator data unlikely to be obtained from this source

Table 2 highlights that a significant amount of indicator data will be obtained from the following data sources:

- Review of ORR / HMRI data
- RSSB safety performance data
- Cost data (from existing RSCR evaluation data and ROGS survey data)
- ROGS specific implementation survey
- Safety culture survey
- Influence Network workshop

These sources range from those which involve a desktop review of existing information sources (e.g. RSCR evaluation cost data etc.) and those that will require data gathering activities to be conducted (e.g. surveys and workshops etc.).

To track changes in rail industry performance over time, indicator data will be collected at four time points. The first data collection will involve gathering baseline information against which future data can be compared.

The overall data collection time points are as follows:

- **Baseline data collection** - review of existing information from 2006 and primary research conducted during August to September 2007
- **Year 1 ROGS survey** - early 2008
- **Year 2 ROGS survey** - end of 2008
- **Year 3 ROGS survey** - end of 2009

4. BASELINE EXISTING INFORMATION REVIEW

4.1 INTRODUCTION

The previous sections of this report have highlighted the range of indicator data required to assess the extent to which ROGS have met their intended aims and objectives. This existing report presents the collection and development of a baseline measure. Two approaches are required to gather this baseline data: firstly, a desktop review of existing information is required (e.g. a review of the RSCR evaluation cost data and RSSB safety performance data etc.) and secondly, primary research with stakeholders is required (e.g. surveys and a workshop). This section of the report outlines a background review of the rail industry in order to put the overall study in context and also presents the results from the desktop review of existing baseline information.

4.2 RAILWAY SAFETY REGULATION

4.2.1 Background to railway safety regulations[5]

At the time of the privatisation of British Rail, the following three sets of regulations were introduced to ensure the continued safety of Britain's railways:

- **Railway (Safety Case) Regulations (RSCR) 1994 (revised 2000)** - this regulatory package required the regulator to scrutinise certain information from operators to decide whether the case for safety had been made before operations were allowed. This regulatory process became known as a "permissioning" regime.

- **Railways and Other Transport Systems (Approval of Works, Plant and Equipment) Regulations (ROTS) 1994** - in addition to fulfilling the requirements of RSCR some duty holders also had to seek approval before bringing into service certain new or altered plant, works etc.

- **Railways (Safety Critical Work) Regulations (RSCWR) 1994** - specific duties were also placed on employers to ensure that any staff undertaking safety critical work were competent, fit, and not fatigued.

The scrutiny of safety case information and the approval of works, plant and equipment were carried out by Her Majesty's Railway Inspectorate (HMRI), at the time, a part of HSE.

The Railway (Safety Case) Regulations (RSCR) (and other associated legislation) were introduced in 1994 and were due for a five yearly review and evaluation in 2000. However, due to a series of train accidents and inquiries, the review was postponed. The 1994 RSCR were revised in 2000 following the Ladbroke Grove accident and minor amendments were made in 2001 as a result of the report into the Southall accident. In 2001, the HSC published Part 2 of Lord Cullen's report into the Ladbroke Grove disaster which included a number of recommendations with implications for the RSCR. Some of these recommendations were introduced in the amendments to the RSCR which came into force in April 2003.

The 1994 RSCR introduced (and the subsequent regulatory amendments identified above have maintained) a permissioning regime which required all railway operators (i.e. train operators, station operators and infrastructure controllers) to prepare a Railway Safety Case (RSC) setting out their health and safety arrangements as a condition of operation.

4.2.2 Railway Safety Directive (RSD)[5]

The Railway Safety Directive (RSD) (2004/49/EC) was published in the Official Journal of the European Communities on 30 April 2004 and fell due for implementation by Member States within two years. It established a common regulatory framework for railway safety across the EU, paving the way for a European railway market without unnecessary barriers. Recital (2) to the RSD stated that the differences in safety provisions between Member States affect the optimum functioning of rail transport and added:

"It is of particular importance to harmonise the content of safety rules, safety certification of railway undertakings, the tasks and roles of the safety authorities and the investigation of accidents".

These issues are all addressed in the RSD.

4.2.3 Introduction of Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS)

The requirement to implement the EU RSD provided the opportunity to update and streamline the current regulatory framework in Great Britain into one consolidated, coherent set of Regulations for railways (including heritage and light rail), tramways, metros and other guided transport systems (such as monorails and magnetic levitation systems, etc.). On 1st April 2006 the responsibility for rail safety transferred to the Office of Rail Regulation (ORR) and on 10th April 2006 the first set of updated regulations came into force under the title of Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS). The final set of these regulations were rolled out on 1st October 2006. ROGS define the safety management regime to be adopted across all UK rail companies from October 2006.

4.3 RAILWAY INDUSTRY STRUCTURE[6]

4.3.1 Introduction

Following privatisation, British Rail was broadly divided into two main elements:

- The national rail network (e.g. track, signalling, bridges, tunnels, stations and depots)
- The operating companies whose trains run on that network

4.3.2 Train operating companies (TOCs)

Train operating companies (TOCs) provide passenger train services. They are granted franchises by the Department for Transport (DfT) and then apply for licenses to operate from ORR.

4.3.3 Network operator (Network Rail)

Network Rail is the owner, operator and infrastructure manager of the main railway. It has to ensure efficient management of the assets over the short, medium and long-term. Network Rail's role includes:

- operating the network;
- managing performance;
- directing service recovery;
- setting timetables;
- allocating capacity;
- leading industry planning; and
- maintaining, renewing and developing the network.

4.3.4 Underground and other railways

ORR regulates a number of other railway operations other than the UK's mainline train system. These other operations are as follows:

- Underground railways
- Light railways
- Tramways
- Minor railways (Heritage railways)

Underground railways are railway systems that usually have high capacity and frequency, with large trains and total or near total grade separation from other traffic. Light railways and tramways are systems of transport that use vehicles running on rails and which generally form a system of local transportation, with tramways often partly on roads. Light rail or tram vehicles are generally of lighter weight than mainline railway vehicles and are usually powered by overhead lines.

The term 'minor railways' relates mainly to those companies forming part of the preservation movement, who now refer to themselves as 'heritage railways'. Other railways in this category include those who are not part of the national network owing to their special nature, such as the Post Office Railway. Minor Railways will not normally be permitted to operate above a speed limit of 25mph.

4.3.5 Office of Rail Regulation (ORR) and rail health and safety

The ORR is the independent health and safety regulator for the railway industry, including metros, light rail and heritage. It covers the safety of the travelling public as well as workers on the railways.

ORR's health and safety strategy is to secure the proper control by dutyholders of risks to the health and safety of employees, passengers and others who might be affected by the operation of Britain's railways.

4.4 RAIL INDUSTRY SAFETY PERFORMANCE DATA 2006

4.4.1 Introduction

In order to help establish the extent to which ROGS have met their intended objectives, this study will collect a range of performance data, including information related specifically to industry safety performance. This safety performance data will comprise qualitative safety data collected via the ROGS survey issued to industry stakeholders (see Section 6), the quantitative safety data collected, analysed and published by the Rail Safety and Standards Board (RSSB) and safety data on underground railways, tramways, light rail and minor railways from ORR's annual report on railway safety (2005)[7]. The following sections (Section 4.4.4 and 4.4.5) present the headline safety performance data extracted from the Annual Safety Performance Report[8] published by RSSB for the main line railway, and Section 4.4.6 presents data for underground railways, tramways, light rail and minor railways. This safety performance data will contribute to the overall evaluation baseline measure.

4.4.2 Main line railway safety performance data[8]

A key role of RSSB in helping the rail industry to manage its health and safety performance is its analysis and presentation of safety performance data. This information is published regularly throughout the year and culminates in the 'Annual Safety Performance Report'[8] (ASPR). The ASPR reviews the safety performance levels achieved during the year across a number of key topic areas (e.g. train accidents, passenger safety, workforce safety etc.) and also considers how safety issues are being addressed by the industry (e.g. advertising campaigns, safe driving DVDs, safety culture assessment etc.). The areas covered by RSSB are those identified in the railway Strategic Safety Plan (SSP). Most of the statistics in the ASPR are derived from the rail industry's Safety Management Information System (SMIS). SMIS is a national database, which has been operating since early 1997.

4.4.3 Definitions

The data presented in Table 3, Table 4 and Table 5 has been extracted from a selection of tables, graphs and narratives presented in RSSB's ASPR 2006[8]. RSSB also provide a list of definitions to help interpretation of its data, which are therefore relevant to all three tables. These definitions are as follows:

- **Scope of safety performance data presented in ASPR** – RSSB's ASPR relates to the ***main line railway in Great Britain***. The analysis covers events that take place in main line stations and on ***Network Rail managed infrastructure*** (such as the track

and the area around it). Workforce fatalities in depots, yards and sidings are included, but other incidents in these locations are not. Suicides, suspected suicides and attempted suicides are excluded from the statistics, except where stated otherwise.

- **Person type involved in incidents** - A person working for a company in the rail industry, either as a contractor or a direct employee, is classed as a member of staff (i.e. 'workforce') while they are on duty. Someone on a train or in a station in connection with a journey they have just made, or are about to make, is a 'passenger'. Anyone else is a member of the 'public'.

- **Severity of injury** - Injuries that involve serious harm, such as a loss of consciousness or a broken limb, are classed as 'major injuries', as is any injury that requires admittance to hospital for over 24 hours. Other physical injuries are classed as 'minor injuries'.

- **FWI -** The railway measures overall harm in terms of fatalities and weighted injuries (FWI). Ten major injuries, or 200 minor injuries are given the same weighting as one fatality.

- **Data sources** - Most of the statistics presented in the ASPR are derived from the rail industry's Safety Management Information System (SMIS).

4.4.4 Headline accident, fatality and injury data

The ASPR presents rail industry performance data on a range of key issues, including:

- Train accidents
- Passenger risk
- Workforce safety
- Public risk
- Risk at level crossings
- Personal security
- Station safety

Against all of the issues covered in the ASPR[8] RSSB present a comprehensive series of data tables and graphs to illustrate any changes in rail industry safety performance over the last 5 to 6 years. The data presented in the ASPR report will therefore act as an indicator for monitoring and evaluating the impact of ROGS on quantitative safety statistics over the next 3 years.

Due to the comprehensive nature of the RSSB ASPR it is not the intention of this report to reproduce the vast range of data already provided within the ASPR. Instead, Table 3

presents headline figures for train accidents and passenger and workforce fatalities, major injuries and minor injuries in 2006. This headline data will act as a baseline measure of rail industry safety performance. The year 2006 was chosen as the baseline year as this was the year ROGS were introduced (starting on April 10th 2006 and completing on October 1st 2006), but it is not envisaged that any meaningful impact would have been experienced at this early stage of the implementation. Furthermore, this data can also be directly compared with the 2006 baseline data collected via the ROGS survey (see Section 6).

Table 3 presents both the raw numbers of incidents occurring, as well as incident rates, where these were available in the ASPR. It should be noted that this data may also be supplemented in later monitoring reports by additional data from the ASPR[8], where it is felt to be relevant to the overall evaluation of ROGS.

Table 3 RSSB headline accident, fatality and injury data for 2006[8]

Accidents, fatalities and injuries	Number	Rate	Comments
Potentially higher-risk train accidents (PHRTAs)	47	Not available	-Includes: collisions between trains (excl. roll backs); derailments (excl. collisions with RVs on LX); train striking buffer stops; collisions with road vehicles at level crossings; other collisions with road vehicles (no derailment) -This number is 6% lower than in 2005, when there were 50 PHRTA's
Other accidents	776	Not available	-Includes: open door collisions; roll back collisions; trains striking animals – no derailment; trains striking other objects – no derailment; trains being struck by missiles; train fires
Passenger or workforce fatalities as a result of train accidents	0	Not applicable	-n/a
Passenger fatalities	8	0.70 (Rate / 100 million passenger journeys)	-6 died in accidents at stations (alcohol was a contributory factor in 3 of these cases) -2 were the victim of assault (one occurred in a train and one in a station)
Passenger major injuries	210	18.4 (Rate / 100 million passenger journeys)	-This has decreased since 2005 when it was 254
Passenger minor injuries	4819	Not available	-n/a
Workforce fatalities	2	0.4 (Rate / 20,000 staff)	-Both occurred on or near the track (generally termed the trackside environment) -One involved a shunter who was crushed during a movement to couple a locomotive to a wagon -One involved a driver who was electrocuted by the third rail as he inspected smoke coming from his train
Workforce major injuries	140	1.4 (Rate / 1,000 staff)	-Showed a reduction of 24% from 2005, continuing the downward trend

Accidents, fatalities and injuries	Number	Rate	Comments
Workforce minor injuries	6561	Not available	-n/a
Public fatalities arising from accident or assault	81	1.4 (Rate / million GB population)	-69 were trespassing (50% increase on 2005) -5 were pedestrians killed on level crossings (2 of these 5 occurred at the same incident involving a group of youths involved in horseplay) -6 were the result of falls from overbridges -1 was the result of a road vehicle incursion (car was hit by train after driver had driven through the boundary fence onto the line)
Public fatalities arising from suicide or suspected suicide	219	Not available	-An 8% increase on 2005
Public major injuries arising from accident or assault	55	Not available	-n/a
Public major injuries arising from suicide or suspected suicide	42	Not available	-n/a
Public minor injuries	179	Not available	-n/a

In addition to the raw numbers and incident rates presented in Table 3, the ASPR also presents the measurement of overall harm for each category of person (i.e. passenger, workforce and public) in terms of fatalities and weighted injuries (FWI). For example, in calculating the FWI, 10 major injuries, or 200 minor injuries, are given the same weighting as one fatality. Table 4 highlights the FWI for passengers, the workforce and members of the public due to accidents and assaults for the years 2002 to 2006.

Table 4 FWI for passengers, the workforce and the public between 2002 and 2006

	Fatalities and weighted injuries score (FWI) (overall harm to persons due to accidents and assaults)				
	2002	**2003**	**2004**	**2005**	**2006**
Passenger fatalities and injuries	69.785	62.780	64.985	57.025	53.095
Workforce fatalities and injuries	54.100	52.645	66.135	56.540	48.805
Public fatalities and injuries (including public trespass and suicide)	62.875	60.855	47.310	64.120	87.395

4.4.5 Precursors to train accidents[8]

As train accidents are relatively rare, RSSB also analyses trends in precursors to accidents. RSSB's Precursor Indicator Model (PIM) provides a measure of the underlying risk from train accidents by tracking changes in the occurrence of accident precursors[8]. Within the PIM, a train accident is defined as one of the following: train derailment, train collision, train striking buffer stops, train fire and train striking road vehicle at a level crossing. There are 84 identified precursors to these accidents, which are categorised in the PIM into 26 subgroups. These 26 subgroups fall into six main precursor groups, as follows:

Precursor group 1 – Infrastructure failures

- Level crossing failures
- Structural failures
- Track
- Wrongside signal failures
- Environmental

Precursor group 2 – Irregular working

- Irregular loading of freight trains
- Irregular working at level crossings
- Irregular working by signallers
- Irregular working in stations

- Runaway trains
- Train speeding
- Irregular working - other

Precursor group 3 – Public behaviour at level crossings

- Nearmisses due to public actions
- Misuse due to weather

Precursor group 4 - Objects on the line

- Animals
- Non-rail vehicles
- Objects blown onto the line
- Objects on the line due to vandalism

Precursor group 5 - SPAD

- Category A SPAD - passenger train
- Category A SPAD - non -passenger train

Precursor group 6 - Trains & rolling stock

- Brakes
- Hot axle box
- Other rolling stock failures
- Fires due to rolling stock failures
- Fires due to vandalism
- Other train fires

The RSSB conducts comprehensive risk analyses of accident precursor's[8] year-on-year and therefore it is not the intention of this report to reproduce these analyses. However, in order to ensure accident precursors are considered as part of the overall ROGS evaluation, the annual totals for each precursor group are presented in Table 5.

Table 5 Total number of accident precursors between 2002 and 2006[8]

	Annual totals				
	2002	**2003**	**2004**	**2005**	**2006**
Infrastructure failures					
Environment: flooding	141	36	92	64	45
Environment: landslips	56	14	20	23	12
Environment: adhesion	151	169	103	191	68
Level crossing failures	2422	2455	2091	2273	2636
Track: broken rails	444	379	333	317	227
Track: buckled rails	22	137	32	56	85
Track: other track faults (level 2 exceedences	1.49	1.25	1.06	0.95	0.84
per mile)	1486	1189	858	688	617
Wrongside signal failures	123	62	69	58	30
Other structural failures					
Irregular working					
Runaway trains	23	23	22	18	9
Train speeding	179	178	199	117	81
Other irregular working	3014	3418	3017	3622	3433
Level crossing misuse and nearmisses					
Pedestrian level crossing misuse	839	866	1076	1358	1717
Pedestrian level crossing near misses	158	203	209	240	222
Road vehicle level crossing misuse	505	599	632	815	826
Road vehicle level crossing near misses	191	222	173	176	157
Objects on the line					
Animals	2371	2665	2363	2786	2474
Non-rail vehicles	70	84	72	58	50
Objects on the line due to vandalism	161	123	132	85	77
Objects blown onto the line	334	122	247	153	161
Category A SPADs					
Total	383	392	357	338	350
Risk ranked 16+	221	179	135	119	113
Risk ranked 20+	105	54	29	22	18
Trains and rolling stock					
Brakes	32	35	31	47	54
Fires due to rolling stock failures	145	127	128	76	61
Fires due to vandalism	153	135	163	83	61
Hot axle box	1592	1641	1612	1148	1004
Other rolling stock failures	199	193	149	108	99
Urgent safety related defects	236	207	215	186	121
Vandalism					
All SMIS reportable	12874	12436	11128	10109	10391
Line of route vandalism	11151	10426	8969	8349	8740
Trespass	12042	11928	11821	12034	12443
Bridge strikes	1947	2074	2093	2025	2113
Rail over road bridges - serious severity	7	8	8	9	8
Rail over road bridges - potentially serious severity	25	24	39	22	19
Rail over road bridges - not serious severity	1811	1895	1910	1842	1961
Road over rail bridges - serious severity	3	3	7	7	9
Road over rail bridges - potentially serious severity	28	16	16	23	14
Road over rail bridges - not serious severity	73	128	113	122	102
Dangerous goods incidents	358	321	238	135	125

4.4.6 Underground railways, tramways, light rail and minor railways

The Office of Rail Regulation (ORR) collate and present details of incidents across the rail network, including underground railways, tramways, light rail and minor railways in its annual report on railway safety[7]. This data therefore complements the preceding RSSB ASPR data by providing a wider view of the rail industry and not just that of the mainline railway. The most recent annual report published by ORR is for 2005 covering the period 1 January 2005 to 31 December 2005. The following sections present top level safety performance data for these additional areas of the rail industry.

4.4.6.1 Underground railways

In terms of London Underground Limited (LUL) a total of 28 people were fatally injured in 2005. However, 18 of these were classed as tresspassers (16 of which were suspected suicides) and 6 were confirmed suicides. This left 4 passenger fatalities. It should be noted that the figures did not include the 7 July terrorist attack and that figures for 2005 are provisional. There were no fatalities to railway employees or other members of the public. It should be noted that London Underground also has its own risk model, the London Underground Quantified Risk Assessment model (LUL QRA), which is maintained and developed by the Safety, Quality and Environmental Department of London Underground.

In terms of Glasgow Subway (Strathclyde Partnership for Transport) only a small number of RIDDOR reportable incidents were notified to HMRI in 2005.

4.4.6.2 Tramways and light rail

In terms of tramway incidents, 193 were reported in 2005 with 80% (154) of these resulting from a collision between a tram and road vehicles.

4.4.6.3 Minor railways

In terms of minor railway incidents, in 2005 a driver of a miniature train was killed when their locomotive struck a car on a level crossing and derailed and a further 44 incidents on minor railways were reported under RIDDOR Regulations. The 44 RIDDOR reported incidents comprised the following:

- 3 fatalities, including one suspected suicide and one platform fall
- 9 serious injuries
- 29 minor injuries
- 3 reportable operational failures

4.5 REVIEW OF COST DATA

4.5.1 Introduction

To develop a baseline cost to the rail industry of regulatory compliance, cost estimates from the RSCR evaluation report were uprated from 2003 cost estimates to 2006 (the baseline year) cost estimates. Data was also collected from the ROGS survey.

4.5.2 Railways (Safety Case) Regulations (RSCR) evaluation cost data 2003

In 2003 HSE published its evaluation of the Railways (Safety Case) Regulations (RSCR)[9]; following a study conducted by BOMEL. As part of the value for money element of the evaluation, the costs to industry of complying with RSCR were estimated. The costs presented in the HSE report reflected the current rates (i.e. 'net present value' (NPV)) at the time of conducting the evaluation (2003). The report presented RSCR compliance cost estimates for the following:

- Total cost of RSCR to the **rail industry** between 1994 and 2003.

- Average cost of RSCR to a single **duty holder, heritage operator** and **infrastructure controller** between 1994 and 2003.

The principal source of cost data was a questionnaire issued to the rail industry. A portion of the cost estimates were generated from multiplying staff hours spent on RSCR compliance activities with 2003 hourly payment rates. The following sections present the main RSCR cost estimates[9].

4.5.2.1 Total cost of RSCR to the rail industry between 1994 and 2003[9]

The overall cost of the RSCR to the rail industry between 1994 and 2003 is presented in Table 6. The overall figure comprises:

- **Total duty holder costs** – including train operating companies, infrastructure maintenance contractors, heritage railways etc. Estimated by multiplying single duty holder costs by the total number of duty holders.

- **Total assessment and audit costs** – including those incurred by the HSE, the infrastructure controller and Railway Safety.

The cost data is presented according to whether it represents expenditure associated with the RSCR 1994 or RSCR 2000. The RSCR 2000 data are further divided to reflect ongoing costs (i.e. likely expenditure in the absence of RSCR 2000) and 'extra' RSCR 2000 costs. 'Extra' costs include the RSC submission and acceptance under RSCR 2000, less any expenditure associated with the three-year review that was due in 2000. The preparatory costs amassed prior to 1994 in relation to defining RSCR scope have been included in the 1994 data.

Table 6 Total cost of RSCR to industry between 1994 and 2003[9]

	Duty holder cost (£m)	Assessment and audit cost component (£m)	Total cost (£m)
1994 – 2000 (1994 RSCR)	26	4.7	30.7
2001 – 2003 (ongoing RSCR costs)	8.5	2.3	10.8
(extra 2000 RSCR costs)	9.7	0.4	10.1
Total	44.2	7.4	51.6

Table 6 highlights that the total estimated RSCR cost (based on 2003 NPV) to the rail industry between 1994 and 2003 amounts to £51.6 million. The total estimated RSCR cost to duty holders between 1994 and 2003 amounts to £44.2 million and the total estimated assessment and audit cost amounts to £7.4 million.

4.5.2.2 Average cost of RSCR to a single duty holder, heritage operator and infrastructure controller between 1994 and 2003[9]

The following tables present the average estimated cost of RSCR between 1994 and 2003 to:

- **A single duty holder** (see Table 7) - this data excludes cost information associated with heritage operators and the infrastructure controller as a duty holder (i.e. the costs associated with the infrastructure controller's role in the assessment and audit of other duty holders' RSCs).

- **A heritage operator** (see Table 8) – costs associated with heritage operations only.

- **The infrastructure controller** (see Table 9) - costs exclude the IC's role as assessor and auditor for TOCs, FOCs, IMCs and heritage operators.

The cost data has been grouped to reflect the various RSCR processes such as safety case submissions, acceptance, material revisions and three-year review. The cost information from all responding duty holders relating to the first 1994 RSCR submission of a safety case has been combined and included as expenditure in 1994/5, although the cost may have been accrued in 1995/6. This allows for clarity in understanding the cost associated with the individual requirements of the RSCR and reflects the fact that data are 'typical' and from an industry sample.

It should be noted that the first (and only) three year 'review' occurred in 1997 (three years after the introduction of RSCR in 1994) and therefore cost data for this review is only presented once. The second three year review would have occurred in 2000, but because the RSCR was revised in 2000, the revisions superseded the need for the three year 'review', as duty holders went through the whole submission process instead, in line with RSCR 2000.

Table 7 Average cost of RSCR to a single duty holder between 1994 and 2003 (excluding heritage operators and the infrastructure controller)[9]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
Submission	£75,385						£83,400				£148,785
Acceptance	£33,231						£39,500				£72,731
Material Revisions	£9,013	£9,013	£9,013	£9,013	£9,013	£9,013	£9,013	£3,567	£3,567	£3,567	£73,970
Audit	£4,345	£4,345	£4,345	£4,345	£4,345	£4,345	£4,345	£4,345	£4,345	£4,345	£43,455
Three-year review				£43,520							£43,520
Ongoing RSCR costs	£14,719	£16,089	£17,459	£19,341	£20,199	£21,569	£32,722	£33,977	£35,002	£39,232	£250,309
Total (average Duty Holder)	£136,692	£29,447	£30,817	£76,220	£33,557	£34,927	£168,980	£41,889	£42,914	£47,145	£642,589

Table 8 Average cost of RSCR to an individual heritage operator between 1994 and 2003[9]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
Submission	No data						£4,000				£4000
Acceptance	No data						£1,000				£1000
Material Revisions	£79	£79	£79	£79	£79	£79	£79	£180	£180	£180	£1,100
Audit	£1,406	£1,406	£1,406	£1,406	£1,406	£1,406	£1,406	£1,406	£1,406	£1,406	£14,064
Three-year review				£6000							£6000
Ongoing RSCR costs	£343	£443	£543	£693	£743	£843	£1,169	£1,269	£1,369	2,482	£9,896
Total (average Duty Holder)	£1,828	£1,928	£2,028	£8,178	£2,228	£2,328	£7,654	£2,859	£2,959	£4,072	£36,060

NB: 2003 prices. Based on cost data supplied by representative range of Duty Holders constituting around 50% of all Duty Holders.

Table 9 Cost of RSCR to Infrastructure Controller (IC) between 1994 and 2003[9] {1}

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
Submission	£5,000,000						£1,000,000				
Acceptance	£100,000						£50,000				
Material Revisions	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£75,000	£750,000
Audit	£50,000	£50,000	£50,000	£50,000	£50,000	£50,000	£50,000	£50,000	£50,000	£50,000	£50,000
Three-year review				£500,000							£500,000
Ongoing RSCR costs	£18,270	£18,455	£18,641	£18,830	£19,020	£19,212	£20,406	£20,602	£20,800	£21,000	£195,236
Total	£5,243,270	£143,455	£143,641	£643,830	£144,020	£144,212	£1,195,406	£145,602	£145,800	£146,000	£8,095,236

[1] Costs exclude the IC's role as TOC, FOC, IMC and heritage assessor and auditor

In summary, Table 7 highlights that according to the RSCR evaluation research report[9] and the data collected during the study, the RSCR regime cost a typical duty holder approximately £643,000 between 1994 and 2003. It should be borne in mind that this is an average figure covering major TOCs, IMCs and FOCs (excluding the IC and heritage operators). The most significant areas of expenditure that contributed to this figure were associated with:

- The development and submission of a Railway Safety Case
- Gaining acceptance of the Railway Safety Case
- The three-year review

4.5.3 RSCR cost data uprated to baseline year 2006

The HSE evaluation of RSCR[9] provided 2003 cost estimates for the total cost of RSCR to industry (including HSE, infrastructure controller and Railway Safety assessment and audit costs) and the average cost of RSCR to duty holders, heritage operators and the infrastructure controller, between 1994 and 2003.

In order to develop a baseline cost against which the future costs of complying with ROGS can be compared, it was necessary to uprate the 2003 RSCR cost estimates to 2006 costs (the baseline year for ROGS). In calculating these costs it has been assumed that industry would continue to comply with RSCR into the year 2006. These estimates are presented in the following sections.

4.5.3.1 Estimated total cost of RSCR to the rail industry for 2006[9]

Table 6 highlights that the total estimated RSCR cost (based on 2003 NPV) to the rail industry between 1994 and 2003 amounts to £51.6 million. This includes the cost to duty holders as well as the associated safety case assessment and audit costs incurred by HSE, the infrastructure controller and Railway Safety. Table 6 also estimated RSCR cost to duty holders only amounted to £44.2 million and the total estimated assessment and audit cost amounted to £7.4 million.

To estimate the total costs to industry for 2006, the figure £51.6 million was divided by 10 years (1994 to 2003). This provided an estimated compliance cost of £5,160,000 per year at the NPV for 2003. This figure was then uprated by 2% for each year up until 2006. This percentage increase was chosen as Annex 6 of the Treasury Green Book[10] suggests that the growth per capita in the UK should be taken as 2%. This same calculation was also conducted for RSCR cost to duty holders only (£4,420,000 per year) and the total estimated assessment and audit cost (£740,000 per year). Table 10 presents the estimated total cost of RSCR to industry for the years 2003, 2004, 2005 and 2006.

Table 10 Estimated total cost of RSCR to industry between 2003 and 2006

	2003	2004	2005	2006
Duty holder only cost	£4,420,000	£4,508,400	£4,598,568	£4,690,539
Assessment and audit only cost	£740,000	£754,800	£769,896	£785,294
Total industry cost	£5,160,000	£5,263,200	£5,368,464	£5,475,833

NB: 2003 costs uprated on basis of 2% growth per capita per year

Table 10 highlights that the total estimated cost to all of industry for RSCR compliance in the year 2006 would be £5,475,833. This figure comprises an estimated cost to duty holders only of £4,690,539 in 2006 and an estimated assessment and audit cost of £785,294 in 2006.

4.5.3.2 Estimated average cost of RSCR to a single duty holder, heritage operator and infrastructure controller for 2006[9]

Table 7 highlights that the average cost of RSCR to a single duty holder in the year 2003 was £47,145. Table 8 highlights that the average cost of RSCR to a heritage operator in the year 2003 was £4,072 and Table 9 highlights the cost to the infrastructure controller in the same year as £146,000. In order to estimate the costs for 2006, these figures were uprated by 2%[10] for each year up until 2006 and are presented in Table 11.

Table 11 Estimated average cost of RSCR to a single duty holder and heritage operator and cost to infrastructure controller between 2003 and 2006

	2003	2004	2005	2006
Average cost to a single duty holder	£47,145	£48,088	£49,050	£50,031
Average cost to individual heritage operator	£4,072	£4,153	£4,237	£4,321
Cost to infrastructure controller	£146,000	£148,920	£151,898	£154,936

NB: 2003 costs uprated on basis of 2% growth per capita per year

Table 11 highlights the following:

- The average estimated cost of RSCR to a single duty holder in the year 2006 is £50,031.
- The average estimated cost of RSCR to a heritage operator in the year 2006 is £4,321.
- The estimated cost of RSCR to the infrastructure controller in the year 2006 is £154,936.

4.5.4 ROGS duty holder survey cost data

As part of the baseline ROGS survey (described in Section 6) duty holder respondents were asked to estimate the costs incurred as a result of complying with ROGS. This formed part of the primary research, however it is felt appropriate to display the raw data in this section of the report, alongside the uprated RSCR cost data for future comparative purposes.

The costs estimated by duty holders were associated with the following main aspects of ROGS:

- Safety management systems
- Safety verification
- Safety certification and authorisation
- Risk assessment
- Annual safety report

For each aspect of ROGS, rail industry duty holders were asked to provide either an estimated cost of compliance (in £'s) or an estimated number of hours or days spent in fulfilling the requirements under ROGS. Data was provided by a selection of the duty holders. The following tables present the raw data gathered and specify the type of duty holders providing that information.

4.5.4.1 Safety management systems

Table 12 highlights the estimated costs incurred by duty holders as a result of developing an SMS under ROGS.

Table 12 Estimated costs incurred as a result of **developing** an SMS under ROGS

Description	Raw data
Estimated number of hours spent	OTM – 400 Metro system - 5400
Estimated number of days spent	TOC – 120 TOC – 360 OTM - 10 OTM – 10 FOC - Nil Metro system – 900 Metro system – 230
Estimated actual cost in £'s spent	TOC – £50,000 OTM – £5,000 FOC - Nil Metro system – £40,000 (staff and consultants) Metro system – £0.5 million

Table 13 highlights the estimated costs incurred by duty holders as a result of maintaining an SMS under ROGS per year.

Table 13 Estimated costs incurred as a result of **maintaining** an SMS under ROGS **per year**

Description	Raw data
Estimated number of hours spent	TOC – No more cost FOC – Nil Metro system - 1.5 full time employees carry out this role Other – No more cost
Estimated number of days spent	TOC – 35 OTM - 10 FOC – no change Metro system – 347 Metro system – 230
Estimated actual cost in £'s spent	FOC – no change Metro system – £40,000 (staff and consultants) Metro system – £60,000

4.5.4.2 Safety verification

Table 14 highlights the estimated costs incurred by duty holders as a result of undertaking safety verification under ROGS per year.

Table 14 Estimated costs incurred as a result of **undertaking safety verification** under ROGS **per year**

Description	Raw data
Estimated number of hours spent	No data
Estimated number of days spent	TOC - 15 TOC – 2 TOC – 50 OTM - 20 FOC – 3 Metro system – 18 consultancy days Metro system – 2,300 Infrastructure manager – 110
Estimated actual cost in £'s spent	TOC – £1,400 Metro system – £18,000 Metro system – £400,000

4.5.4.3 Safety certification

Table 15 highlights the estimated costs incurred by duty holders as a result of initial application for a safety certificate under ROGS.

Table 15 Estimated costs incurred as a result of **initial application** for a **safety certificate** under ROGS

Description	Raw data
Estimated number of hours spent	TOC – 50 FOC – 1200 Metro system - 480
Estimated number of days spent	TOC – 150 TOC – 20 TOC – 150 OTM - 60 Metro system – 230 Metro system – 90
Estimated actual cost in £'s spent	FOC – £54,000 OTM – £5000 Metro system – £36,000 Metro system – £144,000

Table 16 highlights the estimated costs incurred by duty holders as a result of an amendment to the safety certificate under ROGS per year.

Table 16 Estimated costs incurred as a result of an **amendment** to the **safety certificate** under ROGS **per year**

Description	Raw data
Estimated number of hours spent	TOC – 15 Metro system - 320
Estimated number of days spent	TOC – 15 OTM - 20 Metro system – 60
Estimated actual cost in £'s spent	Metro system – £48,000

4.5.4.4 Safety authorisation

Table 17 highlights the estimated costs incurred by duty holders as a result of initial application for safety authorisation under ROGS.

Table 17 Estimated costs incurred as a result of **initial application** for **safety authorisation** under ROGS

Description	Raw data
Estimated number of hours spent	TOC – 50 Metro system - 480
Estimated number of days spent	TOC – 15 TOC – 150 Metro system - 90 Metro system – 230 Infrastructure manager – 350
Estimated actual cost in £'s spent	Metro system – £144,000

Table 18 highlights the estimated costs incurred by duty holders as a result of an amendment to safety authorisation under ROGS per year.

Table 18 Estimated costs incurred as a result of an **amendment** to **safety authorisation** under ROGS **per year**

Description	Raw data
Estimated number of hours spent	Metro system - 320
Estimated number of days spent	TOC – 2 Metro system - 60
Estimated actual cost in £'s spent	Metro system – £48,000

4.5.4.5 *Risk assessment*

Table 19 highlights the estimated costs incurred by duty holders as a result of new risk assessments or changes to existing risk assessments.

Table 19 Estimated costs incurred as a result of new risk assessments or changes to existing risk assessments

Description	Raw data
Estimated number of hours spent	OTM – 200
Estimated number of days spent	TOC - 100 TOC – 5 OTM – 20 Metro system – 2 full time employees
Estimated actual cost in £'s spent	OTM – £10,000 Metro system – £60,000

4.5.4.6 *Annual safety report*

Table 20 highlights the estimated costs incurred by duty holders as a result of submitting an annual safety report, per year.

Table 20 Estimated costs incurred as a result of submitting an **annual safety report**, **per year**

Description	Raw data
Estimated number of hours spent	OTM – 10 Metro system - 40
Estimated number of days spent	TOC – 6 TOC – 5 OTM – 2 OTM – 4 Metro system – 5 Metro system – 7 Maintainer of vehicles or infrastructure -10 Infrastructure manager – 30
Estimated actual cost in £'s spent	OTM – £500 Metro system – £4,000

4.5.4.7 *Levy funding*

It should be noted that there has been a move from a charge to a levy regime for assessments; however, the detailed cost implications will not be explored as part of this report as it is not felt to be of value for the overall purposes of this evaluation study.

5. BASELINE INFLUENCE NETWORK WORKSHOP

5.1 INTRODUCTION

In order to develop a qualitative baseline profile of safety in the rail industry an Influence Network (IN) workshop was undertaken with a representative sample of key rail industry stakeholders on Friday 21st September 2007. The workshop involved examining a series of possible factors which may be influencing safety in the rail industry, in terms of their current quality, as well as the importance of their influence. The workshop enabled an identification of where the key potential risk areas were, based on qualitative feedback from participants, as well as understanding of why these were risk areas. For the profile to act as a baseline measure, participants were asked for their feedback about IN factors in terms of how they felt prior to ROGS fully coming into force. Participants were also asked where they felt ROGS may have most impact. The following section provides an outline of the workshop methodology (including the bespoke rail industry IN model), workshop participants and the findings.

5.2 WORKSHOP METHODOLOGY

5.2.1 The Influence Network (IN)

The tool adopted to structure the assessment of the benefits and their associated costs in BOMEL's evaluation of the RSCR was the IN approach. The IN provides a mechanism that associates the success of the industry in meeting each intermediate objective with a reduction (or otherwise) in rail accident risk. The underlying concept is that the immediate (direct) causes of an incident need to be seen in the wider context of the way ongoing operations are organised, as well as within the pervading corporate strategy influences and the wider environmental factors affecting the business. These 'domains' of influence are clearly interrelated and within the IN model are represented as hierarchical levels as follows:

- **Environmental level influences** - these cover global influences such as the wider political, regulatory, market and social influences which impact the policy decisions taken by Duty Holders.

- **Strategy level** - these comprise the strategy, policy and corporate level factors that determine the organisational processes including interface management, contracting and supply chain management.

- **Organisational influences** - these influence the direct 'level' and reflect the culture, procedures and behaviour promulgated by the organisation in operations.

- **Direct performance influences** - these directly influence the likelihood of an accident being caused in terms of human or hardware performance or external factors with an immediate bearing on safety (e.g. diminished 'Situational Awareness' for train drivers may contribute to SPADs).

5.2.2 Rail industry Influence Network (IN) model

The generic IN was tailored for use in the rail industry workshop to ensure all the relevant factors were represented. Figure 4 highlights the rail industry IN model used during the workshop.

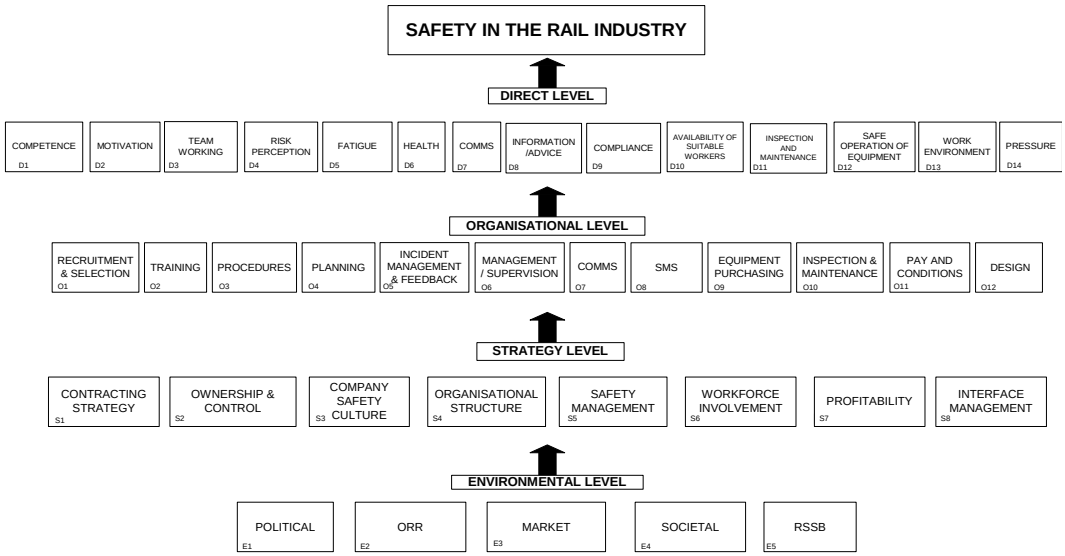


Figure 4 Rail industry Influence Network model

5.2.3 Aim of the workshop

The overarching aim of the workshop was to develop a profile of safety in the rail industry (baseline measure) based on qualitative data gathered from participants. This was achieved by taking each potential influencing factor from the rail industry IN (as highlighted in Figure 4) in turn to:

- **Rate the pre-ROGS quality of that factor** on a scale of 0 to 10, with '0' representing poor and '10' representing excellent.

- **Weight the pre-ROGS importance of that factor** on a scale of 'high' to 'low'.

Participants were asked to try and rate and weight factors in relation to the industry prior to ROGS fully coming into force in order that their feedback could contribute towards the baseline measure. Participants were also asked to indicate where they anticipated seeing changes as a result of ROGS.

5.2.4 Benefits of the approach

The IN workshop approach provided a number of benefits, including:

- Providing a structured means of establishing the current 'state of play'.

- Providing a means of gathering qualitative and some quantitative data.

- Could be re-visited in two to three years time to evaluate the changes and the reasons for those changes.

- Could be used to collect information on what indicators of change participants would expect to see.

- Providing moderated input from a range of rail industry stakeholders.

5.2.5 Workshop steps

In order to address the main aims of the workshop and gather the required information in order to develop the profile of safety in the rail industry, participants were guided through the following five steps.

Step 1 - Burning issues
Step 1 was designed in order to provide workshop participants with an early opportunity to provide input on:

- what they believe the key factors are influencing safety in the rail industry;

- where they see ROGS having the most impact; and

- what they hoped to gain from the IN workshop.

Step 2 to 5 - Rate and weight all Direct (Step 2), Organisational (Step 3), Strategy (Step 4) and Environmental (Step 5) level factors
In order to rate the pre-ROGS quality of each IN factor, participants were asked to rate each factor on a scale of 0 to 10, with '0' being poor and '10' being excellent. For example, in terms of the Direct level factor 'Compliance', participants were asked to consider the extent to which people working in the rail industry comply with rules, instructions, procedures etc.

In order to weight the relative importance of each factor in terms of its impact on safety in the rail industry, participants were asked to weight the importance of each factor on the following scale:

- Low

- Low-Medium

- Medium

- Medium-High

- High

For example, in terms of the Direct level factor 'Compliance', participants were asked to consider how important it is in terms of safety in the rail industry compared with the other Direct level factors.

Additional considerations
Whilst working through each of the IN factors, participants were also asked to consider and explain the following:

- Why they felt the way they did.
- Which factors may be most affected by the introduction of ROGS.
- What indicators of change they may expect to see from each factor.

5.3 WORKSHOP PARTICIPANTS

A representative range of stakeholders from throughout the rail industry were invited to attend the IN workshop. Table 21 highlights the eight rail organisations and their representatives whom attended the workshop.

Table 21 IN workshop participants

Organisation	Organisation type	Description / industry area
ATOC	Association / TOC	The Association of Train Operating Companies (ATOC) is an unincorporated association owned by its members. It was set up by the train operators formed during privatisation of the railways under the Railways Act 1993.
Heritage Railway Association	Association / Heritage	The Heritage Railway Association represents the majority of heritage and tourist railways and railway preservation groups within both the U.K, and Ireland. There are also several overseas members.
Network Rail	Infrastructure (over ground)	Network Rail owns and operates Britain's rail infrastructure.
Tubelines	Infrastructure (underground)	Tube Lines has a 30 year Public Private Partnership (PPP) contract with London Underground for the maintenance and upgrade of all the infrastructure on the Jubilee, Northern and Piccadilly lines.
Transport for London	Metro system	London Underground
ASLEF	Union (train drivers)	ASLEF is Britain's trade union for train drivers. Its 18,500+ members are employed in the train operating companies, the freight companies, London Underground and some Light Rapid Transport.
Transport Salaried Staffs'	Union	TSSA is an independent, UK-based trade union for the transport and travel trade industries. It has 30,000 members in the UK and Ireland, working for the

Organisation	Organisation type	Description / industry area
Association (TSSA)		railways and associated companies, London Underground and Transport for London, the travel trade, and in shipping, ports, road haulage and buses.
Confederation of Passenger Transport UK (CPT)	Union	The Confederation of Passenger Transport UK (CPT) is recognised by Government as the voice of the coach, bus and light rail industries and is the focus for consultation and negotiation on national and international legislation, local regulations, operational practices and engineering standards.

Prior to the workshop all confirmed participants were issued with a workshop briefing note which outlined the aim of the event, the steps to be taken and also provided a list of the rail industry IN factors and their associated definitions. A copy of this briefing note can be found in Appendix A.

The workshop was held on Friday 21st September 2007 at ORR's offices in London.

5.4 DETAILED FINDINGS

5.4.1 Quality ratings

5.4.1.1 Direct level factors

Table 22 highlights the quality ratings assigned to factors at the Direct level of the rail industry IN model (see Figure 4 for the model). The workshop group either assigned a ratings range, which often reflected differences within the overall rail industry, or they came to a consensus and gave one single rating. This is highlighted in the table.

Table 22 Quality ratings assigned to Direct level factors

Direct Level Factors / Quality Ratings	0	1	2	3	4	5	6	7	8	9	10
D1 - Competence								**7 - to - 9**			
D2 - Motivation									**8 - to - 9**		
D3 – Team working									**8**		
D4 – Risk Perception								**7**			
D5 - Fatigue						**5 - to - 7**					
D6 - Health							**6 - to - 8**				
D7 – Communications						**5 – to - 7**					
D8 - Information / Advice						**5 - to - 6**					
D9 - Compliance							**6 - to - 8**				
D10 - Availability of Suitable Workers					**4 - to - 9**						
D11 - Inspection and Maintenance								**7 - to - 8**			
D12 – Safe Operation of Equipment								**7 - to - 8**			
D13 - Work Environment						**5**					
D14 - Pressure					**4 - to - 8**						

Note: The rating scale ranges from '0' indicating poor up to '10' indicating excellent

In addition to the ratings assigned in Table 22, the workshop group also discussed each factor in turn and provided reasons to support their ratings assignment, as follows:

- **D1 – Competence (7 to 9)** – the group rated the factor in terms of individual's being competent to do their own jobs (i.e. jobs they are trained and experienced in) and not competence in general. It was felt that generally the factor should be rated as a 7, although it was also suggested that the competence of train drivers was higher than this (a 9 was suggested). A range of between 7 and 9 was therefore agreed upon across the group.

- **D2 – Motivation (8 to 9)** – in general the group agreed that motivation was high in the rail industry. A part of the industry that was felt to be particularly high on motivation was the heritage sector, where individuals typically become involved in the work through their passion for rail. Areas where motivation was not thought to be as high were amongst train operating companies due to the high levels of staff absenteeism. Other areas included the customer facing sector in general and those doing shift work. However, despite this, the group generally agreed that motivation should be rated between 8 and 9.

- **D3 – Team working (8)** – the group described how there were two types of team working in the rail industry: teams of individuals that work in groups, such as those

working on track maintenance projects and 'virtual' teams made up of train drivers, signallers and technicians. It was agreed that in general these roles are reasonably isolated, but there are certain points when these roles must come together and work as a strong team. Overall, the group agreed on a quality rating of 8 for the team working factor.

- **D4 – Risk Perception (7)** – it was felt that during typical / routine operations risk perception was reasonably high throughout the rail industry, with train drivers at the highest end. However, in the event of an emergency situation risk perception was felt to degrade a little. Overall, the group came to a consensus on a quality rating of 7 for risk perception.

- **D5 – Fatigue (5 to 7)** – the group underlined that the rail industry (with the exception of the heritage sector) is a 24/7 industry. Participants also described some of the well-documented signals passed at danger (SPAD) incidents, which had been caused by microsleeps. The group went on to highlight how account needs to be taken of workers' lifestyle factors (e.g. ensuring people are rested for work etc.) in order to try and mitigate the risk of fatigue at work. Due to the nature of the industry, the group assigned the factor 'fatigue' a quality rating range of between 5 and 7.

- **D6 – Health (6 to 8)** – in terms of physical health the group highlighted how train drivers go through a rigorous selection process, which includes a full medical to ensure fitness to work. The heritage sector raised the issue of working with older individuals and taking into consideration their physical health requirements. In terms of psychological health, the stress rail workers go through if they have been involved with a suicide was also raised during the discussion. A counselling service is provided for rail workers to help them deal with the trauma. The group agreed on a ratings range of between 6 and 8, with '6' representing the infrastructure and train operating companies parts of the rail industry and '8' representing train drivers.

- **D7 – Communications (5 to 7)** – the importance of communications for safe working in the rail industry was underlined during the discussion. By way of example, the group cited several incidents that had occurred due to a lack of communication. It was felt that in general communications in the rail industry were good (hence the quality rating of 7); particular reference was made to improved communications between the signaller and driver in recent years. However, the group did also agree that sometimes communication can still break down (hence the quality rating of 5).

- **D8 - Information / Advice (5 to 6)** – the group felt that industry 'rules and regulations' were clear, but procedures can sometimes be overcomplicated. In terms of ROGS, the group also felt that ROGS would make no difference to the quality of information and advice available in the industry. The group agreed on a quality rating range of 5 to 6.

- **D9 – Compliance (6 to 8)** – the group discussed how the level of workers' compliance is often closely related to the complexity of the rules. It was suggested that if instructions are clear and simple then workers are more likely to follow them, however,

if instructions are difficult and over-complicated, workers will be less inclined to comply with them. The group agreed on a quality rating range of 6 to 8.

- **D10 - Availability of Suitable Workers (4 to 9)** – in general the group agreed that day-to-day resourcing was good (hence the quality rating of 9), but one-off complex projects could be difficult to resource quickly (hence the quality rating of 4). It was also discussed how there is currently no shortage of train drivers, with the number of job applicants far outweighing the number of positions available. The heritage sector highlighted how the average age of its workforce was 55 years old.

- **D11 - Inspection and Maintenance (7 to 8)** – the group discussed how rolling stock companies focus closely on their assets to ensure train operating companies look after their trains properly. The increase in new equipment was also highlighted during discussions. In terms of the standards and quality procedures in place for ongoing inspection and maintenance, the group felt that this was good at the high end of the market. Overall the group agreed on a quality rating range of between 7 and 8.

- **D12 – Safe Operation of Equipment (7 to 8)** – the importance of having well designed equipment, especially inside the various drivers' cabs, was highlighted during discussions. The group agreed that currently the industry is doing this reasonably well and assigned a quality rating range of between 7 and 8.

- **D13 - Work Environment (5)** – the group highlighted how some of the older over ground trains can be less comfortable to work on. In terms of the underground, noise and temperature concerns were raised, particularly on the deep lines. The heritage part of the rail industry was felt to be slightly different because most heritage workers have made a conscious choice to work in the environment simply because they enjoy it. The group came to a quality rating consensus of 5.

- **D14 – Pressure (4 to 8)** – it was felt that day-to-day operations work was not overly pressurised as workers are in a routine and know what is happening, allowing them to plan and prepare themselves for what is required (hence a quality rating of 8). Train drivers and signallers were also felt to be in roles that allowed them to plan and thus keep pressure to a manageable level. However, track maintenance work was felt to be a much more pressurised part of the industry (hence the quality rating of 4) due to having tight timeframes (sometimes only 2 to 3 hours) within which to complete a job (e.g. lay tracks) before the lines need to be used again.

5.4.1.2 Organisational level factors

Table 23 highlights the quality ratings assigned to factors at the Organisational level of the rail industry IN model (see Figure 4 for the model). As with the Direct level, the workshop group either assigned a ratings range, which often reflected differences within the overall rail industry, or came to a consensus and gave one single rating.

Table 23 Quality ratings assigned to Organisational level factors

Organisational Level Factors / Quality Ratings	0	1	2	3	4	5	6	7	8	9	10
O1 - Recruitment and Selection										**9- to -10**	
O2 - Training								**7 - to - 9**			
O3 - Procedures							**6 – to - 8**				
O4 - Planning							**6 - to - 7**				
O5 - Incident Management + Feedback								**7**			
O6 - Management / Supervision							**6 - to - 8**				
O7 - Communications							**6 - to - 7**				
O8 – Safety Management Systems									**8 - to - 9**		
O9 - Equipment Purchasing										**9**	
O10 - Inspection + Maintenance								**7 - to - 8**			
O11 - Pay + Conditions							**6 - to - 8**				
O12 - Design								**7 - to - 8**			

Note: The rating scale ranges from '0' indicating poor up to '10' indicating excellent

In addition to the ratings assigned in Table 23, the workshop group also discussed each factor in turn and provided reasons to support their ratings assignment, as follows:

- **O1 - Recruitment and Selection (9 to 10)** – the group agreed that recruitment and selection in the rail industry was of a high quality, as most roles were safety critical. There are tried and tested systems in place for matching the right skills to the available job roles. Overall the group gave this factor a quality rating of between 9 and 10.

- **O2 – Training (7 to 9)** – it was highlighted that there is a strong training scheme in place for drivers and signallers as they cannot do their job without it (hence the quality rating of 9). The customer facing rail workforce (e.g. ticket sales, platform staff etc.) were also felt to undergo a good standard of training. However, training for track workers was not felt to be quite as good (hence the quality rating of 7).

- **O3 – Procedures (6 to 8)** – the group agreed that procedures are in place, but their implementation on the ground could still be improved. A quality rating range of between 6 and 8 reflected this.

- **O4 – Planning (6 to 7)** – it was felt that although overall planning in the rail industry was reasonably good, there was still room for improvement. By way of example, some participants noted a series of projects where planning had been defective. An area where planning was felt to be good was in relation to track maintenance works, as there were only certain times when the work could be carried out, making robust

planning essential. The group agreed on a quality rating assignment of between 6 and 7.

- **O5 - Incident Management & Feedback (7)** – workshop participants explained that there were structured rail industry systems in place for reporting accidents and incidents (e.g. SMIS) and as such, the rail industry was very advanced compared with other industries. The group also explained that the data collected is disseminated throughout the industry, which helps the rail industry to learn from its mistakes. The group came to a consensus on a quality rating of 7.

- **O6 - Management / Supervision (6 to 8)** – the group felt that team awareness can vary. In terms of infrastructure management the group rated this factor as a '6', compared with the train drivers and signallers side which was rated as an '8'.

- **O7 – Communications (6 to 7)** – the discussion highlighted how shift work and geographical distance can make continued communication a challenge in the rail industry. The group also highlighted how although there is plenty of written information to aid communication, there can sometimes be 'information overload'. In general the group did not feel that these communicative challenges significantly affected safety performance and agreed on a quality rating range of between 6 and 7.

- **O8 – Safety Management Systems (8 to 9)** – the group were in general agreement that safety management systems (SMS's) were mature and effective in the rail industry as organisations had always been required to have them. However, the group agreed that a quality rating of between 8 and 9 was appropriate as there was still room for improvement in terms of integrating SMS's with other organisational functions.

- **O9 - Equipment Purchasing (9)** – the group largely agreed that the quality of equipment purchasing was very good in the industry (hence the quality rating of 9) as every piece of equipment was so highly specified. Accordingly, robust procurement processes were also in place ensuring only the most appropriate equipment was purchased and that it was of a high standard.

- **O10 - Inspection & Maintenance (7 to 8)** – in terms of inspection and maintenance the group discussed the differences in life span for different pieces of equipment. Whereas some equipment may just require routine maintenance, other pieces may require a complete renovation or replacement. For some much older equipment, speeding restrictions may even apply depending on the age of the equipment. The group agreed on a quality rating range of between 7 and 8.

- **O11 - Pay & Conditions (6 to 8)** – train drivers' salaries were thought to be appropriate, whereas it was felt that station staff salaries could be increased. The point was also made that generally wages were good as there were very few grades of staff in the rail industry that were hard to recruit for. A quality rating range of between 6 and 8 was agreed upon.

- **O12 – Design (7 to 8)** – in general it was agreed that standards of design in the rail industry were very high. Historically there had been some design issues with rolling stock, however there were now processes in place to ensure these issues were designed out during the early stages of rolling stock production. The group agreed a quality rating of between 7 and 8 was appropriate.

5.4.1.3 Strategy level factors

Table 24 highlights the quality ratings assigned to factors at the Strategy level of the rail industry IN model (see Figure 4 for the model). As before, the workshop group either assigned a ratings range or came to a consensus and gave one single rating, as highlighted in the table.

Table 24 Quality ratings assigned to Strategy level factors

Strategy Level Factors / Quality Ratings	0	1	2	3	4	5	6	7	8	9	10
S1 - Contracting Strategy									**8**		
S2 - Ownership + Control									**8**		
S3 - Company Safety Culture								**7**			
S4 - Organisational Structure									**8 –to- 9**		
S5 - Safety Management								**7**			
S6 – Workforce Involvement						**5 - to - 8**					
S7 - Profitability						**5**					
S8 - Interface Management										**9**	

Note: The rating scale ranges from '0' indicating poor up to '10' indicating excellent

In addition to the ratings assigned in Table 24, the workshop group also discussed each factor in turn and provided reasons to support their ratings assignment, as follows:

- **S1 - Contracting Strategy (8)** – it was suggested by some of the group that rail industry privatisation had created too many contracts within the industry. Furthermore, the group underlined that it was the competence of the contractors that was one of the biggest safety concerns in terms of contracting strategy. Overall, the group felt that the industry contracting strategy was comprehensive and came to a consensus on a quality rating of 8.

- **S2 - Ownership & Control (8)** – in general the group felt that the larger stakeholders in the rail industry do take ownership for, and control of, safety and therefore came to a consensus that a quality rating of 8 was appropriate.

- **S3 - Company Safety Culture (7)** – it was felt that the overall perception of safety culture can be varied, although many companies perceive their own safety culture to be very positive. Most organisations would probably rate themselves as a '10'. The

group also suggested that safety culture was contagious throughout the industry. The group agreed that a quality rating of 7 was more realistic for company safety culture.

- **S4 - Organisational Structure (8 to 9)** – the group felt that the structure of organisations and the industry was good and therefore a high quality rating of between 8 and 9 was appropriate.

- **S5 - Safety Management (7)** – as with the organisational level factor SMS, the group generally felt that policies, procedures and systems were in place to facilitate a robust safety management system. However, it was felt that in order to go 'the extra mile' with safety management more resource may be required. The group also felt that this would be an important factor to monitor over the course of the evaluation.

- **S6 – Workforce Involvement (5 to 8)** – workforce involvement was generally felt to be good, with regular workforce consultation through established links, but it was also suggested that full engagement still had some way to go. It was therefore agreed that the quality ratings assigned should range from 5 to 8.

- **S7 - Profitability (5)** – the group explained that rail was a highly regulated industry so profitability remains reasonably stable, however it was still felt that some areas could be improved, e.g. light rail, heritage, Metronet issues etc. The group came to a consensus that a quality rating of 5 was appropriate.

- **S8 - Interface Management (9)** – this factor was felt to be very good at present. Relationships with ORR and RSSB were also cited as being particularly positive. The group came to a consensus that a high quality rating of 9 was therefore appropriate.

5.4.1.4 Environmental level factors

Table 25 highlights the quality ratings assigned to factors at the Environmental level of the rail industry IN model (see Figure 4 for the model). As before, the workshop group either assigned a ratings range or came to a consensus and gave one single rating, as highlighted in the table.

Table 25 Quality ratings assigned to Environmental level factors

Environmental Level Factors / Quality Ratings	0	1	2	3	4	5	6	7	8	9	10
E1 - Political Influence							**6**				
E2 – Office of Rail Regulation							**6 - to - 7**				
E3 - Market Influence							**6**				
E4 - Societal Influence							**6**				
E5 – Rail Safety and Standards Board							**6 - to - 7**				

Note: The rating scale ranges from '0' indicating poor up to '10' indicating excellent

In addition to the ratings assigned in Table 25, the workshop group also discussed each factor in turn and provided reasons to support their ratings assignment, as follows:

- **E1 - Political Influence (6)** – the group felt that although the rail industry was high on the political agenda, this did not always have positive consequences for the industry. The group therefore felt that a quality rating of 6 was appropriate.

- **E2 – Office of Rail Regulation (ORR) (6 to 7)** – in terms of ORR the group provided some very positive feedback, including "ORR seems well regulated and funded" and "ORR is better than it was under HSE". In terms of ROGS, the group also felt that they were better than the safety case regulations. However, the group also expressed some discontent with obtaining help from ORR regarding ROGS implementation and felt that this had resulted in industry creating most of the ROGS guidance.

- **E3 - Market Influence (6)** – in general the group felt that as the industry was so regulated it was not significantly affected by changing market conditions and therefore assigned the factor a quality rating of 6.

- **E4 - Societal Influence (6)** – the group felt that society's perception of the rail industry had improved significantly since the Hatfield accident and therefore assigned the factor a quality rating of 6.

- **E5 – Rail Safety and Standards Board (RSSB) (6 to 7)** – some workshop participants felt that the work of RSSB was predominantly focused on mainline railways, although the group also agreed that its work was improving. The RSSB was therefore assigned a quality rating range of between 6 and 7.

5.4.2 Importance weightings assigned

Once the quality ratings had been assigned, participants were asked to weight the importance of each factor upon the factors above. This involved workshop participants firstly weighting the importance of the influence of the Direct level factors on the top event (i.e. 'safety in the rail industry'). Workshop participants then weighted the importance of the influence of the Organisational level factors on each of the factors on the Direct level, e.g. the importance of recruitment and selection, training, procedures and planning etc. on competence, motivation, team working etc. This process also included weighting the importance of the influence of each of the Strategy level factors on each of the factors on the Organisational level and the Environmental level on the Strategy level.

This resulted in each IN factor being assigned a range of weightings. The composite or 'average' weighting for each factor was then calculated. Figure 5 highlights the composite weightings for each IN factor. The colour coding is as follows:

- Grey factors - 'high' composite importance weighting
- Pink factors - 'medium-high' composite importance weighting
- Blue factors – 'medium' composite importance weighting
- Yellow factors - 'medium-low' composite importance weighting
- Green factors - 'low' composite importance weighting

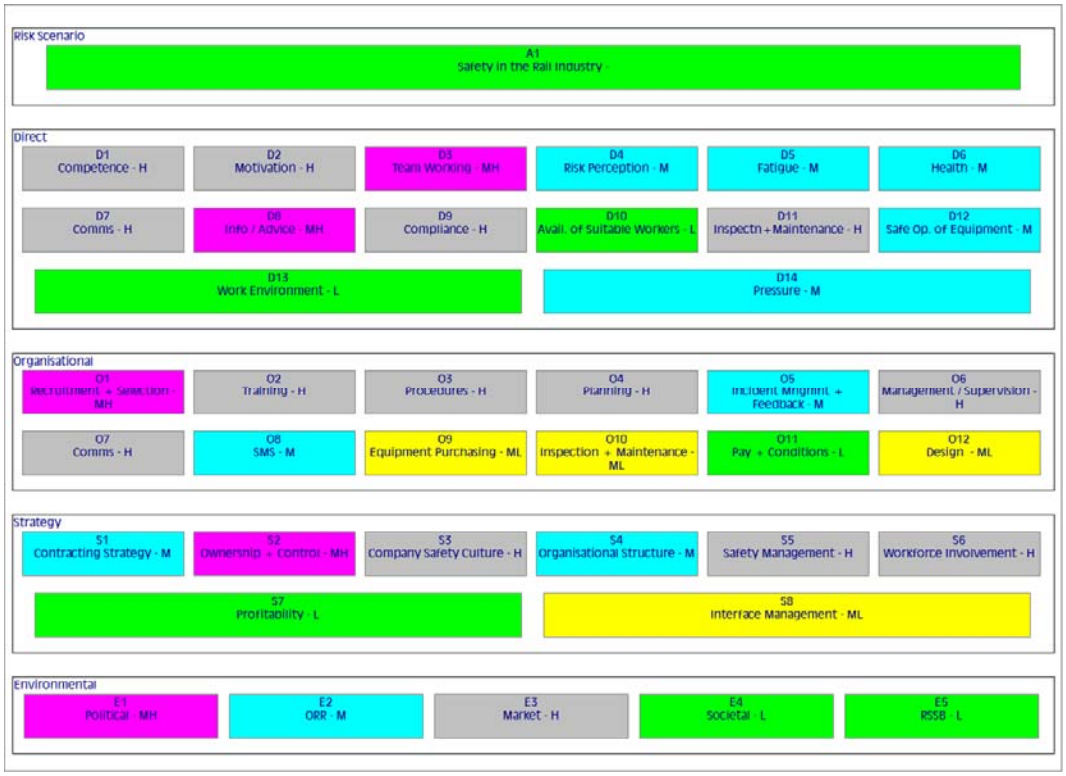


Figure 5 Influence Network model with composite importance weightings for each factor

Figure 5 highlights that the following factors were assessed as being the most important at each of the four levels:

- **Direct level factors** - Competence, Motivation, Communications, Compliance, Inspection & Maintenance
- **Organisational level factors** - Training, Procedures, Planning, Management / Supervision, Communications
- **Strategy level factors** - Company Safety Culture, Safety Management, Workforce Involvement
- **Environmental level factors** – Market

5.5 CONCLUSIONS

- All Influence Network factors rated positively, with aspects of ‘Availability of Suitable Workers’ and ‘Pressure’ at the Direct level showing most room for improvement
- A range of factors at each level of the Influence Network were weighted as being highly influential on safety in the rail industry
- Feedback about ORR and the ROGS included:
  - “ORR seems well regulated and funded”
  - “ORR is better than it was under HSE”
  - “ROGS are better than safety case regulations”

6. BASELINE ROGS SURVEY

6.1 INTRODUCTION

To contribute to the baseline measure a ROGS survey was issued to a representative sample of organisations in the rail industry during August and September 2007. The survey explored a series of key safety indicators including organisations awareness and understanding of ROGS, indicators of industry safety culture, implementation of ROGS and the associated costs and the perceived impact of ROGS on safety. The following section describes the development of the survey, the survey sample and the overall findings.

6.2 DEVELOPMENT OF THE SURVEY

6.2.1 Survey data mapping to ROGS objectives

The overarching objective of the survey was to gather data that would help to indicate the extent to which the ROGS objectives had been met. Section 3.4 and Table 2 highlight the evaluation plan showing the mapping of survey data against ROGS intermediate objectives.

6.2.2 Survey structure and contents

The survey consisted of two parts. The first part was completed by everyone (i.e. duty holders and non-duty holders) and the second part was completed by duty holders only. More specifically these two parts consisted of the following sections:

Part 1 – To be completed by everyone

- **Organisational details** – this section was confidential to BOMEL only and enabled respondents to be contacted again if necessary

- **Awareness and understanding of ROGS** – this section was developed in order to gauge whether the initial outcomes on the impact pathway had been achieved.

- **Indicators of industry safety culture** – this section was designed to gather a snapshot of safety culture from the perspective of health and safety representatives within each participating rail organisation. It was not designed to be a full safety culture study. The safety culture items were selected from the HSE's Safety Climate Tool (HSSCT)[11] and represented each of the key safety culture factors within this safety culture model.

- **General feedback on ROGS and ORR** – this section provided direct feedback from industry on the performance of ROGS and ORR.

- **Additional comments** – this last section in Part 1 of the survey provided respondents with an opportunity to make any additional comments that they had not already had an opportunity to make.

Part 2 – To be completed by duty holders only

- **Specific duty holder details** – this included questions about annual company turnover, number of employees and passenger kilometres travelled. This data was required in order to put cost data into context.

- **Implementation of ROGS** – this section asked specific questions in relation to the key elements of ROGS (i.e. safety management systems, safety verification, safety certification, safety authorisation, risk assessment, the annual safety report, duty of co-operation and safety critical work).

- **Additional comments** - this last section in Part 2 of the survey provided respondents with an opportunity to make any additional comments that they had not already had an opportunity to make.

The survey was drafted by BOMEL with input from ORR officials and final approval was given by ORR prior to issuing the survey to industry.

6.2.3 Issuing the survey

The survey was targeted at individuals with a responsibility for safety (e.g. Safety Managers, Supervisors, Safety Representatives etc.). It was emailed to a representative sample of rail industry organisations on 30th August 2007, with a response deadline of 19th September 2007. This was almost one year since ROGS fully came into force.

Please see Appendix B for a copy of the survey issued to the rail industry.

6.2.4 Collation and analysis of the survey findings

The survey was formatted as an electronic Word response form allowing respondents to either complete the form electronically and email it back, or print the form, complete it in hard copy and then post it back to BOMEL. Forms completed electronically were automatically imported into an Access database and those completed in hard coy were transferred into electronic forms and then imported into the same database. BOMEL was then able to analyse the responses using its Consultation Response Analysis Tool (see Figure 6 for a diagram of the user interface).

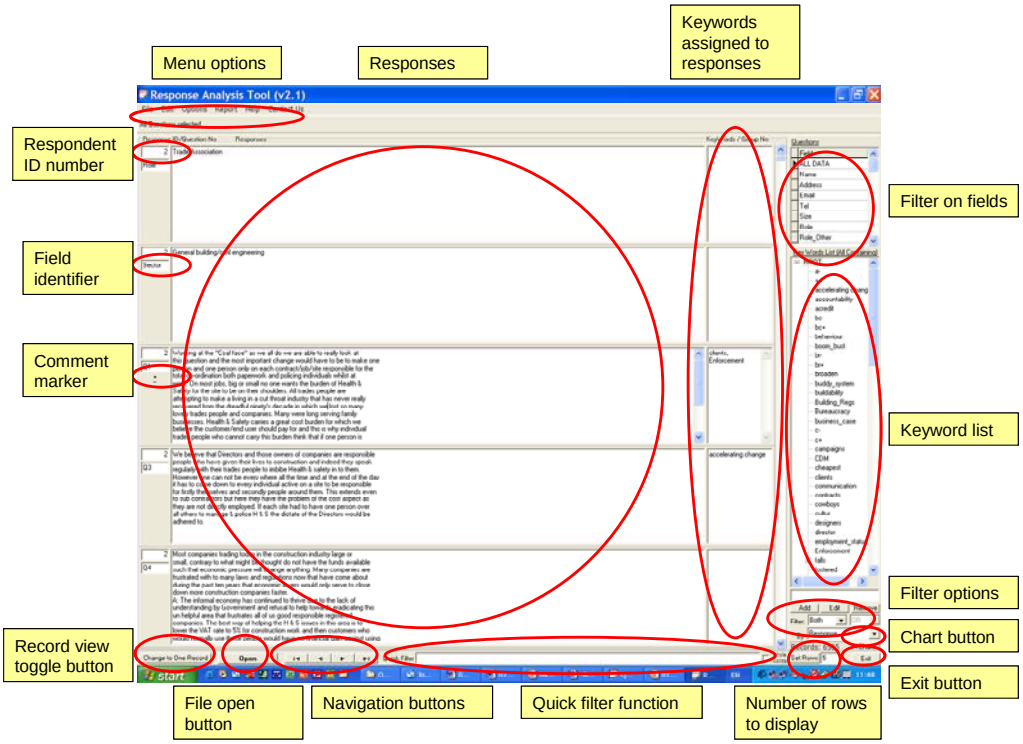


Figure 6 Response Analysis Tool user interface

Figure 6 highlights the Consultation Response Analysis Tool user interface. It illustrates how free text responses to survey questions can be analysed and 'keywords' assigned to highlight key themes running through the answers. The tool also enables more quantitative analysis to be undertaken, where respondents have been asked to answer questions according to a set of predefined responses or on a Likert scale. They tool enabled illustrative graphs to be generated and linked directly to this current report.

6.3 PRESENTATION OF FINDINGS

The findings are divided into two sections in order to aid interpretation. Section 6.5 presents the survey findings from the questions asked to everyone who completed the survey (i.e. duty holders and non-duty holders) and Section 6.6 presents findings from the questions about implementation of the different regulations which were asked to duty holders only.

In some cases not everyone in the sample answered all of the questions relevant to them. In other cases some respondents answered questions that may not have been relevant to them. Respondents were asked to provide only one answer for some questions and for other questions respondents were asked to provide as many answers as were relevant. In order to further aid interpretation of the findings, please read and refer to the following definitions:

- **Respondents** – where percentages are displayed out of 'respondents' (e.g. 60% - 6 out of 10 respondents) this means that this is a percentage of the total number of people responding to that question.

- **Responses** – where percentages are displayed out of 'responses' (e.g. 26% - 11 out of 43 responses) this means that this is a percentage of the total number of responses provided to a question, not the total number of people responding. For example, 10 people may have responded, but if they all provided 2 or 3 answers, then the total number of responses would be more than 10. Where this is the case the percentage has been presented out of the number of responses in order to indicate a trend in the responses.

- **Majority** – used when the number of respondents or the number of responses answering in a particular way is more than 50% of the total number of respondents or responses answering that question.

- **Large** – used when the number of respondents or the number of responses answering in a particular way is the largest number answering in that way, but is not more than 50% of the total number of respondents or responses answering that question.

In terms of the types of organisation responding to the survey (duty holders and non-duty holders), they are defined as follows:

- **Duty holder** – refers to a transport operator (or 'undertaking') with a duty to comply with some or all of the elements of ROGS. These transport operators include: mainline railways; non-mainline railway and other transport systems operating above 40kph (for example, light rail, metro systems); non-mainline railway and other transport systems operating below 40kph (for example, heritage railway); tramways; some types of sidings; work in engineering possessions; and work in depots.

- **Non-duty holder** – a rail oriented organisation working in the rail industry that does not have a duty to comply with any element of ROGS. for example, passenger groups or trade unions.

6.4 SURVEY SAMPLE

The ROGS baseline survey was issued to 34 organisations considered representative of the UK rail industry. BOMEL encouraged further distribution of the survey to increase the sample size (e.g. representative bodies were encouraged to cascade the survey to their membership). Within these organisations, it targeted those individuals with a responsibility for safety, such as safety managers, supervisors and safety representatives etc. A total of 26 organisations responded to the survey, achieving a 76% response rate.

Of the 26 organisations that responded, 17 organisations classed themselves as 'duty holders' and 9 classed themselves as other rail industry organisations (or 'non-duty holders') such as passenger groups, safety groups, other transport associations, trade unions etc. Figure 7 highlights the different types of rail industry organisation represented in the survey sample.

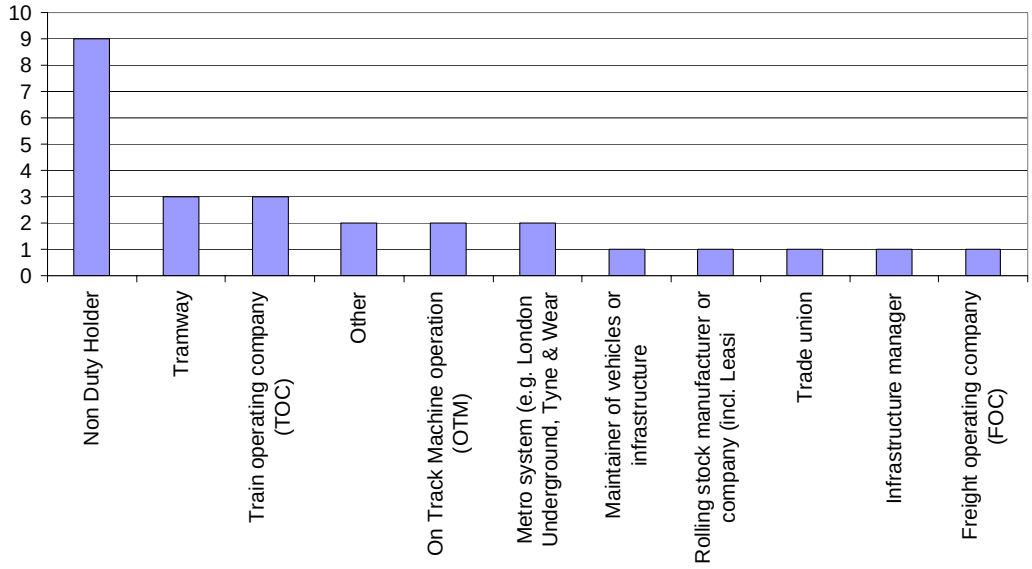


Figure 7 Types of survey respondent

Figure 7 highlights the 9 non-duty holder organisations responding to the survey. The graph also shows the 17 duty holders and how they are divided between representatives from tramways, train operating companies, metro systems, on-track machine operating companies, maintenance organisations and freight operating companies. The organisations that classified themselves in the 'other' category were those organisations which encompassed several of the different rail organisations, e.g. they operated a train operating company and a tramway etc.

It should be noted for the avoidance of doubt, that although one trade union did not class themselves in the 'non duty holder' group, they are not generally considered to be a duty holder as defined in this report.

6.5 SURVEY FINDINGS – COMPLETED BY ALL SURVEY RESPONDENTS

6.5.1 Awareness and understanding of ROGS

To assess the industry's general awareness and understanding of ROGS at the time point of September 2007, all organisations were asked a series of questions to assess their awareness of ROGS and explore any guidance or assistance they had used to help them understand and implement the regulations. All 26 organisations were asked these questions (i.e. both duty holders and non-duty holders).

Figure 8 highlights respondents' level of agreement with the statement "I am aware of ROGS and their contents".

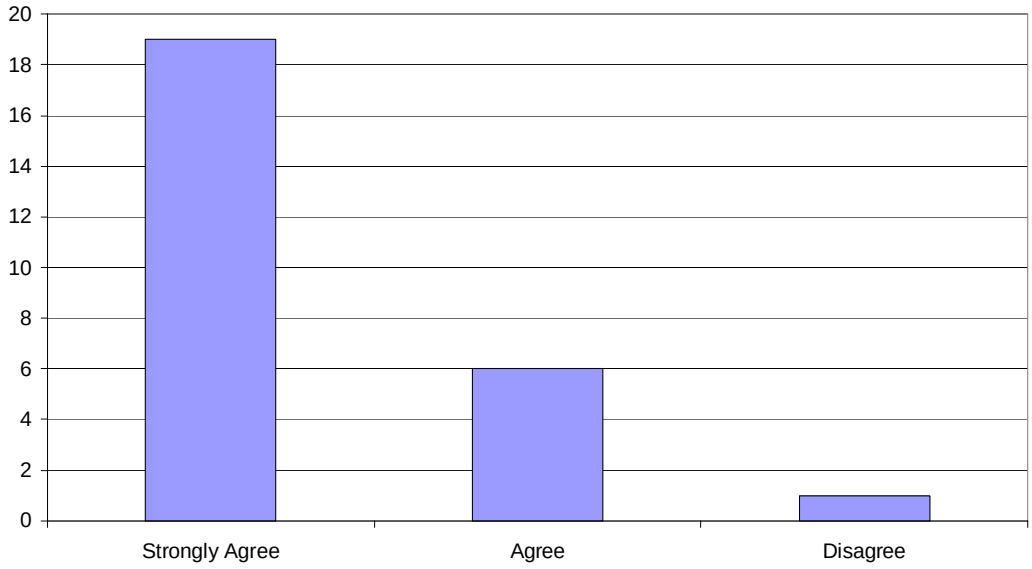


Figure 8 Respondents level of agreement with the statement "I am aware of ROGS and their contents"

Figure 8 highlights that the majority of respondents (73% - 19 out of 26) 'strongly agreed', and a further 23% (6 out of 26) 'agreed', that they were aware of ROGS and their contents. Only 4% (one respondent) said they disagreed with the given statement.

In order to probe respondents understanding of ROGS, Figure 9 highlights respondents' level of agreement with the statement "I understand the requirements of ROGS".

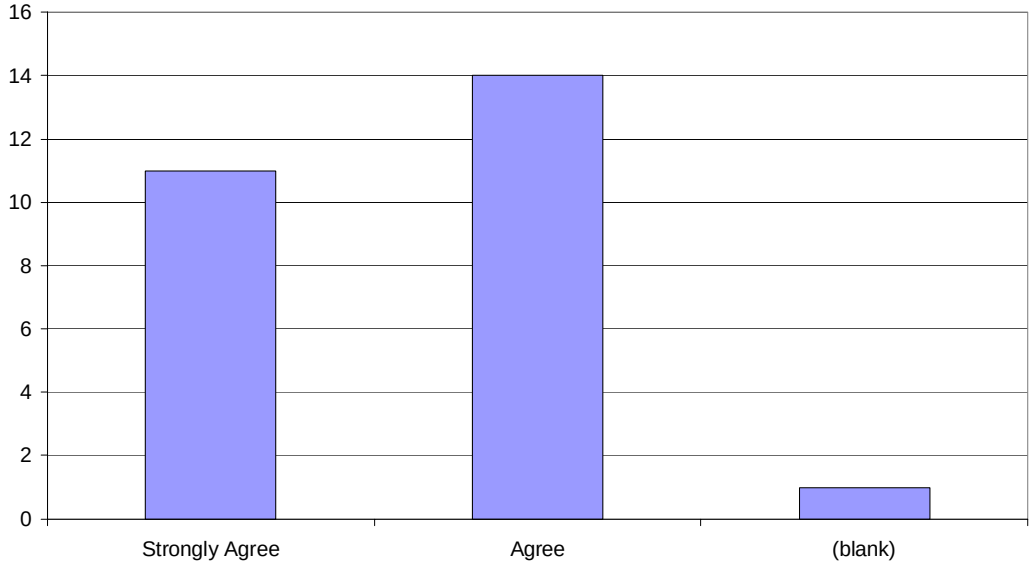


Figure 9 Respondents level of agreement with the statement "I understand the requirements of ROGS"

Figure 9 highlights that the majority of respondents (54% - 14 out of 26) 'agreed' they understood the requirements of ROGS and a further 42% of respondents (11 out of 26) 'strongly agreed'. One individual did not respond to the question.

The survey also asked respondents if they used any guidance to help them understand ROGS; the majority of respondents (96% - 25 out of 26) said they used guidance and one individual did not respond to the question. Respondents were then asked what type of guidance they had used and Figure 10 highlights the response. It should be noted that respondents could indicate having used more than one type of guidance.

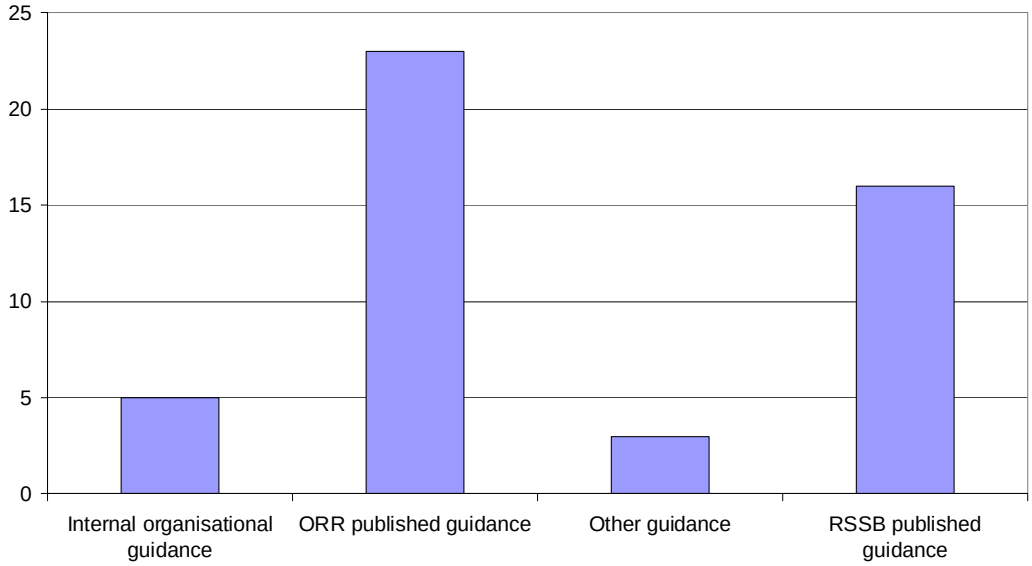


Figure 10 Guidance used by respondents to help them understand ROGS

Figure 10 highlights that the largest percentage of responses (49% - 23 out of 47 responses) indicated using ORR published guidance, 34% (16 out of 47 responses) indicated using RSSB published guidance and 11% (5 out of 47 responses) indicated using their own internally developed organisational guidance. A handful (3 out of 47 responses) of responses also indicated that they used 'other' guidance; this included:

- sharing understanding with other transport undertakings;
- RSSB conferences;
- output from review of other Safety Certificate submissions.

Where respondents had indicated using a particular type of guidance, they were then asked to indicate how useful they found that particular type of guidance; the findings are presented in Table 26.

Table 26 Perceived usefulness of ROGS guidance

Guidance used	Guidance usefulness					
	Very useful	**Useful**	**Not useful**	**Not sure**	**N/A**	**TOTAL**
ORR published guidance	7	15	2			**24**
RSSB published guidance	4	13		1		**18**
Internal organisational guidance	3	4			3	**10**
Other guidance	2	1			4	**7**

Interestingly, Table 26 indicates that a higher number of respondents provided their view on how useful they thought the guidance was, than had indicated actually using the guidance. It may be that some respondents held a 'view' on some of the available guidance, even if they had not actually used it themselves. Table 26 highlights that the majority of responses providing a view on the usefulness of the different types of guidance (including ORR published guidance) thought the guidance was either 'useful' or 'very useful'. Only two responses received indicated the ORR published guidance was 'not useful'.

Where respondents indicated they felt the guidance had been either 'useful' or 'very useful' they were asked to give a reason why they felt this way, for each of the following types of guidance:

- **ORR published guidance** - standardised and therefore familiar format; excellent interpretation of the intent behind the Regulations and what duty holder's must do to ensure compliance; clear, concise and thorough; based on facts.

- **RSSB published guidance** - guidance follows a logical structured path to the requirements; user friendly; useful in clarifying 'duty of cooperation' regulation.

- **Internal organisational guidance** – one respondent explained that it was necessary to take the ORR guidance and re-work it for their specific audience (e.g. health and safety representatives).

Two respondents out of the 24 providing a view (8%) said they felt the ORR published guidance was not useful; the reasons given (offered by more than two respondents) were as follows:

- Concentrates too much on heavy rail and is not specific enough about the application to the light rail and tramway sectors.

- SMS requirements applicable to tramways could have been stated more clearly. Specific guidance relating to tramways only would be of great help.

- Structuring of the guidance notes (particularly the degree of cross referencing and exclusion references) can be difficult to interpret; described as too 'legalistic'.

NB. Since undertaking the survey ORR has revised its guidance and the new version has achieved the Plain English Campaign's Crystal Mark.

In addition to the guidance available for ROGS, 21 respondents said they had also used other help to assist them in understanding ROGS and 4 respondents said they had not used any other help. One respondent did not answer the question. Figure 11 highlights the other help used by respondents to assist them in understanding ROGS.

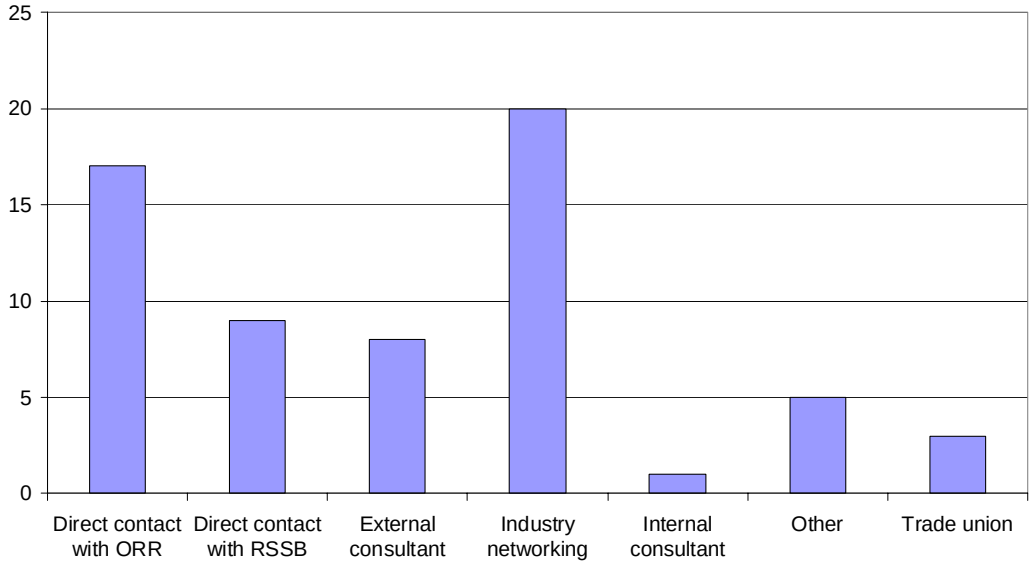


Figure 11 Other help used by respondents to assist them in understanding ROGS

Figure 11 highlights that survey respondents enlisted additional help on understanding ROGS from a variety of sources, including industry networking (32% - 20 out of 63 responses); direct contact with ORR (27% - 17 out of 63 responses); direct contact with RSSB (14% - 9 out of 63 responses); and external consultants (13% - 8 out of 63). A number of responses said they used 'other' help, which included:

- Attendance at the 'Industry Liaison Group' for ROGS;
- CPT LROC, LREG and ORR workshop;
- Personal industry and internal organisational contacts (e.g. company legal department)

6.5.2 Indicators of Industry Safety Culture

6.5.2.1 Safety culture definition

Gathering a 'traditional' measure of organisational safety culture (i.e. the shared attitudes, values and beliefs about safety in an organisation originating from all levels of the organisation) within each rail organisation within the UK rail industry would not have been feasible within the remit of this current evaluation study. Therefore, in order to gather an 'indication' of safety culture within the rail industry, health and safety representatives at each participating rail organisation were asked for their personal views on a series of safety culture statements. It should therefore be underlined that the responses received to the safety culture items presented the views of the individual respondent only, not the views of the whole organisation. However, they do provide an indicator of safety culture, based on the views of those people that are tasked with actively managing safety in a representative range of rail industry organisations.

6.5.2.2 Methodology

Views on key safety culture items were gathered at the time point September 2007, and all 26 respondents (i.e. duty holders and non-duty holders) were asked to indicate their personal level of agreement with 13 safety culture statements. The safety culture statements included 9 'positive' and 4 'negative' safety culture statements to ensure respondents did not become too familiar with answering the questions using the same scale points and thus reducing the reliability of the findings. The safety culture items were selected from the HSE's Safety Climate Tool (HSSCT)[11] and represented each of the key safety culture factors within this safety culture model.

6.5.2.3 Findings

Table 27 highlights the percentage of respondents that either agreed, disagreed, felt neither way or did not offer an opinion, on each of the 13 safety culture statements. The raw number of respondents (out of 26) are also shown in brackets after the percentage. The largest percentage is then shaded in the table in grey. It should be noted that in relation to some safety culture statements the largest percentage was equally divided between two responses; where this is the case both percentages have been shaded in grey.

Table 27 highlights that for the clear majority of safety culture statements (9 out of 13 statements) respondents answered positively, indicating a positive safety culture at their own organisations, as well as highlighting their individual contributions to a positive industry safety culture. However, several of the safety culture statements (4 out of 13 statements) indicated some room for improvement. Statements relating to people working safely un-supervised, having adequate resources to work according to safety procedures, near miss reporting, and people's understanding of the work-related risks, indicated a significant percentage of unfavourable responses or no response at all.

Table 27 Level of agreement with core organisational safety culture issues

POSITIVE SAFETY CULTURE STATEMENTS	Strongly agree	Agree	Neither	Disagree	Strongly disagree	No opinion
3.1. There are good communications here about health and safety issues	19% (5)	50% (13)	8% (2)	4% (1)		19% (5)
3.2. The company really cares about the health and safety of the people who work here	58% (15)	23% (6)				19% (5)
3.3. My immediate boss often talks to me about health and safety	42% (11)	27% (7)	4% (1)	8% (2)		19% (5)
3.4. Supervisors are good at detecting unsafe behaviour	4% (1)	46% (12)	23% (6)			27% (7)
3.6. I trust my workmates with my health and safety	15% (4)	54% (14)	8% (2)	4% (1)		19% (5)
3.7. I am clear about what my responsibilities are for health and safety	35% (9)	46% (12)				19% (5)
3.9. People here always work safely even when they are not being supervised	12% (3)	27% (7)	15% (4)	23% (6)		23% (6)
3.12. There are always enough people available to get the job done according to the health and safety procedures/instructions/rules		31% (8)	19% (5)	19% (5)		31% (8)
3.13. Near misses are always reported	4% (1)	15% (4)	19% (5)	23% (6)	15% (4)	23% (6)
NEGATIVE SAFETY CULTURE STATEMENTS	**Strongly agree**	**Agree**	**Neither**	**Disagree**	**Strongly disagree**	**No opinion**
3.5. There is nothing I can do to further improve health and safety here		4% (1)		31% (8)	46% (12)	19% (5)
3.8. People here do not remember much of the health and safety training which applies to their job		8% (2)	8% (2)	62% (16)		23% (6)
3.10. People here think health and safety is not their problem – it's up to management and others		4% (1)	8% (2)	46% (12)	23% (6)	19% (5)
3.11. Some people here have a poor understanding of the risks associated with their work		35% (9)	12% (3)	35% (9)		19% (5)

** Not all percentages sum 100% due to rounding*

6.5.3 Feedback on ROGS and ORR

All 26 respondents were asked a series of questions designed to gather direct feedback about ROGS and the ORR's role as the safety regulator. It should be noted that the views expressed in this section are only the views of the 26 individual respondents and are not necessarily representative of their whole organisation.

Figure 12 highlights survey respondents' feedback to the question "Has ROGS changed the way in which safety has been managed in your organisation?"

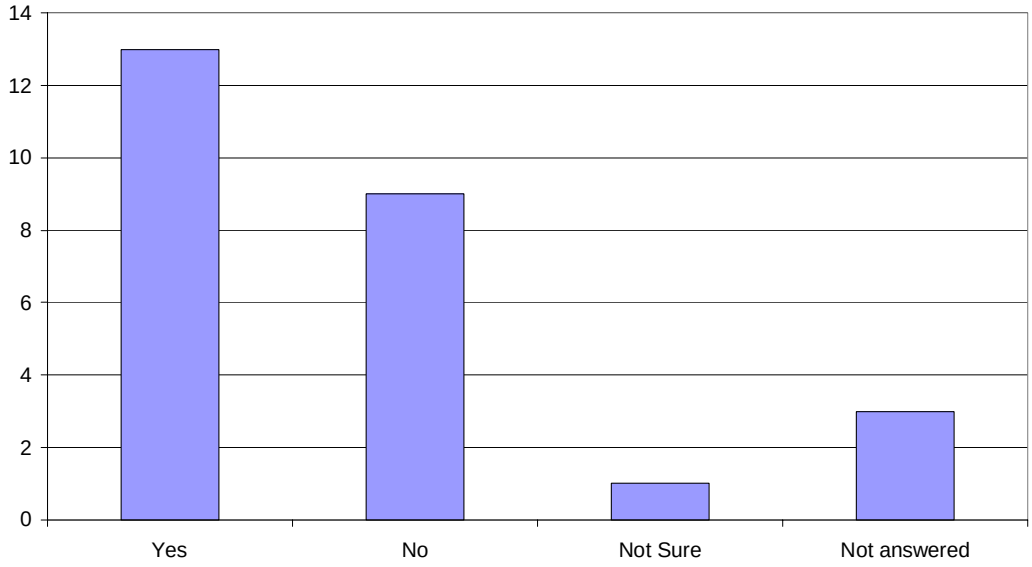


Figure 12 Has ROGS changed the way in which safety has been managed in your organisation?

Figure 12 highlights that the largest percentage of respondents (50% - 13 out of 26) felt ROGS had changed the way safety is managed in their organisation. However, 35% (9 out of 26) did not feel ROGS had made a difference. One respondent was not sure and 3 respondents did not answer the question. The reasons given to explain why ROGS had changed the way safety was managed included:

- Slight change in emphasis; now focus is on the need for better company standards rather that the content of the Railway Safety Case.
- Increased focus on certain specific issues such as managing fatigue in safety critical workers.
- More emphasis on safety validation has caused internal action to be refocused.
- Developed new safety team at the same time as ROGS introduction.
- Due to requirement for new documentation we have reviewed our existing systems with a fresh pair of eyes.

- It has placed a greater requirement on the organisation to have a robust SMS in place.

Respondents were also asked if ROGS had made any difference to safety-related decision making and their response is presented on Figure 13.

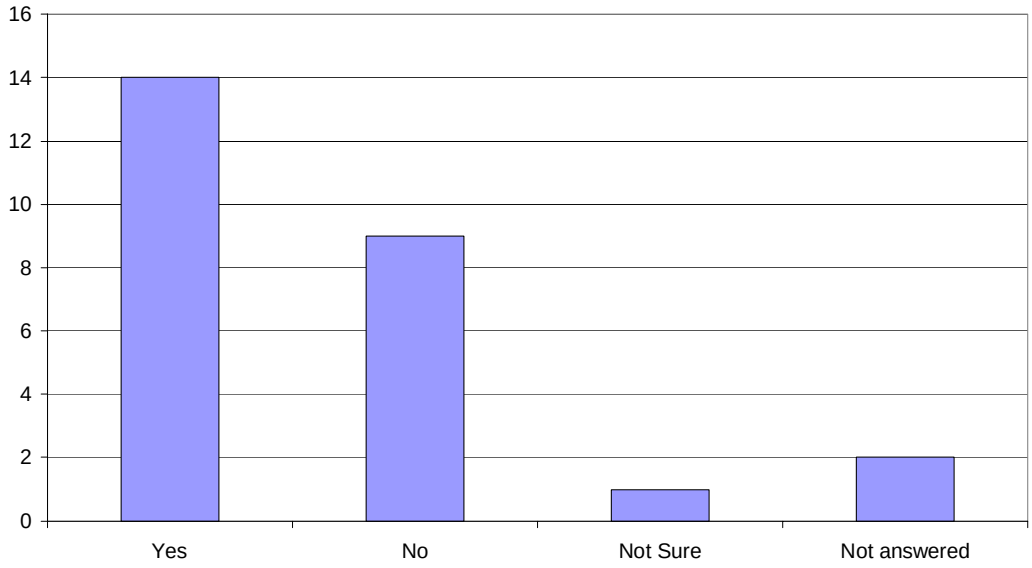


Figure 13 Has ROGS made any difference to safety related decision making?

Figure 13 highlights that the majority of respondents (54% - 14 out of 26) felt ROGS had made a difference to safety related decision making. However, 35% (9 out of 26) did not feel ROGS had made a difference. One respondent was not sure and 2 respondents did not answer the question. The 14 respondents that said they felt ROGS had made a difference to safety related decision making were asked why they felt this way. The reasons given by 13 of the 14 respondents were as follows.

- It has clarified TOC responsibilities.
- There are some changes to previous procedures.
- It has refocused the organisation onto the management of safety critical work / licensing and fatigue.
- It has led us to undertake a timely review of our internal management of change processes. This continues to be developed and refined as the introduction of new rolling stock will certainly force a change to meet the Interoperability requirements. However, at this time there have been no fundamental changes to the process of Safety Validation within our duty holders.
- Simplification of systems for safety verification.
- Loss of direct contact with informed and competent individuals at HMRI has undermined our ability to influence the system design process in respect of safety.

- ROGS has brought the client into the regulatory relationship and will hopefully do so for other light rail companies. This should help them engage as they have often not acted on their responsibilities.

- It has helped with prioritisation.

- It will increase the level of bureaucracy required to document and validate decisions – this will make things slower and more expensive.

- It has caused some minor changes to safety decision criteria and safety cost benefit models, arising from ORR's assessment of SMS.

- Additional verification activities have been required to take over the HMRI activities previously in the Works Plant and Equipment (ROTS) regulations.

- Because of the revised arrangements for placing vehicles into service, the Professional Heads of Operations and Mechanical and Electrical Engineering now lead more visibly in their fields.

- Organisations now have to ensure that safety decisions are taken in a rational and justifiable manner.

Respondents were asked to indicate their level of agreement with the statement “From experience, I believe that standards of safety are the same under ROGS”. Figure 14 highlights the feedback received.

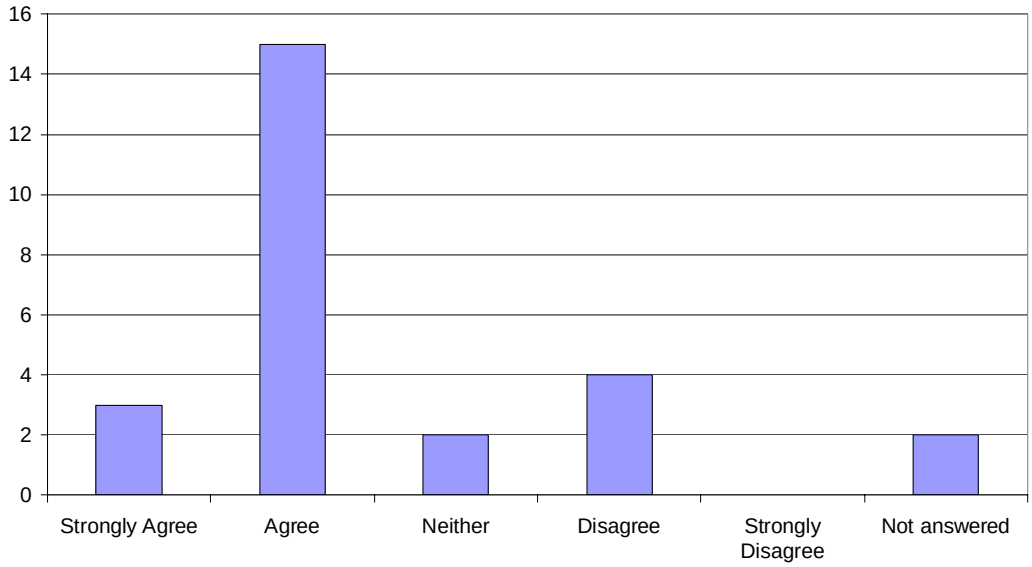


Figure 14 Respondents level of agreement with the statement “From experience, I believe that standards of safety are the same under ROGS”

Figure 14 highlights that the majority of respondents (69% - 18 out of 26) agreed or strongly agreed that standards of safety are the same under ROGS. Only 15% (4 out of 26) disagreed that standards of safety were not the same under ROGS.

When asked about the administrative burden of the regulations, 42% (11 out of 26) felt more could be done to reduce the burden, although a similar amount (38% - 10 out of 26) said they did not feel that any more could be done to reduce it. A further 3 respondents said they had no opinion and 2 respondents did not answer the question. Those respondents that felt the administrative burden could be reduced made the following suggestions:

- Remove the Competent Person requirement and reinstate HMRI inspection.
- Retain "ROTS" for heritage sector.
- Remove annual safety reporting (felt unlikely to be of any benefit).
- Reduce high number of calculations required as part of the annual safety report.
- Provide user friendly guidance to assist operators with determining the level of detail required for Safety Certificate submission documents.

However, it is also worth noting that one respondent did make the comment that the administrative burden has reduced considerably by comparison with the Railway Safety Case regime.

Respondents were also asked how they would describe the help and support they have received from ORR and their feedback is highlighted in Figure 15.

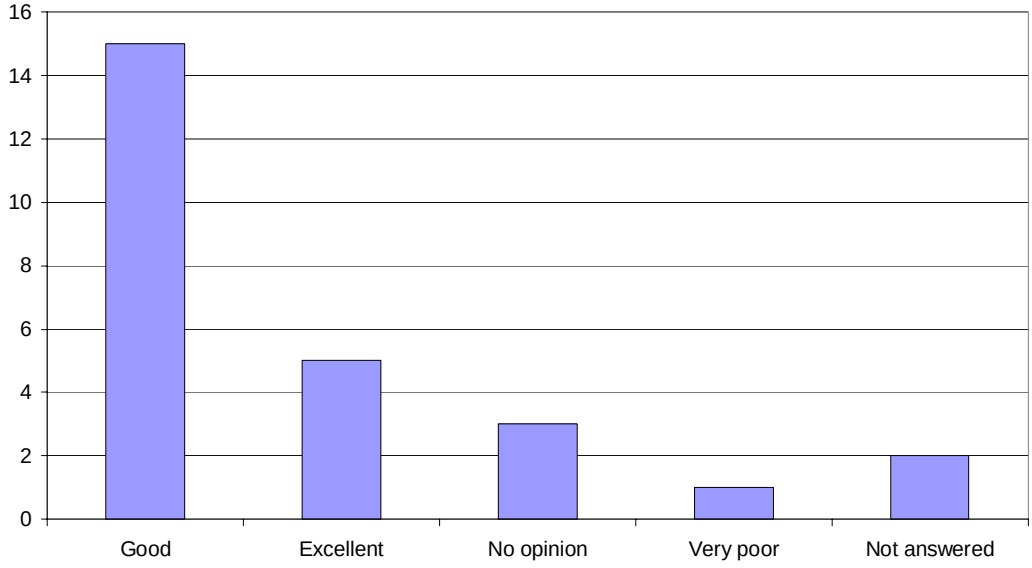


Figure 15 How would you describe the help and support you have received from ORR?

Figure 15 highlights that in total 77% respondents (20 out of 26) felt that the help and support received from ORR had been either excellent or good. Only one person described it as being very poor.

Finally, all 26 respondents were asked what else ORR could do to help them with ROGS. Suggestions made included the following:

- Continue with the Industry Liaison Group meetings
- Support efforts to retain "ROTS"
- Work with UKTram, CPT and other relevant tramway organisations to address the cost and safety risks to the tram industry as a result of ROGS
- Provide a template for SMS
- More examples of what requires verification
- Issue an abridged version of ROGS specific to tramways.
- Be clearer about what ORR's role is in the context of system safety, i.e. assurance that all parts of the system work together effectively
- Good succinct guidance on the application of ROGS (respondent appreciated this was in development)

6.6 SURVEY FINDINGS – COMPLETED BY DUTY HOLDERS ONLY

6.6.1 Safety Management System (SMS)

Duty holders only were asked a series of questions relating to ROGS safety management system (SMS) regulation.

In order to ensure the SMS questions were relevant to the respondent, duty holders were firstly asked if they had a SMS which was ROGS compliant. In total 15 organisations answered the question, with 80% (12 out of 15) confirming they had a ROGS compliant system in place. These 12 organisations were asked additional questions relating to their SMS.

Figure 16 highlights the extent to which duty holders had to change or adapt their existing SMS in order to address the requirements under ROGS.

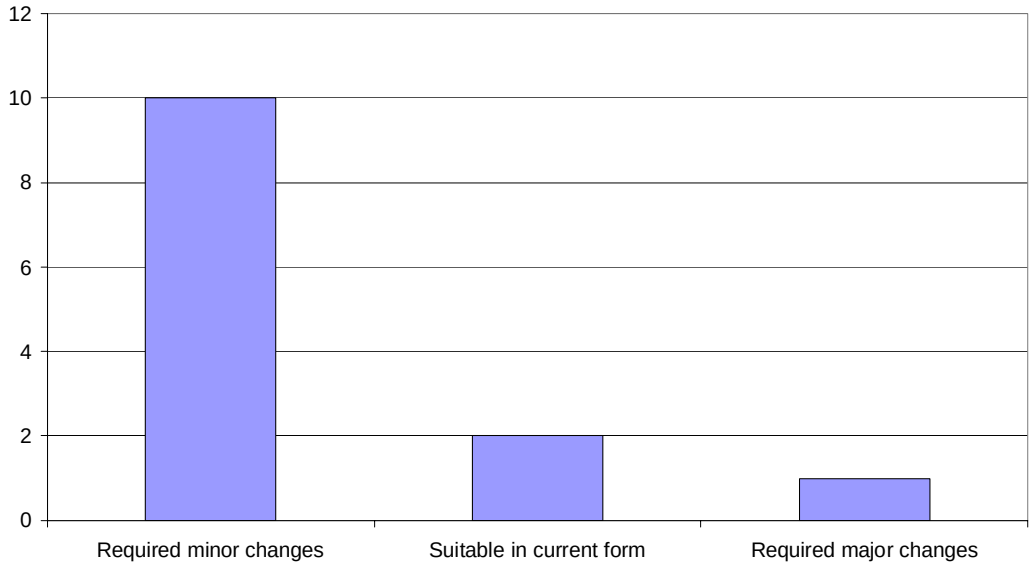


Figure 16 To what extent have you had to change or adapt your existing safety management system in order to fully address the requirements for an SMS under ROGS?

Figure 16 firstly highlights that more than 12 organisations responded to this question. Of the 13 respondents, the majority (77% - 10 out of 13) stated that their existing SMS required minor changes to become ROGS compliant. Only one respondent said their existing SMS required major changes and 2 said their SMS was suitable in its current format. Figure 17 highlights the action taken to change or adapt existing SMS's to ensure they fully address the requirements for an SMS under ROGS. It should be noted that respondents were asked to indicate all the changes they had made, not just provide one change, thus the graph shows a total of 39 responses.

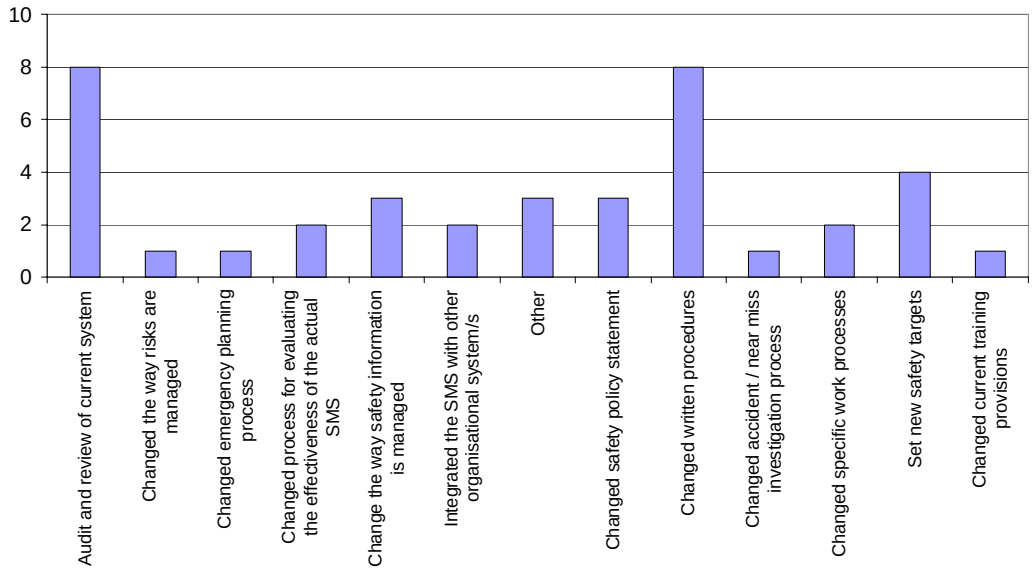


Figure 17 Action required to change or adapt existing SMS to ensure it fully addresses the requirements for an SMS under ROGS

Figure 17 highlights that the most significant changes made to existing SMS's were conducting an audit and review of the current SMS (21% - 8 out of 39 responses) and changing the associated written SMS procedures (21% - 8 out of 39 responses). Several respondents also set new safety targets for their organisation.

In order to understand the cost associated with SMS requirements, respondents were asked to estimate the costs (in GBP and number of working days spent) incurred by their organisation as a result of developing an SMS, and maintaining it per year, under ROGS. The findings were as follows:

- **Setting up an SMS** - The cost per organisation ranged from £5,000 (an OTM) to £500,000 (a Metro system). Within this range, a TOC spent £50,000 and another Metro system spent £40,000. The number of days spent per organisation ranged from 10 days (two OTM's) to 900 days (a Metro system) with an average total number of days per organisation of 272 days.

- **Maintaining an SMS per year** – Two Metro systems provided a cost, one estimated it to be £40,000 and one £60,000. The number of days spent per organisation per year ranged from 10 days (an OTM) to 347 days (a Metro system) with an average total number of days per organisation per year of 156 days.

It should be noted that cost data was only provided by a small number of duty holders, please see Section 4.5.4 for more detailed information.

Figure 18 highlights how the respondents felt the costs of maintaining a safety case under the previous regulatory regime compare with current costs of maintaining an SMS under ROGS.

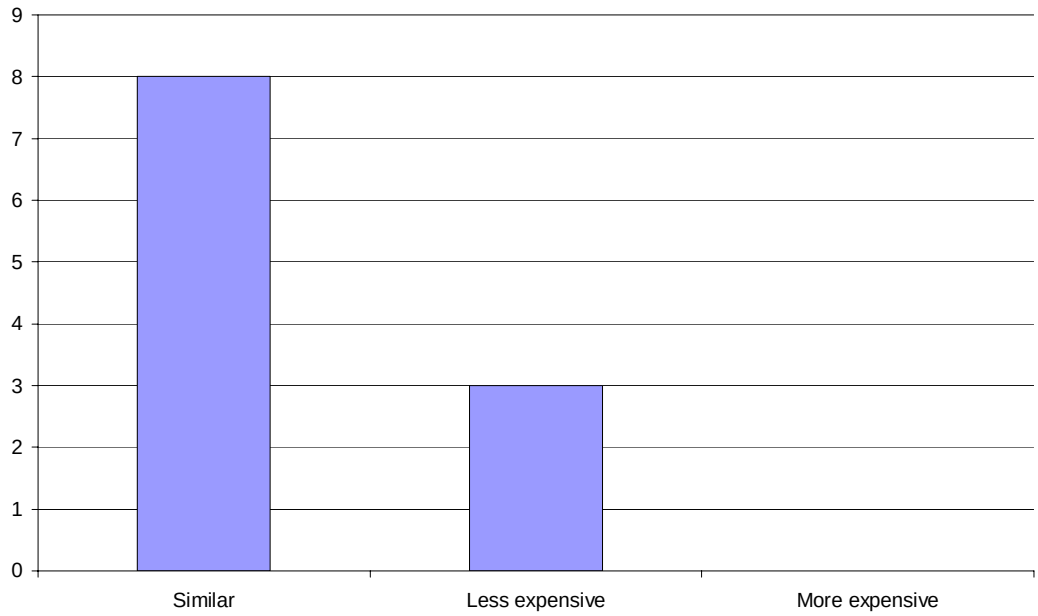


Figure 18 Comparison of the costs associated with maintaining a safety case compared with the current costs of maintaining an SMS under ROGS

Figure 18 highlights how the majority of respondents (73% - 8 out of 11) felt the costs of maintaining a safety case under the previous regulatory regime were similar to the costs associated with maintaining an SMS under ROGS. Encouragingly, 27% (3 out of 11) felt SMS maintenance costs were less expensive than safety cases. Not one respondent felt that SMS maintenance costs were more expensive than safety cases. Respondents were also asked to highlight the main challenges faced whilst maintaining an SMS under ROGS. Respondents were asked to indicate all challenges; 17 responses were received and are presented on Figure 19.

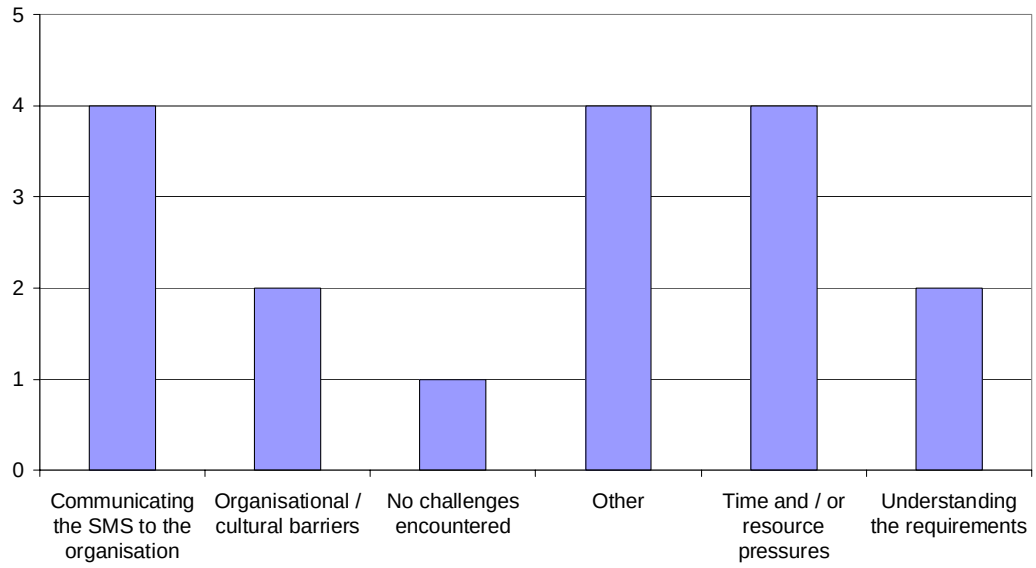


Figure 19 Main challenges in maintaining an SMS under ROGS

Figure 19 highlights that the most significant challenges appeared to be communicating the SMS to the organisation (24% - 4 out of 17 responses) and time and / or resource pressures (24% - 4 out of 17 responses). Some respondents also cited understanding the requirements and organisational / cultural barriers as being a challenge. Included in the category 'other' were challenges such as improving on the validation of change procedures.

Finally, respondents were asked to what extent they felt SMS under ROGS had affected safety. Figure 20 highlights the findings.

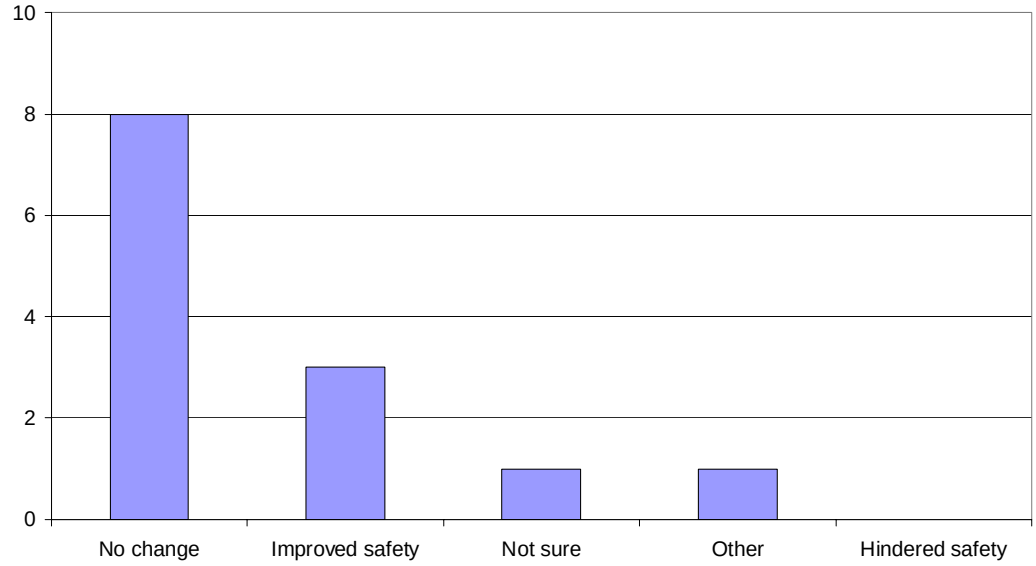


Figure 20 To what extent do you think SMS under ROGS has affected safety?

Figure 20 highlights that the majority of responses (62% - 8 out of 13 responses) indicated that SMS under ROGS had not caused any changes to safety. Encouragingly 23% (3 out of

13 responses) said SMS under ROGS had improved safety and no responses indicated that SMS under ROGS had hindered safety.

6.6.2 Safety Verification

All duty holders were asked if they had processes in place for ensuring the safe introduction of new / altered infrastructure or rolling stock to their operation. It is worth noting that although ROGS are now in force, extensions to safety verification provisions have been granted to Heritage and Tramways.

Figure 21 highlights all of the processes duty holders have in place; 27 responses were received to this question as duty holders were asked to identify all the processes that were applicable to their organisation.

Figure 21 Duty holder processes in place for the introduction of new / altered infrastructure or rolling stock

Figure 21 highlights that the most significant responses were that duty holders were undertaking the SMS change management process (33% - 9 out of 27 responses) or they would go through the safety verification process under ROGS (33% - 9 out of 27 responses). A further 22% of responses (6 out of 27 responses) indicated using a notified body under the Railways (Interoperability) Regulations 2006 (RIR).

Figure 22 highlights the extent to which duty holders have had to change or adapt existing processes in order to fully address safety verification requirements under ROGS.

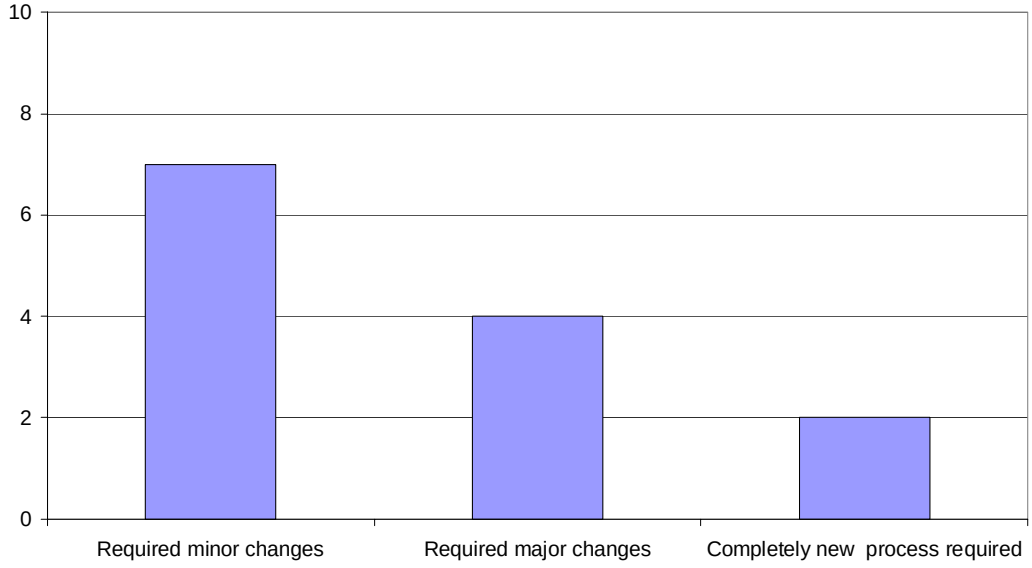


Figure 22 Extent to which duty holders have had to change or adapt existing processes in order to fully address safety verification requirements under ROGS

Figure 22 highlights that the majority of respondents (54% - 7 out of 13) only required minor changes to their existing processes in order to fully address safety verification requirements; 31% of respondents required major changes (4 out of 13); and 15% of respondents (2 out of 13) required a completely new process. Figure 23 highlights the activities duty holders undertook in order to fully address safety verification requirements under ROGS.

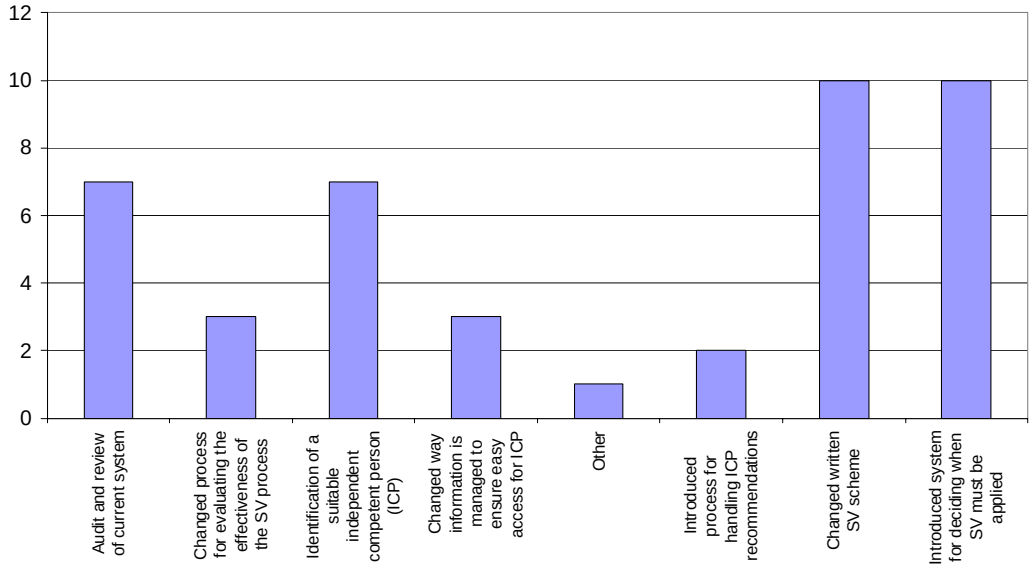


Figure 23 Activities undertaken in order to fully address safety verification requirements under ROGS

Figure 23 highlights that the most significant changes made were changing the written safety verification scheme (23% - 10 out of 43 responses) and introducing a system for deciding when safety verification must be applied (23% - 10 out of 43 responses). Other significant activities included conducting an audit and review of their current system (16% - 7 out of 43 responses) and identifying a suitable independent competent person (ICP) (16% - 7 out of 43 responses).

Duty holders were also asked to estimate the cost they would incur as a result of undertaking safety verification under ROGS per year. The cost per organisation per year ranged from £1,400 (a TOC) to £400,000 (a Metro system) with an average total spend per organisation per year of £139,800. The number of days spent per organisation per year ranged from 2 days to 2,300 days. Separating this by different rail groups highlighted that the cost in days for TOCs ranged from 2 days to 50 days; one FOC reported 3 days of cost; one OTM reported it costing 20 days; one infrastructure manager reported 110 days; and one metro system reported 18 days of consultancy time whilst another metro system reported it costing 2,300 days. Please see Section 4.5.4 for more detailed information.

Figure 24 highlights the perceived main challenges in meeting the requirements of safety verification. Duty holders were asked to indicate all the challenges that applied.

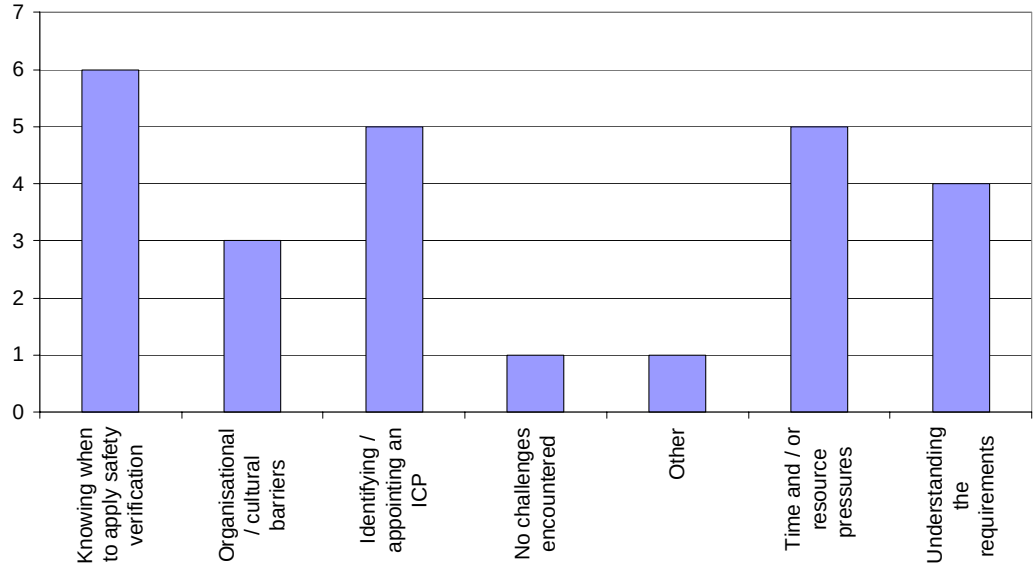


Figure 24 Main challenges in meeting the requirements of safety verification

Figure 24 highlights that the most significant challenge was felt to be knowing when to apply safety verification (24% - 6 out of 25 responses). Other significant challenges were identifying and appointing an independent competent person (ICP) (20% - 5 out of 25 responses); experiencing time and / or resource pressures (20% - 5 out of 25 responses); and understanding the requirements (16% - 4 out of 25 responses).

Finally, respondents were asked the extent to which they felt safety verification had affected safety.

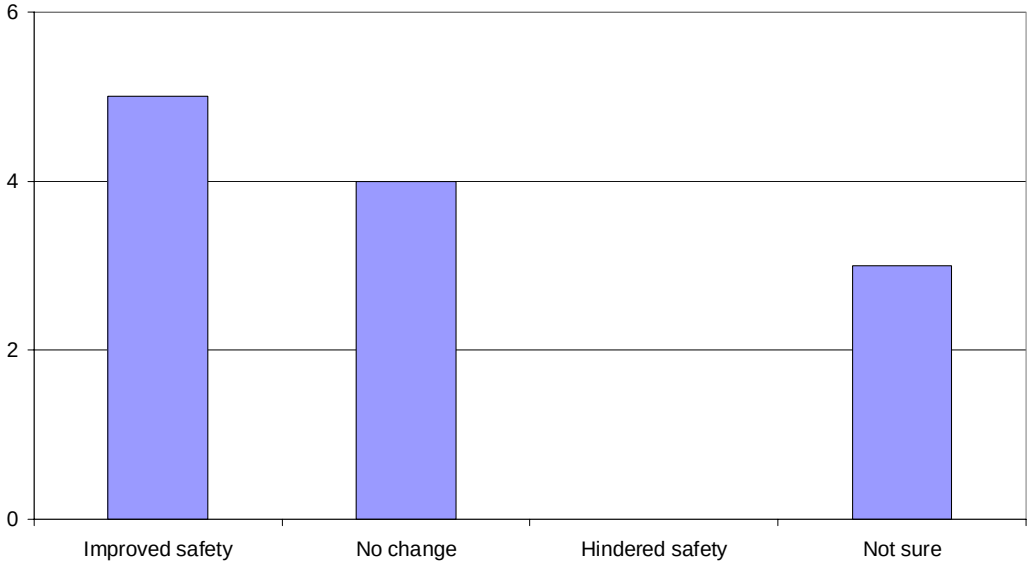


Figure 25 To what extent do you think SV under ROGS has affected safety?

Figure 25 highlights that the largest percentage of respondents (42% - 5 out of 12) believed that safety verification had improved safety. A further 33% of respondents (4 out of 12) said they felt there was no change and 25% said they were not sure.

6.6.3 Safety Certification

All duty holders were asked if they held a safety certificate under ROGS; 44% of respondents (7 out of 16) said they did and 56% (9 out of 16) said they did not have a certificate. They were then asked what stages in the safety certification process they had completed and their feedback is presented on Figure 26. It should be noted that duty holders were asked to indicate all the relevant stages they had completed; 24 responses were received.

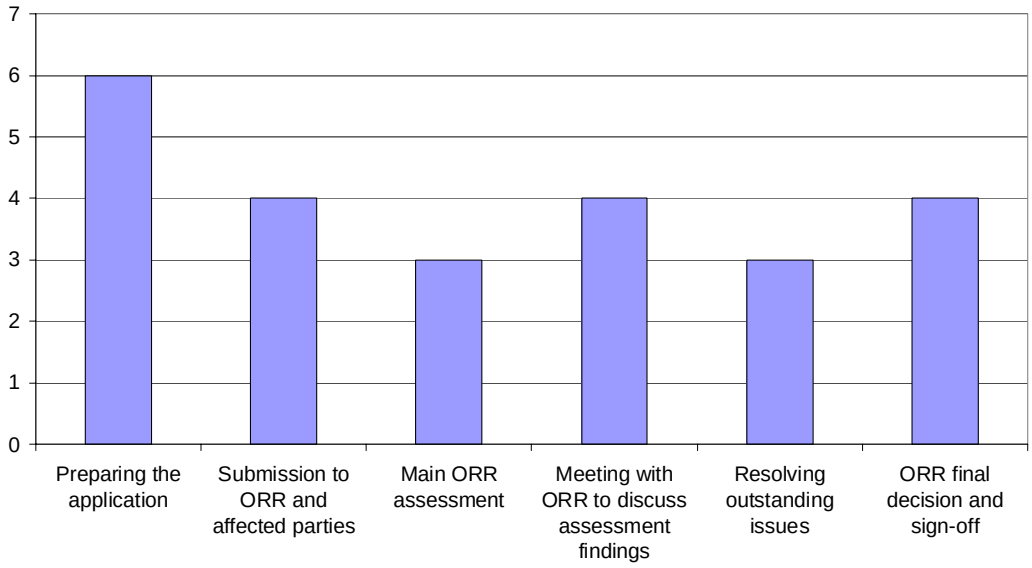


Figure 26 Stages in safety certification process completed by duty holders

Figure 26 highlights that four duty holders had reached the last stage in the safety certification process (ORR final decision and sign-off). Although respondents were asked to indicate all of the stages they had reached, one of these four only indicated having reached the final stage. Therefore, we can also interpret from Figure 26 that six duty holders have made the initial application; three of these six going on to complete all stages until the end of the process. One duty holder indicated having met with ORR before going through the main ORR assessment.

Duty holders were also asked to estimate the costs they incurred as a result of their initial application for a safety certificate under ROGS and then any amendments made to it per year. The estimated costs were as follows:

- **Initial application** - The cost per organisation ranged from £5,000 (an OTM) to £144,000 (a Metro system) with an average total spend per organisation of £59,750. The number of days spent per organisation ranged from 20 days (an OTM) to 230 days (a Metro system) with an average total number of days per organisation of 117 days.

- **Amendment to the safety certificate** - Only one organisation (a Metro system) was able to provide a cost and estimated it to be £48,000. The predicted number of days

spent per organisation per year ranged from 15 days (a TOC) to 60 days (a Metro system) with an average total number of days per organisation per year of 32 days.

It should be noted that cost data was only provided by a small number of duty holders, please see Section 4.5.4 for more detailed information.

Duty holders were also asked how the time and cost invested in applying for safety certificates compared with the time and cost invested in railway safety case applications. A total of 50% of respondents (5 out of 10) felt the time spent applying for a safety certificate under ROGS and the associated cost incurred during the application process was less than the time and cost spent applying for a railway safety case. A further 40% of respondents (4 out of 10) felt the time and cost of application in both regulatory regimes was about the same. Only one respondent felt the new safety certification process was more expensive (in terms of both time and cost).

Duty holders were asked what the main challenges were with regard to gaining their safety certificates; their response is highlighted in Figure 27.

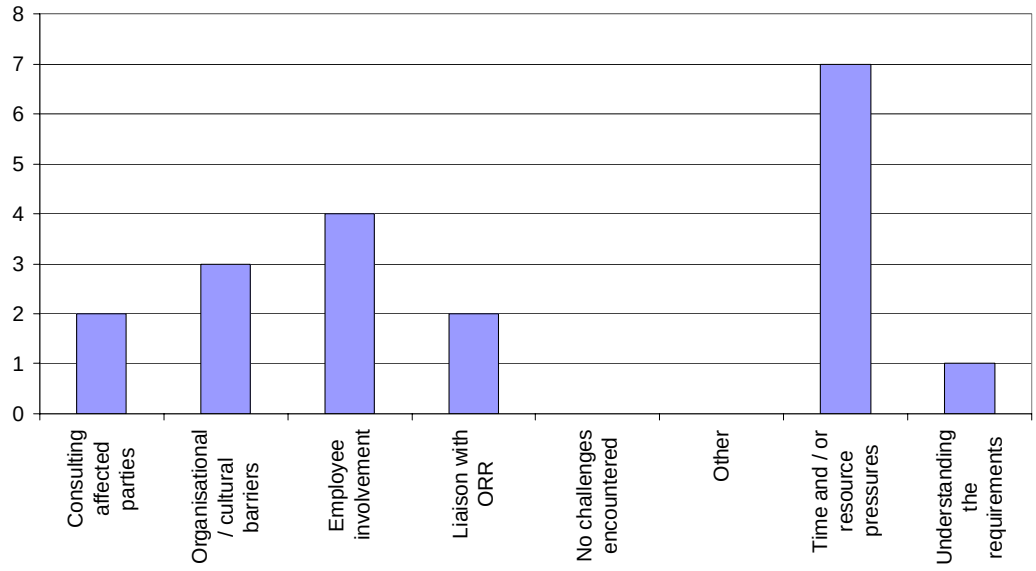


Figure 27 Main challenges in acquiring a safety certificate under ROGS

Figure 27 highlights that the largest percentage of responses (37% - 7 out of 19 responses) indicated time and / or resource pressures as being a challenge in applying for a safety certificate. Employee involvement (21% - 4 out of 19) and organisational / cultural barriers (16% - 3 out of 19) were also raised as being key challenges. One respondent suggested that the ORR provide updated guidance on a simplified safety certification process.

Finally, duty holders were asked to what extent they felt safety certification under ROGS has affected safety; their response is highlighted on Figure 28.

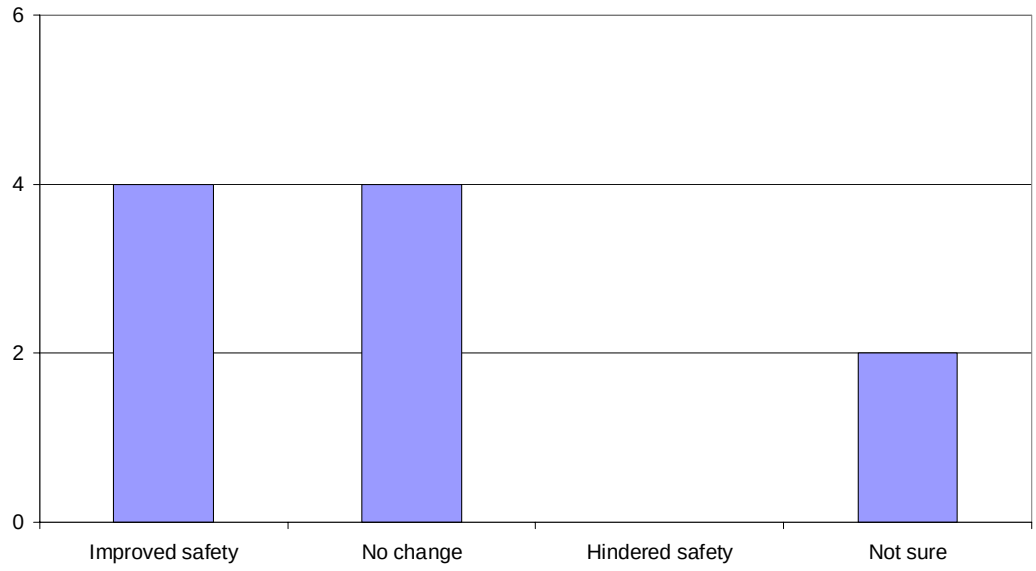


Figure 28 To what extent do you think safety certification under ROGS has affected safety?

Figure 28 highlights that the largest percentage of respondents (40% - 4 out of 10) felt that safety certification had improved safety, however, the same amount felt it had not caused any change. A further 20% (2 out of 10) were not sure. Encouragingly, no one felt safety certification had hindered safety.

6.6.4 Safety Authorisation

All duty holders were asked if they had safety authorisation under ROGS; 31% of respondents (5 out of 16) said they did and 69% (11 out of 16) said they did not have authorisation. They were then asked what stages in the safety authorisation process they had completed and their feedback is presented on Figure 29. It should be noted that duty holders were asked to indicate all the relevant stages they had completed; 23 responses were received.

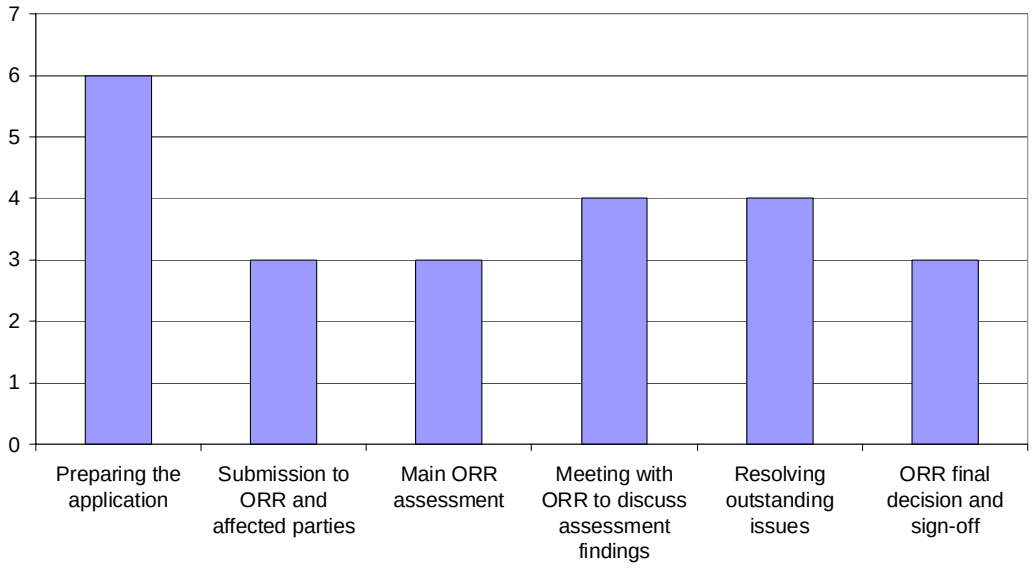


Figure 29 Stages in safety authorisation process completed by duty holders

Figure 29 highlights that all of the stages in the safety authorisation process had been reached by many of the responding duty holders and three duty holders indicated having reached the last stage: ORR final decision and sign-off. Although respondents were asked to indicate all of the stages they had been through, the graph indicates that two duty holders did indicate having met with ORR and resolving outstanding issues before they had submitted their application or gone through the main ORR assessment. It may be because duty holders were referring to other meetings held with ORR about related issues.

Duty holders were also asked to estimate the costs they incurred as a result of their initial application for a safety authorisation under ROGS and then any amendments made to it per year. The estimated costs were as follows:

- **Initial application** - One organisation (a Metro system) was able to provide a cost and estimated it to be £144,000. The number of days spent per organisation ranged from 15 days (a TOC) to 350 days (Infrastructure Manager) with an average total number of days per organisation of 167 days.

- **Amendment to safety authorisation** - Only one organisation (a Metro system) was able to provide a cost and estimated it to be £48,000. Only two organisations were able to provide an estimation of the number of days spent; one TOC said 2 days and one Metro system said 60 days.

It should be noted that cost data was only provided by a small number of duty holders, please see Section 4.5.4 for more detailed information.

Duty holders were also asked how the time and cost invested in applying for safety authorisation compared with the time and cost invested in railway safety case applications. A total of 50% of respondents (3 out of 6) felt the time spent applying for safety authorisation under ROGS and the associated cost incurred during the application process was less than the time and cost spent applying for a railway safety case. A further 50% of respondents (3 out of 6) felt the time and cost of application in both regulatory regimes was about the same.

Duty holders were asked what the main challenges were with regard to gaining safety authorisation; their response is highlighted in Figure 30

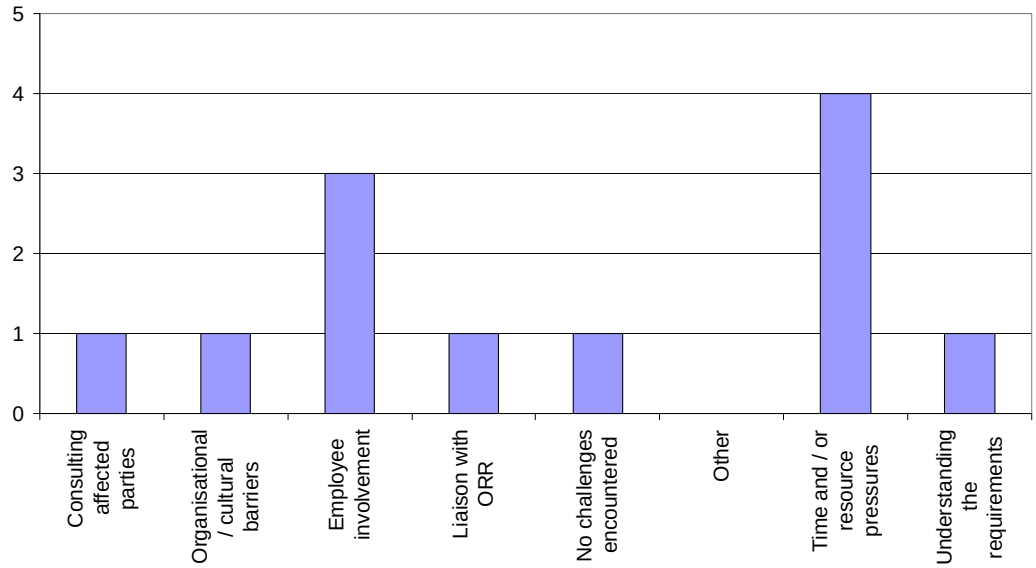


Figure 30 Main challenges in acquiring safety authorisation under ROGS

Figure 30 highlights that the largest number of responses (33% - 4 out of 12 responses) indicated time and / or resource pressures as being a challenge in applying for safety authorisation. Employee involvement (25% - 3 out of 12) was also raised as being a key challenge.

Finally, duty holders were asked to what extent they felt safety authorisation under ROGS has affected safety; their response is highlighted on Figure 31.

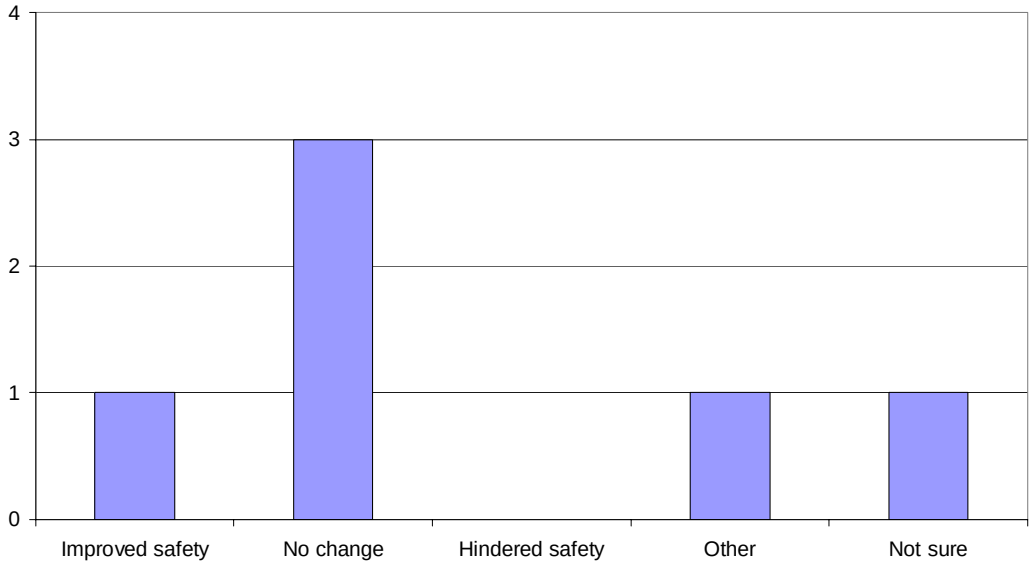


Figure 31 To what extent do you think safety authorisation under ROGS has affected safety?

Figure 31 highlights that the largest number of respondents (50% - 3 out 6) indicated that they felt safety authorisation had not affected safety.

6.6.5 Risk Assessment

Duty holders were asked if the regulations for conducting a risk assessment in accordance with Regulation 19 of ROGS applied to their organisation; 88% of respondents (14 out of 16) said it did apply and 13% (2 out of 16) said it did not apply. Duty holders were then asked about the extent to which they have had to change their existing arrangements for risk assessment in order to address the requirements under ROGS. The findings are highlighted on Figure 32.

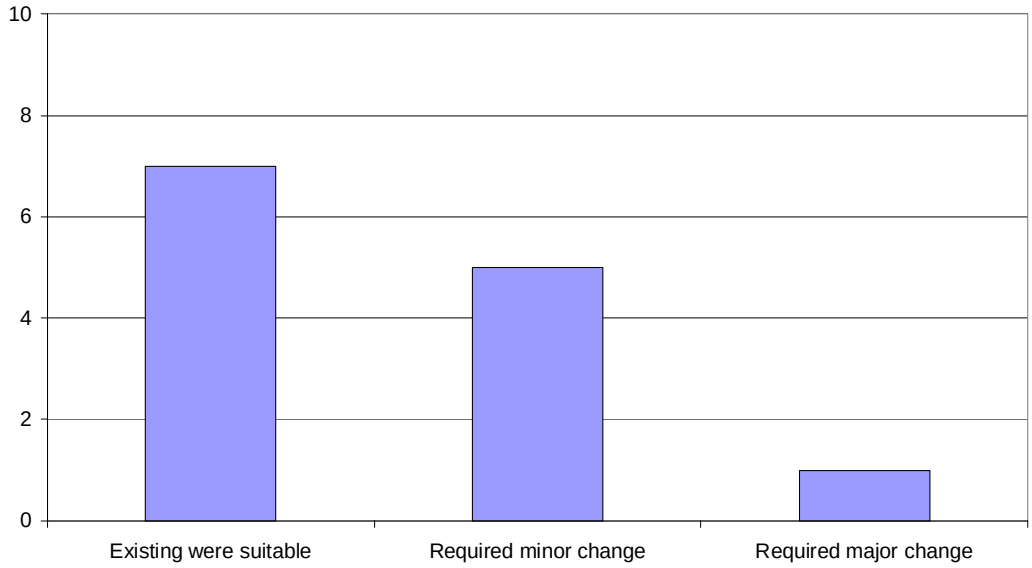


Figure 32 Extent to which existing risk assessment arrangements have had to change in order to address the requirements under ROGS

Figure 32 highlights that the majority of respondents (54% - 7 out of 13) felt their existing risk assessment arrangements were still suitable under ROGS. A further 38% of respondents said their existing system required minor changes and one respondent (8%) said their existing system required major changes. Respondents who indicated making some changes to their existing system were then asked what activities they had undertaken, and the feedback is presented on Figure 33.

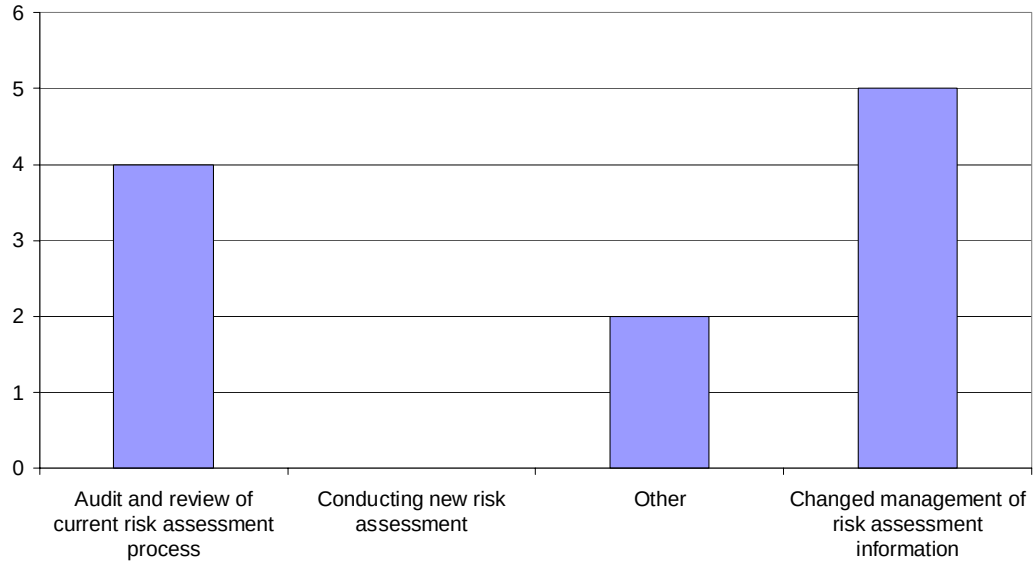


Figure 33 Activities undertaken to change existing risk assessment arrangements in order to address ROGS requirements

Figure 33 highlights that 45% of responses (5 out of 11 responses) changed the management of their risk assessment information and a further 36% of responses (4 out of 11 responses) undertook an audit and review of their current risk assessment process. Not one response indicated conducting a completely new risk assessment. Two of the responses indicating having carried out 'other' activities and one explained they were continuing to use the Safety Risk Model template.

Duty holders were also asked to estimate the cost they had incurred as a result of implementing any new risk assessments or undertaking changes to existing risk assessment processes. Two organisations provided a cost; one OTM provided a cost of £10,000 and one Metro system provided a cost of £60,000. The number of days spent per organisation ranged from 5 days (a TOC) to 100 days (a TOC), with an average total number of days per organisation of 42 days. It should be noted that cost data was only provided by a small number of duty holders, please see Section 4.5.4 for more detailed information.

Survey respondents were also asked what they felt the main challenges were in adapting their existing risk assessment arrangements to meet the requirements of Regulation 19. Figure 34 highlights the findings.

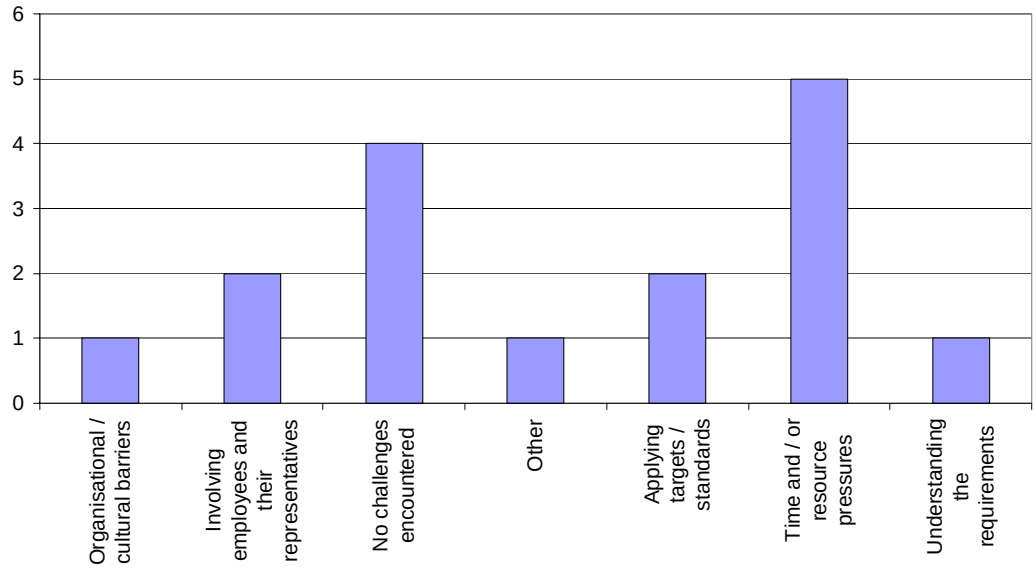


Figure 34 Main challenges faced in adapting existing risk assessment arrangements to meet the requirements of Regulation 19

Figure 34 highlights that 31% of responses (5 out of 16 responses) felt that time and / or resource pressures were a challenge, although a further 25% (4 out of 16 responses) felt that they did not encounter any challenges. Other challenges faced included involving employees and their representatives (13% - 2 out of 16) and applying targets / standards (13% - 2 out of 16).

Finally, respondents were asked about how the changes to risk assessment have impacted on safety, and the findings are presented on Figure 35

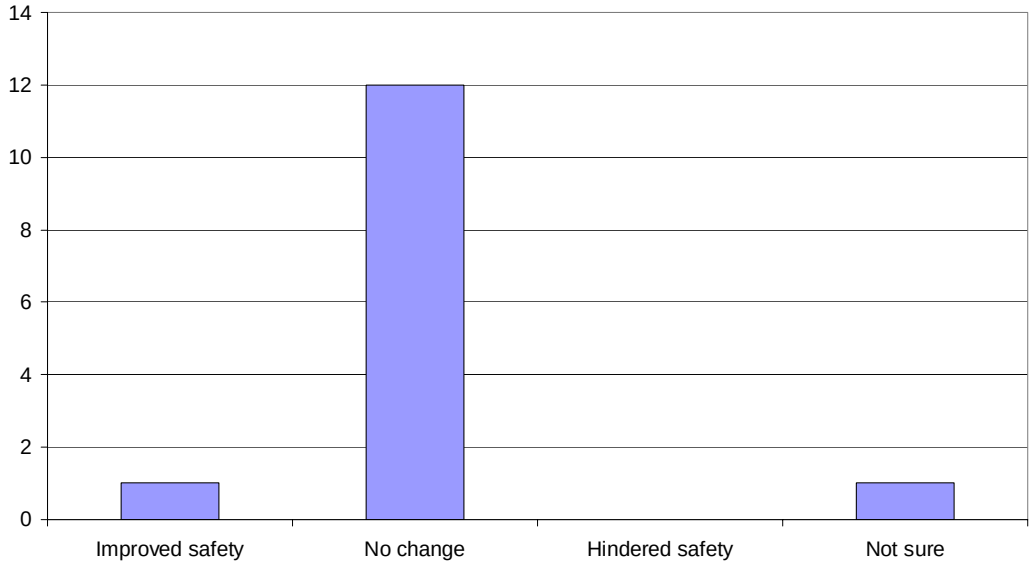


Figure 35 To what extent do you think the changes to risk assessment under ROGS has affected safety?

Figure 35 highlights that the majority of respondents (86% - 12 out of 14) felt there had been no change to safety as a result of the changes brought about to risk assessment under ROGS. However, one respondent did feel that the changes had improved safety.

6.6.6 Annual Safety Report

Respondents were initially asked if they were required to compile and submit an annual safety report under ROGS. Out of 17 respondents 65% (11 out of 17) said yes and 29% (5 out of 17) said no. One respondent was not sure if they were required to complete one or not.

Two organisations estimated the actual costs they incurred per year for compiling and submitting an annual safety report. One OTM organisation estimated the cost at £500 per year and one Metro system estimated it at £4,000 per year. Respondents also estimated the number of days spent per year on compiling and submitting the annual safety report; this ranged from 2 days (an OTM) to 30 days (an Infrastructure Manager) with an average of 9 days spent per organisation per year. When asked what activities they had undertaken in order to incur these costs, respondents described the following activities:

- **Data gathering exercises** - collating data and statistics from company databases; verifying data provided by RSSB; reviewing company periodic reports; reading the regulations.

- **Meetings** - internal and external meetings to establish requirements; discussions with RSSB, consulting internally on content of report

- **Producing the report** – downloading reports and formatting them to prescribed style; writing the report; reviewing and authorising the report prior to submission; submitting the report.

Figure 36 highlights the main challenges faced by respondents in report preparation and submission.

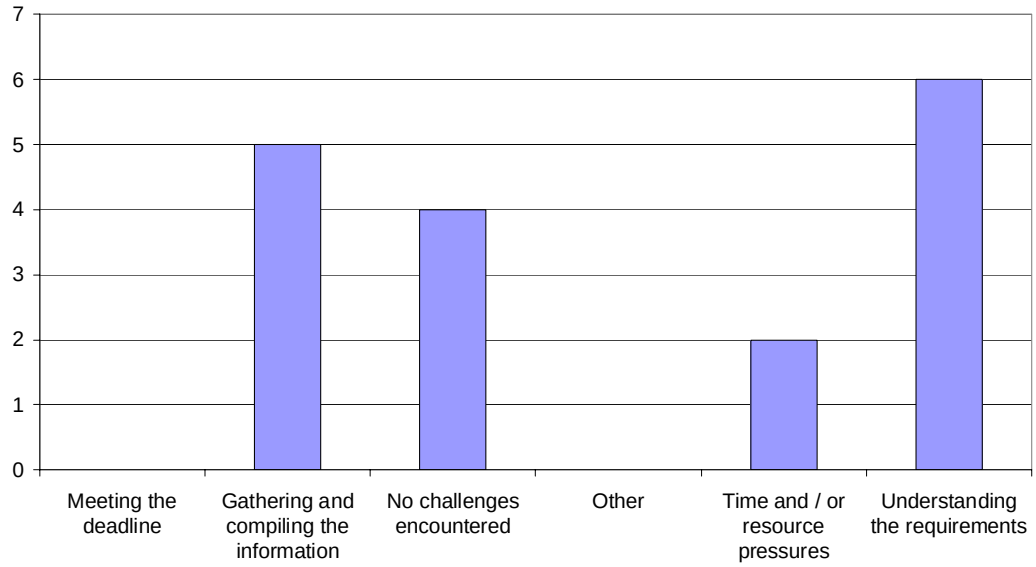


Figure 36 Main challenges encountered in preparing and submitting an annual safety report

Figure 36 highlights the largest percentage of responses (35% - 6 out of 17 responses) found the most challenging aspect actually understanding the requirements for preparing and submitting an annual safety report. A further 29% (5 out of 17 responses) found gathering and compiling the information challenging and 24% (4 out of 17 responses) indicated not encountering any challenges.

Finally, respondents were asked to comment on the extent to which they believed annual safety reports under ROGS have affected safety, and Figure 37 highlights their response.

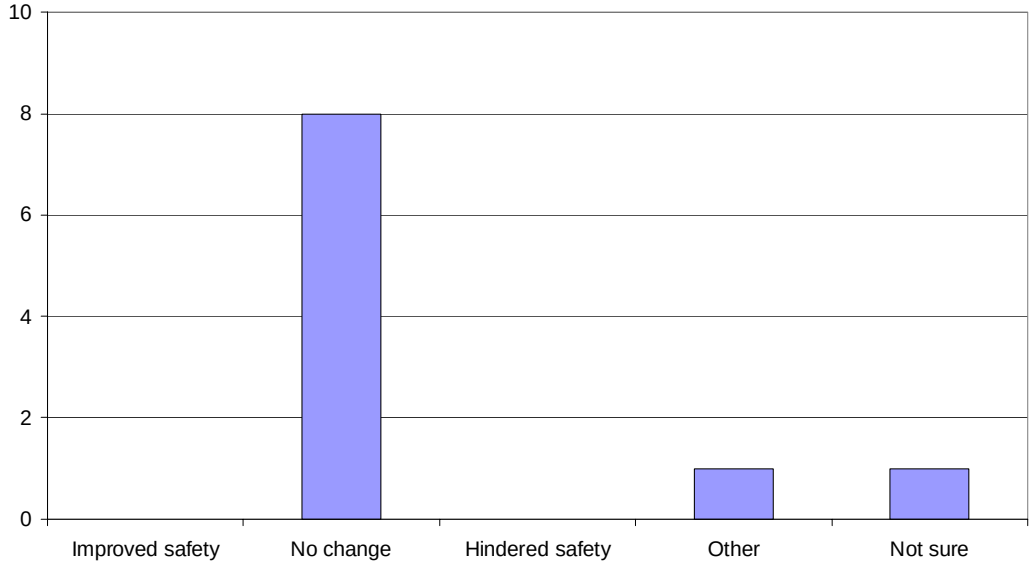


Figure 37 To what extent do you think annual safety reports under ROGS have affected safety?

Figure 37 highlights that the majority of respondents (80% - 8 out of 10) felt annual safety reporting under ROGS had not changed safety. One person explained that they felt it was too early to tell how the annual reporting would affect safety (categorised as 'other' on the graph).

6.6.7 Duty of Co-Operation

Respondents were asked the extent to which the new duty of co-operation caused them to revise their existing processes for achieving co-operation. Figure 38 highlights their response.

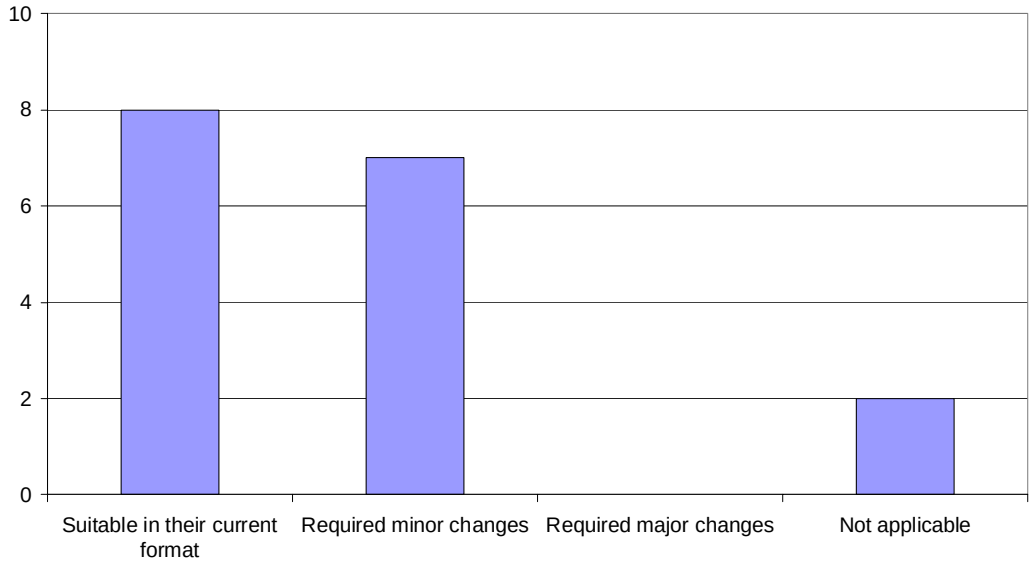


Figure 38 Extent to which the new duty of co-operation caused duty holders to revise their existing processes for achieving co-operation

Figure 38 highlights that the largest percentage of respondents (47% - 8 out of 17) felt their processes for achieving co-operation were suitable in their current format. A further 41% (7 out of 17) said their existing processes required some minor changes. Figure 39 highlights the activities undertaken by respondents to comply with the duty of co-operation under ROGS.

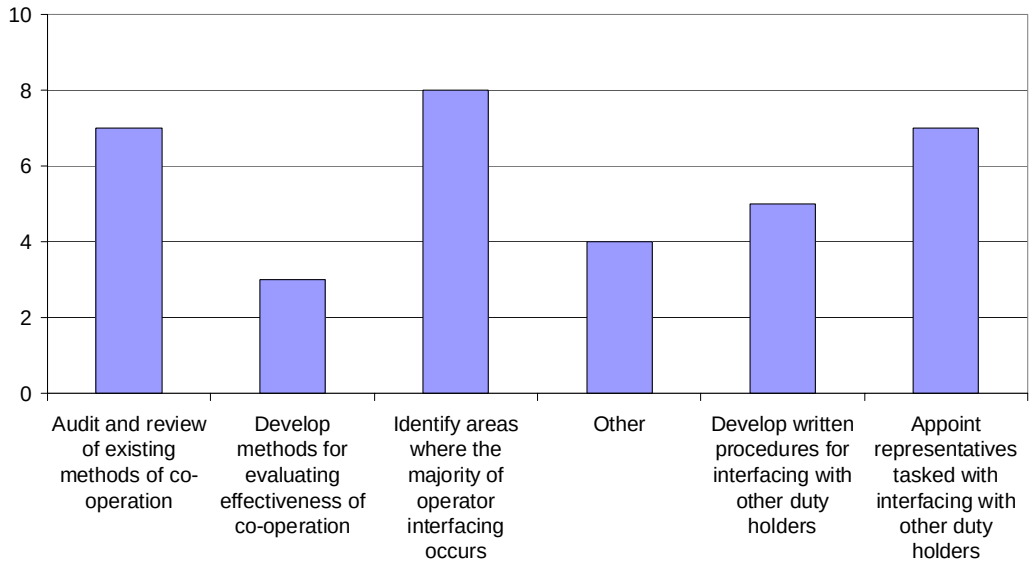


Figure 39 Activities undertaken to comply with the duty of co-operation under ROGS

Figure 39 highlights that the largest percentage of responses (24% - 8 out of 34) said they identified areas where the majority of operator interfacing occurs. A further 21% (7 out of 34) undertook an audit and review of their existing methods of co-operation and a further 21% appointed representatives tasked with interfacing with other duty holders.

Respondents were then asked what the main challenges were in meeting the duty of co-operation.

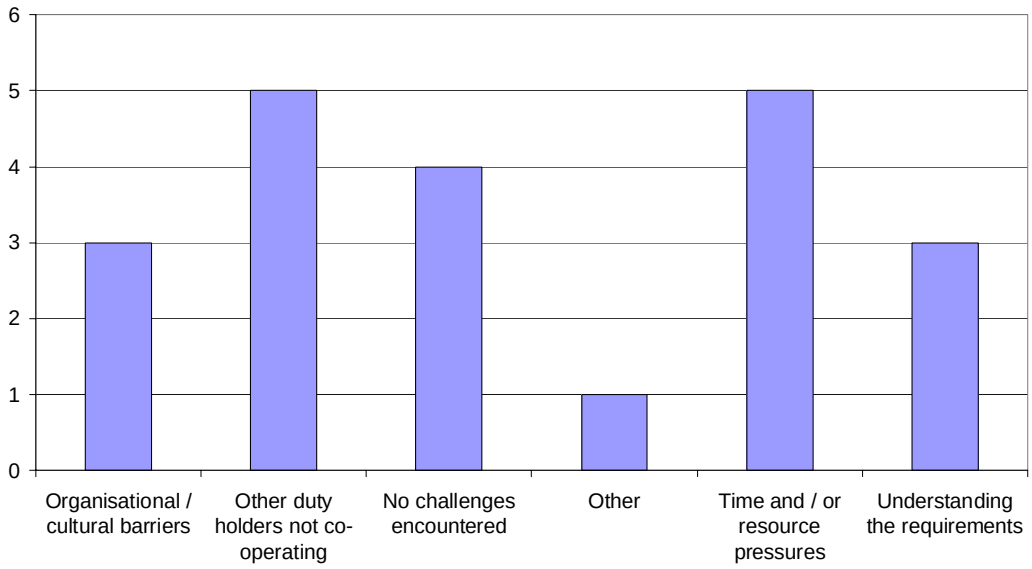


Figure 40 Main challenges encountered in meeting the duty of co-operation

Figure 40 highlights that the joint largest number of responses felt other duty holders not co-operating would be a challenge (24% - 5 out of 21 responses) and also time and / or resource pressures were cited as a significant challenge (24% - 5 out of 21 responses).

Finally, respondents were asked to what extent they felt the duty of co-operation had affected safety. Their response is presented on Figure 41.

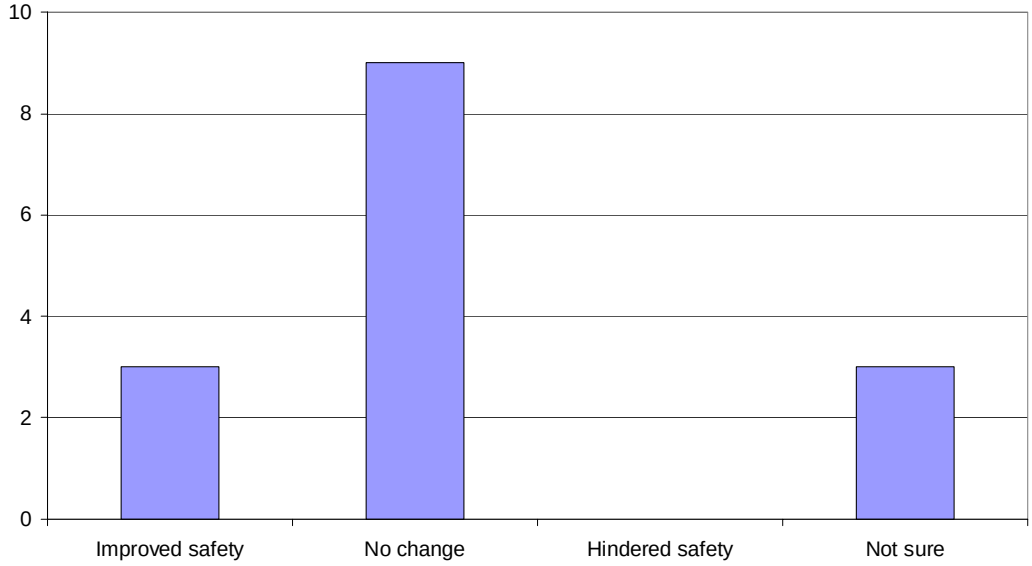


Figure 41 To what extent do you think the duty of co-operation under ROGS has affected safety?

Figure 41 highlights that the majority of respondents (60% - 9 out of 15) felt that the new duty of co-operation had not caused a change in safety. However, 20% of respondents (3 out of 15) felt that the new duty of co-operation had improved safety.

6.6.8 Safety Critical Work

Respondents were asked the extent to which the new safety critical work regulations have caused them to revise their existing methods of working in order to comply with ROGS. Figure 42 highlights their response.

Figure 42 Extent to which the new safety critical work regulations caused duty holders to revise their existing methods of working

Figure 42 highlights that 38% of respondents (6 out of 16) required minor changes to their existing methods of working in order to comply with ROGS and a further 25% (4 out of 16) said they required major changes. However, 19% of respondents (3 out of 16) did say that their methods of working were suitable in their current format.

Respondents were then asked what activities they undertook as a result of ROGS and the findings are presented on Figure 43.

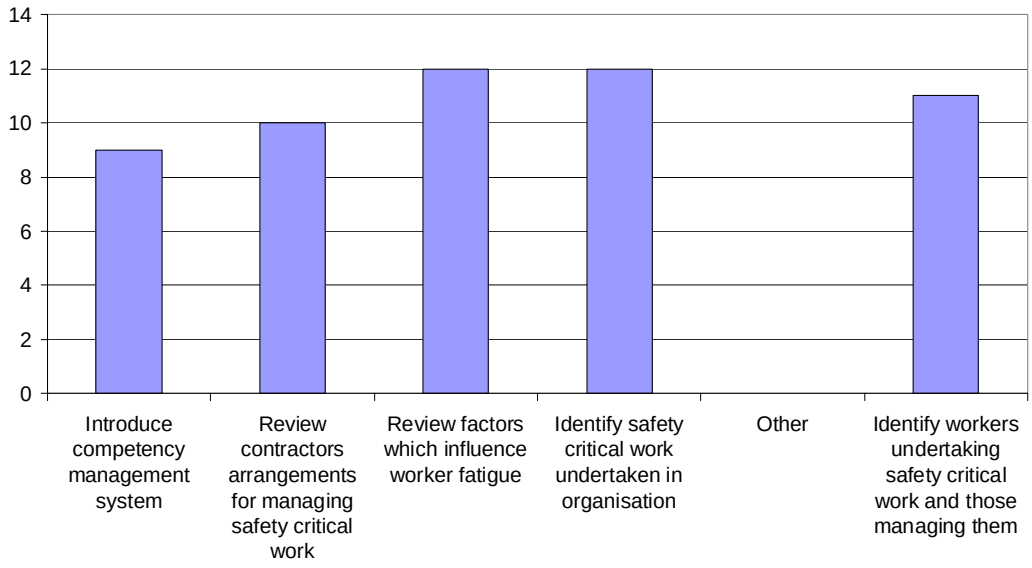


Figure 43 Activities undertaken to comply with the safety critical work regulations under ROGS

Figure 43 highlights the main activities undertaken in order to comply with the safety critical work regulations under ROGS. The graph indicates that the joint largest percentage of responses indicated duty holders reviewed the factors which influence worker fatigue (22% - 12 out of 54 responses) and identified safety critical work undertaken in the organisation (22% - 12 out of 54 responses). A further 20% of responses (11 out of 54 responses) indicated identifying workers undertaking safety critical work and those managing them; 19% of responses (10 out of 54 responses) said they reviewed contractors arrangements for managing safety critical work; and 17% of responses (9 out of 54) indicated introducing a competency management system.

Respondents were also asked what the main challenges were in addressing the safety critical work regulations and the findings are presented on Figure 44.

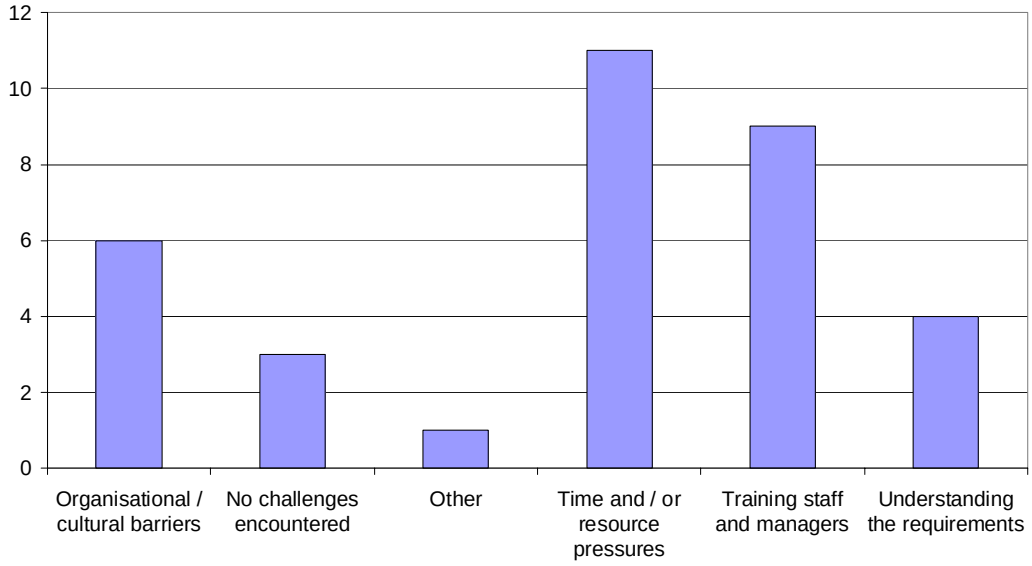


Figure 44 Main challenges encountered in addressing the safety critical work regulations

Figure 44 highlights that the largest percentage of responses (32% - 11 out of 34 responses) indicated time and / or resource pressures as being a challenge in addressing the safety critical work regulations. A further 26% of responses (9 out of 34 responses) said training staff and managers were a challenge and 18% (6 out of 34 responses) cited organisational / cultural barriers.

Finally, respondents were asked to what extent they felt the safety critical work regulations had affected safety. Their response is presented on Figure 45.

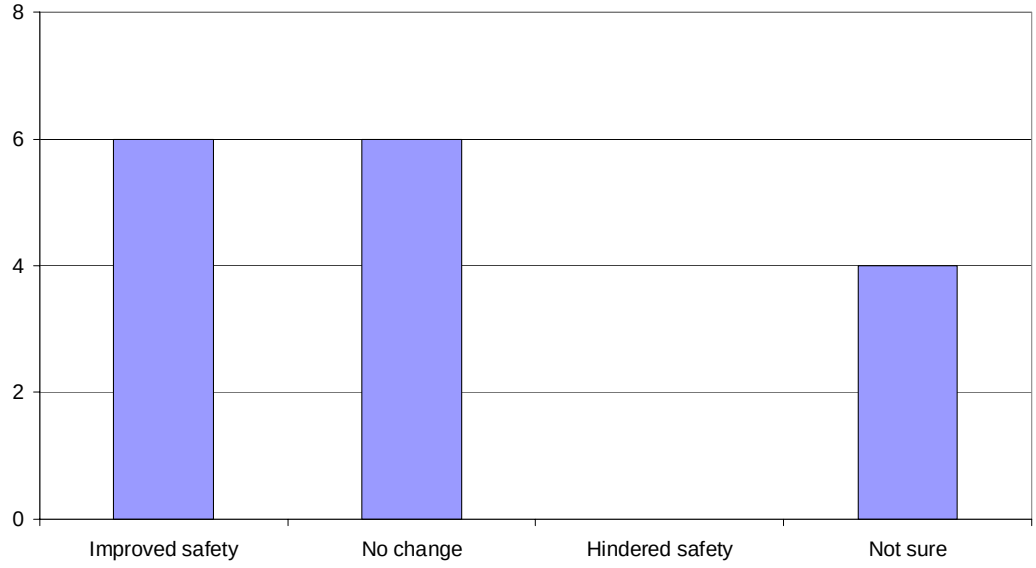


Figure 45 To what extent do you think the safety critical work regulations under ROGS have affected safety?

Interestingly Figure 45 highlights how the joint highest percentage of respondents both felt quite differently about the impact of the safety critical work regulations on safety. A total of 38% of respondents (6 out of 16) felt the new regulations had improved safety and a further 38% of respondents (6 out of 16) felt there had been no change.

6.6.9 Additional comments

Following completion of Part 1 of the survey, all 26 respondents (both duty holders and non-duty holders) were asked what further comments they had. The following comments were made:

- ORR (HMRI) worked really well with the industry to implement this piece of legislation.
- Further clarity on the status of the safety certificates would be useful.
- ORR and NSE need to understand the difficulties ROGS imposes on light rail and tramways.
- Uncertainty over how moving from HMRI approval of new works etc. to the use of an 'independent competent person' will affect duty holders.
- ORR should work with UKTram, CPT and other relevant tramway organisations to address the cost and safety risks imported to the tram industry as a result of ROGS.
- HMRI appeared to require more guidance on regulations.
- Discussions with ORR have been characterised by a willingness to listen to issues and an attempt to address them in constructive ways, which ensure that safety is delivered, but in a way which is not unnecessarily costly.
- The starting point of the actual regulations and the associated guidance has presented two very considerable challenges:
    - the way in which regulations attempt to establish a common approach to all railway systems;
    - in respect of safety critical work, extending the legislation far into the supply chain.
- It is felt that the standard of safety is higher under ROGS.
- The introduction of ROGS is a positive step forward for the industry, as it now places a real emphasis on organisations developing and implementing Safety Management Systems that fit the requirements of their business.

Following completion of Part 2 duty holders only were asked what further comments they had. The following comments were made:

- The only significant change required due to ROGS has been a review and revision of the SMS overview document.

- The main concern for the future is the difficulty in obtaining independent competent persons to assist with new works and new vehicles on tramways. Retaining some form of approvals system for tramways similar to ROTS would be useful.

- ORR could have given more thought about how ROGS could apply to the light rail industry.

- ORR could do more to define what they are looking for in terms of safety culture to ensure a consistent approach across the inspectorate.

6.7 SUMMARY OF SURVEY FINDINGS

At the time point September 2007 the following sections summarise the view of the rail industry concerning ROGS and the duties required to satisfactorily comply with them.

6.7.1 Survey sample

- A total of 26 representative rail industry organisations responded to the survey.

- These 26 organisations consisted of 17 organisations who classed themselves as duty holders and 9 organisations who classed themselves as other rail industry organisations (or non-duty holders) such as passenger groups, safety groups and other transport associations etc.

- The 17 duty holder organisations included representatives from tramways, train operating companies, metro systems, on-track machine operating companies, maintenance organisations, trade unions, freight operating companies and trade unions.

- The duty holder's that classified themselves in the 'other' category were companies that encompassed several different rail organisations, e.g. they operated a train operating company and a tramway etc.

6.7.2 Awareness and understanding of ROGS

- The majority (73% - 19 out of 26) of respondents 'strongly agreed' and a further 23% (6 out of 26) 'agreed' that they were aware of ROGS and their contents.

- The majority (54% - 14 out of 26) of respondents 'agreed' and a further 42% (11 out of 26) of respondents 'strongly agreed' that they understood the requirements of ROGS.

- The majority (96%) of respondents (25 out of 26) said they used guidance to help them understand ROGS.

- The largest percentage of responses (49% - 23 out of 47 responses) indicated using ORR published guidance, 34% (16 out of 47 responses) indicated using RSSB published guidance and 11% (5 out of 47 responses) indicated using internally developed organisational guidance.

- The majority of responses providing a view on the usefulness of the different types of guidance (including ORR published guidance) thought the guidance was either 'useful' or 'very useful'.

- Respondents indicated they felt ORR published guidance had been 'useful' or 'very useful' because it was developed in a standardised and therefore familiar format; it demonstrated excellent interpretation of the intent behind the Regulations and what duty holder's must do to ensure compliance; it was clear, concise and thorough; and it was based on facts.

- Reasons given why the ORR published guidance was felt not to be useful was because it concentrates too much on heavy rail and is not specific enough about the application of ROGS to the light rail and tramway sectors. It was also felt that the structuring of the guidance notes (e.g. the degree of cross referencing and exclusion references) were difficult to interpret; described by one respondent as too 'legalistic'. NB. Since undertaking the survey ORR has revised its guidance.

- Survey respondents also indicated enlisting additional help on understanding ROGS from a variety of other sources, including industry networking (32% - 20 out of 63 responses); direct contact with ORR (27% - 17 out of 63 responses); direct contact with RSSB (14% - 9 out of 63 responses); and use of external consultants (13% - 8 out of 63).

6.7.3 Industry safety culture indicators

- All 26 respondents (i.e. duty holders and non-duty holders) were asked to indicate their level of agreement with 13 safety culture statements.

- The clear majority of safety culture statements (9 out of 13 statements) received favourable responses, indicating a positive safety culture at respondents own organisations, as well as highlighting their individual contributions to a positive industry safety culture.

- Several of the safety culture statements (4 out of 13 statements) indicated some room for improvement. Statements relating to people working safely un-supervised, having adequate resources to work according to safety procedures, near miss reporting, and people's understanding of the work-related risks, indicated a significant percentage of unfavourable responses or no response at all.

6.7.4 Feedback on ROGS and ORR

- The largest percentage (50% - 13 out of 26) of respondents felt ROGS had changed the way safety is managed in their organisation; 35% (9 out of 26) did not feel ROGS had made a difference.

- Reasons given to explain why ROGS had changed the way safety was managed included: creating the need for better company standards rather that the content of the Railway Safety Case; increased focus on certain specific issues such as managing fatigue in safety critical workers; review of existing systems with a fresh pair of eyes; and placing a greater requirement on the organisation to have a robust SMS in place.

- The majority (54% - 14 out of 26) of respondents felt ROGS had made a difference to safety related decision making; 35% (9 out of 26) did not feel ROGS had made a difference.

- Reasons given to explain why ROGS had made a difference to safety related decision making included: provided help with prioritisation; led to a review of internal management of change processes; and caused some minor changes to safety

decision criteria and safety cost benefit models, arising from ORR's assessment of SMS.

- The majority (69% - 18 out of 26) of respondents agreed or strongly agreed that standards of safety are the same under ROGS. Only 15% (4 out of 26) disagreed that standards of safety were not the same under ROGS.

- When asked about the administrative burden of the regulations, 42% (11 out of 26) felt more could be done to reduce the burden, although a similar amount (38% - 10 out of 26) said they did not feel that any more could be done to reduce it.

- Those respondents that felt the administrative burden could be reduced made suggestions such as: remove the Competent Person requirement and reinstate HMRI inspection; retain "ROTS" for heritage sector; remove annual safety reporting (felt unlikely to be of any benefit); and provide user friendly guidance to assist operators with determining the level of detail required for Safety Certificate submission documents.

- The majority (77% - 20 out of 26) of respondents felt that the help and support received from ORR had been either excellent or good.

- When asked what else ORR could do to help duty holders comply with ROGS, suggestions included: continue with the Industry Liaison Group meetings; work with UKTram, CPT and other relevant tramway organisations to address the cost and safety risks to the tram industry as a result of ROGS; provide a template for SMS; provide more examples of what requires verification; and issue good succinct guidance on the application of ROGS (it was appreciated this was in development).

6.7.5 Safety Management System (SMS)

- 12 duty holders confirmed they had a ROGS compliant system in place (although it should be noted to aid interpretation that up to 13 people answered the safety management system questions)

- The majority (77% - 10 out of 13) of respondents stated that their existing SMS required minor changes to become ROGS compliant.

- The most significant changes made to existing SMS's were conducting an audit and review of the current SMS (21% - 8 out of 39 responses) and changing the associated written SMS procedures (21% - 8 out of 39 responses). Several respondents also set new safety targets for their organisation.

- The cost of setting up an SMS ranged from £5,000 (an OTM) to £500,000 (a Metro system). Within this range, a TOC spent £50,000 and another Metro system spent £40,000. The number of days spent per organisation ranged from 10 days (two OTM's) to 900 days (a Metro system) with an average total number of days per organisation of 272 days.

- The estimated cost of maintaining an SMS per year was received from two Metro systems; one estimated it to be £40,000 and the other estimated it at £60,000. The number of days spent per organisation per year ranged from 10 days (an OTM) to 347 days (a Metro system) with an average total number of days per organisation per year of 156 days.

- The majority (73% - 8 out of 11) of respondents felt the costs of maintaining a safety case under the previous regulatory regime were similar to the costs associated with maintaining an SMS under ROGS. Encouragingly 27% (3 out of 11) felt SMS maintenance costs were less expensive than under the safety case regulations.

- The most significant challenges associated with maintaining an SMS under ROGS were said to be communicating the SMS to the organisation (24% - 4 out of 17 responses) and time and / or resource pressures (24% - 4 out of 17 responses). Some respondents also cited understanding the requirements and organisational / cultural barriers as being a challenge.

- The majority (62% - 8 out of 13) of respondents indicated that their SMS under ROGS had not caused any changes to safety. Encouragingly 23%, (3 out of 13) said their SMS under ROGS had improved safety and no respondents indicated that their SMS under ROGS had hindered safety.

6.7.6 Safety verification

- In terms of the processes duty holders have in place for ensuring the safe introduction of new or altered infrastructure or rolling stock, 33% of responses (9 out of 27 responses) indicated they were undertaking the SMS change management process; 33% said they would go through the safety verification process under ROGS; and a further 22% (6 out of 27 responses) indicated using a notified body under the Railways (Interoperability) Regulations 2006 (RIR).

- The majority (54% - 7 out of 13) of respondents only required minor changes to their existing processes in order to fully address safety verification requirements; 31% of respondents required major changes (4 out of 13); and 15% of respondents (2 out of 13) required a completely new process.

- The most significant changes made were changing the written safety verification scheme (23% - 10 out of 43 responses) and introducing a system for deciding when safety verification must be applied (23% - 10 out of 43 responses). Other significant activities included conducting an audit and review of their current system (16% - 7 out of 43 responses) and identifying a suitable independent competent person (ICP) (16% - 7 out of 43 responses).

- The cost per organisation per year ranged from £1,400 (a TOC) to £400,000 (a Metro system) with an average total spend per organisation per year of £139,800.

- The number of days spent per organisation per year ranged from 2 days to 2,300 days. Separating this by different rail groups highlighted that the cost in days for

TOCs ranged from 2 days to 50 days; one FOC reported 3 days of cost; one OTM reported it costing 20 days; one infrastructure manager reported 110 days; and one metro system reported 18 days of consultancy time whilst another metro system reported it costing 2,300 days.

- The most significant safety verification challenge was felt to be knowing when to apply safety verification (24% - 6 out of 25 responses). Other significant challenges were identifying and appointing an independent competent person (ICP) (20% - 5 out of 25 responses); experiencing time and / or resource pressures (20% - 5 out of 25 responses); and understanding the requirements (16% - 4 out of 25 responses).

- The largest percentage (42% - 5 out of 12) of respondents believed that safety verification had improved safety. A further 33% of respondents (4 out of 12) said they felt there was no change and 25% said they were not sure.

6.7.7 Safety certification

- All duty holders were asked if they held a safety certificate under ROGS; 44% of respondents (7 out of 16) said they did and 56% (9 out of 16) said they did not have a certificate.

- All stages in the safety certification process had been reached by many of the responding duty holders and 17% of responses (4 out of 24 responses) indicated having reached the last stage: ORR final decision and sign-off.

- For initial application safety certificate application the estimated cost per organisation ranged from £5,000 (an OTM) to £144,000 (a Metro system) with an average total spend per organisation of £59,750. The number of days spent per organisation ranged from 20 days (an OTM) to 230 days (a Metro system) with an average total number of days per organisation of 117 days.

- For amendments to the safety certificate per year only one organisation (a Metro system) was able to provide a cost and estimated it to be £48,000. The predicted number of days spent per organisation per year ranged from 15 days (a TOC) to 60 days (a Metro system) with an average total number of days per organisation per year of 32 days.

- A total of 50% of respondents (5 out of 10) felt the time spent applying for a safety certificate under ROGS and the associated cost incurred during the application process was less than the time and cost spent applying for a railway safety case. A further 40% of respondents (4 out of 10) felt the time and cost of application in both regulatory regimes was about the same.

- The largest number of responses (37% - 7 out of 19 responses) indicated time and / or resource pressures as being a challenge in applying for a safety certificate. Employee involvement (21% - 4 out of 19) and organisational / cultural barriers (16% - 3 out of 19) were also raised as being key challenges.

- The largest percentage (40% - 4 out of 10) of respondents felt that safety certification had improved safety. However, the same amount felt it had not caused any change.

6.7.8 Safety authorisation

- All duty holders were asked if they had safety authorisation under ROGS; 31% of respondents (5 out of 16) said they did, and 69% (11 out of 16) said they did not have safety authorisation.

- All of the stages in the safety authorisation process had been reached by many of the responding duty holders and 13% of responses (3 out of 23 responses) indicated having reached the last stage: ORR final decision and sign-off.

- Duty holders were also asked to estimate the costs they incurred as a result of their initial application for a safety authorisation under ROGS and then any amendments made to it per year. The estimated costs were as follows:

- For the initial application for safety authorisation one organisation (a Metro system) was able to provide a cost and estimated it to be £144,000. The number of days spent per organisation ranged from 15 days (a TOC) to 350 days (Infrastructure Manager) with an average total number of days per organisation of 167 days.

- For amendments to the safety authorisation per year one organisation (a Metro system) was able to provide a cost and estimated it to be £48,000. Only two organisations were able to provide an estimation of the number of days spent; one TOC said 2 days and one Metro system said 60 days.

- A total of 50% of respondents (3 out of 6) felt the time spent applying for safety authorisation under ROGS and the associated cost incurred during the application process was less than the time and cost spent applying for a railway safety case. A further 50% of respondents (3 out of 6) felt the time and cost of application in both regulatory regimes was about the same.

- The largest number of responses (33% - 4 out of 12 responses) indicated time and / or resource pressures as being a challenge in applying for safety authorisation. Employee involvement (25% - 3 out of 12) was also raised as being a key challenge.

- The largest number of respondents (50% - 3 out 6) indicated that they felt safety authorisation had not affected safety.

6.7.9 Risk assessment

- The majority (88% - 14 out of 16) of respondents said the regulation for conducting a risk assessment under ROGS applied to their organisation and 13% (2 out of 16) said it did not.

- The majority (54% - 7 out of 13) of respondents felt their existing risk assessment arrangements were still suitable under ROGS. A further 38% of respondents said their

existing system required minor changes and one respondent (8%) said their existing system required major changes.

- The largest percentage of responses (45% - 5 out of 11 responses) changed the management of their risk assessment information and a further 36% of responses (4 out of 11 responses) undertook an audit and review of their current risk assessment process.

- Two organisations provided a cost; one OTM provided a cost of £10,000 and one Metro system provided a cost of £60,000. The number of days spent per organisation ranged from 5 days (a TOC) to 100 days (a TOC), with an average total number of days per organisation of 42 days.

- The largest percentage of responses (31% - 5 out of 16 responses) felt that time and / or resource pressures were a challenge, although a further 25% (4 out of 16 responses) felt that they did not encounter any challenges. Other challenges faced included involving employees and their representatives (13% - 2 out of 16 responses) and applying targets / standards (13% - 2 out of 16 responses).

- The majority of respondents (86% - 12 out of 14) felt there had been no change to safety as a result of the changes brought about to risk assessment under ROGS.

6.7.10 Annual safety report

- Out of 17 respondents 65% (11 out of 17) said they were required to compile and submit an annual safety report under ROGS and 29% (5 out of 17) said they were not required to do this.

- Two organisations estimated the actual costs they incurred per year for compiling and submitting an annual safety report. One OTM organisation estimated the cost at £500 per year and one Metro system estimated it at £4,000 per year. Respondents also estimated the number of days spent per year on compiling and submitting the annual safety report; this ranged from 2 days (an OTM) to 30 days (an Infrastructure Manager) with an average of 9 days spent per organisation per year.

- The activities undertaken which caused these costs largely consisted of data gathering activities, meetings and actual production of the report.

- The largest percentage of responses (35% - 6 out of 17 responses) found the most challenging aspect of completing the report actually understanding the requirements. A further 29% (5 out of 17 responses) found gathering and compiling the information challenging and 24% (4 out of 17 responses) indicated not encountering any challenges.

- The majority of respondents (80% - 8 out of 10) felt annual safety reporting under ROGS had not changed safety.

6.7.11 Duty of co-operation

- The largest percentage of respondents (47% - 8 out of 17) felt their processes for achieving co-operation were suitable in their current format although a further 41% (7 out of 17) said their existing processes required some minor changes.

- In terms of making changes, the largest percentage of responses (24% - 8 out of 34) said they identified areas where the majority of operator interfacing occurs.

- The joint largest number of responses felt other duty holders not co-operating would be a challenge in terms of addressing the duty of co-operation (24% - 5 out of 21 responses) and also time and / or resource pressures were cited as a significant challenge (24% - 5 out of 21 responses).

- The majority of respondents (60% - 9 out of 15) felt that the new duty of co-operation had not caused a change in safety.

6.7.12 Safety critical work

- The largest percentage of respondents (38% - 6 out of 16) required minor changes to their existing methods of working in order to comply with the safety critical work regulations under ROGS and a further 25% (4 out of 16) said they required major changes.

- In terms of making changes, the joint largest percentage of responses indicated duty holders reviewed the factors which influence worker fatigue (22% - 12 out of 54 responses) and identified safety critical work undertaken in the organisation (22% - 12 out of 54 responses).

- The largest percentage of responses (32% - 11 out of 34 responses) indicated time and / or resource pressures as being a challenge in addressing the safety critical work regulations.

- The joint highest percentage of respondents both felt quite differently about the impact of the safety critical work regulations on safety. A total of 38% of respondents (6 out of 16) felt the new regulations had improved safety and a further 38% of respondents (6 out of 16) felt there had been no change.

7. CONCLUSIONS AND FINAL ROGS BASELINE MEASURE 2006/07

7.1 INTRODUCTION

The previous sections of this report have presented an overarching monitoring and evaluation plan which identified the indicator data required to help examine the extent to which ROGS have achieved their original aims and objectives (see Section 3). This data was then collected by conducting a desk-based review of existing information (see Section 4) and through primary research with the rail industry (i.e. the ROGS survey (see Section 6) and IN workshop (see Section 5)). In order to consolidate this information into one baseline measure, the original evaluation plan is presented in order to map the ROGS objectives against the relevant information collected. A set of final outcome measures were also identified against each intermediate objective and are also presented in the updated evaluation plan. This section of the report therefore presents the final ROGS baseline measure for 2006/07.

7.2 MAPPING BASELINE DATA TO ROGS OBJECTIVES AND OUTCOME MEASURES

The content of this current report provides the final ROGS baseline measure for 2006/07. However, in order to evaluate more specifically the extent to which ROGS have achieved their specific aims and objectives it is important that the findings over the next two to three year period are mapped back to the original ROGS aims and objectives. In order to do this the baseline data associated with each of these specific objectives also needs to be clearly highlighted.

Table 28 highlights ROGS intermediate objectives and subsidiary intermediate objectives. Alongside each subsidiary intermediate objective a set of outcome measures have also been developed and presented. These outcome measures are items that we would expect to see occur and / or change if ROGS are achieving their overall aims and objectives. Next to each set of outcome measures information is presented on where this existing report contains the baseline data which indicates the 'state of play' for these outcome measures at the time point 2006/07. Table 28 is essentially a ROGS baseline data 'look-up' table. This table and the associated information within this report will provide the basis for ongoing data collection and evaluation in subsequent years.

Table 28 Summary of final baseline measure for 2006/07– data sources 'look-up' table

Intermediate objective	Subsidiary intermediate objectives	Suggested outcome measures / indicators	Final baseline measure 2006/07– data sources look-up					
			HMRI / ORR data	Safety performance data	Cost data (existing RSCR and new ROGS)	ROGS specific survey 2007	Safety culture survey 2007	Influence Network Workshop 2007 (pre-ROGS feedback)
1. Implement a large part of the safety management provisions of the EC Railway Safety Directive (RSD) (2004/49/EC), which is intended to harmonise the approach to regulating railway safety across the European Union (EU). This will include having a common approach to safety across the EU covering both passenger and worker safety.	1a. transfer the mainline rail industry from a system of railway safety cases to a system of safety certification and authorisation	-Number of mainline rail industry organisations in existence by end of 2008 -Number of safety certification and authorisation applications received, processed and approved by end of 2008	To be explored in 2008 with HMRI / ORR	-	-	To be explored in 2008 (Year 2 survey)	-	-
	1b. ensure that the UK can respond to Common Safety Targets (CSTs) in the future, to be achieved through Common Safety Methods set by the European Rail Agency	-Creation of Common Safety Methods -Extent to which Annual Safety Reports submitted include details on Common Safety Indicators	To be explored in 2008 / 2009 with HMRI / ORR	To be explored in 2008 / 2009	-	-	-	-
2. Simplify domestic UK rail safety Regulatory structure by replacing three sets of regulations with one.	2a. reduce the number of railway operators that have to seek formal permission from the safety regulator to work on the railway	-Number of railway operators applying for formal permission from ORR to work on the railway by end of 2008 and 2009	To be explored in 2008 / 2009 with HMRI / ORR	-	-	To be explored in 2008 / 2009 (Year 2 and Year 3 survey)	-	-

Intermediate objective	Subsidiary intermediate objectives	Suggested outcome measures / indicators	Final baseline measure 2006/07– data sources look-up					
			HMRI / ORR data	Safety performance data	Cost data (existing RSCR and new ROGS)	ROGS specific survey 2007	Safety culture survey 2007	Influence Network Workshop 2007 (pre-ROGS feedback)
	2b. 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	-Industry stakeholders' perceptions of the current quality of SMS's under ROGS in the rail industry -Industry stakeholders' perceptions of the importance of SMS's under ROGS for maintaining safety in the rail industry -Cost of developing an SMS under ROGS -Cost of maintaining an SMS under ROGS -Challenges faced in maintaining an SMS under ROGS -Impact of ROGS SMS on safety	To be explored in 2008 with HMRI / ORR	-	See Section 4.5.3 and Section 4.5.4 for 2006 cost estimates (and survey cost data in Section 6.6.1)	See Section 6.6.1 (SMS related questions)	-	See Section 5.4.1.2 (IN factor O8) and Section 5.4.1.3 (IN factor S5)
	2c. change the distribution of HMRI inspector resource from the 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	-Amount of time booked by HMRI inspectors to assessing safety cases -Amount of time booked by HMRI inspectors to conducting site visits -Number of queries received by ORR with regard to RA etc.	To be explored in 2008 with HMRI / ORR	-	-	See Section 6.6.5 (risk assessment related questions)	-	See Section 5.4.1.4 (IN factor E2)

Intermediate objective	Subsidiary intermediate objectives	Suggested outcome measures / indicators	Final baseline measure 2006/07– data sources look-up					
			HMRI / ORR data	Safety performance data	Cost data (existing RSCR and new ROGS)	ROGS specific survey 2007	Safety culture survey 2007	Influence Network Workshop 2007 (pre-ROGS feedback)
3. Place a duty on operator companies and infrastructure managers to co-operate and ensure that the interface (in its widest sense) is being managed effectively to ensure system safety.	3a. transport operators and infrastructure managers need to work together to ensure system safety	-Appointment of representatives in organisations tasked with interfacing with other duty holders -Methods developed to evaluate effectiveness of co-operation -Identification of areas where majority of operator interfacing occurs -Development of written procedures for interfacing with other duty holders -Impact of duty of co-operation on safety -Challenges encountered in meeting duty of co-operation -Industry stakeholders' perceptions of the current quality of interface management in the rail industry -Stakeholders' perceptions of the importance of interface management for maintaining safety in the rail industry	-	-	-	See Section 6.6.7 (duty of co-operation questions)	-	See Section 5.4.1.3 (see IN factor S8)

Intermediate objective	Subsidiary intermediate objectives	Suggested outcome measures / indicators	Final baseline measure 2006/07– data sources look-up					
			HMRI / ORR data	Safety performance data	Cost data (existing RSCR and new ROGS)	ROGS specific survey 2007	Safety culture survey 2007	Influence Network Workshop 2007 (pre-ROGS feedback)
	3b. transport operators should identify appropriate forms of co-operation that complement the measures they are taking to comply with their own safety duties	- See 3a outcome measures	-	-	-	See Section 6.6.7 (duty of co-operation questions)	-	See Section 5.4.1.3 (see IN factor S8)
4. Extend broadly similar requirements to railways not covered by the RSD ("non-mainline railways"), as well as to some other guided transport systems.	4a. for the parts of the railway industry outside the mainline railway (i.e. the non-mainline railway including 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	-Number of non-mainline railway organisations having difficulty without HMRI approval role -Number of non-mainline railway organisations with process in place for introducing new or altered works, plant or equipment -Introduction of systems for deciding when safety verification must be applied -Changes to written safety verification schemes -Changed processes for evaluating the effectiveness of the safety verification process -Challenges encountered in obtaining safety verification	To be explored in 2008 with HMRI / ORR	-	-	See Section 6.6.2 (safety verification questions)	-	See Section 5.4.1.1 (see IN factor D10)

Intermediate objective	Subsidiary intermediate objectives	Suggested outcome measures / indicators	Final baseline measure 2006/07– data sources look-up					
			HMRI / ORR data	Safety performance data	Cost data (existing RSCR and new ROGS)	ROGS specific survey 2007	Safety culture survey 2007	Influence Network Workshop 2007 (pre-ROGS feedback)
	4b. replace this requirement with a more targeted requirement on duty holders to obtain safety verification from an independent competent person	-Identification of suitable independent competent person/s (ICP) -Changes in the way information is managed to ensure easy access for ICP's -Introduction of processes for handling ICP recommendations	-	-	-	See Section 6.6.2 (safety verification questions)	-	See Section 5.4.1.1 (see IN factor D10)
5. Replace the Safety Critical Work Regulations 1994 (SCWR) and implement requirements on those carrying out all types of safety critical	5a. 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	- Number of organisations identifying safety critical work undertaken in organisation	-	-	-	See Section 6.6.8 (safety critical work questions)	-	See Section 5.4.1.1 (IN factors D1, D5 and D6)

Intermediate objective	Subsidiary intermediate objectives	Suggested outcome measures / indicators	Final baseline measure 2006/07– data sources look-up					
			HMRI / ORR data	**Safety performance data**	**Cost data (existing RSCR and new ROGS)**	**ROGS specific survey 2007**	**Safety culture survey 2007**	**Influence Network Workshop 2007 (pre-ROGS feedback)**
work. Under ROGS the legal scope has increased as a wider range of work is now covered.	5b. safety critical tasks must be carried out by a person assessed as being competent and fit for work	-Number of organisations introducing competency management systems -Number of organistaions explicitly identifying workers undertaking safety critical work and those managing them -Number of workers accredited as competent - Industry's perception of the competence, health and overall fitness of rail industry workers	-	-	-	See Section 6.6.8 (safety critical work questions)	See Section 6.5.2 (safety culture statements 3.7, 3.9, 3.8, 3.11)	See Section 5.4.1.1 (IN factors D1, D5 and D6)
	5c. remove the requirement for safety critical workers to carry a formal means of identification	- Number of safety critical workers carrying formal means of identification	To be explored in 2008 with HMRI / ORR		See Section 4.5.3 and Section 4.5.4 for 2006 cost estimates	See Section 6.6.8 (safety critical work questions)		-

Intermediate objective	Subsidiary intermediate objectives	Suggested outcome measures / indicators	Final baseline measure 2006/07– data sources look-up					
			HMRI / ORR data	Safety performance data	Cost data (existing RSCR and new ROGS)	ROGS specific survey 2007	Safety culture survey 2007	Influence Network Workshop 2007 (pre-ROGS feedback)
	5d. require a change in approach from simply controlling the number of hours for preventing fatigue to one of requiring arrangements to be implemented that control risks from a wide number of factors, such as the pattern of working hours and roster design	-Consideration of the pattern of working hours and roster design reflected in revised working schedules -Industry's perception of the health and fatigue of rail industry workers -Industry's perception of safe job design	-	-	-	See Section 6.6.8 (safety critical work questions)	-	See Section 5.4.1.1 and Section 5.4.1.2(IN factors D1, D5 and D6)

Key

- = indicator data unlikely to be obtained from this source

Table 28 highlights that for each intermediate objective and outcome measure there is more than one source of data that will help to indicate the extent to which those outcome measures are occurring and / or changing over time. This therefore allows for triangulation of the data and thus provides more confidence in the eventual findings. The table also highlights that some data will need to be gathered from ORR and HMRI during the next phase of the monitoring and evaluation project.

7.3 DETAILED MAPPING

In order to clearly map the most appropriate baseline data gathered in this baseline report against the objectives and outcome measures, each of the five main objectives were taken in turn and data extracted from the appropriate report sections. The data mapping is consistent with the data sources look-up table (see Table 28). However, it should be noted that at this stage it is not possible to have collected baseline data for some of the outcome measures as they refer to ROGS specific outcomes that we can only expect to see emerge over the course of this evaluation.

Table 29 Baseline data for Objective 1

Objective 1: Implement a large part of the safety management provisions of the EC Railway Safety Directive (RSD) (2004/49/EC), which is intended to harmonise the approach to regulating railway safety across the European Union (EU). This will include having a common approach to safety across the EU covering both passenger and worker safety.		
Subsidiary objectives	***Outcome measures***	***Outcome measures: baseline data***
1a. transfer the mainline rail industry from a system of railway safety cases to a system of safety certification and authorisation	• Number of mainline rail industry organisations in existence by end of 2008 • Number of safety certification and authorisation applications received, processed and approved by end of 2008	• In order to gather this outcome data the number of safety certification and authorisation applications will need to be gathered from ORR. In order to ensure this provides the whole rail industry with sufficient time, this data will be captured by the end of 2008.
1b. ensure that the UK can respond to Common Safety Targets (CSTs) in the future, to be achieved through Common Safety Methods set by the European Rail Agency	• Creation of Common Safety Methods • Extent to which Annual Safety Reports submitted include details on Common Safety Indicators	• This data will also be required from ORR in 2008 and 2009. ORR will be required to provide insight into the extent to which Annual Safety Report submissions are detailing common safety indicators.

Table 30 Baseline data for Objective 2

Objective 2: Simplify domestic UK rail safety Regulatory structure by replacing three sets of regulations with one.		
Subsidiary objectives	***Outcome measures***	***Outcome measures: baseline data***
2a. reduce the number of railway operators that have to seek formal permission from the safety regulator to work on the railway	• Number of railway operators applying for formal permission from ORR to work on the railway by end of 2008 and 2009	• In order to gather this outcome data the number of railway operators applying for formal permission from ORR to work on the railway by end of 2008 and 2009 will need to be gathered from ORR.
2b. 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	• Industry stakeholders' perceptions of the current quality of SMS's under ROGS in the rail industry • Industry stakeholders' perceptions of the importance of SMS's under ROGS for maintaining safety in the rail industry • Cost of developing an SMS under ROGS • Cost of maintaining an SMS under ROGS • Challenges faced in maintaining an SMS under ROGS • -Impact of ROGS SMS on safety	• Stakeholders at the Influence Network workshop rated existing SMS's between 8 to 9 out of 10 (0 being poor and 10 being excellent). They were generally in agreement that safety management systems (SMS's) were mature and effective in the rail industry as organisations had always been required to have them. The group agreed that a quality rating of between 8 and 9 was appropriate as there was still room for improvement in terms of integrating SMS's with other organisational functions. Safety management at a strategy level was thought to be of 'high' importance for influencing safety in the rail industry, although SMS at an organisational level were currently weighted of medium importance. • The cost of setting up an SMS ranged from £5,000 (an OTM) to £500,000 (a Metro system). Within this range, a TOC spent £50,000 and another Metro system spent £40,000. The number of days spent per organisation ranged from 10 days (two OTM's) to 900 days (a Metro system) with an average total number of days per organisation of 272 days. • The estimated cost of maintaining an SMS per year was received from two Metro systems; one estimated it to be £40,000 and the other estimated it at £60,000. The number of days spent per organisation per year ranged from 10 days (an OTM) to 347 days (a Metro system) with an average total number of days per organisation per year of 156 days. • The most significant challenges associated with maintaining an SMS under ROGS were said to be communicating the SMS to the organisation (24% - 4 out of 17 responses to survey

Objective 2: Simplify domestic UK rail safety Regulatory structure by replacing three sets of regulations with one.		
		questions) and time and / or resource pressures (24% - 4 out of 17 responses to survey questions). Some respondents also cited understanding the requirements and organisational / cultural barriers as being a challenge. • The majority (62% - 8 out of 13) of respondents indicated that their SMS under ROGS had not caused any changes to safety. Encouragingly 23%, (3 out of 13) said their SMS under ROGS had improved safety and no respondents indicated that their SMS under ROGS had hindered safety.
2c. change the distribution of HMRI inspector resource from the 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	• Amount of time booked by HMRI inspectors to assessing safety cases • Amount of time booked by HMRI inspectors to conducting site visits • Number of queries received by ORR with regard to RA etc.	• In order to gather the amount of time booked by HMRI inspectors to assessing safety cases and conducting site visits this data will need to be gathered from ORR. • The number of queries received by ORR with regard to risk assessment will need to be gathered from ORR. The types of challenges that duty holders are facing with regard to risk assessment were indicated as time and / or resource pressures (31% - 5 out of 16 survey responses). Other challenges faced included involving employees and their representatives (13% - 2 out of 16 survey responses) and applying targets / standards (13% - 2 out of 16 survey responses). These may be areas where ORR receives queries. • In terms of stakeholders feedback about ORR in general, a workshop group provided some very positive feedback, including "ORR seems well regulated and funded" and "ORR is better than it was under HSE". In terms of ROGS, the group also felt that they were better than the safety case regulations. However, the group also expressed some discontent with obtaining help from ORR regarding ROGS implementation and felt that this had resulted in industry creating most of the ROGS guidance.

Table 31 Baseline data for Objective 3

Objective 3: Place a duty on operator companies and infrastructure managers to co-operate and ensure that the interface (in its widest sense) is being managed effectively to ensure system safety.		
Subsidiary objectives	***Outcome measures***	***Outcome measures: baseline data***
3a. transport operators and infrastructure managers need to work together to ensure system safety	• Appointment of representatives in organisations tasked with interfacing with other duty holders • Methods developed to evaluate effectiveness of co-operation • Identification of areas where majority of operator interfacing occurs • Development of written procedures for interfacing with other duty holders • Impact of duty of co-operation on safety • Challenges encountered in meeting duty of co-operation • Industry stakeholders' perceptions of the current quality of interface management in the rail industry • Stakeholders' perceptions of the importance of	• The largest percentage of baseline survey respondents (47% - 8 out of 17) felt their processes for achieving co-operation were suitable in their current format although a further 41% (7 out of 17) said their existing processes required some minor changes. • In terms of making changes, the largest percentage of survey responses (24% - 8 out of 34) said they identified areas where the majority of operator interfacing occurs. • The joint largest number of survey responses felt other duty holders not co-operating would be a challenge in terms of addressing the duty of co-operation (24% - 5 out of 21 responses) and also time and / or resource pressures were cited as a significant challenge (24% - 5 out of 21 responses). • The majority of respondents (60% - 9 out of 15) felt that the new duty of co-operation had not yet caused a change in safety. • In terms of the factor interface management, the Influence Network workshop group felt this to be very good at present. Relationships with ORR and RSSB were also cited as being particularly positive. The group came to a consensus that a high quality rating of 9 was therefore appropriate. However, the factor interface management was only given a medium-low weighting in terms of its importance in influencing safety.

Objective 3: Place a duty on operator companies and infrastructure managers to co-operate and ensure that the interface (in its widest sense) is being managed effectively to ensure system safety.		
	interface management for maintaining safety in the rail industry	
3b. transport operators should identify appropriate forms of co-operation that complement the measures they are taking to comply with their own safety duties	• See Objective 3a outcome measures	• See Objective 3a baseline data.

Table 32 Baseline data for Objective 4

Objective 4: Extend broadly similar requirements to railways not covered by the RSD ("non-mainline railways"), as well as to some other guided transport systems.		
Subsidiary objectives	***Outcome measures***	***Outcome measures: baseline data***
4a. for the parts of the railway industry outside the mainline railway (i.e. the non-mainline railway including 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	• Number of non-mainline railway organisations having difficulty without HMRI approval role • Number of non-mainline railway organisations with process in place for introducing new or altered works, plant or equipment • Introduction of systems for	• Outcome data on the number of non-mainline railway organisations having difficulty without the HMRI approval role will be explored with ORR (HMRI) in 2008. • In terms of the processes duty holders have in place for ensuring the safe introduction of new or altered infrastructure or rolling stock, 33% of responses (9 out of 27 baseline survey responses) indicated they were undertaking the SMS change management process; 33% said they would go through the safety verification process under ROGS; and a further 22% (6 out of 27 responses) indicated using a notified body under the Railways (Interoperability) Regulations 2006 (RIR). • The majority (54% - 7 out of 13) of baseline survey respondents only required minor changes to their existing processes in order to fully address safety verification requirements; 31% of

Objective 4: Extend broadly similar requirements to railways not covered by the RSD ("non-mainline railways"), as well as to some other guided transport systems.		
	deciding when safety verification must be applied • Changes to written safety verification schemes • Changed processes for evaluating the effectiveness of the safety verification process • Challenges encountered in obtaining safety verification	respondents required major changes (4 out of 13); and 15% of respondents (2 out of 13) required a completely new process. • The most significant changes made were changing the written safety verification scheme (23% - 10 out of 43 responses) and introducing a system for deciding when safety verification must be applied (23% - 10 out of 43 responses). Other significant activities included conducting an audit and review of their current system (16% - 7 out of 43 responses) and identifying a suitable independent competent person (ICP) (16% - 7 out of 43 responses). • The most significant safety verification challenge was felt to be knowing when to apply safety verification (24% - 6 out of 25 responses). Other significant challenges were identifying and appointing an independent competent person (ICP) (20% - 5 out of 25 responses); experiencing time and / or resource pressures (20% - 5 out of 25 responses); and understanding the requirements (16% - 4 out of 25 responses). • The largest percentage (42% - 5 out of 12) of respondents believed that safety verification had improved safety. A further 33% of respondents (4 out of 12) said they felt there was no change and 25% said they were not sure.
4b. replace this requirement with a more targeted requirement on duty holders to obtain safety verification from an independent competent person	• Identification of suitable independent competent person/s (ICP) • Changes in the way information is managed to ensure easy access for ICP's • Introduction of processes for handling ICP	• A significant challenge in safety verification was found to be identifying and appointing an independent competent person (ICP) (20% - 5 out of 25 survey responses). • The majority of baseline survey respondents (54% - 7 out of 13) were found to only require minor changes to their existing processes in order to fully address safety verification requirements; 31% of respondents required major changes (4 out of 13); and 15% of respondents (2 out of 13) required a completely new process. • In terms of findings suitable workers in the rail industry in general, the Influence Network

Objective 4: Extend broadly similar requirements to railways not covered by the RSD ("non-mainline railways"), as well as to some other guided transport systems.		
	recommendations	workshop group agreed that day-to-day resourcing was good (hence the quality rating of 9), but one-off complex projects could be difficult to resource quickly (hence the quality rating of 4).

Table 33 Baseline data for Objective 5

Objective 5: Replace the Safety Critical Work Regulations 1994 (SCWR) and implement requirements on those carrying out all types of safety critical work. Under ROGS the legal scope has increased as a wider range of work is now covered.		
Subsidiary objectives	***Outcome measures***	***Outcome measures: baseline data***
5a. 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	• Number of organisations identifying safety critical work undertaken in organisation	• In terms of making changes, the joint largest percentage of responses to the baseline survey indicated duty holders reviewed the factors which influence worker fatigue (22% - 12 out of 54 responses) and identified safety critical work undertaken in the organisation (22% - 12 out of 54 responses).
5b. safety critical tasks must be carried out by a person assessed as being competent and fit for work	• Number of organisations introducing competency management systems • Number of organistaions explicitly identifying workers undertaking safety critical work and those managing them • Number of workers accredited as competent	• In terms of competence throughout the industry, the Influence Network workshop group rated this factor in terms of individual's being competent to do their own jobs (i.e. jobs they are trained and experienced in) and not competence in general. It was felt that generally the factor should be rated as a 7, although it was also suggested that the competence of train drivers was higher than this (a 9 was suggested). A range of between 7 and 9 was therefore agreed upon across the group. • In terms of findings suitable workers in the rail industry in general, the Influence Network workshop group agreed that day-to-day resourcing was good (hence the quality rating of 9), but one-off complex projects could be difficult to resource quickly (hence the quality rating of 4). • In terms of fatigue in the rail industry, the group underlined that the rail industry (with the

Objective 5: Replace the Safety Critical Work Regulations 1994 (SCWR) and implement requirements on those carrying out all types of safety critical work. Under ROGS the legal scope has increased as a wider range of work is now covered.		
	• Industry's perception of the competence, health and overall fitness of rail industry workers	exception of the heritage sector) is a 24/7 industry. Workshop participants also described some of the well-documented signals passed at danger (SPAD) incidents, which had been caused by microsleeps. The group went on to highlight how account needs to be taken of workers' lifestyle factors (e.g. ensuring people are rested for work etc.) in order to try and mitigate the risk of fatigue at work. Due to the nature of the industry, the group assigned the factor 'fatigue' a quality rating range of between 5 and 7. • In terms of physical health the group highlighted how train drivers go through a rigorous selection process, which includes a full medical to ensure fitness to work. The heritage sector raised the issue of working with older individuals and taking into consideration their physical health requirements. In terms of psychological health, the stress rail workers go through if they have been involved with a suicide was also raised during the discussion. A counselling service is provided for rail workers to help them deal with the trauma. The group agreed on a ratings range of between 6 and 8, with '6' representing the infrastructure and train operating companies parts of the rail industry and '8' representing train drivers.
5c. remove the requirement for safety critical workers to carry a formal means of identification	• Number of safety critical workers carrying formal means of identification	• Outcome data on the number of safety critical workers carrying formal means of identification will be explored with ORR in 2008.
5d. require a change in approach from simply controlling the number of hours for preventing fatigue to one of requiring arrangements to be implemented that control risks from a wide number of factors, such as the pattern of working hours and roster design	• Consideration of the pattern of working hours and roster design reflected in revised working schedules • Industry's perception of the health and fatigue of rail industry workers	• See objective 5b for industry's perception of the health and fatigue or rail industry workers.

Objective 5: Replace the Safety Critical Work Regulations 1994 (SCWR) and implement requirements on those carrying out all types of safety critical work. Under ROGS the legal scope has increased as a wider range of work is now covered.		
	• Industry's perception of safe job design	

8. REFERENCES

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APPENDIX A

INFLUENCE NETWORK BRIEFING NOTE TO PARTICIPANTS

SAFETY IN THE RAIL INDUSTRY

INFLUENCE NETWORK (IN) WORKSHOP

Friday 21st September 2007, 0930hrs (for 1000hrs start) till 1600hrs

Office of Rail Regulation, One Kemble Street, London, WC2B 4AN

BACKGROUND AND WORKSHOP AIM

This workshop is being held as part of a project for the Office of Rail Regulation (ORR) to monitor and evaluate the impact of the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS).

This will involve a series of activities over the next three years designed to gather and analyse information in order to assess whether ROGS have met their original aims and objectives. This IN workshop constitutes one of these activities and is designed to gather an outline of the different influences on safety in the rail industry in order to assess the impact of ROGS.

RAIL INDUSTRY INFLUENCE NETWORK MODEL

The Influence Network (IN) allows a structured discussion about a range of possible factors that may or may not be influencing safety in the rail industry. Figure 1 shows the rail industry IN model that will be used in the workshop.

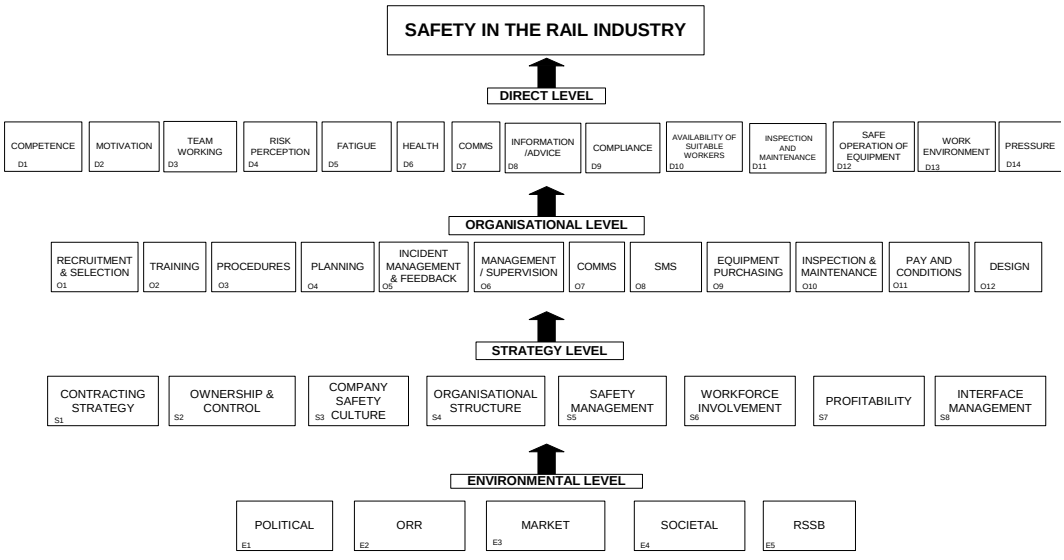

Figure 1 Rail Industry IN Model

The factors shown in the model in Figure 1 will be discussed in the workshop to assess the current quality of each factor in the rail industry and identify the factors that have the most importance in terms of maintaining safety.

WORKSHOP AGENDA

The agenda for the day is shown below in Table 1.

Table 1 Agenda for workshop

Time	Topic
0930	Arrive and coffee
1000	Workshop start and introduction to the day
1015	Round table introductions
1020	**Step 1** – Burning issues
1040	**Step 2** – Rate the quality and weight the importance of all Direct level factors
1200	Break
1205	**Step 3** – Rate the quality and weight the importance of all Organisational level factors
1300	Lunch
1330	**Step 3** – Contd.
1350	**Step 4** – Rate the quality and weight the importance of all Strategy level factors
1445	Break
1450	**Step 5** – Rate the quality and weight the importance of all Environmental level factors
1600	Finish

PREPARATION FOR THE WORKSHOP

There is little preparation required before attending the workshop since the approach will be explained fully on the day. However, **it would be of benefit if you could take a little time to look at the Influence Network model in Figure 1 and think about which factors you believe to be the most important influences on safety in rail and why**. Definitions for the factors are provided in Appendix A. If you would like any further information, please contact Natasha Perry on 01753 216 800 or natashaperry@bomelconsult.com.

APPENDIX A
INFLUENCE NETWORK FACTOR DEFINITIONS

The following section outlines the generic definitions given to each of the factors at the Direct, Organisational, Strategy and Environmental levels of the Influence Network.

Direct Level Influences

This refers to the immediate factors that may have a direct influence on safety.

D1 - Competence
The skills, knowledge and abilities required to perform particular tasks safely.
D2 - Motivation
Workers incentive to work towards the business, employer, personal and common goals.
D3 – Team working
The extent to which individuals in teams work as cohesive units and look out for each other's safety interests
D4 – Risk Perception
The extent to which workers are aware of the hazards and risks presented in the workplace.
D5 - Fatigue
The degree to which performance is degraded through sleep deprivation, or excessive / insufficient mental or physical activity.
D6 - Health
The physical well-being of workers.
D7 – Communications
The extent to which the frequency and clarity of communications are appropriate to enable tasks to be performed safely.
D8 - Information / Advice
The extent to which people can access information that is accurate, timely, relevant and usable.
D9 - Compliance
The extent to which people comply with instructions, procedures, rules, or regulations.
D10 - Availability of Suitable Workers
The relationship of supply to demand for suitable human resources. Relates to the appropriate mix and number of personnel in terms of experience, knowledge and qualifications.
D11 - Inspection and Maintenance
The extent and frequency with which equipment is inspected and maintained.

D12 – Safe Operation of Equipment
The extent to which systems and equipment are available, conform to best practice and meet the usability needs of the user.
D13 - Work Environment
The level of noise, temperature, congestion, light and vibration existing in the place of work.
D14 - Pressure
The level of pressure created by work and the extent to which this leads to negative consequences for individuals in terms of health and/or performance e.g. unacceptable levels of stress.

Organisational Level Influences

This refers to the organisational factors that may influence safety at the Direct level.

O1 - Recruitment and Selection
The system that facilitates the employment of personnel that are suited to the job demands.
O2 - Training
The system that ensures the skills of the workforce are matched to their job demands.
O3 - Procedures
The system that ensures that the method of conducting tasks and/or operations is explicit and practical.
O4 - Planning
The system that designs and structures the work activities of personnel.
O5 - Incident Management + Feedback
The system of incident management that ensures high quality information about incidents and near misses is collected, analysed and acted on appropriately.
O6 - Management / Supervision
The system that ensures human resources are adequately managed/supervised.
O7 - Communications
The system that ensures that appropriate information is communicated clearly to its intended recipients from/to management and workers.
O8 – Safety Management Systems (SMS)
The system in place for managing safety risks.
O9 - Equipment Purchasing
The system that ensures the range of hardware (infrastructure, rolling stock, tools, machinery, PPE etc) available is appropriate for the job demands and meets user requirements.

O10 - Inspection + Maintenance
The system that ensures the range of hardware is inspected, and maintained in good working order.
O11 - Pay + Conditions
The extent to which earnings, working conditions and other employment rewards match the demands of the job.
O12 - Design
The process of engineering and ergonomic design of the workplace activities, facilities, and hardware to ensure fitness-for-purpose, safety and operability.

Strategy Level Influences

This level comprises the factors that shape the organisational processes.

S1 - Contracting Strategy
The extent to which safety is considered in contractual arrangements and the implications.
S2 - Ownership + Control
The extent to which ownership and control is taken to ensure sustained safety performance.
S3 - Company Safety Culture
Product of individual and group values, attitudes, competencies and patterns of behaviour in relation to safety.
S4 - Organisational Structure
The extent to which there is appropriate definition of roles and responsibilities within and between organisations.
S5 - Safety Management
The management system which encompasses safety policies, the definition of roles and responsibilities for safety, the implementation of measures to promote safety and the evaluation of safety performance.
S6 – Workforce Involvement
The extent to which there is a harmonious relationship between managers/duty holders and the workforce. Also the extent to which there is the opportunity for workers to affiliate with associations active in defending and promoting their welfare, and the extent to which there is a system in place for negotiation of pay and conditions.
S7 - Profitability
The extent to which the business is subject to competition over market share and constrained as to the price that can be charged for the services offered.
S8 - Interface Management
The extent to which interacting operating organisations and parent companies liaise on safety issues and railway associations assist in interface management.

Environmental Level Influences

This refers to the regulatory and wider external influences that impact on the rail industry as a whole.

E1 - Political Influence
The profile of, and practices within, Government, related to the rail industry.
E2 – Office of Rail Regulation (ORR)
The economic and safety regulator.
E3 - Market Influence
The commercial and economic context affecting the rail industry.
E4 - Societal Influence
Aspects of the community and society at large, which bear upon the public perception of the rail industry.
E5 – Rail Safety and Standards Board (RSSB)
The industry controlled body which both manages standards and monitors safety.

APPENDIX B

ROGS BASELINE SURVEY ISSUED TO INDUSTRY

BASELINE SURVEY
THE RAILWAYS AND OTHER GUIDED TRANSPORT SYSTEMS (SAFETY) REGULATIONS 2006 (ROGS)

ABOUT THIS SURVEY

- BOMEL is an independent research and consultancy organisation. We are carrying out research on behalf of the Office of Rail Regulation (ORR) to monitor and evaluate the impact of ROGS.
- This research will involve a series of activities over the next three years designed to gather and analyse safety performance information in order to assess whether ROGS have met their original aims and objectives. This survey is the first of four we will conduct over the next three years.
- We appreciate you are busy and we have therefore tried to keep the survey as short and interesting as possible. We value your views and appreciate the time taken to complete this survey.

WHO SHOULD COMPLETE THIS SURVEY

- We are seeking views from a representative sample of organisations within the rail industry regarding ROGS.
- This questionnaire is ideally intended for those with a responsibility for safety (e.g. Safety Managers, Supervisors, Safety Representatives etc.).
- The survey covers the following areas:

PART 1 – FOR EVERYONE TO COMPLETE

1. Organisational details
2. Awareness and understanding of ROGS
3. Industry safety culture
4. General feedback on ROGS and ORR
5. Additional comments

PART 2 – FOR DUTY HOLDERS ONLY TO COMPLETE

6. Specific duty holder details
7. Implementation of ROGS
8. Additional comments

CONFIDENTIALITY

All responses will be treated in the strictest confidence. Your name will not be passed to the ORR or made available to any other parties without your consent. Responses are being obtained from a range of organisations. The results of this survey will be aggregated and presented so that individual respondents will not be identifiable. Likewise, our report will not name individual contributors.

COMPLETING THE SURVEY

Please respond in terms of your own organisation. If your organisation is part of a larger group but essentially works independently, then please answer for your organisation about which you have direct knowledge, and not the group. Please provide as many answers as you can but leave blank those questions you cannot answer. The survey should take no longer than 30 minutes to complete.

CONTACT DETAILS

BOMEL: Natasha Perry, natashaperry@bomelconsult.com, 01753 216800
Thames Central, 90 Hatfield Road, Slough, Berkshire, SL1 1QE

Thank you for your assistance with this important study.

PART 1 – FOR EVERYONE TO COMPLETE

1 Organisational details

This section (1 – Organisational details) will remain confidential to BOMEL only	
1.1 Your name:	
1.2 Job title:	
1.3 Organisation name:	
1.4 Telephone No:	
1.5 Email:	
1.6 Website:	

2 Awareness and understanding of ROGS

2.1 Please provide your views on the following statement by ticking the box which most accurately reflects your opinion: ***"I am aware of ROGS and their contents"***	**Strongly agree**	**Agree**	**Neither**	**Disagree**	**Strongly disagree**	**No opinion**
	☐	☐	☐	☐	☐	☐
2.2 Please provide your views on the following statement by ticking the box which most accurately reflects your opinion: ***"I understand the requirements of ROGS"***	**Strongly agree**	**Agree**	**Neither**	**Disagree**	**Strongly disagree**	**No opinion**
	☐	☐	☐	☐	☐	☐

2.3 Do you use any guidance to help you understand ROGS?	Yes	☐
	No	☐
2.4 If *Yes*, please indicate what guidance you use. (Select all boxes that apply)	ORR published guidance	☐
	RSSB published guidance	☐
	Internal organisational guidance	☐
	Other	☐
If *Other*, please specify:		

		Very useful	Useful	Not useful	Not sure	Not applicable
2.5 If you indicated using any of the following pieces of guidance, please indicate how useful you find the guidance:	ORR published guidance	☐	☐	☐	☐	☐
	RSSB published guidance	☐	☐	☐	☐	☐
	Internal organisational guidance	☐	☐	☐	☐	☐
	Other (as specified above)	☐	☐	☐	☐	☐
2.6 In relation to the answers you gave in Question 2.5, please briefly explain why you felt each piece of guidance is either 'very useful', 'useful', 'not useful' etc.	ORR published guidance					
	RSSB published guidance					
	Internal organisational guidance					
	Other (as specified above)					

2.7 Do you use any other help to assist you in understanding ROGS?	Yes	☐
	No	☐
2.8 If *Yes*, please specify what help you use. (Select all boxes that apply)	External consultant	☐
	Internal consultant	☐
	Direct contact with ORR	☐
	Direct contact with RSSB	☐
	Trade union	☐
	Industry networking	☐
	Other	☐
If *Other*, please specify:		

3 Industry safety culture

PLEASE PROVIDE YOUR VIEWS ON THE FOLLOWING SAFETY STATEMENTS BY TICKING THE BOX WHICH MOST ACCURATELY REFLECTS YOUR OPINION

	Strongly agree	Agree	Neither	Disagree	Strongly disagree	No opinion
3.1 There are good communications here about health and safety issues	☐	☐	☐	☐	☐	☐
3.2 The company really cares about the health and safety of the people who work here	☐	☐	☐	☐	☐	☐
3.3 My immediate boss often talks to me about health and safety	☐	☐	☐	☐	☐	☐
3.4 Supervisors are good at detecting unsafe behaviour	☐	☐	☐	☐	☐	☐
3.5 There is nothing I can do to further improve health and safety here	☐	☐	☐	☐	☐	☐
3.6 I trust my workmates with my health and safety	☐	☐	☐	☐	☐	☐
3.7 I am clear about what my responsibilities are for health and safety	☐	☐	☐	☐	☐	☐
3.8 People here do not remember much of the health and safety training which applies to their job	☐	☐	☐	☐	☐	☐
3.9 People here always work safely even when they are not being supervised	☐	☐	☐	☐	☐	☐
3.10 People here think health and safety is not their problem – it's up to management and others	☐	☐	☐	☐	☐	☐
3.11 Some people here have a poor understanding of the risks associated with their work	☐	☐	☐	☐	☐	☐
3.12 There are always enough people available to get the job done according to the health and safety procedures/instructions/rules	☐	☐	☐	☐	☐	☐
3.13 Near misses are always reported	☐	☐	☐	☐	☐	☐

4 General feedback on ROGS and ORR

4.1	Has ROGS changed the way in which safety has been managed in your organisation?	Yes ☐
		No ☐
		Not sure ☐
	If *Yes*, please briefly explain why:	
4.2	Has ROGS made any difference to safety related decision making?	Yes ☐
		No ☐
		Not sure ☐
	If *Yes*, please briefly explain why:	
4.3	Please provide your views on the following statement by ticking the box which most accurately reflects your opinion: ***"From experience, I believe that standards of safety are the same under ROGS"***	**Strongly agree** ☐ **Agree** ☐ **Neither** ☐ **Disagree** ☐ **Strongly disagree** ☐ **No opinion** ☐
4.4	Could more be done to reduce the administrative burden of the regulations?	No ☐
		Yes ☐
		No opinion ☐
	If *Yes*, please specify:	
4.5	How would you describe the help and support you have received from ORR? (Select one box)	Excellent ☐
		Good ☐
		Average ☐
		Poor ☐
		Very poor ☐
		No opinion ☐
4.6	What else could ORR do to help you with ROGS?	

5 Additional comments

5.1 Are there any additional comments that you would like to make?

PART 2 – FOR DUTY HOLDERS ONLY TO COMPLETE

6 Specific duty holder details

This section will be used to put cost data into context		
6.1 What best describes the role of your organisation?: (Select **one** box only or specify below)	Infrastructure manager	☐
	Train operating company (TOC)	☐
	Freight operating company (FOC)	☐
	On Track Machine operation (OTM)	☐
	Possession only operation	☐
	Maintainer of vehicles or infrastructure	☐
	Rolling stock manufacturer or company (incl. Leasing companies)	☐
	Metro system (e.g. London Underground, Tyne & Wear Metro)	☐
	Light railway	☐
	Tramway	☐
	Railway (or other transport system) operating under 40kph	☐
	Trade union	☐
	Passenger groups	☐
	Other	☐
If *Other*, please specify:		
6.2 If known, could you please indicate your organisation's annual turnover for 2006:		£
6.3 If known, could you please indicate your organisation's total number of direct employees (i.e. not including subcontractors) in 2006:		
6.4 If known, could you please indicate your organisation's total number of contracted workforce (i.e. not directly employed) in 2006:		
6.5 If applicable, could you please indicate the total number of passenger kilometres travelled by your organisation in 2006:		Tick here if non-applicable: ☐
6.6 If applicable, could you please indicate the amount of freight tonnage moved by your organisation in 2006:		Tick here if non-applicable: ☐

7 Implementation of ROGS

SAFETY MANAGEMENT SYSTEM (SMS)			
7.1	Do you have a safety management system which is ROGS compliant?	Yes	☐
		No	☐
		Not sure	☐
		If *No or Not sure* please go straight to Question 7.9	
7.2	To what extent have you had to change or adapt your existing safety management system in order to fully address the requirements for an SMS under ROGS? (Select one box)	A completely new system was required	☐
		Our existing system required major changes	☐
		Our existing system required minor changes	☐
		Our existing system was suitable in its current format	☐
7.3	If action was required, what new activities did you undertake as a result of ROGS? (Select all boxes that apply)	Audit and review of current system	☐
		Changed specific work processes	☐
		Changed written procedures	☐
		Changed safety policy statement	☐
		Changed the way risks are managed	☐
		Set new safety targets	☐
		Changed current training provisions	☐
		Changed the way safety information is managed	☐
		Changed accident / near miss investigation process	☐
		Changed emergency planning process	☐
		Changed process for evaluating the effectiveness of the actual SMS	☐
		Integrated the SMS with other organisational system/s	☐
		Other	☐
	If *Other* actions were required, please specify:		

7.4	Please estimate the costs your organisation incurred as a result of developing an SMS under ROGS. Please provide details on at least one of the following costs:	Estimated number of hours spent	
		Estimated number of days spent	
		Estimated actual cost in £'s spent	
7.5	Please estimate the costs your organisation incurred as a result of maintaining an SMS under ROGS, **per year**. Please provide details on at least one of the following costs:	Estimated number of hours spent	
		Estimated number of days spent	
		Estimated actual cost in £'s spent	
7.6	Compared to your costs to maintain a safety case, please indicate whether SMS maintenance costs under ROGS are:	Similar	☐
		More expensive	☐
		Less expensive	☐
7.7	What are the main challenges in maintaining an SMS under ROGS? (Select all boxes that apply)	Understanding the requirements	☐
		Time and / or resource pressures	☐
		Organisational / cultural barriers	☐
		Communicating the SMS to the organisation	☐
		No challenges encountered	☐
		Other	☐
	If *Other*, please specify:		
7.8	To what extent do you think SMS under ROGS has affected safety? (Select one box)	Improved safety	☐
		Hindered safety	☐
		No change	☐
		Not sure	☐
		Other	☐
	If *Other*, please specify:		

SAFETY VERIFICATION (SV)			
7.9	Do you have processes in place for ensuring safe introduction of new / altered infrastructure or rolling stock to your operation? (Select all boxes that apply)	Use "notified body" under the Railways (Interoperability) Regulations 2006 (RIR)	☐
		SMS change management process	☐
		Safety verification under ROGS	☐
		Not applicable	☐
If only '*Use "notified body" under RIR*' and / or '*Not applicable'* apply to your organisation please go straight to Question 7.15.			

7.10	To what extent have you had to change or adapt your existing processes in order to fully address SV requirements under ROGS? (Select one box)	A completely new process was required	☐
		Our existing process required major changes	☐
		Our existing process required minor changes	☐
		Our existing process was suitable in its current format	☐
7.11	If action was required, what activities did you undertake as a result of ROGS? (Select all boxes that apply)	Audit and review of current system	☐
		Introduced system for deciding when SV must be applied	☐
		Identification of a suitable independent competent person/s (ICP)	☐
		Changed written SV scheme	☐
		Changed way information is managed to ensure easy access for ICP	☐
		Introduced process for handling ICP recommendations	☐
		Changed process for evaluating the effectiveness of the SV process	☐
		Other	☐
	If *Other* actions were required, please specify:		
7.12	Please estimate the costs your organisation incurred as a result of undertaking SV under ROGS, **per year**. Please provide details on at least one of the following costs:	Estimated number of hours spent	
		Estimated number of days spent	
		Estimated actual cost in £'s spent	
7.13	What are the main challenges in meeting the requirements of SV? (Select all boxes that apply)	Understanding the requirements	☐
		Time and / or resource pressures	☐
		Organisational / cultural barriers	☐
		Knowing when to apply safety verification	☐
		Identifying / appointing an ICP	☐
		No challenges encountered	☐
		Other	☐
	If *Other*, please specify:		

7.14 To what extent do you think SV under ROGS has affected safety? (Select one box)	Improved safety	☐
	Hindered safety	☐
	No change	☐
	Not sure	☐
	Other	☐
If *Other*, please specify:		

SAFETY CERTIFICATION			
7.15 Do you have a safety certificate under ROGS? (Select one box)	Yes	☐	
	No	☐	
	Not sure	☐	
If *No or Not sure* please go straight to Question 7.23			
7.16 Please tick which stages in the safety certification assessment process you have completed. (Select all boxes that apply)	Preparing the application	☐	
	Submission to ORR and affected parties	☐	
	Main ORR assessment	☐	
	Meeting with ORR to discuss assessment findings	☐	
	Resolving outstanding issues	☐	
	ORR final decision and sign-off	☐	
7.17 Please estimate the costs your organisation incurred as a result of your initial application for a safety certificate under ROGS or an amendment to it, **per year**. Please provide details on at least one of the following costs:		Initial application	Amend
	Estimated number of hours spent		
	Estimated number of days spent		
	Estimated actual cost in £'s spent		
7.18 What are the main challenges? (Select all boxes that apply)	Understanding the requirements	☐	
	Time and / or resource pressures	☐	
	Organisational / cultural barriers	☐	
	Consulting affected parties	☐	
	Liaison with ORR	☐	
	Employee involvement	☐	
	No challenges encountered	☐	
	Other	☐	
If *Other*, please specify:			

7.19 Compared to Railway Safety Case applications, the **time** spent on applying for a safety certificate was: (Select one box)	More	☐
	Less	☐
	About the same	☐
7.20 Compared to Railway Safety Case applications, the **cost** of applying for a safety certificate was: (Select one box)	More	☐
	Less	☐
	About the same	☐
7.21 Do you think that improvements could be made to the application process?	Yes	☐
	No	☐
	No opinion	☐
If *Yes*, please specify:		
7.22 To what extent do you think safety certification under ROGS has affected safety? (Select one box)	Improved safety	☐
	Hindered safety	☐
	No change	☐
	Not sure	☐
	Other	☐
If *Other*, please specify:		

SAFETY AUTHORISATION			
7.23 Do you have safety authorisation under ROGS? (Select one box)	Yes	☐	
	No	☐	
	Not sure	☐	
If *No or Not sure* please go straight to Question 7.31			
7.24 Please tick which stages in the safety authorisation assessment process you have completed. (Select all boxes that apply)	Preparing the application	☐	
	Submission to ORR and affected parties	☐	
	Main ORR assessment	☐	
	Meeting with ORR to discuss assessment findings	☐	
	Resolving outstanding issues	☐	
	ORR final decision and sign-off	☐	
7.25 Please estimate the costs your organisation incurred as a result of your initial application for a safety authorisation under ROGS or an amendment to it, **per year**. Please provide details on at least one of the following costs:		Initial application	Amend
	Estimated number of hours spent		
	Estimated number of days spent		
	Estimated actual cost in £'s spent		

7.26 What are the main challenges? (Select all boxes that apply)	Understanding the requirements	☐
	Time and / or resource pressures	☐
	Organisational / cultural barriers	☐
	Consulting affected parties	☐
	Liaison with ORR	☐
	Employee involvement	☐
	No challenges encountered	☐
	Other	☐
If *Other*, please specify:		
7.27 Compared to Railway Safety Case applications, the **time** spent on applying for a safety authorisation was: (Select one box)	More	☐
	Less	☐
	About the same	☐
7.28 Compared to Railway Safety Case applications, the **cost** of applying for a safety authorisation was: (Select one box)	More	☐
	Less	☐
	About the same	☐
7.29 Do you think that improvements could be made to the application process?	Yes	☐
	No	☐
	No opinion	☐
If *Yes*, please specify:		
7.30 To what extent do you think safety authorisation under ROGS has affected safety? (Select one box)	Improved safety	☐
	Hindered safety	☐
	No change	☐
	Not sure	☐
	Other	☐
If *Other*, please specify:		

RISK ASSESSMENT		
7.31 Do the regulations for conducting a risk assessment in accordance with Regulation 19 of ROGS apply to your organisation?	Yes	☐
	No	☐
	Not sure	☐
If *No or Not sure* please go straight to Question 7.37		

7.32	To what extent have you had to change your existing arrangements for risk assessment to address the requirements under ROGS? (Select one box)	Completely new risk assessments were required	☐
		Our existing risk assessments required major changes	☐
		Our existing risk assessments required minor changes	☐
		Our existing risk assessments were suitable	☐
		Not applicable	☐
7.33	If action was required, what activities did you undertake as a result of ROGS? (Select all boxes that apply)	Audit and review of current risk assessment process	☐
		Conducting new risk assessment	☐
		Changed management of risk assessment information	☐
		Other	☐
	If *Other* actions were required, please specify:		
7.34	If new risk assessments or changes were required, please estimate the costs to your organisation incurred as a result of these activities. Please provide details on at least one of the following costs:	Estimated number of hours spent	
		Estimated number of days spent	
		Estimated actual cost in £'s spent	
7.35	What were the main challenges you faced in adapting your arrangements to meet the requirements of Regulation 19? (Select all boxes that apply)	Understanding the requirements	☐
		Time and / or resource pressures	☐
		Organisational / cultural barriers	☐
		Involving employees and their representatives	☐
		Applying targets / standards	☐
		No challenges encountered	☐
		Other	☐
	If *Other*, please specify:		
7.36	In summary, how do you feel about the changes brought about to risk assessment by ROGS? (Select one box)	Improved safety	☐
		Hindered safety	☐
		No change	☐
		Not sure	☐
		Other	☐
	If *Other*, please specify:		

ANNUAL SAFETY REPORT			
7.37 Are you required to compile and submit an annual safety report under ROGS? (Select one box)		Yes	☐
		No	☐
		Not sure	☐
		If *No* or *Not sure* please go straight to Question 7.42	
7.38 Please estimate the costs your organisation incurred as a result of submitting an annual safety report, **per year**. Please provide details on at least one of the following costs:		Estimated number of hours spent	
		Estimated number of days spent	
		Estimated actual cost in £'s spent	
7.39 Please describe briefly the activities that you undertook in incurring these costs:			
7.40 What are the main challenges in preparing and submitting a report? (Select all boxes that apply)		Understanding the requirements	☐
		Time and / or resource pressures	☐
		Gathering and compiling the information	☐
		Meeting the deadline	☐
		No challenges encountered	☐
		Other	☐
	If *Other*, please specify:		
7.41 To what extent do you think annual safety reports under ROGS have affected safety? (Select one box)		Improved safety	☐
		Hindered safety	☐
		No change	☐
		Not sure	☐
		Other	☐
	If *Other*, please specify:		

DUTY OF CO-OPERATION			
7.42	To what extent does the new duty of co-operation cause you to revise your processes for achieving co-operation? (Select one box)	A completely new set of processes was required	☐
		Our existing set of processes required major changes	☐
		Our existing set of processes required minor changes	☐
		Our existing set of processes was suitable in their current format	☐
		Not applicable	☐
7.43	What activities do you undertake to comply with the duty under ROGS? (Select all boxes that apply)	Audit and review of existing methods of co-operation	☐
		Identify areas where the majority of operator interfacing occurs	☐
		Develop written procedures for interfacing with other duty holders	☐
		Appoint representatives tasked with interfacing with other duty holders	☐
		Develop methods for evaluating effectiveness of co-operation	☐
		Other	☐
	If *Other*, please specify:		
7.44	What are the main challenges in meeting the duty? (Select all boxes that apply)	Understanding the requirements	☐
		Time and / or resource pressures	☐
		Organisational / cultural barriers	☐
		Other duty holders not co-operating	☐
		No challenges encountered	☐
		Other	☐
	If *Other*, please specify:		
7.45	To what extent do you think the duty of co-operation has affected safety? (Select one box)	Improved safety	☐
		Hindered safety	☐
		No change	☐
		Not sure	☐
		Other	☐
	If *Other*, please specify:		

SAFETY CRITICAL WORK			
7.46	To what extent have the duties relating to managing the competence, fitness and fatigue of individuals performing safety critical tasks caused you to revise current methods of working in order to comply with ROGS? (Select one box)	A completely new set of methods was required	☐
		Our existing set of methods required major changes	☐
		Our existing set of methods required minor changes	☐
		Our existing set of methods was suitable in their current format	☐
		Not applicable	☐
7.47	What activities do you undertake as a result of ROGS? (Select all boxes that apply)	Identify safety critical work undertaken in organisation	☐
		Identify workers undertaking safety critical work and those managing them	☐
		Introduce competency management system	☐
		Review factors which influence worker fatigue (e.g. shift patterns, frequency of breaks, commute time etc.)	☐
		Review contractors arrangements for managing safety critical work	☐
		Other	☐
	If *Other*, please specify:		
7.48	What are the main challenges in meeting the duty? (Select all boxes that apply)	Understanding the requirements	☐
		Time and / or resource pressures	☐
		Organisational / cultural barriers	☐
		Training staff and managers	☐
		No challenges encountered	☐
		Other	☐
	If *Other*, please specify:		
7.49	To what extent do you think duties regarding safety critical work have affected safety? (Select one box)	Improved safety	☐
		Hindered safety	☐
		No change	☐
		Not sure	☐
		Other	☐
	If *Other*, please specify:		

8 Additional comments

8.1 Are there any additional comments that you would like to make?

Please save the completed questionnaire to your desktop and then email it as an attachment to natashaperry@bomelconsult.com, marking the email subject as "ROGS survey" by 5pm on Wednesday 19th September 2007.

Thank you, again, for your help and assistance in this important study