

**RSSB-managed  
industry R & D programme**

**HEALTH  
TOPIC RESEARCH PLAN**

**EXECUTIVE SUMMARY**

**ISSUE 1**

**Topic Research Plan approved by Safety Policy Group  
on 8 April 2008.**

**Endorsed by R&DAG on ....**

**(Other Client Groups: Operations Focus Group)**

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## Executive Summary – Health

This document is an executive summary of the Health topic research plan (TRP) developed by the Safety Policy Group and other groups in this area, facilitated by RSSB. This summary outlines the scope of the topic, the potential impact of research carried out under this topic, the areas of research that will address the research programme objectives and the immediate priorities for these research areas.

The scope of this topic includes the promotion and maintenance of the highest practicable degree of physical, mental, social, economic and environmental well-being of workers in all occupations on the railways. It looks not only at the effects of health on work but also the effects of work on health, including the fact that work can contribute to good health or well-being<sup>1</sup>. This focus favours the adoption of a holistic or more correctly a biopsychosocial model of health – one that takes into account the person, their health problem and their work environment – and encourages investigation at three different levels of economic efficiency – treatment area, health service and societal. It is, however, up to the industry as a whole to decide whether research at all these levels is likely to be appropriate, cost-effective, or practical. Furthermore, this topic covers two aspects of passenger health, namely where the industry's environment and activities may have an impact on the health of customers and where passengers' illnesses or disabilities (or age)<sup>2</sup> may create challenges which the industry will need to accommodate to a greater or lesser extent. Members of Safety Policy Group have agreed that the topic should include existing and potential research into areas of passenger health.

Particular areas of current research included in the research and development health portfolio are of interest to other research stakeholders. Work on fatigue is currently supported by the Infrastructure Safety Liaison Group, and is also of interest to Operations Focus Group (OFG), the principal client group for research into operations. OFG is also interested in crowd management research, some of which has been managed within the station safety area, and the remainder of which was formerly in this Health topic.

For some of the research objectives the potential size of the problem associated with health-specific issues is unknown, and/or industry targets have not yet been set; therefore, a detailed assessment of the potential impact of research cannot be achieved. Safety Policy Group members have indicated that it is inappropriate for the fatalities and weighted injuries metrics (referred to in other topic research plans) to be used as proxies for the size and importance of the health risk facing the industry. This plan therefore does not include data extracted from the Safety Risk Model. In summary:

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<sup>1</sup> The acknowledgment that 'work is a public health tool' is one of the key drivers of the government's Health, Work and Well-being strategy that was launched to encourage and support employers initiatives to improve the health and well-being of working aged people.

<sup>2</sup> Managing the offer for disabled people is covered in the Operations TRP which is sponsored by OFG

- **Health and Safety** - There is no single source of information available in Great Britain on the nature and full extent of occupational and work-related ill health. However there are a number of sources of data, which provide some evidence of the extent of this problem. These are:
  - The Health & Occupational Reporting Network (THOR)
  - The self-reported work-related ill-health survey (SWI) 2005-2006
  - The statutory Reporting of Injuries, Diseases and Dangerous Occurrences regulations 1995 (RIDDOR)
  - RSSB's Risk Profile Bulletin, Issue 5 (but see note above)
- **Performance** - The cancellation of or delay to trains as a consequence of staff sickness has a direct effect on the performance of the operational railway in a way visible to customers. The service is degraded when staff are unavailable, for example to provide information or to operate a buffet car. The general efficiency of operation is reduced when jobs are left uncovered, and further stresses put on staff covering for absent colleagues. But it is very difficult to get useful figures as much of the data is subjective and includes both genuine sickness and absences where sickness is given as an excuse. London Underground has calculated that total work-related ill health cost it £27m in 2002/3.
- **Capability** - Individuals with one or more health risk factors such as high stress, job dissatisfaction, smoking, physical inactivity, poor physical health, carrying excess weight and high blood pressure have been shown to be less productive in the workplace than individuals with no health risks; each additional risk factor is associated with 2.4% productivity loss<sup>3</sup>. On the other hand, employees who improved their health risk status experienced measurable improvement in work productivity by as much as 11%. The potential impact of improvements in occupational health on the rail industry has not been investigated in detail at the present time, however London Underground, the closest comparative organisation, has created a performance indicator, Customer Benefit that estimates the value of customer benefit added by a unit change in a positive direction (one percentage point) over one year, of a number of employee-related and other aspects of its business such as: employee attendance, employee motivation, employee injuries and delays. The improvements in the above-mentioned parameters were calculated to deliver £6.5 million, £3.5 million, £0.75 million and £0.06 million respectively in 2001, or nearly £11m, which equated to approximately 0.1 percent of turnover in 2001.
- **Costs** - The RSSB research project T382 'Managing Health Needs' calculated the direct costs of time lost from ill-health to the rail industry to be approximately **£230 million per year**; 61% of these costs being attributable to performance impairment and 33% to sickness absence.
- **Sustainability** - The sustainability of the railways requires both a supply of healthy and motivated employees to provide a service and a pool of customers prepared to purchase the offering. Customer loyalty can be achieved through

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<sup>3</sup> Pelletier B, Boles M, Lynch W. Changes in Health Risks and Work Productivity over time. Journal of Occupational and Environmental Medicine. 2004; 46(7):746-754.

providing services that meet their needs. Additionally, paying attention to improving the quality of life of the workforce and their families will secure employers many benefits including: increased employee productivity, reduced absence, lower costs associated with ill-health, decreased voluntary staff turnover, and improvement in employee morale and greater employee engagement. These goals are of particular importance in the railways in helping to ensure the knowledge base required to run the railways is retained.

In consultation with stakeholder groups, key areas of activity that support the different types of research need and the research programme objectives for this topic have been identified. The present status of work in these research areas, the main priorities moving forward, and the benefits of these priorities are presented in the following tables.

<b>Area 1 - Research into the effects of work on health to manage the health risk to employees.</b>	<b>Responsive Industry-wide R&amp;D</b>
<p><b>Overview</b></p> <p>Research in this area could look at the risks arising at work which could damage the health of employees and thus impair their fitness for work in general and safety critical work in particular. These include:</p> <ul style="list-style-type: none"> <li>• physical, chemical and biological hazards</li> <li>• psychosocial hazards (fatigue, stress, trauma)</li> </ul> <p>Research can look into the sources of hazards for particular groups and the design and evaluation of intervention measures to control the risks if required. The outcomes of such studies would map directly on to the Revitalising Health and Safety targets as they are focused on minimising the risks. Furthermore, the outcomes should help drive down costs associated with managing employee health risks both directly and indirectly. A reduction in direct costs can be achieved through reducing ill-health, long-term disability and ill-health retirements whereas a reduction in the indirect costs can be achieved by providing the necessary proof of managing the risks demanded by insurers before they consider lowering premiums on employers' liability insurance. Thus there is a clear business case for undertaking such research and, where appropriate, implementing recommendations.</p> <p>Network Rail believes that the main project of interest that would be beneficial would be 'Managing the health risk to employees through the effects of work on health'. This should place particular emphasis on the management of stress: guidance, creation of a risk assessment tool and an audit tool etc.</p>	
<p><b>Status</b></p> <p>Work to date has covered a number of the known physical, chemical, biological and psychosocial hazards railway employees encounter through their work. Others such as crystalline silica and ballast dust have been investigated out with the research programme by ORR/HMRI and Network Rail respectively.</p>	

<b>Priorities</b>				
The future priorities for this area are presented below.				
<b>Research Priority</b>	<b>Benefits to Stakeholders</b>	<b>Reason for Priority</b>	<b>Timescale</b>	<b>Priority</b>
Learning from and pooling experience with contractors within the rail industry and organisations outside it (eg mining and construction) on issues such as prevention of, and managing hand/arm vibration problems and similar conditions	Reduction in incidence of conditions, and time lost through them.	Network Rail believe this would be useful	Start 6-18 months	<b>H P4</b>
Investigation into the sources and levels of occupational stress in workers to inform development of organisational based interventions	The industry suffers considerable costs because of staff absence through stress – but it is difficult to quantify. If research could both quantify the problem and help suggest ways of reducing its prevalence and impact, there would be a direct positive impact on the bottom line (and also benefits to the employees).	ORR/HMRI have identified that the reporting of stress related ill health may become a reportable condition under RIDDOR in the foreseeable future. The industry believes that stress is an important issue to manage and therefore that guidance is needed	Start 12 - 24 months	<b>H P5</b>

<p><b>Area 2 - Research into the effects of employees' health on work to manage the health and safety risk affecting the workforce, passengers and the public</b></p>				<p><b>Responsive Industry-wide R&amp;D</b></p>
<p><b>Overview</b></p> <p>Research in this area could look at pre-employment screening (PES) and health surveillance (HS) in respect of:</p> <ul style="list-style-type: none"> <li>• stable decrements (visual acuity, colour vision, hearing)</li> <li>• variable decrements (alcohol and drug abuse, prescribed medication, mental health, fatigue)</li> <li>• sudden deficits (seizure, cardio-vascular disorders, hypoglycaemia from insulin)</li> </ul> <p>Research projects carried out in this area going forward may require the creation of complex mathematical models to explain the impact of employees' health on their potential for work. In turn, this requires the collection and analysis of data, much of which already exists but which is currently widely dispersed through the industry and beyond. Network Rail believes that each company should be encouraged to work with its human resources and occupational health and safety teams to gather good metrics so identifying health trends and then addressing areas of concern to meet their business needs</p> <p>The benefits of any research can be realised through the ability of the individuals such as occupational health physicians and line managers involved in health related decision-making to make consistent decisions supported by the creation of a comprehensive evidence base. This will lead to organisations choosing the right level of control for the risks in questions as opposed to the most comprehensive, which may lead to substantial cost savings. Furthermore, the solutions implemented should contribute to the improved general health and morale of the employee population.</p>				
<p><b>Status</b></p> <p>Work to date has covered or is covering the impact of stable decrements such as hearing, the variable decrements such as drug and alcohol misuse and sudden deficits in functional capability of employees that are known to import risk into the running of the railways.</p>				
<p><b>Priorities</b></p> <p>The future priorities for this area are presented below.</p>				
Research Priority	Benefits to Stakeholders	Reason for Priority	Timescale	Priority
<p>Collecting and analysing railway-related health data to facilitate better investigation of employee health risks.</p>	<p>To provide a tool for better investigation of employee health risks</p>	<p>To address the issue of a lack of health data in the industry, which is a barrier to taking effective management action. This has been identified in discussions with ATOC, Network Rail and ORR.</p>	<p>Start 6 -18 months</p>	<p><b>H P3</b></p>

<p><b>Area 3 – Research into the interaction of work and health to improve the effects on productivity and performance</b></p>	<p><b>Responsive Industry-wide R&amp;D</b></p>
<p><b>Overview</b></p> <p>Research in this area could investigate systems that:</p> <ul style="list-style-type: none"> <li>• Minimise medico-legal costs</li> <li>• Enhance workplace safety</li> <li>• Reduce variation in sickness absence</li> <li>• Enhance employee performance through increased productivity</li> <li>• Maximise employee health and morale</li> </ul> <p>Research into employee performance and productivity is relatively new, at least in health terms for the rail sector, hence the initial effort will need to focus on the collection of data, which can be achieved through the use of validated questionnaires addressing performance impairment and well-being issues. The data collected can then be used in a variety of ways for example, to understand the scale and drivers of presenteeism<sup>4</sup> in the employee population, or to create cost models to calculate the value of poor employee morale at the industry level or organisational level. Once an understanding of these issues is achieved, efforts to measure, address and monitor them can follow.</p> <p>Studies carried out to date in this subject area have been able to quantify the value to, for example, the retail industry of looking after employee wellbeing which makes staff feel valued<sup>5</sup>. Feeling valued has been shown to positively impact on customer satisfaction leading to increased spending and increased profit on the bottom line. The ‘mechanisms’ driving the monetary gains are improvements in employee satisfaction directly, and improvements in employee attendance leading to improvement in their job satisfaction ie employers generating more profit per employee whilst reducing operating costs. Again, a definite business case benefit is indicated.</p>	
<p><b>Status</b></p> <p>Work to date has identified the potential cost to the industry from poor performance</p>	

<sup>4</sup> Presenteeism is defined as Individuals who are attending work but are unable to work to their optimum potential as a result of suffering a health condition

<sup>5</sup> From People to Profits. The Institute of Employment Studies. 1999.

<b>Priorities</b>				
The future priorities for this area are presented below.				
<b>Research Priority</b>	<b>Benefits to Stakeholders</b>	<b>Reason for Priority</b>	<b>Timescale</b>	<b>Priority</b>
Previously published research (eg T382 'Management of health conditions and diseases') has not been widely noted by the industry, but contains much useful information about the conditions / illnesses which most affect the industry.	To provide a digest of this research to enable duty holders to justify in business terms which health-related initiatives should be taken forward, and in what order of priority.	Considerable business benefits could be obtained by leveraging existing research on causes of employee ill-health absence / early retirements.	Start 1 -12 months	<b>H P2</b>

<b>Area 4 – Research into the effects of passengers’ health on the rail industry, affecting the workforce, other passengers and the public</b>				<b>Strategic Industry-wide R&amp;D</b>
<b>Overview</b>				
<p>Research in this area can identify and understand health problems (such as infectious diseases) which passengers may pass on to other users, and staff and how they should be managed. It can also examine disabilities and age-related conditions which may make it more difficult for existing and potential passengers to access rail services, and how the ‘offer’ can be optimised to cater for their needs in a sustainable way. At the same time, in parallel with area 1 above, the impact of railways on the health of its users (eg noise, pollution, discomfort, stress and anxiety) can be assessed and solutions identified.</p> <p>Network Rail suggests that research into the effects of passengers’ health on the rail industry, affecting the workforce, other passengers and the public is worth exploring as this will assist with improving customer satisfaction and meeting passengers’ needs.</p>				
<b>Status</b>				
<p>Work to date has investigated issues ranging from physiological responses of the body to adverse conditions through to public behaviour and identified policies, processes and design features to mitigate customer distress.</p>				
<b>Priorities</b>				
<p>The future priorities for this area are presented below.</p>				
<b>Research Priority</b>	<b>Benefits to Stakeholders</b>	<b>Reason for Priority</b>	<b>Timescale</b>	<b>Priority</b>
<p>Possible research to assess the health effects on passengers of travelling by rail. A high level report on this topic<sup>6</sup> has identified the need for the rail industry to recognise the value in co-operating in health impact assessment studies.</p>	<p>This could provide information to allow duty holders to respond to ORR which is increasingly asking what the industry is doing to minimise health risks from its activities. There are also wider generative and reputational benefits.</p>	<p>Identified as a key risk by ORR which means that the industry needs to respond in a positive (and unified) way. Sustainability is becoming an enormously important public and political issue world-wide.</p>	<p>Start 24 - 36 months</p>	<p><b>M P6</b></p>

<sup>6</sup> C8 Topic Note Health

<b>Area 5 – Research to support outputs from inquiries, government recommendations, policy initiatives and new legislation</b>				<b>Strategy Support R&amp;D</b>
<b>Overview</b> Research may be used from time to time to establish whether recommendations relating to the management of relevant risks from investigations of recent major incidents, for instance from Rail Accident Investigation Branch (RAIB) investigations, are satisfactorily addressed.				
<b>Status</b> Past research requirements in areas 1 - 3 above have specified investigation with reference to the Health and Safety at Work Act 1974 and any other relevant legislation. Research into ageing is taking account of the need for the industry to develop a defence should there be claims of age discrimination under the Employment Equality (Age) Regulations 2006.				
<b>Priorities</b> The future priorities for this area are presented below.				
<b>Research Priority</b>	<b>Benefits to Stakeholders</b>	<b>Reason for Priority</b>	<b>Timescale</b>	<b>Priority</b>
To address the recommendations relating to a recent accident caused by the driver having a 'micro-sleep', articulated in the RAIB report Derailment of a freight train at Brentinby Junction near Melton Mowbray (Reference Area 2) T699	Research will ensure recommendations from investigation are satisfactorily addressed.	A message to the industry regarding the importance of recognising the business risk from sleep disorders	Already in progress	<b>H P1</b>

## Appendix 1 – Overview of Priorities

Area	Priority	Timescale	Priority Level
<b>1. Managing the health risk to employees through the effects of work on health</b>	Learning from and pooling experience with contractors within the rail industry and organisations outside it (eg mining and construction) on issues such as prevention of, and managing hand/arm vibration problems and similar conditions	Start 6-18 months	<b>H P4</b>
	Investigation into the sources and levels of occupational stress in workers to inform development of organisational based interventions	Start 12 - 24 months	<b>H P5</b>
<b>2. Research into the effects of employees' health on work to manage the health and safety risk affecting the workforce, passengers and the public</b>	Collecting and analysing railway- related health data to facilitate better investigation of employee health risks.	Start 6 -18 months	<b>H P3</b>
<b>3. Investigating the interaction between work and health to improve employee productivity and performance</b>	Previously published research (eg T382 'Management of health conditions and diseases') has not been widely noted by the industry, but contains much useful information about the conditions / illnesses which most affect the industry.	Start 1 -12 months	<b>H P2</b>
<b>4. Research into the effects of passengers' health on the rail industry, affecting the workforce, other passengers and the public</b>	Possible research to assess the health effects on passengers of travelling by rail. A high level report on this topic <sup>7</sup> has identified the need for the rail industry to recognise the value in co-operating in health impact assessment studies.	Start 24 - 36 months	<b>M P6</b>

<sup>7</sup> C8 Topic Note Health

Area	Priority	Timescale	Priority Level
<b>5. Research to support output from inquiries, government recommendations, policy initiatives and new legislation</b>	To address the recommendations relating to a recent accident caused by the driver having a 'micro-sleep', articulated in the RAIB report Derailment of a freight train at Brentinby Junction near Melton Mowbray (Reference Area 2) T699	Already in progress	<b>H P1</b>

## **Appendix 2 – Status of Research Projects**

See attached mindmap.

