1. Purpose

This paper seeks to provide the Board with an overview of current workforce health and safety risk, including performance trends, some headline observations and discussion topics.

2. Headline observations concerning workforce health and safety on today’s railway

- No material improvement to reported level of national major and minor injuries in five years.
- The single biggest cause of Fatality and Weighted Injuries (FWI) risk across all worker types remains slips, trips and falls.
- The one sustained improvement over the last five years has been the reduction in injuries arising from staff assaults due to the concerted efforts of the industry; in particular train operators supported by the work of the Rail Personal Security Group (RPSG) and the British Transport Police (BTP).
- There is increasing recognition that proactive improvement is required to understand and manage the effects of specific workplace activities on the long term health of the workforce (particularly hearing, respiratory diseases, muscular-skeletal, dermatitis, stress and hand and arm vibration syndrome (HAVS)).
- Recent survey of Industry Safety Meeting (ISM) attendees has ranked Occupational Health as one of the highest rated priorities.
- Recent ORR enforcement activity highlights shortcomings in the management of fatigue, exposure to hazardous substances and safe system of work in various different companies. There is also correlation between ORR enforcement activity, recent CIRAS reports and recurrent themes emerging from RAIB investigations – see Appendix 1.
- The industry has made some progress improving safety data, for example through RSSB’s data quality programme. Nevertheless, fundamental issues remain over understanding and integrity of reporting.
- RIDDOR reporting by Network Rail and its contractors has improved significantly since the introduction of data controls but there is still further to go to achieve reporting levels of 4-5 years ago.

3. Safety Risk Model (SRM) version 7

The latest version of the SRM has just been produced and risk to the workforce equates to 27.2 FWI which is 19% of the total rail system risk – see Appendix 2 Chart 1.
3.1 Recent performance and developments

A comprehensive analysis of workforce fatalities, major and minor injuries by types of workers is contained in Chapter 6 of the 2010/11 *Annual Safety Performance Report* (ASPR), which is available on RSSB’s website [http://www.rssb.co.uk/SPR/REPORTS/Pages/default.aspx](http://www.rssb.co.uk/SPR/REPORTS/Pages/default.aspx) and a separate presentation on the ASPR headlines will be made to the Board.

The overall workforce FWI performance trend by injury severity is illustrated in Appendix 2 Chart 2. There has been no material improvement over the last five years in the overall number of major injuries – see Appendix 2 Chart 3.

3.2 Further trends

- Analysis of all minor injuries (5335 in 2010/11) by all worker types reveals no material improvement over the past 4 years
- Risk to infrastructure workers remains fairly static
- FWI for train drivers has increased over the last two years due to a relatively small number of major and minor injuries caused by a combination of problems with seat fittings in the cab, striking parts of the body against parts of the train and being caught in internal train doors
- Trend is improving for station staff principally due to a reduction in physical assaults.
- External industry commentators have observed that certain industry roles (e.g. look-outs) are more exposed to personal accident risk. Does this require further consideration?

3.3 Data quality commentary

The above information only relates to incidents which have occurred on Network Rail Managed Infrastructure (NRMI) and recent work undertaken with the infrastructure contractor community indicates there are at least 25-30% additional incidents that occur at other locations such as yards, depots and sidings. In April 2010, train operators began reporting injuries in yards, depots and sidings into SMIS. The next step is for RSSB to bring them into the scope of its safety performance reporting and risk modelling.

In recent years, the industry has focussed much effort on improving data quality. RSSB has established a data quality programme that includes annual ‘data health checks’ on the organisations that input into SMIS. The integrity of the data that feeds RSSB outputs - especially relating to the more serious incidents - is generally good. Nevertheless, areas of weakness remain, such as understanding what is not reported into SMIS and the implications of this.

Information from the infrastructure and FOC communities indicates a significant number of injuries arise from road vehicle driving accidents, this is not being consistently reported.

RSSB’s independent review of RIDDOR reporting found that during the period 2005/06 to 2009/10, around 500 to 600 RIDDOR-reportable injuries are likely to have gone unreported. During the review period itself there was a marked improvement in reporting trends and following re-briefing and the introduction of enhanced data quality controls last year, reporting by Network Rail (particularly maintenance) and its contractors has improved significantly.
However, there is still further to go to achieve the reporting levels of 4 to 5 years ago. In particular, their safety leadership and culture change programme is expected to deliver further improvements. Discussions with the infrastructure community suggest that issues remain with the reporting of incidents by labour agencies and smaller contractors, the understanding of reporting arrangements and a lack of clarity in relation to incidents that occur away from NRMI. In response to this, the infrastructure contractors are to coordinate improvement efforts through Infrastructure Safety Liaison Group (ISLG).

4. Discussion topics

4.1 Recent industry developments in the field of workforce risk are summarised in Appendix 3.

4.2 Occupational Health (OH)

The ORR OH Strategy published in 2010 raised the profile of this important topic but what is not really understood is the level of industry preparedness to start consistently addressing some of the key issues associated with OH. Although some companies have begun coding absence data and collecting specific information through medicals, there is a general lack of basic information about the scale of the exposure and loss across the majority of the industry. It is also difficult to pinpoint normal sickness against work related causes.

Some tentative work has been started by RSSB, the infrastructure contractors and Network Rail to define the elements of a management system to address this issue. It is proposed that the February 2012 ISM seeks to engage leaders in more depth on this topic and determine how best to respond. Recognising that risk exposure fundamentally differs between types of worker within the industry needs to be one of the areas of focus.

One observation from the early work is that the industry has largely outsourced OH activities to reactive service providers and therefore lacks understanding and managerial competence. Some companies are starting to take steps to recruit OH specialists to strengthen in house capability. Examples include Volker Rail, Network Rail, Northern Rail and Southern.

The Board are reminded that at their meeting on 09 July 2009 a decision was taken that RSSB would not undertake any active role in respect of OH. Given the recent significant developments in this area members have been engaging RSSB in discussion and tentative plans are underway to form an industry wide OH working group to accelerate the pace of development. Additionally, the ORR has just published its report ORR overview of work related ill health in the GB rail industry in 2010, which summarises the current rail industry position. Included in paragraph 32 on page 13 “ORR believes that RSSB has a legitimate wider role and could do more to support the industry in improving the long term health and fitness of its workforce, and so reduce costs and inefficiencies associated with work related ill health. This was explicitly addressed in our 2010 review of RSSB”. In light of this and emerging industry developments, the Board is invited to reconsider RSSB’s role in relation to supporting OH activities, understanding that this will have resourcing implications.
4.3 Health and Safety representatives

The potential for industry senior management to meaningfully engage with employee Health & Safety (H&S) representatives has come into sharp focus over the past few months. Historically, many railway managers have inadequately understood the role and potential value added by the contribution of H&S reps, and consequently have largely sought to marginalise the role and at worse regard it as a positive nuisance.

Constructive engagement with these representatives offers the potential to meaningfully understand the concerns of frontline workers and help shape, not just traditional controls, but the culture and behaviour of all workers. However, the company managers need to be trained and equipped to actively progress this activity. The recent Workers’ Memorial Day conference on 28 April 2011 gathered together a range of industry H&S representatives to share experiences and Network Rail has gone a stage further and appointed nine full time H&S representatives as part of their efforts to improve culture and behaviour. It may be appropriate for the Board to separately receive further feedback about this Network Rail initiative and consider how to facilitate the improvement of management engagement with H&S representatives more widely.

4.4 Road vehicle driving

Many rail companies employ sizable fleets of road vehicles to support their operations, including the response to incidents. The scale of this activity is currently unknown, but it is clear that many employees are required to drive substantial mileages and incidents, including deaths and injuries, arise from this activity.

In some organisations, the control of vehicle driving activities is seen as a peripheral activity and therefore outside of the scope of formalised Safety Management Systems (SMS). However, it is an essential feature of their business operation and needs to be subject to the same controls and discipline. The issue is further compounded by the acknowledged problem of driving at antisocial times and/or when fatigued after shift working. There is currently no RSSB or industry coordinated activity surrounding road vehicle driving.

4.5 Smarter insights and sharing

The implementation of the new Network Rail Close Call System potentially provides an opportunity to gather new insights into Health and Safety issues and opportunities but because the system has only just been launched it will be some time before any meaningful data analysis is going to be possible. There is also a need to radically improve the reliable sharing of workforce safety lessons through the deployment of Rail Notices and the smarter use of industry forums. Work on this is currently being sponsored by Operations Focus Group (OFG).

5. Recommendations

The Board is invited to:

- DISCUSS current performance and developments
- CONSIDER the various discussion topics contained in the paper, including RSSB’s role in relation to Occupational Health.
Recurrence of ORR enforcement actions, CIRAS reports and RAIB investigations in relation to workforce safety

<table>
<thead>
<tr>
<th>Recurrent themes</th>
<th>ORR enforcement actions¹</th>
<th>CIRAS reports</th>
<th>RAIB investigations²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fatigue management</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Inadequate competence of personnel or having in place an ineffective competence management system</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Incomplete and badly maintained Safety Management System</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ineffective safe system of working</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5. Working in an environment with hazardous substances</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Unsafe storing and/or transportation of materials</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>7. Failure to efficiently conduct, or implement the findings of, risk assessments</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>8. Faulty and/or unsafe use of equipment</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>9. Unsafe walking routes</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>10. Incidents or injuries not being reported</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Security issues at large mainline stations</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

¹ A comprehensive review of all ORR prosecutions, improvement notices and prohibitions was undertaken for this paper and is available on request.

² RAIB provided a valuable analysis of recurrent themes arising from their investigations of workforce safety incidents between 2004 and May 2011. A copy of this has been provided to Network Rail and the Chair of ISLG. A copy can be provided on request.
Appendix 2

Workforce risk performance charts 2010-2011

Chart 1: Risk profile (SRM v7)

- Risk to members of public: 61% FWI (44%)
- Risk to passengers: 52% FWI (37%)
- Other Workforce: 10%
- Revenue Protection Staff: 5%
- Station Staff: 10%
- Other on-board Train Crew: 27%
- Train Drivers: 11%
- Infrastructure Workers: 41%

Chart 2: Workforce FWI performance trend by injury severity

- Shock & trauma
- Minor injuries
- Major injuries
- Fatalities
- Estimated effect of RIDDOR under-reporting

Chart 3: Workforce major injuries by type of worker

- Other workforce
- Revenue protection staff
- Station staff
- Other on-board train crew
- Train drivers
- Infrastructure workers
## A detailed summary of recent industry developments in the field of workforce risk

### Risk from Workforce behaviour

<table>
<thead>
<tr>
<th>Risk to</th>
<th>Main types of event relevant to workforce risk</th>
<th>Fatals</th>
<th>FWI</th>
<th>RSSB actions to support industry</th>
<th>Industry co-operative actions</th>
<th>Duty holder actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track workers</td>
<td>Occupational hazards including electrocution and being struck by trains. Train accidents caused by maintenance errors.</td>
<td>3.18</td>
<td>13.38</td>
<td>Research projects: T749 and T854.</td>
<td>Trials of streamlined arrangements to take possessions led by NR West Coast Route Modernisation, supported by RSSB Rules team. ISLG and PSLG focus on track safety. OFG also has a remit to look at risk to and from track workers. ISLG are continuing to look at possession working and occupational health as part of their 2011 work plan. OFG sponsored briefing pack on the arrangements for level crossing within possessions and at worksites.</td>
<td>The Close Call System (CCS) launched in June 2011 to encourage collection of trackside near misses. Improvement of possession management system and safety critical communications protocol with a simplification of rules. NR analysis of human factors issues and related potential safety disturbances for current and proposed new systems of track access; NR simplification of rules for plant use, with aim to match plant more closely to task needs and staff skills; NR year-long plant to target top three sources of risk, and release of annual DVD. Use of safety triangles / positive safety triangles (e.g. Birse Rail) to encourage and reward safety, and monitor proactive and reactive measures; contractor initiatives to instil strong safety culture at all levels of organisation (e.g. Carillion’s ‘Behaving Safely’ campaign).</td>
</tr>
<tr>
<td>Train crew</td>
<td>Personal injuries. SPADs.</td>
<td>0.70</td>
<td>5.73</td>
<td>Research projects: T663 and T669</td>
<td>Fitment of TPWS at permanent speed restrictions and in-cab modifications. TPWS Strategy Group also established as a sub-group to the Vehicle Train Control &amp; Communications System Interface Committee. OFG to understand the types and quality of existing route knowledge information. RED and Opsweb are available to frontline staff.</td>
<td>Trains fitted with incident response kits and additional training for staff in order to act as quickly as possible in emergency situations. Improvement in training and competence management schemes. Injury prevention initiatives (e.g. First Group) based on booklets, DVDs and staff briefings. Proactive fatigue management system. Unobtrusive monitoring of drivers (via OTMR) and train despatch. Re-engineering of catering vehicles to reduce the occurrence of scalds and burns. Undertake publicity campaigns highlighting risks when boarding/alighting at stations, depots and lineside.</td>
</tr>
<tr>
<td>Station staff, train crew, crossing keepers</td>
<td>Assaults. Arson, missiles thrown at trains, objects on the line and other acts of vandalism. Witnessing suicides and accidents to / near misses with trespassers.</td>
<td>0.07</td>
<td>3.48</td>
<td>Research projects: T138, T317, T723, T703, T704 and T845</td>
<td>A variety of initiatives including “Trackoff” (RSSB) and “No Messin” (NR) Campaigns. CSSG and CSPG focus on public behaviour, RPSG focuses on assaults against staff and passengers. BTP Operation Drum to target cable theft. The industry works closely with the National Suicide Prevention Group.</td>
<td>General improvements made to CCTV systems across a number of stations. Rail enforcement officers given direct access to the BTP radio network. Improved conflict training for members of staff. Fencing priorities matched with trespass hotspots. Campaign run during school holidays to deter trespass and anti-social behaviour. Closure of access to unused platforms. Placing of Samaritans posters around stations and additional staff training to identify potentially suicidal people. Utilise SWeRVe v2.0 to educate new staff on conflict avoidance and management.</td>
</tr>
<tr>
<td>Station staff</td>
<td>Personal injuries. Accidents related to train despatch and station management.</td>
<td>0.03</td>
<td>2.17</td>
<td>Research projects: T743, T749 and T834</td>
<td>Aerodynamics GB Working Group covers any past and ongoing slipstream work. Train dispatch rules being reviewed in order to be simplified (TOM SC). OFG has established a dedicated station safety improvement programme with RSSB resource.</td>
<td>Continued use of the slips, trips and falls toolkit and the HSE’s ‘shattered lives’ campaign, review workforce footwear and communication campaigns. Training needs analysis for conductor and train dispatch staff duties and use outputs to update training courses. Publicity campaign highlighting the hazards to station staff of doors, drawers and floors. Improve Driver Only Operation (DOO) dispatch equipment on stations. Provision of mobile panic attack alarms for use when staff open and close offices and stations.</td>
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</tbody>
</table>
## A detailed summary of recent industry developments in the field of workforce risk

### Engineering failure

<table>
<thead>
<tr>
<th>Role</th>
<th>Problems with the track, signalling systems, or bridges, embankments, tunnels etc.</th>
<th>0.17</th>
<th>1.14</th>
<th>Research projects: T359, T683, T679, T696 T804 and T808</th>
<th>Industry co-operative input to Railway Standards and Technical Specifications for Interoperability. RISAS focuses on achieving consistency in the procurement of critical maintenance materials and services.</th>
<th>Strategic replacement of softwood sleepers. Application of latest technology to reduce track defects. Focussed risk assessment on track stressing &amp; effects of weather on embankments and structures. Identification and remedy of ‘rough-rider’ sites. Bridge examination intervals based on risk. Further lever test kits being made available following successful trials by NR maintenance staff.</th>
</tr>
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### Engineering failure

<table>
<thead>
<tr>
<th>Role</th>
<th>Faults with train interior (including seats and windows). Electrical faults. Brakes, bogies etc.</th>
<th>0.06</th>
<th>0.70</th>
<th>Research projects: T066, T310, T800, T728, T796 T797 and T910</th>
<th>RISAS aims to give consistency to the procurement of critical maintenance materials and services.</th>
<th>Introduction of a digital reader to measure axle box temperatures and new rolling stock with improved interior design. Fit high intensity headlights to class 142 and 143 fleet to enable increased visibility to track workers and people working on or near the line. Improve cab environment of class 66 locomotives to minimise fatigue levels. Fitment of a second interlock switch to class 150 to reduced the risk of ‘wrong-side’ door interlock failure.</th>
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</table>

### Workforce behaviour

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<thead>
<tr>
<th>Role</th>
<th>Personal injuries, public assaults.</th>
<th>0.05</th>
<th>0.19</th>
<th>Research projects: T014, T106, T145, T146, T190, T204, T347, T365, T506, T534, T629 and T682</th>
<th>Monitoring of voice communications and sharing the results to improve the quality.</th>
<th>NR programme to assess and manage workload, NR evaluations of injury risk from lever operation. NR introduction of revised computer-based training, and safety briefings for signallers. Reinvigoration of Communication Review Groups (CRG) and league tables.</th>
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### Public

<table>
<thead>
<tr>
<th>Role</th>
<th>Accidents at level crossings. Road vehicle incursions. Bridge strike.</th>
<th>0.08</th>
<th>0.17</th>
<th>Research projects: T335, T653, T729 and T730</th>
<th>The Department for Transport (DfT) produced a report after the Great Heck accident setting out the steps to be taken by railway infrastructure authorities and highway authorities to manage the risk of the accidental incursion of road vehicles.</th>
<th>Continued development of NR’s ‘Don’t Run the Risk’ campaign. NR risk assessment of crossings through the Level Crossing Risk Model. Cameras installed at all level crossing to identify incidents of road vehicle misuse. Strategy to upgrade AOCls and close UWCs when possible. Promote improved driver reporting of crossing misuse and active participation in raising public awareness of level crossing risk.</th>
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</thead>
</table>

### Public

<table>
<thead>
<tr>
<th>Role</th>
<th>Attending to or witnessing accidents similar to passenger accidents in stations</th>
<th>0.00</th>
<th>0.12</th>
<th>Research projects: T157, T317, T749 and T829</th>
<th>T845 is also evaluating the Network Rail campaign with Samaritans which is raising awareness of the hazards of railways. National Suicide Prevention Group’s work with the rail industry.</th>
<th>New passenger emergency evacuation signage to train. Implement a programme of escalator safety enhancements to reduce passenger accidents. Surface testing/inspection &amp; improved surfaces on platforms and footbridges.</th>
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### Environment

<table>
<thead>
<tr>
<th>Role</th>
<th>Train accidents due to effects of adverse weather conditions.</th>
<th>0.01</th>
<th>0.06</th>
<th>Research projects: T112, T552, T554, T643, T925</th>
<th>The Sustainable Rail Programme is looking at the future effects of the environment on the railway.</th>
<th>Improving inspection and maintenance of earthworks to combat increased risk from extreme weather. Defoliation works across owned, managed and leased locations.</th>
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### Workforce behaviour

<table>
<thead>
<tr>
<th>Role</th>
<th>Personal injuries (including crushed by trains). Coupling/train preparation errors.</th>
<th>0.03</th>
<th>0.04</th>
<th>Research project: T341 Special topic report on shunter safety published in 2008</th>
<th>OFG produced a generic shunter training course in DVD format which provides a standardised, modular and interactive training package.</th>
<th>Developing and reviewing individual training plans and examining supervision and monitoring guidelines for shunters. Introduction of unobtrusive monitoring. Development of a manual handling brief. Improvement to loading and train preparation processes. Undertake Safety Culture Survey of depot shunting staff.</th>
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### Passenger actions

<table>
<thead>
<tr>
<th>Role</th>
<th>Shock and trauma due to attending to or witnessing passenger accidents.</th>
<th>0.00</th>
<th>0.04</th>
<th>Research projects: T157, T317, T749 and T829 2011 Special Topic Reports on passenger risk at the PTI and wrong-side door release.</th>
<th>Red 28 focussed on the platform-train interface using a fictional dramatisation. A Rail Industry Standard (RIS) for passenger train dispatch and platform safety (RIS-3703-TOM) completed in June 2011.</th>
<th>Passenger safety awareness campaign for boarding/alighting trains. Improvements to customer display screens and public address systems to reduce crowding around signs and late rushes to trains. Review of incidents of passengers being taken ill on trains to establish common causes and develop plans to reduce the numbers of such incidents.</th>
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Total 4.4 27.2