1. **Purpose**

1.1 The purpose of the system risk review is to provide the board with an opportunity to think about and discuss the factors that could influence the industry’s future risk profile by:

- identifying any potential new or emerging factors/influences that are of concern to board members that could cause the industry not to meet its strategic risk objectives over CP5
- considering if adequate understanding and/or mitigations are in place to manage the identified factors.

2. **Background**

2.1 Since 2007/08, the board have been presented with Strategic Board Agenda papers covering the risk to passengers, the workforce, and members of the public. During the current year, the board additionally reviewed a paper on the risk from train accidents. Each of these papers presented information on trends in risk and performance in the areas covered, and highlighted key emerging or recurring issues for discussion. An overall annual risk review paper is presented to the board in March of each year providing an overview of risk and inviting the board to confirm that they are content that during the year they have reviewed and considered the significant items of system safety risk that impact on the industry and are satisfied with the overall arrangements.

2.2 As part of the development of the initial Industry Plan and the Industry Strategic Business Plan (ISBP) a detailed risk review has been undertaken by the industry, facilitated by RSSB, to estimate how the risk profile may change up to the end of CP4 and through CP5.

2.3 During the discussion on the Annual Risk Review paper in March 2012 the board agreed that they should take time out from their normal agenda to look forward strategically at the system risk profile and identify if there are any factors/issues, from the board’s perspective, that could affect the risk profile in the coming years and consider if adequate understanding and/or mitigations are in place to manage the identified factors and give their overall view on the trend in risk for each risk area.

3. **Preparation for the meeting**

3.1 Over the year the board have been presented with a range of documents covering the whole risk profile and reflecting on a number of risk areas for
discussion. In preparation for the system risk review board members are invited to remind themselves of the current risk profile and the initiatives in place to manage the risk by reviewing the following documents:

- Workforce risk paper
- Public risk paper
- Passenger risk paper
- Train accident risk paper
- The annual safety performance report 2011/12

3.2 The total system risk, excluding suicide and suspected suicide, is estimated to be 140.9 fatalities and weighted injuries (FWI) as modelled by Safety Risk Model version 7 (SRMv7). The total risk is often shown broken down by main accident category and who is affected (ie passengers, workforce, public) as shown in Chart 1.

![Chart 1. SRM risk broken down by hazardous event types and person types](chart1.png)

3.3 A breakdown of the risk for each main accident category by person type and accident type is presented in Appendix 2.

4. System risk review process

4.1 Given that the current trends and strategic initiatives have been considered in the reference documents listed in 3.1 above, it is not considered necessary to discuss this information again in detail in the January risk review session.

4.2 Instead, the risk review will focus on identifying potentially new or emerging factors/ influences that are of concern to board members that could cause the industry not to meet its strategic risk objectives over CP5.
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4.3 The risk profile will be considered in the categories:
   - Train accidents: Collisions, derailments, fires, etc
   - Movement accidents: Boarding and alighting, platform train interface, trespass (including uncontrolled detrainment), workers struck by train, etc
   - Non-movement accidents: slips, trips and falls, infrastructure worker injuries, road vehicle driving, etc
   - General: affecting all the risk profile

4.4 In advance of the meeting board members are asked to consider up to three new or emerging factors that are of concern to them that could affect the predicted risk profile over CP5 ie what could cause the risk predictions in the ISBP not to be met? To assist with preparations for the meeting it would be helpful, but not essential, if the factors identified could be forwarded to RSSB in advance of the meeting. An initial list of potential factors/influences for consideration is presented in Appendix 1.

4.5 The process to be followed at the meeting will then be:
   a. Each board member will be asked to describe their most significant new or emerging factor/influence that is of concern to them and why they are of concern
   b. These will be recorded against the relevant risk areas in 4.3 above and, where appropriate, grouped
   c. Depending on the number of discrete issues raised the list will be prioritised for further discussion
   d. Each new or emerging issue selected will then be discussed to determine if they are understood and if adequate actions are in place to manage them – if not the board will be asked to consider what should be done to address them.

4.6 The findings and any proposed actions will be documented.

5. Recommendations

5.1 Prior to the meeting the board is asked to:
   - REVIEW the risk documentation that has been provided to the board outlining the current trends and risk issues in 3.1 above.
   - CONSIDER up to three new or emerging factors/ influences that are of concern to them that could cause the industry not to meet its strategic risk objectives over CP5. To assist with preparations for the meeting it would be helpful, but not essential, if the factors identified could be forwarded to RSSB in advance of the meeting (colin.dennis@rssb.co.uk).

5.2 During the meeting the board is asked to:
   - PARTICIPATE in the risk review discussions and agree actions to be taken forward if appropriate.
Appendix 1

Potential new or emerging risk issues for consideration by the board

A number of new or emerging risk factors/influences have been identified that have the potential to affect the risk profile in the future. These include:

a) Climate change
b) Increase railway usage – more trains, longer trains, higher passenger loadings, etc
c) Driving towards to a 24/7 railway
d) A move towards increasing use of new rail technology – lighter rolling stock, more software based systems
e) Organisational change (eg devolution, alliancing, franchising)
f) The occurrence of a major accident - industry’s preparedness
g) Population growth and demographical change
h) Road traffic growth
i) Changes in farming practices and land use
j) Traffic management
k) Reduction in the number of signalling control centres
l) More electrification
m) Changing societal expectations and tolerance of risk
n) The initiatives to improve performance while reducing costs (achieving VfM targets) and without compromising business (including safety) risk

Some of the possible changes in these areas have the potential to bring about improvements in safety and performance, but a notable number have the potential for negative impact.

For the industry to fulfil its overriding requirement to maintain safety, and improve it where reasonably practicable, any negative impacts from future changes will need to be managed carefully.
Appendix 2

Hazardous events broken down by accident/event type

Train accidents (HETs) broken down by person type and accident type

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>Passenger</th>
<th>Workforce</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collisions and derailments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collisions with RVs at LX</td>
<td>0.26</td>
<td>0.13</td>
<td>0.39</td>
</tr>
<tr>
<td>Collisions with objects</td>
<td>0.10</td>
<td>0.30</td>
<td>0.39</td>
</tr>
<tr>
<td>Other train accidents</td>
<td>0.12</td>
<td>0.06</td>
<td>0.07</td>
</tr>
<tr>
<td>Collisions and derailments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collisions with RVs at LX</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collisions with objects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other train accidents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other train accidents</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Movement accidents (HEMs) broken down by person type and accident type

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>Passenger/Public</th>
<th>Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trespass</td>
<td></td>
<td>36.78</td>
</tr>
<tr>
<td>Platform-train interface</td>
<td></td>
<td>9.04</td>
</tr>
<tr>
<td>LX pedestrian struck by train</td>
<td></td>
<td>6.50</td>
</tr>
<tr>
<td>On-board injuries</td>
<td></td>
<td>0.66</td>
</tr>
<tr>
<td>Lean or fall from train in running</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Other passenger/public HEMs</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Struck/crushed by train</td>
<td></td>
<td>2.30</td>
</tr>
<tr>
<td>Platform-train interface</td>
<td></td>
<td>1.61</td>
</tr>
<tr>
<td>On-board injuries</td>
<td></td>
<td>0.92</td>
</tr>
<tr>
<td>Witnessing traumatic events</td>
<td></td>
<td>0.89</td>
</tr>
<tr>
<td>Lean or fall from train in running</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>Contact with object</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Other workforce HEMs</td>
<td>0.11</td>
<td></td>
</tr>
</tbody>
</table>
Non-movement accidents (HENs) broken down by person type and accident type

Passenger/public

- Slips, trips, and falls: 11.68
- Trespass: 9.19
- Assault and abuse: 3.40
- On-board injuries: 1.23
- Platform-train interface: 1.67
- Contact with object: 0.46
- Contact with person: 0.43
- Falls from height: 0.40
- Other passenger/public HENs: 0.37

Workforce

- Slips, trips, and falls: 4.47
- Contact with object: 2.33
- Assault and abuse: 2.26
- On-board injuries: 1.32
- Manual handling/awkward movement: 0.79
- Road traffic accident: 0.69
- Workforce electric shock: 0.59
- Machinery/tool operation: 0.56
- Falls from height: 0.50
- Other workforce HENs: 0.37