

## Recommendation(s) Status: Partial failure of a structure inside Balcombe Tunnel, West Sussex, 23 September 2011

This report is based on information provided to the RAIB by the relevant safety authority or public body.  
The status of implementation of the recommendations, as reported to us, has been divided into eight categories:

### Key to Recommendation Status

<b>Implemented:</b>	All actions to deliver the recommendation have been completed.
<b>Implemented by alternative means:</b>	The intent of the recommendation has been satisfied in a way that was not identified by the RAIB during the investigation.
<b>Implementation ongoing:</b>	Work to deliver the intent of the recommendation has been agreed and is in the process of being delivered.
<b>Insufficient response:</b>	The end implementer has failed to provide a response; or has provided a response that does not adequately satisfy ORR that sufficient action is being taken to properly consider and address a recommendation.
<b>Progressing:</b>	The relevant safety authority has yet to be satisfied that an appropriate plan, with timescales, is in place to implement the recommendation; and work is in progress to provide this.
<b>Non-implementation:</b>	Regulation 12(2)(b)(iii) = recommendation considered and no implementation action to be taken.
<b>Other Public Body or Authority</b>	The recommendation is also addressed to another public body or authority.
<b>Awaiting response:</b>	Awaiting initial report from the relevant safety authority or public body on the status of the recommendation.

RAIB concerns on actions taken by organisations in response to recommendations are reflected in this report and are indicated by one of the following:

-  The red triangle shows recommendations where the RAIB has concerns that no actions have been taken in response to a recommendation.
-  The blue triangle shows recommendations where the RAIB has concerns that the actions taken, or proposed, are inappropriate or insufficient to address the risk identified during the investigation.
-  The white triangle shows recommendations where the RAIB notes substantive actions have been reported, but the RAIB still has concerns.

Note: The tables which follow, report the status of recommendations on 31 December 2015. In some other cases the end implementer has already sent information to the relevant safety authority about the actions it has taken, or proposes to take and the safety authority is considering whether it is satisfied that those actions and the associated timescales are accepted.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implemented</p>	<p>The intention of this recommendation is to identify fixings at risk of failure based on current knowledge.</p> <p>Network Rail should, where failure could result in risk, identify where polyester resin anchors have been used to support structures (including overhead electrification and signalling equipment), and develop an appropriate regime to detect loose fixings including tactile testing where appropriate (paragraphs 129a and 132).</p>	<p>ORR has reported that Network Rail has reported that it has taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>2            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implemented</p>	<p>The purpose of this recommendation is to prevent the further use of polyester resin anchors where their long-term performance may compromise safety.</p> <p>Network Rail should implement procedures to prevent the use of polyester resin anchors in circumstances where dampness or shrinkage may affect the safe performance of an asset (paragraph 129a).</p>	<p>ORR has reported that Network Rail has reported that it has completed actions taken in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>3            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implemented</p>	<p>The purpose of this recommendation is to promote additional investigation prior to specifying materials where performance is critical.</p> <p>Network Rail should review, and if necessary amend its processes, such that designers of structures are required to positively confirm the compatibility of materials with their intended application and environment, including fixing metallic structures to masonry, if the application is safety critical (paragraph 130b).</p>	<p>ORR reports that Network Rail is taking actions to address the risk by means of a Letter of Instruction to an existing standard requiring the positive affirmation of the compatibility of materials and fixings in designs, and this should be recorded as complete when the outline design is submitted for approval.</p>
<p>4            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implemented</p>	<p>The intention of this recommendation is to provide an effective asset management response when structure defects (or suspected defects) are reported.</p> <p>Network Rail should review and, if necessary, modify the management arrangements that are now in place to provide an appropriate engineering response when structure defects are reported. This should include assessing the risk in the period prior to rectification, the means to verify that work requested has been carried out, and whether the reported defect is an indication of a wider problem (paragraph 129b).</p>	<p>ORR has reported that Network Rail has reported that it has taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>

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<p>5            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implemented</p>	<p>The intention of this recommendation is to improve the quality of decision making in the management of structures.</p> <p>Network Rail should undertake a comprehensive review and, if necessary, implement a time-bound plan to modify its levels of staffing and competency requirements so that all technical tasks associated with the management of structures are performed or checked in a timely manner by sufficiently qualified and experienced staff (paragraph 129c).</p>	<p>ORR has reported that Network Rail has reported that it has taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>6            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implemented</p>	<p>The intention of this recommendation is to improve the effectiveness of Network Rail's investigations when abnormal events are reported.</p> <p>Network Rail should revise its arrangements for the briefing of staff or contractors who are sent to investigate reported defects, so that all relevant available information is provided, and correct any deficiencies found in those arrangements (paragraph 129e).</p>	<p>ORR has reported that Network Rail has reported that it has taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>7            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implemented</p>	<p>The intention of this recommendation is to provide adequate opportunities for examination and maintenance activities.</p> <p>Network Rail should review, and if necessary amend, its processes to include adequate safeguards such that sufficient track access is provided for the examination needs of all structures in a manner commensurate with the risk they pose to railway safety (paragraph 131).</p>	<p>ORR has reported that Network Rail has reported that it has completed actions taken in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>8            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implemented</p>	<p>The intention of this recommendation is to improve the effectiveness of Network Rail's examinations regime for structures within tunnels.</p> <p>Network Rail should clarify arrangements, including its relationship with its contractors, for examining structures which are within tunnels, but are not fully encompassed by the normal tunnel management regime (paragraphs 132 and 133).</p>	<p>ORR has reported that Network Rail has reported that it has completed actions taken in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>9            23/09/2011    13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implementation ongoing</p>	<p>The intention of this recommendation is to improve the quality of information available to staff responsible for the management of structures including provision of information not required within the statutory Health and Safety File.</p> <p>Network Rail should review, and if necessary improve, arrangements for recording, storing and retrieving data so that all relevant information is readily available to staff undertaking</p>	<p>The recommendation was intended to ensure that design information is available to Network Rail staff responsible for managing structures (paragraphs 124 and 134 of report). This is typically the drawings (and, sometimes, parts of the specification) for structures. This information is omitted from the list of data to be included in the CSAMS database proposed as the way in which NR will implement the recommendation.</p>

**Number/ Date/ Report No/  
Inv Title / Current Status**

**Safety Recommendation**

the examination, evaluation and maintenance of structures  
(paragraph 134).

**Summary of current status (based on ORR's report to  
RAIB)**