

## RISSB product for prioritisation

Primary information	
Type of product being suggested:	Standard
Title of product being suggested:	Specification for Alternative Material Sleepers – Timber Replacement
Date of suggestion:	February 2018
Reason for suggestion:	Supply of quality timber is an emerging issue requiring alternate materials which are not covered by current AS1085
Railway discipline area:	Infrastructure
Scope:	
<p>The standard should direct the RIM to decide when selecting this sleeper if it is to be an exact timber replacement or a functional replacement or an opportunity to upgrade. This decision will guide the application of the standard. To assist with this concept, this standard shall describe likely the scenarios where these sleepers will be used.</p> <ol style="list-style-type: none"> <li>1. Individual direct timber replacement – e.g. turnout bearers</li> <li>2. 100% relay – e.g. deck of transoms or yard road relay</li> <li>3. Staged implementation – replacing timber within 1:2 steel pattern</li> </ol> <p>This standard should define the functional requirements of a sleeper, turnout bearer and bridge transom made from a non-traditional (concrete, steel or timber) material for the replacement of a hardwood timber sleeper. Specific elements to be considered are (but not limited to):</p> <p><u>Strength Requirements</u></p> <ol style="list-style-type: none"> <li>1. Fastener pull out strength</li> <li>2. Bending and shear resistance at rail seat</li> <li>3. Fatigue loading</li> <li>4. Bending stresses for centre bound conditions</li> <li>5. Flexural tolerance from deflection under load for both gauge widening from rail roll and cross cant in turnout road</li> <li>6. Ability to provide lateral resistance in ballast</li> </ol> <p><u>Durability</u></p> <ol style="list-style-type: none"> <li>7. Impact to strength requirements from environmental exposure: UV radiation, heat, dust, vibration</li> <li>8. Fire resistance and fumes if burning</li> <li>9. Resistance to traffic of derailed wheel</li> <li>10. Resistance to abrasion at rail seat and at ballast/girder interface</li> <li>11. Consistency of dimensional tolerances</li> <li>12. A requirement for the manufacturer to advise the RIM on failure modes and maintenance practices.</li> </ol> <p><u>Material Handling</u></p> <ol style="list-style-type: none"> <li>13. Integration with existing processes for               <ol style="list-style-type: none"> <li>a. Transport and distribution – resistance to sleeper grab etc.</li> <li>b. Attaching fastening systems – consistency of spikes and drills etc.</li> <li>c. Making adjustments – e.g. reboring to adjust gauge etc.</li> </ol> </li> </ol> <p>The standard should not specify manufacturing processes and ITP given the diverse and uncertain nature of the materials to be used.</p>	

<b>Objective:</b>			
The aim of this standard is to assist a RIM to commence procurement of sleepers, turnout bearers and transoms made from a non-traditional material. The standard should direct the RIM to decide when selecting this sleeper if it is to be an exact timber replacement or a functional replacement or an opportunity to upgrade.			
<b>Hazard identification:</b>			
1	6.8 Harm to Track & Civil infrastructure during construction	6	9.55 Interlocking failure (Maintenance)
2	6.28 Track & civil infrastructure design failure	7	10.9 Rail traffic operate over unsafe infrastructure
3	9.19 Field equipment and or enclosure failures (Construction)	8	10.11 Interface failure
4	9.26 Interlocking failure (Construction)	9	
5	9.48 Field equipment and or enclosures failure (Maintenance)	10	
<b>Benefits:</b>			
<u>Safety</u>			
Unlikely to be a safety risk as RIMs would conduct type approvals for any new material.			
<u>Interoperability<sup>i</sup> / harmonisation<sup>ii</sup></u>			
This is expected to be an extension of AS1085 Permanent Way Materials series to provide a consistent approach to specifying sleepers, turnout bearers and transoms made from non-traditional materials. Standardisation of this specification will aid in the acceptance of alternate sleepers for use across networks.			
<u>Financial</u>			
The effort to create the specification is concentrated by RISSB for the rail industry and provides a single specification for suppliers and potential suppliers to target their operations.			
<u>Environmental</u>			
N/A			
<b>Impacts:</b>			
The Standard will make a valuable addition to AS1085.			
Given its proposed performance nature, and non-specificity to the actual sleeper material it is not anticipated to be a particularly complex standard to develop.			

<sup>i</sup> Interoperability - the ability of a process, system or a product to work with other process, systems or products (aka compatible systems through managed interfaces).

<sup>ii</sup> Harmonisation - the act of bringing into agreement so as to work effectively together (aka uniformity of systems).