Dare truss bridges

**Period of construction:** 1905 to 1936  
**Similar to American Pratt truss design**  
**Number built:** 44  
**Number remaining under RTA control:** Thirteen of which six are listed on SHR (an additional five controlled by local government).

**Advantages of design**

This was the most successful composite truss, having a construction period from 1905 to 1936. In 1903, Harvey Dare was in charge of highway bridge design and took the opportunity to change the composite truss. He returned to the Howe truss arrangement of the Allan truss but substituted a pair of steel channels for the timber bottom chord and redesigned the bottom chord joints to eliminate the pins of the DeBurgh truss. He achieved further simplicity in member replacements, thereby creating the most cost-effective timber truss at the end of this evolutionary process. The Dare truss bridges have the highest survival rate of the five truss types, with 18 still in existence in 2009 (of the 44 built). In fact the first one, completed in 1905 over the MacDonald River at Bendemeer, is still in existence as a footbridge.

**Defining features of Dare truss design**

The Dare truss design is a variation of the Howe truss arrangement of the Allan truss design, substituting a pair of steel channels for the bottom steel chord and employing simplified bottom chord joints by eliminating the pin as used in the DeBurgh truss. By replacing the bottom timber chord with a steel member the structural performance of the bridge design was increased.

![Figure 1](image)

**Dare truss span bridges - number of spans (44 built)**

<table>
<thead>
<tr>
<th>Number of spans</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built</td>
<td>28</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Operable</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Operationally unsuitable</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sub types** (measures variation in the design of Dare truss bridges)

Despite their relatively long period of construction, no discernible design evolution can be observed within the form of the Dare truss. All are therefore considered to be of a ‘Standard’ type. A maximum of three Dare truss spans were used in bridge configurations. A single Dare truss bridge was built with a bascule lift span over the Wakool River at Kyalite but this was replaced in 1981.
Dare truss bridges and their future operability

<table>
<thead>
<tr>
<th>Operational bridges</th>
<th>Bridge</th>
<th>Construction date</th>
<th>Number of trusses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colemans</td>
<td>1908</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Briner</td>
<td>1908</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Warroo</td>
<td>1909</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabbing Flat</td>
<td>1911</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Rawsonville</td>
<td>1916</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>New Buildings</td>
<td>1921</td>
<td>3</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Operationally unsuitable bridges</th>
<th>Bridge</th>
<th>Construction date</th>
<th>Number of trusses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coorei</td>
<td>1906</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sportsmans</td>
<td>1911</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bulga</td>
<td>1912</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Mungindi</td>
<td>1914</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Korns</td>
<td>1916</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Coonamit</td>
<td>1922</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Gee Gee</td>
<td>1929</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Standard modifications required to bring Dare truss bridges up to a reasonable level of risk using the T44 Standard

- **Truss span**
  - Increase in thickness of second and third diagonal members from 4.5 inches to 6 inches.
  - Replacement of timber planking with structurally appropriate heritage-sympathetic decking.
  - Installation of additional steel sway braces to provide lateral support for the truss at each panel point to prevent compression buckling of top chord member of the truss.
  - Replacement of primary timber cross girders with steel cross girders where appropriate.
  - Installation of weather protection barrier on top chord member of truss.

- **Approach spans**
  - Replacement of approach span decks with timber concrete composite decks.

- **Substructure**
  - Replacement of timber piles below ground with steel and/or reinforced concrete piles and pile caps forming the sill for the piers.
  - Replacement of existing timber piers and abutments with modern heritage-sympathetic design and materials.

- **Railing**
  - Replacement with structurally and dimensionally appropriate heritage-sympathetic design and materials for the entire length of the bridge.
Coorei Bridge over the Williams River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>RR 101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>1</td>
<td>Location</td>
<td>Dungog</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Hunter</td>
</tr>
<tr>
<td>Built</td>
<td>1906</td>
<td>RTA bridge number</td>
<td>1472</td>
</tr>
<tr>
<td>Assessed significance (MBK)</td>
<td>State</td>
<td>Local government</td>
<td>Dungog Shire</td>
</tr>
<tr>
<td>SHR listed</td>
<td>SHR 01465</td>
<td>Daily traffic [AADT]</td>
<td>1222</td>
</tr>
</tbody>
</table>

Coorei Bridge is a single-span Dare truss located on the Maitland-Buckets Way Regional Road, one kilometre from Dungog in a picturesque and accessible setting.

Analysis of heritage and operational factors

**Service requirements:** The route on which the bridge is situated is required to meet the emerging regulatory limits well in excess of the T44 Standard. The bridge cannot be upgraded to achieve the required standard and therefore will need to be eventually replaced with a modern bridge in order to meet capacity requirements.

In 2006 in order to facilitate maintenance and inspection of the underside of the deck, a ‘Standard Exemption: Minor Works’ was approved for the installation of monorails for maintenance gantry.

Coorei Bridge was partially upgraded in 2008 with a Section 60 approved for the replacement of timber piles below and above ground with steel and/or concrete piles and caps with streamlined sills for Piers 2 and 3 supporting the truss span.

Coorei Bridge is listed on the State Heritage Register. It was ranked 27th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.
Coorei Bridge exhibits a minor technical detail not seen on other Dare trusses: the cast iron shoes (connections) are shaped so that the timber diagonals have a pointed [as distinct from a chamfered] end. This may have been typical of other early Dare truss forms. This detail can only be seen when the bridge is undergoing extensive rehabilitation.

Conservation strategy – Coorei Bridge

Due to the route load limit requirements for Coorei Bridge it will be duplicated in accordance with network upgrading priorities. It does not have any unique characteristics that are not represented elsewhere among retained bridges. As a result the bridge cannot be retained in use within the RTA's timber truss bridge portfolio. If required to be retained as a redundant structure it would attract minimum resources to support due diligence requirements and its existing fabric would be retained.

Proposed future conservation works

Mitigation of impacts
- Archival recording of the bridge, with special attention to cast iron shoes.
- Interpretation of the bridge.
- Salvage of the timbers for use in other bridge rehabilitation works.

Conservation outcomes

There are six operable Dare trusses including two single-span bridges (Briner and Warroo).

Coorei Bridge does not bear any outstanding design characteristics that cannot be viewed in other Dare truss bridges, meaning its removal and replacement would not result in a loss of the representativeness of the RTA’s timber truss bridge collection.
Colemans Bridge over Leycester Creek

**Description**

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>Local Road 544 (Union Street)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>2</td>
<td>Location</td>
<td>Lismore</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Northern</td>
</tr>
<tr>
<td>Built</td>
<td>1908</td>
<td>RTA bridge number</td>
<td>2594</td>
</tr>
<tr>
<td>Assessed significance(MBK)</td>
<td>State</td>
<td>Local government</td>
<td>Lismore City</td>
</tr>
<tr>
<td>SHR listed</td>
<td>SHR 01463</td>
<td>Daily traffic [AADT]</td>
<td>8000</td>
</tr>
</tbody>
</table>

Colemans Bridge is a two-span Dare truss bridge located on Union Street near the town centre of Lismore. The bridge has a strong civic function and marks an extremely rare example of a timber truss bridge integrated into a town plan rather than forming a gateway. The central cast iron pier was reused from the former Old Public Works Department (Old PWD) bridge situated at the crossing and built in 1885.

**Analysis of heritage and operational factors**

**Service requirements:** The bridge is required to meet the current regulatory limits for general access trucks (ie to within a reasonable level of risks using the T44 Standard which is the design standard for bridges carrying a 42.5 tonne semi-trailer or equivalent). Upgrading works to meet this standard will be planned for in the future.

Colemans Bridge was extensively upgraded in 2001. These works involved:
- Replacement of timber planking with a stress laminated timber (SLT) decking system.
- Replacement of all timber cross girders with steel cross girders.
- Replacement of approach span decks with concrete Doolan decks.
- Replacement of existing timber abutments with reinforced concrete elements.

Colemans Bridge was further upgraded in 2006, with a Section 60 approved for:
- Increase in thickness of second and third diagonal members from 4.5 inches to 6 inches.
Colemans Bridge is listed on the State Heritage Register. It was ranked 16th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

**Conservation strategy – Colemans Bridge**

Colemans Bridge meets operability requirements, given its location on the road network. Future routine and periodic maintenance using existing form of fabric maintenance will be required to maintain this operability standard as the bridge ages.

**Proposed future conservation works**

- Routine and periodic maintenance using existing forms of fabric.
- Interpretation of the bridge.

**Truss span**
- Replacement of curved sway braces to provide lateral support for the truss at each panel point and prevent compression buckling of top chord members of truss.
- Installation of weather protection barrier on top chord member of truss.

**Approach spans**
- Replacement of approach span decks with timber concrete composite decks.

**Substructure**
- Replacement of timber piles below ground with steel and/or reinforced concrete piles and pile caps forming the sill for the piers.
- Replacement of existing timber piers and abutments with modern heritage-sympathetic design and materials.

**Railing**
- Replacement with structurally and dimensionally appropriate heritage-sympathetic design and material for the entire length of the bridge.

**Conservation outcomes**

The retention of this structure would ensure that the timber truss bridge is integrated into the town plan and continues to provide an important civic function. Colemans Bridge features the widest carriageway (6.1 metres) built for a timber truss bridge. The bridge deck provides a dual-lane carriageway and a footpath on both sides of the roadway.

Conservation would be achieved by maintenance and necessary upgrades to the structure to offset material deterioration. Colemans Bridge is one of six Dare truss bridges, and one of three two-span Dare truss bridges in the operable RTA timber truss bridge portfolio.
Briner Bridge over Upper Coldstream River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>1</td>
<td>Location</td>
<td>Ulmarra</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Northern</td>
</tr>
<tr>
<td>Built</td>
<td>1908</td>
<td>RTA bridge number</td>
<td>2680</td>
</tr>
<tr>
<td>Assessed significance(MBK)</td>
<td>Local</td>
<td>Local government</td>
<td>Clarence Valley</td>
</tr>
<tr>
<td>SHR listed</td>
<td>No</td>
<td>Daily traffic [AADT]</td>
<td>1000</td>
</tr>
</tbody>
</table>

Briner Bridge is a single-span Dare truss bridge located on the Ulmarra to Tucubia Road, crossing the Upper Coldstream River. It is located about 20 kilometres from Ulmarra and away from any local community.

Analysis of heritage and operational factors

Service requirements: The bridge is required to meet the current regulatory limits for general access trucks (ie to within a reasonable level of risks using the T44 Standard which is the design standard for bridges carrying a 42.5 tonne semi-trailer or equivalent). Upgrading works to meet this standard will be planned for in the future.

Briner Bridge was partially upgraded in 2000. These works involved the replacement of timber piles below ground with steel and/or concrete piles and caps with streamlined sills.

The current bridge therefore meets the expected operability standard for long-term future road network planning.

Briner Bridge is not listed on the State Heritage Register. However, it is significant at a local level. It was ranked 51st in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.
Conservation strategy – Briner Bridge

Briner Bridge meets operability requirements, given its location on the road network. Future strengthening and modification will be required to maintain this operability standard as the bridge ages.

Proposed future conservation works

- Routine and periodic maintenance using existing forms of fabric.
- Interpretation of the bridge.
- Nomination for inclusion on the State Heritage Register.

Truss span

- Increase in thickness of second and third diagonal members from 4.5 inches to 6 inches.
- Replacement of timber planking with structurally appropriate heritage-sympathetic decking.
- Installation of additional steel sway braces to provide lateral support for the truss at each panel point to prevent compression buckling of top chord member of the truss.
- Replacement of primary timber cross girders with steel cross girders where appropriate.
- Installation of weather protection barrier on top chord member of truss.

Approach spans

- Replacement of approach span decks with timber concrete composite decks.

Substructure

- Replacement of timber piles below ground with steel and/or reinforced concrete piles and pile caps forming the sill for the piers.
- Replacement of existing timber piers and abutments with modern heritage-sympathetic design and materials.

Railing

- Replacement with structurally and dimensionally appropriate heritage-sympathetic design and materials for the entire length of the bridge.

Conservation outcomes

The retention of this structure would ensure that a timber truss bridge remains in operation in the Grafton area, which previously had a high concentration of heritage bridges. Conservation would be achieved by maintenance and necessary upgrades to the structure to offset material deterioration. Briner Bridge is one of six operable Dare truss bridges, and one of two single-span Dare truss bridges in the operable RTA timber truss bridge portfolio.
Warroo Bridge over the Lachlan River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>Condobolin – Warroo Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>1</td>
<td>Location</td>
<td>Warroo</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Western</td>
</tr>
<tr>
<td>Built</td>
<td>1909</td>
<td>RTA bridge number</td>
<td>4658</td>
</tr>
<tr>
<td>Assessed significance (MBK)</td>
<td>Local</td>
<td>Local government</td>
<td>Forbes</td>
</tr>
<tr>
<td>SHR listed</td>
<td>No</td>
<td>Daily traffic [AADT]</td>
<td>50</td>
</tr>
</tbody>
</table>

Warroo Bridge is a single-span Dare truss bridge located on the Condobolin-Warroo Road, crossing the Lachlan River. It is located about 30 kilometres from Warroo and away from any local community.

Analysis of heritage and operational factors

Service requirements: The bridge is required to meet the current regulatory limits for general access trucks (ie to within a reasonable level of risks using the T44 Standard which is the design standard for bridges carrying a 42.5 tonne semi-trailer or equivalent). Upgrading works to meet this standard will be planned for in the future.

The current bridge therefore can meet the expected operability standard for long-term future road network planning. However, the emergence of and widespread access for multi-combination trucks on the western slopes and plains places some degree of uncertainty on the future operability of this bridge.

Warroo Bridge is not listed on the State Heritage Register. However, it is significant at a local level. It was ranked 79th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

Conservation strategy – Warroo Bridge

Warroo Bridge meets operability requirements, given its location on the road network. Future strengthening and modification will be required to maintain this operability standard as the bridge ages.
Proposed future conservation works

- Routine and periodic maintenance using existing forms of fabric.
- Interpretation of the bridge.
- Nomination for listing on the State Heritage Register.

Truss span
- Increase in thickness of second and third diagonal members from 4.5 inches to 6 inches.
- Replacement of timber planking with structurally appropriate heritage-sympathetic decking.
- Installation of additional steel sway braces to provide lateral support for the truss at each panel point to prevent compression buckling of top chord member of the truss.
- Replacement of primary timber cross girders with steel cross girders where appropriate.
- Installation of weather protection barrier on top chord member of truss.

Approach spans
- Replacement of approach span decks with timber concrete composite decks.

Substructure
- Replacement of timber piles below ground with steel and/or reinforced concrete piles and pile caps forming the sill for the piers.
- Replacement of existing timber piers and abutments with modern heritage-sympathetic design and materials.

Railing
- Replacement with structurally and dimensionally appropriate heritage-sympathetic design and materials for the entire length of the bridge.

Conservation outcomes

Conservation would be achieved by maintenance and necessary upgrades to the structure to offset material deterioration. Warroo Bridge is one of six Dare truss bridges, and one of two single-span Dare truss bridges in the operable RTA timber truss bridge portfolio.
Sportsmans Creek Bridge

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Road</th>
<th>Grafton-Maclean Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>2</td>
<td>Location</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
</tr>
<tr>
<td>Built</td>
<td>1911</td>
<td>RTA bridge number</td>
</tr>
<tr>
<td>Assessed significance(MBK)</td>
<td>State</td>
<td>Local government</td>
</tr>
<tr>
<td>SHR listed</td>
<td>No</td>
<td>Daily traffic [AADT]</td>
</tr>
</tbody>
</table>

Sportsmans Creek Bridge is a two-span Dare truss located on the Grafton to Maclean Road, located at the entrance to the town of Lawrence which has a strong agricultural focus. The narrow deck width of the bridge is viewed as an impediment to the movement of agricultural machinery over the crossing. The bridge incorporates much of the substructure of the previous Old PWD truss bridge built at the crossing in 1885.

Analysis of heritage and operational factors

Service requirements: The route on which the bridge is situated is required to meet the emerging regulatory limits well in excess of the T44 Standard. The bridge cannot be upgraded to achieve the required standard and therefore will need to be eventually replaced with a modern bridge in order to meet capacity requirements.

In 2007, following deterioration in timber piles and sheetings at abutments and instability in abutment earth fill, works were undertaken encompassing the propping of existing timber abutments with steel frames.

Sportsmans Creek Bridge is not listed on the State Heritage Register. It was ranked 19th in the 1998 MBK timber truss bridge study.

Sportsmans Creek Bridge exhibits the unusual design characteristic (along with Bulga Bridge) of the longest span lengths developed for a Dare truss at 31.9 metres (105 feet). Apart from the length, it is otherwise the same as the 90 feet- and 70 feet-span bridges which were more common amongst Dare trusses. The cast iron piers and stone embankments are remnants of the former 1885 Old PWD bridge built at the crossing.
Conservation strategy – Sportsmans Creek Bridge

Due to the route load limit requirements, Sportsmans Creek Bridge would need to be duplicated in accordance with network upgrading priorities. The bridge cannot meet these load limits through upgrading. It does not have any unique characteristics that are not represented elsewhere among retained bridges. As a result, the bridge cannot be retained in use within the RTA’s timber truss bridge portfolio. If required to be retained as a redundant structure it would attract minimum resources to support due diligence requirements and its existing fabric would be retained.

Proposed future conservation works

Mitigation of impacts:
  • Archival recording of the bridge.
  • Interpretation of the bridge.
  • Salvage of the timbers for use in other bridge rehabilitation works.

Conservation outcomes

Six Dare truss bridge are operable, including three two-span bridges.

Sportsmans Creek Bridge does not bear any outstanding design characteristics that cannot be viewed at other Dare truss bridges, meaning its removal and replacement would not result in a loss of the representativeness of the RTA’s timber truss bridge collection.
Scabbing Flat Bridge over the Macquarie River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>Pontro Road (regional road)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>2</td>
<td>Location</td>
<td>4km south of Geurie</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Western</td>
</tr>
<tr>
<td>Built</td>
<td>1911</td>
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<td>4660</td>
</tr>
<tr>
<td>Assessed significance (MBK)</td>
<td>Regional</td>
<td>Local government</td>
<td>Wellington</td>
</tr>
<tr>
<td>SHR listed</td>
<td>No</td>
<td>Daily traffic [AADT]</td>
<td>150</td>
</tr>
</tbody>
</table>

Scabbing Flat Bridge is a two-span Dare truss bridge located on the Geurie to Scabbing Flat Road over the Wellington River. It is situated about 30 kilometres from Warroo and away from any local community. It features cast iron piers which are uncommon for Dare truss bridges.

Analysis of heritage and operational factors

Service requirements: The bridge is required to meet the current regulatory limits for general access trucks (ie to within a reasonable level of risks using the T44 Standard which is the design standard for bridges carrying a 42.5 tonne semi-trailer or equivalent). Upgrading works to meet this standard will be planned for in the future.

The current bridge therefore can meet the expected operability standard for long-term future road network planning. However, the emergence of and widespread access for multi-combination trucks on the western slopes and plains places some degree of uncertainty on the future operability of this bridge.

Scabbing Flat Bridge is not listed on the State Heritage Register. It was ranked 39th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.
**Conservation strategy – Scabbing Flat Bridge**

Scabbing Flat Bridge meets operability requirements, given its location on the road network. Future routine and periodic maintenance using existing forms of fabric will be required to maintain this operability standard as the bridge ages.

**Proposed future conservation works**

- Routine and periodic maintenance using existing forms of fabric.
- Interpretation of the bridge.

**Truss span**

- Increase in thickness of second and third diagonal members from 4.5 inches to 6 inches.
- Replacement of timber planking with structurally appropriate heritage-sympathetic decking.
- Installation of additional steel sway braces to provide lateral support for the truss at each panel point to prevent compression buckling of top chord member of the truss.
- Replacement of primary timber cross girders with steel cross girders where appropriate.
- Installation of weather protection barrier on top chord member of truss.

**Approach spans**

- Replacement of approach span decks with timber concrete composite decks.

**Substructure**

- Replacement of timber piles below ground with steel and/or reinforced concrete piles and pile caps forming the sill for the piers.
- Replacement of existing timber piers and abutments with modern heritage-sympathetic design and materials.

**Railing**

- Replacement with structurally and dimensionally appropriate heritage-sympathetic design and materials for the entire length of the bridge.

**Conservation outcomes**

The retention of this structure would ensure that a standard two-span timber truss bridge remains in operation in the central west, which previously had a high concentration of heritage bridges. Conservation would be achieved by maintenance and necessary upgrades to the structure to offset material deterioration. Scabbing Flat Bridge is one of six Dare truss bridges and one of three two-span Dare truss bridges in the operable RTA timber truss bridge portfolio.
Bulga Bridge over Wollombi Brook

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Road</th>
<th>RTA region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dare</td>
<td>SR 503 (Putty Road)</td>
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<table>
<thead>
<tr>
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<th>Location</th>
<th>Built</th>
<th>RTA bridge number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
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<td>1737</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub-type</th>
<th>RTA region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>Hunter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessed significance (MBK)</th>
<th>State</th>
<th>Local government</th>
<th>SHR listed</th>
<th>Daily traffic [AADT]</th>
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</thead>
<tbody>
<tr>
<td>State</td>
<td>Local government</td>
<td>Singleton</td>
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<td>908</td>
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</tbody>
</table>

Bulga Bridge is a two-span Dare truss bridge located over the Wollombi Brook, less than 1 kilometre from Bulga. Bulga Bridge is a significant crossing on the Putty Road (SR 503), formerly known as Howe’s Road, which had an important historical role in opening up the Hunter Valley for settlement. Bulga Bridge carries a high volume of heavy vehicles.

Analysis of heritage and operational factors

**Service requirements:** The route on which the bridge is situated is required to meet emerging regulatory limits well in excess of the T44 Standard. The bridge cannot be upgraded to achieve the required standard and therefore will need to be eventually replaced with a modern bridge in order to meet capacity requirements.

Bulga Bridge is listed on the State Heritage Register. It was ranked 9th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

Bulga Bridge exhibits the unusual design characteristic (along with Sportsmans Creek Bridge) of the longest span lengths developed for a Dare truss at 31.9 metres (105 feet). Apart from the length, it is otherwise the same as the 90 feet- and 70 feet-spans which were more common amongst Dare trusses. The central timber trestle piers are sheathed with horizontal timbers to prevent flood debris lodging in timber trestles.
Conservation strategy – Bulga Bridge

Due to the route load limit requirements for Bulga Bridge a duplicate bridge is required in accordance with network upgrading priorities. It does not have any unique characteristics that are not represented elsewhere among retained bridges. As a result, the bridge cannot be retained in use within the RTA’s timber truss bridge portfolio. If required to be retained as a redundant structure it would attract minimum resources to support due diligence requirements and its existing fabric would be retained.

Proposed future conservation works

Mitigation of impacts
• Archival recording of the bridge.
• Interpretation of the bridge.
• Salvage of the timbers for use in other bridge rehabilitation works.

Conservation outcomes

There are six operable Dare trusses including three two-span bridges.

Bulga Bridge does not bear any outstanding design characteristics that cannot be viewed in other Dare truss bridges, meaning its removal and replacement would not result in a loss of the representativeness of the RTA’s timber truss bridge collection.
Mungindi Bridge over the Barwon River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>Garah – Mungindi Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>1</td>
<td>Location</td>
<td>Mungindi</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Western</td>
</tr>
<tr>
<td>Built</td>
<td>1914</td>
<td>RTA bridge number</td>
<td>3088</td>
</tr>
<tr>
<td>Assessed</td>
<td>Local</td>
<td>Local government</td>
<td>Moree Plains</td>
</tr>
<tr>
<td>significance(MBK)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHR listed</td>
<td>No</td>
<td>Daily traffic [AADT]</td>
<td>1600</td>
</tr>
</tbody>
</table>

Mungindi Bridge is a single-span Dare truss located on the Garah to Mungindi [State] Road. It forms a gateway to Mungindi on the NSW-Queensland border.

Analysis of heritage and operational factors

**Service requirements:** The State road on which the bridge is situated is required to meet emerging regulatory limits well in excess of the T44 Standard. The bridge cannot be upgraded to achieve the required standard and therefore will need to be eventually duplicated with a modern bridge in order to meet capacity requirements.

Mungindi Bridge is not listed on the State Heritage Register. It was ranked 69th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

**Conservation strategy – Mungindi Bridge**

Due to the route load limit requirements for Mungindi Bridge, a replacement bridge needs to be constructed to meet network upgrading priorities. It does not have any unique characteristics that are not represented elsewhere among retained bridges. As a result, the bridge cannot be retained in use within the RTA’s timber truss bridge portfolio. If required to be retained as a redundant structure it would attract minimum resources to support due diligence requirements and its existing fabric would be retained.
Proposed future conservation works

Mitigation of impacts
- Archival recording of the bridge.
- Interpretation of the bridge.
- Salvage of the timbers for use in other bridge rehabilitation works.

Conservation outcomes

There are six operable Dare trusses including two single-span bridges (Briner and Warroo).

Mungindi Bridge does not bear any outstanding design characteristics that cannot be viewed in other Dare truss bridges, meaning its removal and replacement would not result in a loss of the representativeness of the RTA’s timber truss bridge collection.
Rawsonville Bridge (aka Minore Bridge) over the Macquarie River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>Local road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>2</td>
<td>Location</td>
<td>Minore</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Western</td>
</tr>
<tr>
<td>Built</td>
<td>1916</td>
<td>RTA bridge number</td>
<td>4645</td>
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<tr>
<td>Assessed significance(MBK)</td>
<td>Regional</td>
<td>Local government</td>
<td>Dubbo City</td>
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<tr>
<td>SHR listed</td>
<td>No</td>
<td>Daily traffic [AADT]</td>
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</tr>
</tbody>
</table>

Rawsonville Bridge is a two-span Dare truss bridge located on a local road connecting the Mitchell Highway and Rawson over the Macquarie River. It is located less than 10 kilometres from Rawson and away from any local community. Rawsonville Bridge features concrete wall piers which are more commonly associated with contemporary steel trusses.

Analysis of heritage and operational factors

Service requirements: The bridge is required to meet the current regulatory limits for general access trucks (ie to within a reasonable level of risks using the T44 Standard which is the design standard for bridges carrying a 42.5 tonne semi-trailer or equivalent). Upgrading works to meet this standard will be planned for in the future.

The current bridge therefore can meet the expected operability standard for long-term future road network planning. However, the emergence of and widespread access for multi-combination trucks on the western slopes and plains places some degree of uncertainty on the future operability of this bridge.

Rawsonville Bridge is not listed on the State Heritage Register. It was ranked 44th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

The use of concrete wall piers is rare amongst timber truss bridges, but is more common among the steel truss bridges being built during this period. The pier fabric does not have any bearing on the truss design beyond the method of connection and support of the deck.
**Conservation strategy – Rawsonville Bridge**

Rawsonville Bridge meets operability requirements, given its location on the road network. Future routine and periodic maintenance using existing forms of fabric will be required to maintain this operability standard as the bridge ages.

**Proposed future conservation works**

- Routine and periodic maintenance using existing forms of fabric.
- Interpretation of the bridge.

**Truss span**

- Increase in thickness of second and third diagonal members from 4.5 inches to 6 inches.
- Replacement of timber planking with structurally appropriate heritage-sympathetic decking.
- Installation of additional steel sway braces to provide lateral support for the truss at each panel point to prevent compression buckling of top chord member of the truss.
- Replacement of primary timber cross girders with steel cross girders where appropriate.
- Installation of weather protection barrier on top chord member of truss.

**Approach spans**

- Replacement of approach span decks with timber concrete composite decks.

**Substructure**

- Replacement of timber piles below ground with steel and/or reinforced concrete piles and pile caps forming the sill for the piers.
- Replacement of existing timber piers and abutments with modern heritage-sympathetic design and materials.

**Railing**

- Replacement with structurally and dimensionally appropriate heritage-sympathetic design and materials for the entire length of the bridge.

**Conservation outcomes**

There are six operable Dare trusses including three two-span bridges.

The retention of this structure would ensure that a standard two-span timber truss bridge remains in operation in the central west, which previously had a high concentration of heritage bridges.

Conservation would be achieved by maintenance and necessary upgrades to the structure to offset material deterioration. Rawsonville Bridge is one of six Dare truss bridges and one of three two-span Dare truss bridges in the operable RTA timber truss bridge portfolio. The conservation of Rawsonville Bridge also achieves retention of an example of concrete wall piers used on a timber truss bridge.
Korns Crossing over the Rous River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>Murwillumbah-Chillingham Garah Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>1</td>
<td>Location</td>
<td>Murwillumbah</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
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<td>Built</td>
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<td>RTA bridge number</td>
<td>2581</td>
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<td>Assessed significance(MBK)</td>
<td>Local</td>
<td>Local government</td>
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<tr>
<td>SHR listed</td>
<td>No</td>
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</tbody>
</table>

Korns Crossing Bridge is a single-span Dare truss bridge located on the Murwillumbah to Chillingham Garah [regional] Road near the NSW-Queensland border.

Analysis of heritage and operational factors

Service requirements: The route on which the bridge is situated is required to meet emerging regulatory limits well in excess of the T44 Standard. The bridge cannot be upgraded to achieve the required standard and therefore will need to be eventually replaced with a modern bridge in order to meet capacity requirements.

Korns Crossing Bridge is not listed on the State Heritage Register. It was ranked 47th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

Conservation strategy – Korns Crossing Bridge

Due to the route load limit requirements for Korns Crossing Bridge it will be duplicated in accordance with network upgrading priorities. The bridge cannot meet these load limits through upgrading. It does not have any unique characteristics that are not represented elsewhere among retained bridges. As a result, the bridge cannot be retained in use the RTA's timber truss bridge portfolio. If required to be retained as a redundant structure it would attract minimum resources to support due diligence requirements and its existing fabric would be retained.
Proposed future conservation works

Mitigation of impacts
• Archival recording of the bridge.
• Interpretation of the bridge.
• Salvage of the timbers for use in other bridge rehabilitation works.

Conservation outcomes

The conservation strategy proposes retaining six Dare trusses including two single-span bridges.

Korns Crossing Bridge does not bear any outstanding design characteristics that cannot be viewed in other Dare truss bridges, meaning its removal and replacement would not result in a loss of the representativeness of the RTA’s timber truss bridge collection.
New Buildings Bridge over the Towamba River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>RR 248</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>3</td>
<td>Location</td>
<td>Wydham</td>
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<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Southern</td>
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<tr>
<td>Built</td>
<td>1921</td>
<td>RTA bridge number</td>
<td>6237</td>
</tr>
<tr>
<td>Assessed</td>
<td>State</td>
<td>Local government</td>
<td>Bega Valley</td>
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<tr>
<td>significance(MBK)</td>
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<td></td>
</tr>
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<td>SHR listed</td>
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</tr>
</tbody>
</table>

New Buildings Bridge is a three-span Dare truss bridge located on the Wyndham to Cathcart [local] Road located less than 10 kilometres from Wyndham. The bridge is located away from civic centres on a historic route. It is the only surviving example of a three-span Dare truss.

Analysis of heritage and operational factors

Service requirements: The bridge is required to meet the current regulatory limits for general access trucks (ie to within a reasonable level of risks using the T44 Standard which is the design standard for bridges carrying a 42.5 tonne semi-trailer or equivalent). Upgrading works to meet this standard will be planned for in the future.

The current bridge can meet the expected operability standard for long-term future road network planning.

New Buildings Bridge is listed on the State Heritage Register. It was ranked 18th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

Conservation strategy – New Buildings Bridge

New Buildings Bridge meets operability requirements, given its location on the road network. Future routine and periodic maintenance using existing forms of fabric will be required to maintain this operability standard as the bridge ages.

Recent conservation works
- Bridge painted green in 2003.
Proposed future conservation works

- Replacement of timber planking with structurally appropriate heritage-sympathetic decking.
- Reinforcement of truss second diagonal members.
- Routine and periodic maintenance using existing forms of fabric.
- Interpretation of the bridge.

Railing
- Replacement with structurally and dimensionally appropriate heritage-sympathetic design and material for the entire length of the bridge.

Conservation outcomes

The retention of this structure would ensure that the only surviving three-span Dare truss would remain in operation in the Monaro region, which previously had a high concentration of timber truss bridges. Only four three-span Dare truss bridges were built and this bridge features the maximum span configuration utilised. The local ecologically-minded community of Wyndham has a strong social connection to the bridge and lobbied the RTA for it to be painted green in 2003.

Conservation would be achieved by maintenance and necessary upgrades to the structure to offset material deterioration. New Buildings Bridge is one of six operable Dare truss bridges and the only three-span Dare truss bridge in the operable RTA timber truss bridge portfolio.
Coonamit Bridge over the Wakool River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>RR 386</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>2</td>
<td>Location</td>
<td>Bulga</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>Hunter</td>
</tr>
<tr>
<td>Built</td>
<td>1928</td>
<td>RTA bridge number</td>
<td>3315</td>
</tr>
<tr>
<td>Assessed significance(MBK)</td>
<td>State</td>
<td>Local government</td>
<td>Shire of Wakool</td>
</tr>
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<td>SHR listed</td>
<td>SHR 01464</td>
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<td>350</td>
</tr>
</tbody>
</table>

Coonamit Bridge is a two-span Dare truss bridge located over the Wakool River on the Swan Hill to Moulamein Road, over 30 kilometres from Moulamein. Coonamit Bridge carries a high volume of heavy vehicles. It is currently closed to traffic pending upgrading works to piers and a detour is available.

Coonamit Bridge exhibits uncharacteristically tall timber trestle piers. In fact, the bridge features the second tallest timber trestle piers within the existing timber truss bridge population (with only Victoria Bridge, Picton, being taller).

Analysis of heritage and operational factors

Service requirements: The route on which the bridge is situated is required to meet emerging regulatory limits well in excess of the T44 Standard. The bridge cannot be upgraded to achieve the required standard and therefore will need to be eventually replaced with a modern bridge in order to meet capacity requirements.

Coonamit Bridge was extensively upgraded in 1997. These works involved:
- Replacement of timber planking with a stress laminated timber (SLT) decking system.
- Replacement of all timber cross girders with steel cross girders.
- Replacement of existing timber abutments with reinforced concrete elements.
Following an inspection detailing advanced deterioration in the piers in 2008, a Section 60 was approved for the replacement of timber piers with steel piers (works are ongoing).

Coonamit Bridge is listed on the State Heritage Register. It was ranked 36th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

**Conservation strategy – Coonamit Bridge**

Due to the route load limit requirements for Coonamit Bridge it will be duplicated in accordance with network upgrading priorities. The bridge cannot meet these load limits through upgrading of the existing structure. Coonamit Bridge does not have any unique characteristics that are not represented elsewhere among retained bridges. As a result, the bridge cannot be retained in use within the RTA’s timber truss bridge portfolio. If required to be retained as a redundant structure it would attract minimum resources to support due diligence requirements and its existing fabric would be retained.

Due to the substantial length of the trestle timbers, and given the difficulties in sourcing suitable length replacement timbers, a Section 60 application was lodged and approved in 2008 to replace the timber piers supporting the trusses with steel piers.

**Proposed future conservation works**

Mitigation of impacts
- Archival recording of the bridge.
- Interpretation of the bridge.
- Salvage of the timbers for use in other bridge rehabilitation works.

**Conservation outcomes**

There are six operable Dare trusses including three two-span bridges.

Coonamit Bridge does not bear any outstanding design characteristics that cannot be viewed in other Dare truss bridges, meaning its removal and replacement would not result in a loss of the representativeness of the RTA’s timber truss bridge collection.
Gee Gee Bridge over the Wakool River

Description

<table>
<thead>
<tr>
<th>Truss type</th>
<th>Dare</th>
<th>Road</th>
<th>Swan Hill – Deniliquin Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of spans</td>
<td>1</td>
<td>Location</td>
<td>Near Swan Hill</td>
</tr>
<tr>
<td>Sub-type</td>
<td>Standard</td>
<td>RTA region</td>
<td>South West</td>
</tr>
<tr>
<td>Built</td>
<td>1929</td>
<td>RTA bridge number</td>
<td>3237</td>
</tr>
<tr>
<td>Assessed significance (MBK)</td>
<td>State</td>
<td>Local government</td>
<td>Shire of Wakool</td>
</tr>
<tr>
<td>SHR listed</td>
<td>SHR 01469</td>
<td>Daily traffic [AADT]</td>
<td>90</td>
</tr>
</tbody>
</table>

Gee Gee Bridge is a single-span Dare truss bridge located on the Swan Hill to Deniliquin [local] Road over the Wakool River. It is located over 30 kilometres from Swan Hill.

Analysis of heritage and operational factors

Service requirements: The route on which the bridge is situated is required to meet emerging regulatory limits well in excess of the T44 Standard. The bridge cannot be upgraded to achieve the required standard and therefore will need to be eventually replaced with a modern bridge in order to meet capacity requirements.

Gee Gee Bridge is listed on the State Heritage Register. It was ranked 37th in the 1998 MBK timber truss bridge study and this is recognised in the timber truss bridge conservation strategy sensitivity test.

Conservation strategy – Gee Gee Bridge

Due to the route requirements for Gee Gee Bridge, a new bridge is required to be built to the higher load standard. Gee Gee Bridge does not have any unique characteristics that are not represented elsewhere among retained bridges. As a result, the bridge cannot be retained in use within the RTA’s timber truss bridge portfolio. If required to be retained as a redundant structure it would attract minimum resources to support due diligence requirements and its existing fabrics would be retained.
Proposed future conservation works

Mitigation of impacts
• Archival recording of the bridge.
• Interpretation of the bridge.
• Salvage of the timbers for use in other bridge rehabilitation works.

Conservation outcomes

There are six operable Dare trusses including two single-span bridges (Briner and Warroo).

Gee Gee Bridge does not bear any outstanding design characteristics that cannot be viewed in other Dare truss bridges, meaning its removal and replacement would not result in a loss of the representativeness of the RTA’s timber truss bridge collection.