Briner Bridge upgrade
Statement of Heritage Impact
Roads and Maritime Services | October 2018
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1 Introduction

Roads and Maritime Services NSW (RMS) propose to upgrade the heritage-listed Briner Bridge over the Coldstream River near Tucabia (the proposal). The historic Dare Truss bridge is currently load limited to 33 tonnes and requires regular, ongoing maintenance. The upgrade will increase the capacity to 42.5 tonnes and reduce maintenance requirements, whilst retaining the heritage significance of the truss span. In developing plans to upgrade the bridge, RMS are working in consultation with the NSW Office of Environment and Heritage (OEH).

Key features of the proposal include:

- Increasing the width of the bridge deck to 5.4 metres between barriers to allow two cars to pass
- Restoration & strengthening of the Dare Truss span
- Restoration of the deck on the truss span with stress laminated timber
- Replacement of the timber approach spans with reinforced concrete & steel girder approach spans
- Replacement of the timber abutments with new reinforced concrete abutments
- Replacement of timber piles below ground with new driven piles
- Replacement of timber trestle piers with steel trestle piers
- Replacement of the timber handrail with a new steel traffic barrier
- Installation of a temporary bridge linked to Coldstream Terrace for public access during construction
- Establishing site facilities associated with the works.

Construction is expected to begin in early 2019 and will take approximately 14 months to complete (including installation and removal of the temporary bridge and rehabilitation of the project area).

1.1 Study Area

Briner Bridge (BN 2680) spans a meander in the Coldstream River - a tributary of the Clarence River - to the immediate west of the Northern NSW village of Tucabia. Oriented northwest to southeast, it is set on Coldstream Terrace/Coldstream Road within the Clarence Valley LGA, bordering the Parishes of Ulmarra & Coldstream in the County of Clarence. The nearest notable township is Ulmarra: on the Pacific Highway, 6.7 kilometres to the northwest.

Generally, the bridge is set within a near-flat rural landscape that features silty, alluvial soils with gravel lenses. It is cleared for the most part, excepting remnant & regrowth vegetation along the river and road margins. Low-lying and swampy in parts, the location is subject to the impacts of periodic flooding.

Aside from the bridge, which dominates the locality, other landscape features include an earthen road formation (that runs at an angle to the western bridge approach, from Gilletts Ridge Road to the informal Bowlings Road) & Sweeneys Creek (a minor watercourse that discharges into Upper Coldstream Creek via a formalised headwall of concrete and stone just upstream of the bridge on the western bank).

For the purposes of this report, the study area includes the bridge, its approaches & its immediate setting.

Refer figures 1 – 6.
1.2 Background
As part of the project planning process, RMS are required to prepare a Review of Environmental Factors (REF) to address any environmental concerns associated with the proposal and meet service obligations under the Environmental Planning & Assessment Act 1979 (Section III; Part 5). RMS contracted GeoLINK (environmental design & planning consultants) to prepare the project REF, and they in-turn engaged Dan Tuck (archaeologist & heritage consultant) to prepare this contributory document: a Statement of Heritage Impact (SoHI) that assesses the potential impacts of the proposed works on the heritage values of the bridge and its setting.

This report has been prepared in accordance with the RMS project brief (July 2018) with reference to:

- Timber Truss Bridge Overarching Conservation Management Plan (RMS 2018)
- Timber Truss Bridge Conservation Strategy (RMS 2012)
- Statements of Heritage Impact (NSW Heritage Branch 2002).

It is a companion document to the Briner Bridge Heritage Assessment (Futurepast 2014) and draws on the previous Briner Bridge: Statement of Heritage Impact for Truss Upgrade & Widening (Bill Jordan & Associates 2016).

1.3 Acknowledgements
The author would like to thank David Havilah (GeoLINK) as well as Ian Berger, Kate Dallimore, Rochelle Hicks and Alexander Rosnell (RMS) for facilitating the project and providing background information, site access and advice.
Figure 1: REGIONAL MAP SHOWING STUDY AREA LOCATION
NSW Spatial Services SIX Viewer 2018

Figure 2: DISTRICT MAP SHOWING STUDY AREA LOCATION
NSW Spatial Services SIX Viewer 2018
Figure 3: BRINER BRIDGE & SURROUNDS (MAP)

NSW Spatial Services SIX Viewer 2018

Figure 4: BRINER BRIDGE & SURROUNDS (SATELLITE)

NSW Spatial Services SIX Viewer 2018
Figure 5: BRINER BRIDGE (EASTERN APPROACH)
View NW – Dan Tuck 2018

Figure 6: BRINER BRIDGE (CENTRAL SPAN + DARE TRUSSES)
View ENE – Dan Tuck 2018
2 History

The following section provides a brief history of the bridge within its regional setting.

2.1 Clarence Valley

The Clarence Valley on the North Coast of NSW constitutes an expansive flood plain set about the largest of the Northern Rivers. It is within the domain of the Bundjalung, Yaegal and Gumbaingerr: the custodians and occupiers of this resource-rich region for thousands of years prior to European incursion.¹

Prior to European settlement, the varied landscapes of the North Coast (which included forests, open grasslands, swamps, rainforests, estuaries, headlands and open beaches) combined with a mild climate to provide an ideal living environment for the region’s first people. The oceans and the Clarence River and its tributaries and feeder creeks provided a range of maritime, estuarine and freshwater resources including birds, cetaceans, crustaceans, fish and shellfish. The adjacent hinterland, plains and woodlands (and the ranges and tablelands further afield) were also rich in terrestrial food reserves including marsupials, such as kangaroos and wallabies; birds such as ducks, bush turkeys and emus; and various reptiles.² Timbered areas were not only a food larder but a source of numerous usable products. Ethno-historical records indicate that the Aborigines of the North Coast made use of a variety of tree species including Tea tree, various eucalypts and Bangalow Palm for the production of canoes and shelters; the manufacture of tools, weapons and other implements; and the preparation of traditional medicaments.³

2.1.1 Exploration & Settlement

The mouth of the Clarence River was observed by Captain James Cook on his Voyage of Discovery in 1770 and again by captain Mathew Flinders in 1799. It was not until the 1830s however, that incidental and deliberate European incursion and reconnoitre took place: the former by escapees of the Moreton Bay penal settlement heading south towards Sydney Town (including Richard Graig) and the latter by timber getters heading north from Sydney to exploit the ‘Big Rivers’.⁴ By 1820 the Hastings River had been reached, by 1828 the Manning, and by the early 1830’s the Macleay. The Clarence River was plied during the late 1830s and by 1838, cedar camps had been established on the river banks and the forests were being felled to supply the voracious Colonial timber market. Notable river-side settlements established by the mid-nineteenth century included Grafton (at the head of navigation), Ulmarra and Maclean.⁵

Beyond the Clarence

In 1939, William Wilson and his brother Christopher were contracted to prepare a survey of the natural features from the south side of the Clarence to the coast, carrying out their work in 1841 and 1842. William Wilson in particular, was responsible for surveying Coldstream, Tyndale, Gulmaradd, Taloumbi, Conoulan and Wolibarri.⁶ He named many of the places in the area after Greek place names (including Clarenza, Lavadia, Lanitza and Tucabia). According to district resident Thomas Bawden and Surveyor-general H. B. Matthews, this was a consequence of Wilson having served as a Lieutenant in the British Army in the Greek War of Independence.⁷

Refer figure 7.

¹ http://www.abc.net.au/indigenous/map/; Tindale 1974
² NSW Dept of Planning 1989; Ryan 1964
³ McBryde 1978
⁴ DUAP 1996; Kass 1989
⁵ DUAP 1996; McFarlane 1910
⁶ Bawden 1997
⁷ Bawden 1997; Kijas 2007
Figure 7: WILSON’S CHART OF THE CLARENCE RIVER SHOWING GRAFTON, ULMARRA & THE COLSTREAM RIVER (1840)
State Library of NSW ML Z/M2 813.14/1840/1
Wilson was also one of the earliest observers to provide an appraisal of the area between the beaches of the now Yuraygir Coast and the Coastal Ranges:

*The whole of the land for two and three miles from the Coast is very clear of trees and slopes gently to the sea. The timber chiefly consists of Gums, Blood, Tea Tree, Myall, Black Butt, Stringy Bark, Apple, Turpentine, Honeysuckle, Oaks ...*²

**Settlement**

In the mid-nineteenth century, the Clarence district was fairly remote, and either densely vegetated or impenetrably swampy. Not surprisingly, initial settlement was sporadic and tentative, with most activity concentrated at strategic locations along the Clarence and its main tributaries. Pioneer enterprise was concerned with timber getting (and allied industries such as boat building) and pastoralism (focusing initially on sheep and later cattle grazing and dairying).³

It was not until the late-nineteenth century that broader settlement occurred in the region in the wake of the *Robertson Land Act* (1861).⁴ The Act served to break open the large holdings of the pioneer squatter-pastoralists and officially opened up the lands beyond the settled districts to selection and free settlement. Coupled with national population growth, this in-turn lead to new settlement and the rise of a number of industries that became notable on the North Coast, including fishing and mixed farming; cane growing (1870s+) and dairying (1880s+).⁵

### 2.2 Tucabia

Like most of the North Coast settlement areas beyond the main river towns, Tucabia appears to have been established as a small rural enclave in the late-nineteenth century. A rural satellite of Ulmarra, it sported a public school by 1891.

Sited on relatively high ground adjacent to the Coldstream River (also referred to on occasion as Upper Coldstream Creek), it was on a point between Ulmarra and Corindi, and the near-coastal pastoral stations of Glenugie, Redbank and Taloumbi.

### 2.2.1 Crossing the Coldstream

By the 1870s, the area west of Ulmarra presented as a rural mosaic of farmland and homesteads. However, preventing easy access between the coastal settlements (such as Tucabia) and Ulmarra, the Clarence and the proto-Pacific Highway, was the meandering Coldstream River.

Refer [*figures* 8 – 11].

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² Wilson WCB 1842 cited in Kijas 2007: 17
³ Kass 1989
⁴ Kass 1989
⁵ Kass 1989
Figure 8: MAP OF THE COLDSTREAM PASTORAL RUN (ND)
Historic Lands Record Viewer

Figure 9: PLAN OF THE TOWN OF TUCABIA (1886)
Historic Lands Record Viewer
2.2.2 Upper Coldstream Punt
Agitation for a crossing of the Upper Coldstream appears to have commenced in the late 1870s and culminated with the approval of a punt service (as part of a regional road construction program) in 1881. A joint arrangement between Ulmarra Shire Council and the Public Works Department, the Upper Coldstream punt service appears to have commenced in that year, with an eastern approach road completed in c.1883 and the service itself run via a lease arrangement.

Early punt operators included J. Helmich (1881); H. Tree (1883); D. Robinson (1884); A. Davis (1885) and J. Revel (1886 – 1889). Onsite accommodation for the punt operator was requested by A. Davis in 1885 and a cottage was provided by Council soon thereafter. It would appear that the accommodations provided were somewhat spartan, if the following description in the local press is anything to go by:

**Upper Coldstream Punt**

*My attention has been called by more than one ratepayer to the wretched accommodation provided by the Council for the puntman at the above-named ferry. To look at the wretched apology for, a hut, or rather “gunyah,” one would think it impossible almost for a man to live there; a few sheets of iron for walls, a few more sheets for a roof; a regular tin box. The place must be a perfect oven in; summer time, and an ice-chest in winter. A tent would in my opinion be far more preferable, both for comfort and appearance sake. To give an idea of the place to those who have not had the opportunity of seeing this very primitive piece of architecture, the following remarks may be useful. It is constructed of sheets of iron, both walls and roof, the latter almost flat.*

The whole affair has been standing lord knows how long, certainly seven years to my knowledge, and has now more the appearance of a sieve than a human habitation. In fact during the late heavy rains, I believe the present occupier would have found more comfort and warmth under the cockspur bushes that surround it, and certainly a drier skin, than in this shower bath construction; I cannot call it a building; I am sure that if the Council were to put a neat and cheap cottage on the ferry ground they would do the correct thing, and; as regards the laying out of ratepayers money for such a purpose. I don't think they could better invest it; for the very fact of there, being decent accommodation for the puntman would induce more competition for the post, and therefore bring in higher tender.

The punt service appears to have met with variable success: a useful asset for the conveyance of people, but unusable in times of flood and of limited use for the cross-river movement of stock.

2.2.3 Lower Coldstream Bridge

In August and September 1889, public meetings were convened, and a committee appointed in an endeavour to build a bridge over the Coldstream River. Initial meetings were concerned with locality, there being some debate about whether a bridge should be built at Lower or Upper Coldstream.

It was ultimately determined in the latter meetings that the bridge should be sited at Lower Coldstream: on the main road north from Grafton to Ulmarra. The bridge at Lower Coldstream was eventually approved, constructed and formally opened on 26 February 1902.

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12 Clarence & Richmond Examiner 18 June 1881
13 Clarence & Richmond Examiner 12 November 1881; 4 February 1882; 7 March 1882; 9 June 1883; 3 July 1883; 4 December 1983
14 Clarence & Richmond Examiner 13 May 1884; 5 December 1885; 6 June 1886
15 Clarence and Richmond Examiner 3 August 1899
16 Clarence & Richmond Examiner 20 July 1889
17 Futurepast 2014
2.2.4 Upper Coldstream Bridge

While the Lower Coldstream Bridge proved to be a valuable asset, it did not negate the need for a bridge at Upper Coldstream. The importance of the Ulmarra Dairy industry and the regularity of Clarence River valley flooding meant that there needed to be an escape to high-ground east of Ulmarra for both residents and stock in the event of a significant flood.\(^\text{18}\)

During the opening years of the twentieth century there was Council concern, community agitation and the editorialising of the Clarence & Richmond Examiner advocating for construction of another bridge. This put considerable pressure on the Government. Especially local MPs, the Commissioner for Roads and the Department of Public Works.\(^\text{19}\)

In January 1906, the Commissioner for Roads (Mr Hanna) visited the district to make direct enquiries and to evaluate the situation for himself. The visit was attended by members of the Ulmarra Council and several local farmers and businessmen, whose arguments in favour of a bridge were put at length.

By the end of the year, the bridge had been approved, design was underway, and the project was awaiting funding.\(^\text{20}\) Financing and designs were thereafter finessed and approved and tenders for construction of the bridge (to replace the existing punt service) were invited in June 1907.\(^\text{21}\)

In the March of following year, it was reported:

> Work at the Coldstream Bridge is going on satisfactorily – all the underneath work is completed and a start made with the planking. Allowing for no hitch, the contract should be completed and the bridge open for traffic in six months at the latest.\(^\text{22}\)

The official opening ceremony was held on 5 August 1908. The bridge was named after local MP G. S. Briner who was a significant player in lobbying for its construction. As part of the opening, the ceremonial ribbon was cut by his wife. The official cost of the Bridge on completion is reported to have been £3,000.\(^\text{23}\)

Refer figures 12 - 13.

\(^{18}\) Clarence River Advocate 18 May 1902; 15 April 1902

\(^{19}\) Futurepast 2014

\(^{20}\) Clarence & Richmond Examiner 22 May 1906

\(^{21}\) Futurepast 2014

\(^{22}\) Clarence & Richmond Examiner 03 May 1908.

\(^{23}\) Northern Star 6 August 1908; Futurepast 2014
Figure 12: PLAN OF THE VILLAGE OF TUCABIA (1916)

Figure 13: PLAN OF THE VILLAGE OF TUCABIA (1960)
2.3 Briner Bridge

Briner bridge was designed by Harvey Dare with the tender for construction awarded to J. McPhillips of Coffs Harbour. Construction materials were sourced from local suppliers including W. Bailey (who provided the timber piles) and the Fraser & Co Sawmill (who supplied the sawn timbers). Work on the bridge was underway by September 1907 and completed in the following year.

Timber Truss Bridges

Timber truss bridges were the main type of large span bridges constructed in NSW during the period 1861 to 1936. During this period, there were in excess of 400 such bridges built, in a range of sizes and styles.

Timber truss bridges were ultimately replaced by reinforced concrete bridges: the construction of which was facilitated by the supply of structural steel from BHP for bridgeworks from around the 1920s.

Dare Truss Type

The Dare Truss bridge was the fifth - and last - timber truss road bridge design. Largely attributed to notable PWD highway bridge designer Harvey Dare, the truss is a composite truss-type that drew on the American Howe Truss arrangement of the earlier Allan Truss design but substituted a pair of steel channels for the timber bottom chord. It also included a redesign of the bottom chord joints to eliminate the pins characteristic of the DeBurgh truss.

Dare Truss bridges were produced from 1905 to 1936. Forty-four such bridges were erected of the course of thirty years, of which approximately half survive. The earliest, dating to 1905, spans the MacDonald River at Bendemeer in the New England Region.

The Dare Truss design is considered to mark the end of the timber truss evolutionary process and is remembered for its cost effectiveness & the relative ease with which timber members could be replaced due to Dare’s enhancements.

The Northern Rivers Region is notable for its Dare Truss bridges which aside from Briner Bridge include Coleman Bridge (Lismore 1908) & Korns Crossing Bridge near Crystal Creek (Rous River 1916).

For additional information the reader is directed to MBK (1998) & Futurepast (2014)

Refer figures 14 - 18.
Figure 14: BRIDGE OVER THE UPPER COLDSTREAM: SITE PLAN (1907)

Extracted from Department of Public Works (Roads & Bridges) drawing by Alfred Barnsby provided by RMS

Figure 15: BRIDGE OVER THE UPPER COLDSTREAM: GENERAL ELEVATION (1907)

Extracted from Department of Public Works (Roads & Bridges) drawing by Alfred Barnsby provided by RMS
Figure 16: BRIDGE OVER THE UPPER COLDSTREAM: GENERAL ELEVATION/DARE TRUSS SPAN (1907)
Extracted from Department of Public Works (Roads & Bridges) drawing by Alfred Barnsby provided by RMS

Figure 17: BRIDGE OVER THE UPPER COLDSTREAM: PIERS (1907)
Extracted from Department of Public Works (Roads & Bridges) drawing by Alfred Barnsby provided by RMS
Figure 18: BRIDGE OVER THE UPPER COLDSTREAM: ABUTMENTS, ORDNANCE FENCE &C (1907)

Extracted from Department of Public Works (Roads & Bridges) drawing by Alfred Barnsby provided by RMS
3 Survey

The bridge site was subject to site inspection/survey on 24 August 2018, with a follow up visit on 12 September 2018.

3.1 Bridge

The Briner Bridge is a single-lane, Dare truss bridge set above the (Upper) Coldstream River near its junction with Sweenys Creek: the notional limit of tidal influence. It comprises one timber and steel Dare-truss span measuring 27.7 metres over water, with five timber beam approach spans on the eastern side and three timber beam approach spans on the western side. The primary axis of the bridge is northwest to southeast and the bridge has an overall length of 114.6 metres. The bitumen and timber deck/carriageway is 4.6 metres between kerbs. There is no footway, though timber post and rail ordnance fences extend the full length of the bridge on both sides.

The bridge is supported by timber trestles. Within the river, these are founded on continuous concrete pile caps, while on land they are supported by driven timber piles.

3.1.1 Dare Truss Span

The Dare truss span is of composite timber and steel construction and features paired timber top chords and diagonal struts, with steel rods forming verticals within each panel. The bottom chords are formed by pairs of continuous, parallel, steel plates. These have been strengthened at the end panels by lattice box-sections comprising steel angles riveted to the inner faces of each plate and fixed by horizontal cross-lattice bracing. The steel plates making up the bottom chord are spliced together by riveted twin-fishplates and the vertical rods are connected to the bottom chords by underslung steel brackets.

The vertical rods are in pairs and orientated longitudinally, with each pair passing on either side of each main cross-girder. Steel sheet rain caps have been added to both the top chords and diagonals as a protective measure at some time in the more recent past. Angle-section steel braces, set between the top chords and the outer ends of the cross-girders, provide lateral stiffness to the truss arrangement.

3.1.2 Approach Spans

The approach spans range from nine metres to 11 metres in length and are of timber beam construction: comprising four parallel timber logs spanning between timber trestle piers. The logs support transverse timber joists. While the main span at the apex of the bridge is level, the approach spans on both sides rise from ground level at a notable gradient, projecting from built up road formations.

3.1.3 Deck + Abutments

The deck of the bridge - on the approaches and main span - features bituminised, longitudinal decking over transverse planking. Timber kerbs/kick plates are evident at the base of the aforementioned ordnance fence. The bridge abutments are set well beyond the river banks and are constructed of timber piles and sheathing. These were completely rebuilt - involving the splicing of some old members - in c.2012.

Refer summary table overleaf & figures 19 – 45. The table summarises basic bridge information, while the figures provide general and detail views of the bridge (and its structural elements) as well as imagery of the broader bridge setting.
### Summary: Briner Bridge over the Coldstream River - RMS Bridge Nos. 2680

<table>
<thead>
<tr>
<th>Type</th>
<th>One lane; Dare-type timber truss bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>c.1907/1908</td>
</tr>
<tr>
<td><strong>GPS</strong></td>
<td>56J 508950E; 6719601N</td>
</tr>
<tr>
<td>Design</td>
<td>PWD (Harvey Dare)</td>
</tr>
<tr>
<td>Builder</td>
<td>J. McPhillips (Coffs Harbour).</td>
</tr>
<tr>
<td>Details</td>
<td></td>
</tr>
<tr>
<td>• Bridge length: 114.6 metres</td>
<td></td>
</tr>
<tr>
<td>• Dare truss span at bridge apex</td>
<td></td>
</tr>
<tr>
<td>• Five approach spans on the east &amp; three approach spans to the west</td>
<td></td>
</tr>
<tr>
<td>• Trestle piers on concrete (in-water) or piles (on-land)</td>
<td></td>
</tr>
<tr>
<td>• Decks of bituminised timber decking above timber planking</td>
<td></td>
</tr>
<tr>
<td>• Between-kerb carriageway of 4.6 metres</td>
<td></td>
</tr>
<tr>
<td>• Post + rail ordnance fence</td>
<td></td>
</tr>
<tr>
<td>• Rebuilt timber abutments</td>
<td></td>
</tr>
<tr>
<td>Modifications</td>
<td></td>
</tr>
<tr>
<td>• Periodic and occasional maintenance, including the replacement of failed elements &amp; painting, since construction (1945 &amp;c)</td>
<td></td>
</tr>
<tr>
<td>• Double pier capwales replaced with single piece headstocks (Nd)</td>
<td></td>
</tr>
<tr>
<td>• Approach span sawn girders and corbels replaced with round sections (Nd)</td>
<td></td>
</tr>
<tr>
<td>• Galvanised capping (flashing) installed to truss top chords &amp; end principals to protect from weather effects (Nd)</td>
<td></td>
</tr>
<tr>
<td>• Substantial modifications made to the in-river pier section of the substructure (c.2002): the timber piles have been replaced with steel piles that carry a reinforced concrete pile cap (supporting modified timber trestles).</td>
<td></td>
</tr>
<tr>
<td>• Abutments replaced-refurbished w. timber piles &amp; sheathing (c.2012)</td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td></td>
</tr>
<tr>
<td>• Load limited to 33t</td>
<td></td>
</tr>
</tbody>
</table>

Table based on site survey & information provided by RMS

### 3.2 Surrounds

For the most part, land beyond the immediate bridge corridor comprises a modified riverine landscape that has been shaped by early twentieth century bridge and road building, as well as bridge, road and riverbank repair and remodelling hence. Universally, the landscape is grassed-up, though it had been slashed to near-ground level at the time of survey, with vegetative regrowth along the river banks (trees and woody weeds).

### 3.2.1 Western Bank

The Western bank (Ulmarra side) features an **old road formation**: on the northern side of the western approach. It is sealed with rounded gravels and bitumen in part. This was the old approach road to the bridge and formerly connected with Bowling's Road (an unsealed track that runs south, along the western bank of the Creek). The road has since been cut off by construction of the extant western bridge approach formation. Refer [figure 27](#).
The time at which the extant approach road was built, and the former made redundant, is uncertain. There was Council agitation for improved, raised approaches in the 1920s and 1930s (e.g. *Daily Examiner* 8 August 1929: 3), which suggests that the revised road alignment likely dates to 1930s.

The south side of the approach has been heavily impacted by flooding and there is scour protection works evident (battered rockwork) between the bridge and the formalised concrete headwall of Sweeney’s Creek (refer figure 36).

### 3.2.2 Eastern Bank

The northern side of the eastern approach is unremarkable and presents as relatively swampy grazing land. The southern side is undulating and disturbed and accessed via a modern, grassed-up dirt track, which departs Coldstream Terrace approximately 150 metres east of the bridge.

During the 1880s, the area immediately south of the western bridge approach was where the cross-stream punt operation was located. It comprised a metalled access road (c.1884) with a flat-bottomed punt that hand-winched between a pole on each bank via a cable/rope. Unlike the larger punt and ferry operations on the bigger rivers – such as the Clarence and the Richmond – infrastructure was minimal, there was no associated jetty or pontoon, and the punt merely rested on the bank for passenger dismount.

There is no visible evidence of landscaping or infrastructure associated with the former punt operation, and there are unlikely to be significant, buried relics associated with its construction and use. Onsite appraisal and aerial photo review suggest that there was significant earthmoving and landscaping involved in creating the eastern bridge abutment and building the elevated, battered, earthen road approaches. In addition, there has been post-construction works that have increased the width of the verge on the eastern bridge approach road and improved its geometry (refer figures 19 & 20), as well as reconstruction of the eastern abutment and erosion control works. Collectively, these initial and subsequent bridge-road works are likely to have significantly impacted – and likely removed - the limited physical evidence that once denoted the punt operation’s former footprint (refer figures 43 & 46).

South of the bridge’s eastern approach spans, near the river bank, is a *timber pole* (GPS 56J 508986E; 6719562N acc. 7m). Initial appraisal of this item by Bill Jordan & Associates (2016a) raised the possibility that it was associated with the pre-bridge punt operation. A review of the original bridge plans (figure 14) and recent reappraisal by RMS engineers, however, suggest that:

- a) The pole is not in the right position to have been a punt rope anchor post
- b) The item is in fact a former bridge member (likely discarded during a maintenance program and erected nearby for an unknown purpose).

Bridge bolts evident on the pole, in addition to evenly spaced bitumen staining, suggest it was once part of the bridge sub-deck/soffit (figures 44 & 46).

Historic plans show the *ferryman’s cottage*, constructed to house the punt operator in c.1884 (refer back to figure 14). This simple and much-derided structure was however outside of the study area. Like the other punt elements, it is considered highly unlikely that physical evidence of this structure exists in situ due to its simple ad hoc construction coupled with the cumulative impacts of flooding, landscaping and an active riverside revegetation program (refer figure 46).

*In summary, with the exception of the remnant roadway on the western side - which is a work rather than a relic - it is unlikely that significant pre-bridge relics exist within the study area and it therefore has low-nil historical archaeological potential and sensitivity.*
Figure 19: SATELLITE IMAGE SITE PLAN

Google Earth Pro

Figure 20: SATELLITE IMAGE COMPOSITE PLAN

Google Earth Pro image with best-fit 1907 Site Plan overlay (B+W) & Temporary Bridge Location (Yellow)
Figure 21: VIEW TOWARDS THE WESTERN APPROACH (FROM GILLETTS ROAD/TUCABIA ROAD JUNCTION)
View ESE – Dan Tuck 2018

Figure 22: WESTERN APPROACH (FROM GIVEWAY SIGN)
View ESE – Dan Tuck 2018
Figure 23: SOUTH SIDE OF THE APPROACH SPANS FROM THE WESTERN ABUTMENT

View ENE – Dan Tuck 2018

Figure 24: CENTRAL SPANS + DARE TRUSS

View NE – Dan Tuck
Figure 25: DARE TRUSS + EASTERN APPROACH SPANS
View NE – Dan Tuck

Figure 26: WESTERNMOST APPROACH SPAN AND DETAIL OF RENEWED WESTERN ABURMENT
View NW – Dan Tuck 2018
Figure 27: BRINER BRIDGE (WESTERN END) EARTHEN APPROACH; APPROACH SPANS + DARE TRUSS
View SSE – Dan Tuck 2018

Figure 28: OLD ROAD ALIGNMENT (NE-SW) APPROACHING BRINER BRIDGE
View SE – Dan Tuck 2018
Figure 29: WESTERN APPROACH (DECKING + RAILING)
View ESE – Dan Tuck 2018

Figure 30: WESTERN APPROACH (DETAIL OF DECKING + RAILING)
View ESE – Dan Tuck 2018
Figure 31: DARE TRUSS SPAN
View ESE – Dan Tuck 2018

Figure 32: DARE TRUSS SPAN
View WSW – Dan Tuck 2018
Figure 33: DARE TRUSS SPAN DETAIL (NORTH SIDE; OBLIQUE)
View E – Dan Tuck

Figure 34: DARE TRUSS SPAN DETAIL (SOUTH SIDE; OBLIQUE)
View SE – Dan Tuck
Figure 35: VIEW UPSTREAM FROM BRINER BRIDGE
View SSE – Dan Tuck 2018

Figure 36: SWEENEYS CREEK ENTRANCE, SOUTH OF BRIDGE ON WESTERN BANK (LEFT OF FRAME)
View W – Dan Tuck 2018
Figure 37: EASTERN APPROACH
View ESE – Dan Tuck

Figure 38: EASTERN APPROACH + SIGNAGE
View NW – Dan Tuck
Figure 39: EASTERN APPROACH SPANS, SOFFIT + TRESTLES
View WNW – Dan Tuck 2018

Figure 40: EASTERN APPROACH SPANS + RENEWED EASTERN ABUTMENT
View NE – Dan Tuck 2018
Figure 41: BRIDGE SUB-STRUCTURE INCLUDING TRESTLES + CONCRETE CAPS

View E – Dan Tuck 2018

Figure 42: VIEW TOWARDS EASTERN APPROACH

View WNW – Dan Tuck 2018
Figure 43: VIEW ALONG ROAD CORRIDOR TOWARDS EASTERN APPROACH
View WNW – Dan Tuck 2018

Figure 44: VIEW ALONG ACCESS TRACK TOWARDS BRIDGE (WITH TIMBER POST TO LEFT OF FRAME)
View NW – Dan Tuck 2018
Figure 45: DETAIL OF TIMBER POST (FORMER BRIDGE MEMBER)

View SSE – Dan Tuck 2018

Figure 46: PRIVATE LAND TO THE SOUTH OF THE POST (SHOWING REVEGETATION /LANDSCAPING REGIME)

View S – Dan Tuck 2018
4 Heritage
The following section provides a brief review of the legislative and listing context and presents an assessment of the heritage significance of the subject bridge.

4.1 Legislation

4.1.1 NSW Heritage Act 1977
The NSW Heritage Act 1977 is the principle document governing the management of heritage items (relics and places containing relics) in NSW.


The Act defines a relic as:

any deposit, artefact, object or material evidence that:

(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, & (b) is of State or local heritage significance.


All relics are afforded automatic statutory protection by the relic’s provisions of the Act. Sections 139 to 145 within Division 9 of The Act prevent the excavation or disturbance of land for the purpose of discovering, exposing or moving a relic, except by a qualified archaeologist to whom an excavation permit from the Heritage Council of NSW has been issued. Section 146 of The Act requires that the inadvertent discovery of relics be reported to the Heritage Council in a timely and appropriate manner.

4.1.2 Environmental Planning & Assessment Act 1979
The NSW Department of Planning and Environment (DoPE) administers the EPA Act, which provides the legislative context for environmental planning instruments to be made to govern and guide the process of development and land use. Local heritage items, including known archaeological items, identified Aboriginal Places and heritage conservation areas are protected through listings on Local Environmental Plans (LEPs) or Regional Environmental Plans (REPs). The EPA Act also requires that potential Aboriginal and historical archaeological resources are assessed and considered as part of the development process, in accordance with the requirements of the NPW Act and the Heritage Act.

4.2 Listings
The following statutory and non-statutory registers and planning documents were reviewed during preparation of this report:

- Clarence Valley LEP 2011
- North Coast REP 1988 (as amended)
- NSW Heritage Office’s State Heritage Inventory (SHI)
- NSW Heritage Office’s State Heritage Register (SHR)
- Australian Heritage Places Inventory (AHPI)
- *Incorporating the National Heritage List, the Commonwealth Heritage list, & the Register of the National Estate.*
- RMS s170 Heritage & Conservation Register.

4.2.1 Bridge
Briner Bridge is listed as a built heritage item of State significance on the RMS s170 Heritage & Conservation Register (Briner Bridge over the Upper Coldstream River: Item 4300158).

The bridge is also listed on the SHI: a consequence of its s170 listing:


Refer attachment 1.

Notes:

1. The bridge is not listed within the heritage schedule of the Clarence Valley LEP.

   *The Ulmarra and Nymboida portions of the LGA are currently the subject of a community-based heritage study, which will result in the addition of new items to the LEP’s heritage schedule.*

2. Application is to be made to the NSW Heritage Office to have the bridge listed on the NSW SHR at the completion of the upgrade described herein.

4.2.2 Surrounds
The lands adjacent to the bridge that will accommodate the new crossing and revised road alignment are not listed on, or within, any statutory or non-statutory heritage list, register or database.
4.3 Significance

The significance of the bridge was initially assessed as part of the Study of the Heritage Significance of All Timber Truss Bridges in NSW undertaken by McMillan Britton & Kell Pty Ltd (MBK 1998). This appraisal was revised as part of the Briner Bridge Heritage Assessment prepared by Futurepast (2014: 33-37) and is presented in its entirety below:

Assessment Against Criteria

CRITERION A: An item is important in the course, or pattern, of NSW's cultural or natural history or the cultural or natural history of the local area.

The Briner Bridge has historical significance as the original road link over the Upper Coldstream River in this location and it has served this role for over a century. It is a moderately significant local route between the Clarence River and the townships east of the Coldstream River. (Local Significance)

The erection of the Briner Bridge was a highly significant event in the Clarence River hinterland, creating a flood-free route from the river flats to the higher ground to the east, whilst also ensuring the connection of these eastern regions with the main centres of commerce and population along the Clarence River. This road link is historically influential in the pattern of development in the region, providing an economic and social advantage to the areas in the vicinity of or accessible to the main road routes. (Local Significance)

The Briner Bridge is a significant relic of the era when motor vehicles were still virtually unknown, and the horse-drawn wagon was still the major form of heavy road transport. High-level bridges (i.e. flood-free) were significant in the spread of European settlement in NSW, as they created lines of communication in otherwise sparsely settled areas, enabling timely delivery of goods to markets and the provision of government services and administration into what might otherwise be isolated settlements. This was a key feature of colonial settlement in NSW, with the large distances, foreign flora and fauna, conflicts with the local Aboriginal populations and the general antipodean differences from the European experience feeding a sense of close interdependency between individual settler groups and the machinery of government, especially law enforcement. Equally, open lines of access meant that settlers were not cut off from access to services, especially medical, in times of emergency and were able to access fellow settlers socially and economically, providing a valuable sense of security and community. (State Significance)

The historical origins of the Briner Bridge and the reasons for its construction are components in the story of the settlement, development and economic history of the Clarence River and far north coast of NSW region. The development of the north coast was, in the nineteenth century, seen to be critical to the expansion of agricultural production regionally and, consequently, the economic development of the state, owing to its apparently fertile land, access to coastal shipping and potential for intra-state production of produce otherwise more suited to the Queensland climate, such as sugar cane, or Victoria, such as dairying. (State Significance)

The Briner Bridge was sought and was provided by the NSW State Government for the potential economic benefits arising from its role in mitigation of the consequences of the periodic flooding of the Clarence River and the impact of these floods upon livestock. The ongoing success of the dairy, sugar and other industries on the north coast of NSW was considered to be a matter of importance to the fortunes of the State generally, both for the specific produce and more generally for the health and diversity of the State economy. (State Significance)

The Dare composite steel and timber truss spans of the Briner Bridge are relics of the progressive development of timber truss design in NSW and illustrate an important stage in the evolution of the design. The Dare truss was the apogee of the design of timber truss bridges in NSW, using composite materials for practical and economic reasons and demonstrating the ongoing adoption of new
approaches and innovations in engineering by the engineers of the NSW Public Works department.

(State Significance)

**CRITERION B: An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW’s cultural or natural history or the cultural or natural history of the local area.**

The Briner Bridge is an important example of the work of engineer Harvey Dare, a significant engineer in the history of NSW, and of the work of the NSW Public Works Department. Harvey Dare was appointed Assistant Engineer for Design in the New South Wales Public Works Department in 1903, a position he held until appointed Principal Assistant Engineer for Rivers, Water Supply and Drainage in 1910. He became Engineer (in 1911), then Chief Engineer for Water Conservation and Irrigation in the Department in 1913. He later became inaugural Chief Engineer and Commissioner of the New South Wales Water Conservation and Irrigation Commission and was responsible for much of the early work on the Murrumbidgee Irrigation Area and Burrenjuck Dam. (State Significance)

**CRITERION C: An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW, or the local area.**

The Briner Bridge demonstrates the high level of technical achievement by the bridge engineers of the NSW Public Works Department in the late nineteenth century in NSW. The design of the composite ‘Dare’ Truss was largely developed in NSW with no overseas precedents and the efficacy and durability of the design is evidenced by the survival of this bridge and many of its peers for over a century of use. (State Significance)

The timber truss spans represent a sophisticated application of standard designs over a wide range of applications and these Dare composite trusses were a significant improvement over the Allan Truss all-timber design used previously. The development of timber truss designs based on the use of Australian hardwoods was unique to NSW and was a significant engineering and economic achievement that was key to the industrial and social development of Australia in the late nineteenth century. (State Significance)

The Briner Bridge demonstrates the aesthetic qualities of timber bridges that are typically valued by a significant part of the community, especially the natural materials, a human scale and familiar proportions and the combination of sounds and smells in addition to appearance. (Local Significance)

**CRITERION D: An item has strong or special association with a particular community or cultural group in NSW, or the local area, for social, cultural or spiritual reasons.**

The Briner Bridge has significance to the communities of Tucabia, Ulmarra and Wooli as a traditional crossing, as a key icon of the locality and as a local amenity. It is featured in local tourism brochures and websites and the story of the bridge is closely tied to the history and identity of the Upper Coldstream district. (Local Significance)

**CRITERION E: An item has potential to yield information that will contribute to an understanding of NSW’s cultural or natural history, or the cultural or natural history of the local area.**

The Briner Bridge does not have any values relevant to this criterion.

**CRITERION F: An item possesses uncommon, rare or endangered aspects of cultural or natural history of NSW, or cultural or natural history of the local area.**

The Briner Bridge is one of thirteen surviving bridges in NSW (in 2012) which utilise Dare composite timber-truss spans and one of only six which are designated for retention in the long term. Of the six bridges earmarked for retention, it is one of two single-span truss bridges. (State Significance)
CRITERION G: An item is important in demonstrating the principal characteristics of a class of NSW’s cultural or natural places; or cultural or natural environments (or cultural or natural places; or cultural or natural environments of the local area).

The Briner Bridge includes a representative example of a Dare composite timber-truss span and includes representative examples of standard timber beam approach spans. (Local Significance)

The Briner Bridge and the story of its provision for the economic security of the local dairy industry provides a representative example of the historical context and motivation for state government investment in local infrastructure in the late nineteenth and early twentieth centuries in NSW. (State Significance)

Statement of Significance

The Briner Bridge is an excellent example of a Dare type timber truss bridge which remains highly original and in good condition. The establishment of the bridge reflects the historical development of the Clarence River region of NSW and is closely related to the development of the dairy industry in northern NSW in the late nineteenth and early twentieth centuries. The story of the local agitation and government responses leading up to the erection of the Briner Bridge provides a representative example of the historical context and motivation for state government investment in local infrastructure in the late nineteenth and early twentieth centuries.

As a timber truss road bridge, it has strong associations with the expansion of the road network and economic activity throughout NSW and also with Harvey Dare, the designer of this type of truss. The Dare truss contained a range of engineering enhancements over its predecessors and represented a significant evolution of the design of timber truss bridges.

<table>
<thead>
<tr>
<th>Component</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dare Truss Span</td>
<td>High</td>
</tr>
<tr>
<td>Approach Spans</td>
<td>Moderate</td>
</tr>
<tr>
<td>Timber Trestle Piers</td>
<td>Moderate</td>
</tr>
<tr>
<td>Abutments</td>
<td>Moderate</td>
</tr>
<tr>
<td>Timber Deck</td>
<td>Moderate</td>
</tr>
<tr>
<td>Handrails</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Table based on information in Futurepast 2014: 38-39

**High**: High degree of original fabric; demonstrates a key element of the item’s significance.

**Moderate**: Altered or modified element(s); elements with little heritage value, but which contribute to the overall significance of the item.

**Note:**
Relics or other subsurface material associated with the pre-bridge punt – which plied the river immediately upstream of the bridge – are likely to be ephemeral; disturbed by historic flooding and bridge construction activities; and of low archaeological value/research potential.
4.4 Guiding Documents
The principal heritage management documents relating to this proposal are:

4.4.1 Timber Truss Bridge Conservation Strategy (2012)
This strategy recognises the role of RMS as the ‘custodian of the heritage significance of the population of timber bridges’ under Service control. In accordance with the strategy, RMS is required to:

- Retain a minimum of 26 timber truss road bridges until 2032 (& retain a minimum of 20 beyond 2032)
- Use traditional methods & materials where possible & where upgrading is not required
- Upgrade bridges for strength and safety as required in order to ensure their ongoing safety & operability.

The Strategy mentions the need to make use of modern materials to achieve required load capacities, with all design solutions developed on a case-by-case basis.
- Continue to improve conservation knowledge & skills through training
- Continue to improve engineering knowledge & understanding through research.


4.4.2 Timber Truss Bridges: Overarching Conservation Management Plan (2018)
The purpose of this Conservation Management Plan (CMP) – recently endorsed by the NSW Heritage Office - is to guide the conservation and management of the bridges to be retained under the Timber Truss Bridges Conservation Strategy into the future, with a continuing role and use in the life of communities. It states that:

- For each individual bridge a more detailed bridge specific CMP will be written by RMS (informed by this overarching CMP)
- The CMP is intended to inform all decision making for the conservation & management of each State-listed timber truss bridge until bridge specific CMPs are endorsed.

While the CMP details the importance of heritage management in the treatment of significant bridges, it acknowledges that it is but one of a number of agency priorities that include:

- Making safety paramount while delivering services & an effective infrastructure program
- Meeting customer & community needs & enhancing economic & social outcomes.

It is noted that although a bridge-specific CMP is planned for Briner Bridge, it is yet to be completed. This means that the Overarching CMP is the main decision-making document in relation to heritage management and planning for the bridge at present.

https://app.box.com/s/ygkiu20o7qf77diao91kj0a6tn8gw6gp
4.4.3 State Agency Heritage Guide (2005)
This document acknowledges that management of state-owned heritage assets is a State agency service responsibility, to be jointly managed with other service delivery responsibilities and given a high priority in the corporate planning and budgetary processes. It recognises that the effective management of heritage assets will achieve an appropriate balance between the twin objectives of efficient provision of government services and conservation of the State’s heritage for future generations.

In accordance with the guide, each agency is required to identify, list and manage/conserve heritage assets that fall within their respective jurisdictions in an appropriate, sustainable and integrated manner.

The guide requires that each agency:

- Actively identifies heritage assets & keeps a S170 Heritage & Conservation Register
- Prepare Statement of Heritage Impact for works that may have an impact on a listed item
- Update and review information on heritage assets & their management from time to time
- Take a strategic approach to the management of heritage assets (including the application of Heritage Asset Management Plans, Management Action Plans & Maintenance Action Plans)
- Manage assets according to & with respect for their significance
- Consider archaeology as well as structural & moveable heritage
- Appropriately and sensitively manage change & alteration to use and function
- Acquire the relevant approvals when altering or conserving an asset
- Monitor, report on, interpret & promote heritage assets & agency conservation initiatives.

5 Project

5.1 Understanding

- RMS desire a safe bridge that will meet current & future operational requirements without prohibitive upfront expense or ongoing maintenance & repair costs.

- Timber truss bridges of the late-nineteenth & early-twentieth century - such as Briner - were designed to be economic structures with limited load-bearing capacity & a finite lifespan.

- RMS acknowledge in their endorsed *Timber Truss Bridges Overarching CMP (2018)* & *Timber Truss Bridge Conservation Strategy (2012)* that not all timber truss bridges can be conserved & a management approach that sees representative examples conserved & retained, while others are demolished & replaced, is the only practical way to manage these items.

- Briner Bridge has been identified as one of six Dare Truss bridges to be retained in the RMS’s *Timber Bridge Conservation Strategy* (refer table below).

- Application to have the bridge listed on the SHR will be made after the proposed works program has been completed, as recommended in the Heritage Assessment (Futurepast 2014: 40).

<table>
<thead>
<tr>
<th>Management of RMS-controlled Dare-Type Timber Truss Bridges in NSW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To be Retained &amp; Conserved</strong></td>
</tr>
<tr>
<td>Briner (Clarence Valley LGA)</td>
</tr>
<tr>
<td>Coleman's (Lismore City LGA)</td>
</tr>
<tr>
<td>Rawsonville (Dubbo City LGA)</td>
</tr>
<tr>
<td>Scabbing Flat (Wellington LGA)</td>
</tr>
<tr>
<td>New Buildings Rd (Bega LGA)</td>
</tr>
<tr>
<td>Waroo (Forbes LGA)</td>
</tr>
</tbody>
</table>

Table based on information in RMS’s Timber Truss Bridge Conservation Strategy 2012: iii; 53 I

5.2 Rationale

Structural inspection and appraisal of the bridge has found that it requires upgrade works - including widening and strengthening - to improve safety, amenity, capacity and longevity:

- The crossing is limited to 33t & is required to meet regulatory limits of at least T44 Standard.

- There is a minor possibility that an over-mass vehicle travelling across the bridge may cause it to collapse. This could result in injury/or loss of life to vehicle occupants & loss of the bridge.

- The timber ordinance fence does not meet the current requirements for safety barriers & if subjected to vehicle impacts, is likely to fail.

- The single lane is problematic as the steep grade of the approach spans, and the distinctive hump at the bridge apex, mean travellers from either end are often unable to see each other’s approach.
5.3 Proposal

The following bridge treatment options were considered by RMS:

1. **Do nothing**: This option maintains the status quo.

2. **Restore truss span only**: This option involves strengthening the truss span. However, the bridge would be unable to be widened as the width of the approach spans would remain unchanged.

3. **Full bridge upgrade**: This option involves restoration of the truss span and approach spans (including new abutments and piers), as well as widening of the bridge to allow two cars to pass and a higher load capacity to be achieved.

**Preferred Option**

The preferred Option 3 – full bridge upgrade - has been designed as ‘… an outcome that meets the project safety objectives whilst balancing the requirement of retaining the heritage significance of the bridge’ (RMS). It is a proposal that is best described as a ‘capacity upgrade’ and will see extant bridge elements removed and then replaced with stronger, harder componentry that is up to code and will increase the safety, functionality and lifespan of the structure. The Option 3 works program will involve:

**Establishment**

- Establishment if site compound/works area
- Utility relocation (water, electricity &c)
- Installation of a temporary bridge crossing (to immediate south/upstream of extant bridge).

**Deconstruction**

- Removal of truss span super structure
- Removal of approach span superstructure
- Removal of truss span timber trestle piers
- Removal of approach span timber trestle piers
- Removal of approach span walers & cutting-off of timber piles
- Removal of timber abutments at both ends.

**Groundworks**

- Excavation of the land approach span footings & cutting-off of timber piles
- Excavation of abutment footings & cutting-off of timber piles.

**Construction**

- Driving-in of steel H-piles for new land approach span piers (in existing locations)
- Driving-in of steel H-piles for new abutments (in existing locations)
• Forming & pouring of reinforced concrete pile caps (around new steel piles) to form the land approach span foundations
• Forming & pouring of reinforced concrete abutments (around new steel piles) to form abutments
• Installation of new steel trestle piers to new approach span pile caps & existing river pile caps.
  *The steel trestles will retain the geometry of the current timber trestles*
• Installation of elastomeric bearings to the top of piers & abutments
• Installation of new steel girders to approach spans
• Forming & pouring new reinforced concrete deck for approach spans
• Fabrication of new timber trusses with steel cross girders & the lifting into position on the truss span
• Fabrication of the SLT (Stress Laminated Timber) deck & installation on the truss span
• Creation of deck joints & installation of AC wearing course.

**Completion**

• Switching of traffic to new bridge
• Removal of temporary crossing
• Landscaping.

Works phases are anticipated to be:

1. Construction temporary bridge
2. Removal existing bridge
3. Foundation work
4. Pier work
5. Construction of approach span
6. Construction of truss span
7. Roadworks & traffic switch

**Details of select modifications/fabrication**

• Replacement of timber ordnance fencing with safer, visually recessive steel traffic barriers
• Replacement of truss cross girders with steel members (rather than timber)
• Provision of Stress Laminated Timber (SLT) deck over the truss span (replacing deck planking)
• Replacement of deteriorated wrought iron elements (such as tension rods) with ductile steel
• Replacement of brittle cast iron shoes with ductile cast iron shoes (of equivalent dimensions)
- Replacement of timber abutments with reinforced concrete abutments (on driven steel piles)
- Replacement of timber piles under the land piers with steel piles & reinforced concrete pile caps
- Replacing of timber trestle piers with steel trestle piers (of comparable design)
- Provision of steel beam/reinforced concrete deck for the approach spans.

**Figure 47** presents the proposed site area.

**Figures 48 – 54** show details of the proposed bridge upgrade compared to the existing bridge.

**Figures 55 – 57** show details of the proposed temporary crossing.

A full set of current **concept design drawings** for the both the **bridge upgrade** and the **temporary crossing** accompany the REF.
Figure 47: PROPOSED SITE AREA (October 2018)

Image provided by GeoLINK
Figure 48: BRINER BRIDGE UPGRADE COMPARISON (ISOMETRIC VIEW)

RMS 2018
Figure 49: BRINER BRIDGE UPGRADE (PLAN)
RMS 2018

Proposed Bridge

Existing Bridge
Figure 50: BRINER BRIDGE UPGRADE (TRUSS SPAN SECTIONS)

RMS 2018
Figure 51: BRINER BRIDGE UPGRADE (PIER 3 & 4 UPGRADE DETAIL)

RMS 2018
Figure 52: BRINER BRIDGE UPGRADE (PIERS 1, 6, 7 & 8 UPGRADE DETAIL)

RMS 2018
Figure 53: BRINER BRIDGE UPGRADE (ABUTMENT)

RMS 2018

Existing Bridge

Proposed Bridge
Figure 54: BRINER BRIDGE UPGRADE (SAFETY BARRIER DESIGN) RMS 2018
Figure 55: TEMPORARY BRIDGE CROSSING (ARRANGEMENT) RMS 2018
Figure 57: TEMPORARY BRIDGE CROSSING (APPROACHES) RMS 2018
6 Impacts

6.1 Assessment

The following questions derive from the NSW Heritage Branch guideline document *Statements of Heritage Impact* and are the established means of assessing the impact of proposals on heritage items in NSW.

**What aspects of the proposal respect or enhance the heritage significance of Briner Bridge?**

The upgrade proposal will see Briner Bridge retained and is consistent with the *Timber Truss Bridge Overarching CMP* (2018) in the following ways:

- The bridge will be retained (policies 1 & 4)
- The significance of the bridge will be further acknowledged with application to have the bridge listed on the SHR on completion of the works program (policy 5)
- Use of the bridge as an operational vehicular thoroughfare will continue (policy 6)
- Works to upgrade bridge capacity will incorporate ‘new work’ that will be sympathetic to the overall design & form of the bridge & make use of contemporary design & modern materials (policy 8)
- The bridge setting will be returned to a pre-works state (or better) at completion (policy 10).

While the bridge will effectively be replaced, both its form (including its distinctive Dare trusses) and functionality, and the nature of its rural setting, will be endure. Furthermore, the use of modern materials to upgrade the capacity of the bridge, such as concrete and steel composite – which has historic precedent in the remediation of other significant RMS-controlled bridges – will ensure that the bridge survives into the future without the recurrent maintenance expenditure typically associated with full-timber truss bridges.

**What aspects of the proposal could detrimentally impact upon the heritage significance of Briner Bridge?**

The capacity upgrade of Briner Bridge will alter the bridge physically. Notable elements, including the abutments and trestles, will be replaced with concrete and concrete-steel composite respectively. The trusses too will be removed, strengthened and replaced. Changes to some lesser elements, including the timber ordnance fences, which will also be replaced with a metal barrier that meets modern safety standards, will also alter the bridge’s appearance.

That said, these alterations are in keeping with the overarching CMP and will ensure the survival of the bridge into the future in a form that is both recognisable and consistent with the past presentation of the structure. Importantly, the highly significant and defining Dare trusses will remain as operational components of the bridge, as opposed to non-functional decorative adornments, and their future protection will be aided by the new steel barrier fence.

In order to ameliorate the impact of any visual alterations to the bridge, a program of pre and post-works archival photographic recording is recommended as a means of capturing the bridge ‘before and after’ (refer recommendations).

The temporary crossing will be constructed in part where the former punt eastern approach was located. As mentioned previously there is no indication of any in situ or significant archaeology associated with the former punt on account of its ephemeral nature and the high level of impact to the locale, both at the time...
of bridge construction and from bridge, road and bank works hence. The erection of the temporary bridge will therefore have no impact on the overall heritage values of the bridge and its broader setting.

**Have more sympathetic bridge treatment solutions been considered? If so, why were they discounted?**

A recent options study for the bridge upgrade considered (and discounted) a number of bridge treatment options beyond the preferred option 3:

**Option 1: Leave the Bridge ‘as is’ (do nothing approach)**

The treatment option of least impact would be to leave the bridge as and where it is. This however is an unrealistic and undesirable option from both an operational and heritage point-of-view, as the bridge would continue to degrade, with both its viability and heritage value significantly reduced over time.

**Option 2: Restore Truss Span**

This option would have a moderate upfront cost and some project objectives would be met. However, the overall project objectives would not be met, as:

- the bridge would not be able to accommodate two lanes of traffic
- approach is not entirely consistent with RMS *Timber Truss Bridge Conservation Strategy*
- RMS will not meet its legal obligations for safety
- option does not meet community expectations
- ongoing maintenance costs higher than other options.

**Option 3: Restore Truss & Approach Spans (including traffic barrier) – Preferred Option**

This option has reduced bridge asset lifecycle costs and arguably meets all essential project objectives, because:

- option is broadly consistent with RMS *Timber Truss Bridge Conservation Strategy* (as the bridge, in a comparable though more durable form, will be retained).
- capacity/load requirements & bridge traffic barrier safety improved
- community expectations better met.

**6.2 Summary**

The capacity upgrade of Briner Bridge via option 3 will see much of the fabric of the bridge renewed. While this will alter the structure physically, it is consistent with the modern approach to timber truss bridge management as espoused in the NSW Heritage Office-endorsed, *Timber Truss Bridge Overarching CMP* (2018). Importantly, the recognizable heritage form of the bridge (including its iconic Dare trusses) will be retained, and survival and safe operation of the bridge well into the future will be assured.

Overall, the changes resultant of the capacity upgrade will not devalue the heritage significance of the bridge, nor deleteriously impact application to have the bridge listed in the SHR.
7 Consultation

Consolation with the NSW Office of Environment & Heritage (OEH) and the community was an important part of the works planning process and has been undertaken by the RMS Environmental team.

7.1 OEH

February 2018

A site meeting with OEH (Sarah-Jane Brazil & Gary Escort), occurred on 22nd February where the proposal design scope was discussed. OEH and RMS reviewed the Briner Bridge upgrade design plans. RMS highlighted the proposed changes to the bridge, which would include new land piers/foundations, steel beam approach spans, stress laminated timber (SLT) decking, larger section truss members, reinforced concrete abutments. RMS also discussed the proposal to construct a temporary crossing during the works to minimise disruption to the community.

March 2018

OEH provided clear direction in March 2018 to RMS regarding the Briner Bridge upgrade. OEH was presented with and agreed to the design. OEH specified that Briner Bridge should meet the requirements of RMS policies, procedures and priorities, Australian Standards and CMPs. Direction from OEH included:

- Community consultation to be captured in the SOHI
- SOHI to be prepared & submitted prior to construction of the new bridge
- CMP to be completed after the new bridge is built
- No further formal consultation required on the design
- Conflicting requirements to be assessed through the process of project development.

In addition to the above, monthly meetings between with RMS and OEH regarding the project have also occurred, as well as ad hoc impromptu phone calls discussing the design of the project. As recently as 12 October 2018, OEH confirmed in communications with the RMS team that design of the modern handrail/safety barrier was considered an appropriate modification commensurate with the upgrade.

7.2 Community

With respect to the community consultation process, this commenced some time ago and has included:

September 2016

Community update went out, which included consultation on heritage.

Monday 10 & Tuesday 11 October 2016

Community drop in sessions held on the above dates. Key messages related to retaining the key features of the bridge to maintain heritage significance. Feedback forms were collected by RMS. In general, the community was supportive (or neutral) towards the proposal, which was amended to reflect public feedback (including the addition of a temporary bridge to improve amenity during the upgrade process).

April 2017

Community update provided, presenting an overview of the project following consultation. The project website has also been updated periodically, when necessary, with project news and documents:

8. Recommendations

The following recommendations acknowledge:

- *Burra Charter & NSW Heritage Division guidelines & best practice*
- RMS cultural heritage guidelines, operational requirements & procedures

It is recommended that:

1. As per policy 11 of RMS’ *Timber Truss Bridge Overarching CMP* (2018), the bridge and its setting should be subject to a pre and post-works archival photographic recording. The recording should be undertaken by a suitably qualified professional & meet NSW Heritage Office standards as per:

   *NSW Heritage Office. 2005. Photographic Recording of Heritage Items using Film or Digital Capture.*

   When the archival record is complete, it should be made available to the Clarence River Historical Society; Clarence Valley Council & Library (Local History Collection) and NSW Heritage Office.

Furthermore, it is recommended that:

2. RMS implement its *Recycling of Used Bridge Timbers Policy*, if when dismantling the bridge, RMS or its contractors are able to recover timber suitable for research or reuse purposes.

3. Application to the NSW Heritage Office for the SHR listing of Briner Bridge be undertaken as planned and as recommended in the *Briner Bridge Heritage Assessment* (Futurepast 2014).

   *Updated listing information should acknowledge the history & original form of the bridge but be amended to reflect alterations associated with the proposed program of works (if approved). The RMS s170 listing for the site should also be altered accordingly.*

4. Although any remains associated with the former 1880s ferryman’s cottage/hut are likely to be minimal and are outside of the immediate works impact area, an exclusion zone and appropriate buffer should be established at the approximate location of the structure prior to the commencement of any works (as per the overlay presented at figure 58).

5. Should unexpected items of potential historical archaeological value be unearthed during the upgrade process, RMS’ *Standard Management Procedure: Unexpected Heritage Items* (2015) should be instigated and adhered to as a means of appropriately addressing such finds.

*Note:*

*The reader is reminded that any potential subsurface material associated with the pre-bridge punt is likely to be ephemeral, disturbed by periodic flooding, and impacted by the construction and ongoing maintenance activities associated with the bridge that replaced it. As such, the punt site (including the*
former approach alignments) has no potential research value and requires no additional archaeological oversight or intervention as part of the upgrade project.

Figure 58: SATELLITE IMAGE COMPOSITE PLAN

Google Earth Pro image overlayed with best-fit/rubber-sheet 1907 Site Plan (B+W). Temporary bridge location (denoted in yellow); Indicative cottage exclusion zone (shaded in red)
9. References


Fraser, D. 1985. *Timber Bridges of NSW*.


NSW Department of Main Roads. c.1968. All about Bridges. Dept. of Main Roads, Sydney. SLNSW ML Q624.2/8.


NSW Department of Planning. 1993a. Historical Archaeological Sites: Investigation & Conservation Guidelines. NSW Department of Planning in association with the Heritage Council of NSW.

NSW Department of Planning. 1993b. Historical Archaeological Excavations: A Code of Practice. NSW Department of Planning in association with the Heritage Council of NSW.

NSW Department of Planning (Kass). 1989a. Regional History of the North Coast: A Discussion paper on Recent Settlement. Report based on a study by Terry Kass for the NSW Department of Planning, Northern Regional Office, Grafton.

NSW Department of Planning (Kass). 1989b. Aboriginal Heritage of the North Coast: A Discussion Paper. NSW Department of Planning, Northern Regional Office, Grafton.


NSW RTA s170 Heritage & Conservation Register.

NSW RTA. 2006c. RTA Thematic History. Report prepared by the RTA.

NSW RTA. 2006d. Bridge Types in NSW Historical Overviews. Report prepared by the RTA.

NSW RTA. 2004. RTA Heritage Guidelines. Report prepared by the RTA.


10. Attachments
A1. SHI Listing
Briner Bridge over Upper Coldstream River

Item details

Name of item: Briner Bridge over Upper Coldstream River
Other name/s: RTA Bridge No. 2680
Type of item: Built
Group/Collection: Transport - Land
Category: Road Bridge
Primary address: Local road, Ulmarra, Tucabia, NSW 2462
Local govt. area: Clarence Valley

All addresses

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Statement of significance:

The Briner bridge is a Dare type timber truss bridge, and was completed in 1908. In 1998 it was in good condition.

As a timber truss road bridge, it has strong associations with the expansion of the road network and economic activity throughout NSW, and Harvey Dare, the designer of this type of truss.

Dare trusses were fifth in the five stage design evolution of NSW timber truss road bridges. They were similar to Allan trusses, but contain improvements which make them stronger and easier to maintain. This engineering enhancement represents a significant evolution of the design of timber truss bridges, and gives Dare trusses some technical significance.

In 1998 there were 27 surviving Dare trusses in NSW of the 40 built, and 82 timber truss road bridges survive from the over 400 built.

The Briner bridge is a representative example of Dare timber truss road bridges, and is assessed as being Regionally significant, primarily on the basis of its technical and
historical significance.

Date significance updated: 28 Jan 99

Note: The State Heritage Inventory provides information about heritage items listed by local and State government agencies. The State Heritage Inventory is continually being updated by local and State agencies as new information becomes available. Read the OEH copyright and disclaimer.

Description

Designer/Maker: Harvey Dare

Builder/Maker: J McPhillips, Coffs Harbour

Physical description: Briner bridge is a Dare type timber truss road bridge. It has a single timber truss span of 27.7m (91ft). There are 5 timber approach spans at one end and 3 at the other giving the bridge an overall length of 114.6m (375ft).

The bridge super structure is supported by timber trestles and provides a single lane carriage way with a minimum width of 4.6m. A timber post and rail guard rail extends the full length of the bridge.

Physical condition and/or Archaeological potential: Original condition assessment: 'Good' (Last updated: 22/10/1998.)

2007-08 condition update: 'Good.' (Last updated: 17/4/09.)

Date condition updated: 17 Apr 09

Current use: Road bridge

Former use: Road bridge

History

Historical notes: The Briner bridge is a Dare type timber truss bridge, and was completed in 1908.

Timber truss road bridges have played a significant role in the expansion and improvement of the NSW road network. Prior to the bridges being built, river crossings were often dangerous in times of rain, which caused bulk freight movement to be prohibitively expensive for most agricultural and mining produce. Only the high priced wool clip of the time was able to carry the costs and inconvenience imposed by the generally inadequate river crossings that often existed prior to the trusses construction.

Timber truss bridges were preferred by the Public Works Department from the mid 19th to the early 20th century because they were relatively cheap to construct, and used mostly local materials. The financially troubled governments of the day applied pressure to the Public Works Department to produce as much road and bridge work for as little cost as possible, using local materials. This condition effectively prohibited the use of iron and steel, as these, prior to the construction of the steel works at Newcastle in the early 20th century, had to be imported from England.

Harvey Dare, the designer of Dare truss and other bridges, was a leading engineer in the Public Works Department, and a prominent figure in early 20th century NSW.

Timber truss bridges, and timber bridges generally were so common that NSW was
known to travellers as the "timber bridge state".

### Historic themes

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### Assessment of significance

**SHR Criteria a)**

(Historical significance)

Through the bridge's association with the expansion of the NSW road network, its ability to demonstrate historically important concepts such as the gradual acceptance of NSW people of American design ideas, and its association with Harvey Dare, it has historical significance.

**SHR Criteria c)**

(Aesthetic significance)

The bridge exhibits the technical excellence of its design, as all of the structural detail is clearly visible. In the context of its landscape it is visually attractive. As such, the bridge has a small amount of aesthetic significance.

**SHR Criteria d)**

(Social significance)

The Briner bridge is valued by the people of the Grafton district.

Timber truss bridges are prominent to road travellers, and NSW has in the past been referred to as the 'timber truss bridge state'. Through this, the complete set of bridges gain some social significance, as they could be said to be held in reasonable esteem by many travellers in NSW.

**SHR Criteria e)**

(Research potential)

The bridge has technical significance because it is a Dare truss, is representative of some major technical developments that were made in timber truss design by the Public Works Department.

**SHR Criteria f)**

(Rarity)

Rare - In 1998 there were 27 surviving Dare trusses in NSW of the 40 built, and 82 timber truss road bridges survive from the over 400 built.

**SHR Criteria g)**

(Representativeness)

Representative of Dare truss bridges

**Integrity/Intactness:**

Intact

**Assessment criteria:**

Items are assessed against the [State Heritage Register (SHR) Criteria](#) to determine the level of significance. Refer to the Listings below for the level of statutory protection.

### Recommended management:

continued sympathetic management

### Listings

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69 | Briner Bridge upgrade SoHI
Study details

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Note: internet links may be to web pages, documents or images.

(Click on thumbnail for full size image and image details)

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**Database number:** 4300158

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