BATHURST REGIONAL COUNCIL

Denison Bridge Upgrade

STATEMENT OF HERITAGE IMPACT

Report No: 220228_SoHI
Rev: 001D
1 March 2024

Premise

DOCUMENT AUTHORISATION					
Revision	**Revision Date**	**Proposal Details**			
A	21/12/23	Internal review			
B	22/12/23	For issue to Heritage NSW			
C	10/02/24	Revised draft post Heritage Council meeting			
D	01/03/24	Final			
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1.1 Introduction

Premise Australia Pty Ltd (Premise) have been engaged by Bathurst Regional Council (BRC) to prepare a Statement of Heritage Impact (SoHI) to support an update/addendum to a Review of Environmental Factors (REF) in relation to the Bathurst Water Harvesting Scheme (WHS).

The proposed development is subject to a Heritage NSW Section 60 approval as works will be undertaken on a State Heritage Listed Item SHR ID#01960 'Denison Bridge'. The development is located within the Bathurst Heritage Conservation Area (BHCA).

The proposed works involve installation of a pipe on the western (downstream) elevation of the Denison Bridge to service critical water infrastructure for the city of Bathurst as part of the Bathurst WHS.

1.1.1 AUTHORSHIP AND ACKNOWLEDGMENT

This report was prepared by Tamera Rudd (Graduate Archaeologist, Premise) and Latisha Ryall (Archaeologist, Premise). Management review was undertaken by David Walker (General Manager).

A site inspection was conducted on 7 December 2023 by Tamera Rudd and Latisha Ryall.

Consultation with the Heritage Council of NSW has also been undertaken for the project.

1.1.2 REPORT METHODOLOGY

The objective of the SoHI is to assess the heritage impacts of the proposed works on the state heritage listed Denison Bridge and on the surrounding heritage landscape.

The report has been prepared in accordance with the NSW Department of Planning and Environment (NSWDPE) *Guidelines for preparing a statement of heritage impact 2023* and the *Assessing heritage significance 2023* guidelines. The report also incorporates the best practices outlined in the Burra Charter (Australia ICOMOS 2013).

1.1.3 REPORT LIMITATIONS

This report is limited to the assessment of significance and heritage impacts of the site only and does not address archaeological impacts.

The SoHI does not address Aboriginal cultural heritage.

It is important to note also that the State Heritage Inventory (SHI) contains three separate listings for the Denison Bridge. These include:

- 'Denison Bridge' local government (LEP #I53).
- 'Denison Bridge' Heritage NSW (SHR #01665).
- 'Denison Bridge over Macquarie River at Bathurst (Archived)' state government (heritage study).

The SHI Heritage NSW (SHR#01665) has been consulted for the purposes of this assessment.

1.2 Site Description

1.2.1 HERITAGE ITEM

The site encompasses State Heritage Listed Item (SHR ID#01960) 'Denison Bridge', which is situated on Bridge Street in the suburb of Kelso, approximately 2 kilometres (km) south of the Bathurst CBD. Access to the Denison Bridge is granted from the south via Kendall Avenue and Bridge Street and from the north, via River Road and Lions Club Drive.

The Denison Bridge is a wrought iron Pratt truss bridge which was constructed over the Macquarie River in 1870. The bridge is divided into three spans which are supported by large concrete piers or pylons. There are nine spans in total including three timber spans of 6.7m, three wrought iron spans of 34, 34.5 and 34m and another three timber spans of 6.7, totalling a total bridge length of 143.5m.

The bridge is an American Pratt truss design type and consists of wrought iron pony trusses. There are four pairs of cast iron cylinders (1.83m in diameter) supporting the bridge with wrought iron crossed rods. Timber approach spans are located underneath the bridge made of slab abutments, as well as timber supports made of large trestle frames, cross braced.

There are ten supported, panel Pratt style trusses which have horizontal I-sections from the upper chords which slope to the diagonals at the end, both of which have flat metal strips to help ease any tension. There are metal stringers on the metal cross girders and the piers consists of two metal cylinders of the same dimension and fabric.

Several service pipes are supported off the Denison Bridge on both the eastern and western facades, extending the length of the bridge. . On the upstream side of the bridge (eastern side) there are three sets of service pipes which run along the side of the bridge to the opposite side of the river. Two of these pipes are aligned above the timber beams while one is positioned below. On the downstream side (western side) of the bridge, a large service pipes is located which extends the length of the structure. This pipe is supported by three concrete structures and a metal beam. A second pipe is located below this which runs into the ground. On the eastern side of the Denison Bridge, a number of cement structures and metal beams have been constructed to support the service pipes. The pipe on the upstream side of the bridge meanders underneath the bridge at the eastern side and enters subsurface at ground level, the later section of the pipe is red in colour.

These service pipes and associated structures are not original fabric and were added to the Denison Bridge post construction from the 1960s onwards (**Section 3.2.4**) .

The deck of the bridge was originally made of wood panels however is now covered in bitumen. There are eight steel lamp posts positioned along the deck of the bridge on both the east and western sides which are black in colour. A metal fence (green in colour) has been constructed around the internal deck, most likely at the time the bridge was transformed into a pedestrian bridge. One interpretation panel is located on the western (downstream facing) side of the bridge which depicts a photograph from c.1955 of individuals swimming at the beach along the Macquarie River. The original PN Russell & Co makers plate is located on an iron truss on the downstream side of the bridge (**Figure 24**). At the entrance/egress point of the bridge, four posts have been installed (green in colour), approximately one metre in height which restrict vehicle access along the bridge.

The surrounding area consists of a number of walking paths which have been constructed along the Macquarie River and link to the bridge, emphasising the areas use for recreational activities. It was noted during the site inspection that the context on the upstream (eastern) side of the bridge was less effected by recent alterations and additions to the bridge and nearby areas than the downstream (western) side was. The introduction of the large cement structures on both the southern and northern banks of the of the river (along the downstream side of the bridge) have had the most prominent impact on the context of the bridge, particularly views of the bridge from this angle. While service pipes have been added to the bridge on the upstream side, the effects are more prominent on the downstream.

The site is shown in **Figure 1.**

Figure 1 – The Site

1.2.2 HERITAGE LISTINGS

In NSW cultural heritage is managed under a three-tiered system: National, State and Local heritage. Certain sites and items may require management under all three levels or a combination of state and local or local only. The assessment area falls under the Local Heritage tier.

The legislative framework relevant to the study area is discussed below. The works will be assessed under Division 4.7 of the *Environmental Planning and Assessment Act 1979*.

Heritage listed items relevant to the study area were identified through a search of the following relevant state and federal statutory and non-statutory heritage registers on 1 December 2023:

- World, Commonwealth and National Heritage List;
- State Heritage Register (SHR) or the State Heritage Inventory (SHI) database;
- Section 170 Heritage and Conservation Registers;
- Bathurst Regional Local Environmental Plan 2014;
- National Trust Register; and
- Register of the National Estate (the Australian Heritage Database).

Statutory heritage listing relevant to the site are shown in **Table 1**.

Table 1 – Statutory heritage listings

Listing Type	Item Name and Document Details	Listing Number
State heritage register	*Denison Bridge*	SHR #01665
Local heritage item	*Denison Bridge*	LEP #I53
Local heritage conservation area	Bathurst Heritage Conservation Area	

The site is also listed on two non-statutory registers:

- The study area is listed on the Australian Heritage Database (formerly the Register of the National Estate). The Denison Bridge was listed on the RNE on 21 March 1978 (place ID: 15953) and is recognised for its technical accomplishment and style; and
- The study area is listed on the National Trust of Australia Register (listing ID # 870).

Nearby heritage listed items and the BHCA are shown in **Figure 2**.

1.2.3 SITE AND ITS CONTEXT

The site is located in Bathurst, in the Central Tablelands region of New South Wales. The site is located within the Bathurst Local Government Area (LGA) across the Counties of Bathurst and Roxburgh and the Parishes of Bathurst and Kelso. The Macquarie River meanders north to south through the town of Bathurst and can be crossed (within the Bathurst region) from the Denison Bridge (now a pedestrian bridge), Evans Bridge (four-lane vehicular bridge), the Old Bathurst Railway Bridge (railway access only) and the Gordon Edgell Bridge (vehicular and pedestrian access).

The site refers to the Denison Bridge, which is situated over the Macquarie River, along Bridge Street. Denison Bridge is located in the suburb of Kelso and can be accessed from the north via River Road and Lions Club Drive and from the south via Kendall Avenue which traverses onto Bridge Street. Land in surrounding areas is zoned predominately as RE1: Public Recreation under the BRLEP and includes sporting field complexes, parks and the showgrounds. The Macquarie River is utilised for a number of recreational activities also, including fishing.

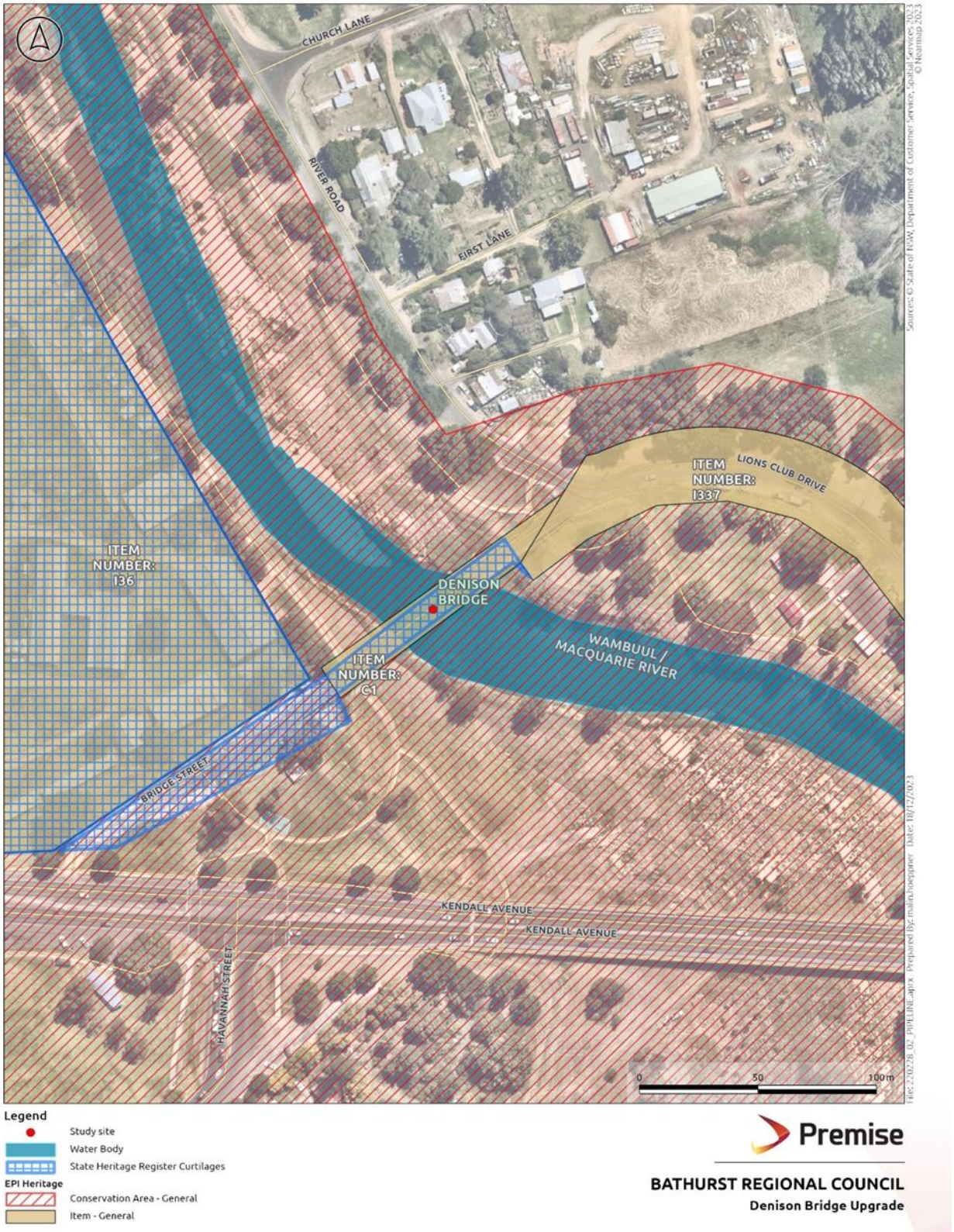
There are several items of heritage significance located in the vicinity of the Denison Bridge. The closest item is the Bathurst Showground, which is located approximately 250m northwest of the bridge and is listed as an item of state heritage significance under the SHR (SHR #01960). The Bathurst Showground complex includes a gravelled racetrack, grassed areas, with thirty-five buildings and plantings across the curtilage.

An associated heritage item related to the broader proposed pipeline works is the Waterworks and Bathurst Pumping Station (Item #I147), which is located approximately 1.8km south east from the Denison Bridge.

1.2.4 THE PROPOSED WORKS AREA

The plans provided at **Appendix A** provide a clear summary of the works proposed.

Figure 2 – Nearby Heritage Items



1.4 Site Summary History

1.4.1.1 Local Context

Bathurst was the first major inland European settlement established west of the divide after the crossing of the Blue Mountains in 1813 by explorers William Charles Wentworth, William Lawson and Gregory Blaxland. Exploration routes soon became roads providing easy access to new areas. After new areas had been surveyed by George Evans, soldier William Cox was commissioned by Governor Lachlan Macquarie to build a twelve-foot-wide road from Emu Plains to the Macquarie River via the Blue Mountains. William Cox also received the first land grant of 2,000 acres (or, 809 hectares) on land west of the mountains.[1] Governor Lachlan Macquarie established the town of Bathurst in 1815 with his exploration and spread of European settlement across Australia becoming one of his major achievements throughout his life. [2]

Bathurst was initially planned as an administrative centre for the expansion of the colony, to service government officials, soldiers and convicts who were stationed on the lands west of the Blue Mountains.[3] However, the major influx of pastoralists to the area created conflict with the traditional Wiradjuri people of the region, which resulted in armed resistance between the two groups, lasting for over a decade.

By 1817, explorer William Lawson also occupied land in the Bathurst region and in 1818 ten small land grants (of 50 acres each) were issued to ten settlers, located on the eastern bank of the Macquarie River, granted by Governor Macquarie. These first ten settlers of Bathurst were William Lee, Richard Mills, Thomas Kite, Thomas Swanbrooke, George Cheshire, John Abbott, John Blackman, James Blackman, John Neville and John Godden (as stated above, William Cox was granted 2000 acres of land previous to this, however, he did not live in Bathurst, only grazed sheep on these lands).[4] These grants were for the purpose of wheat, seed and cattle farming on the land.[5] Government officials settled on the opposite side of the river (western bank of the Macquarie River).[6] The farms owned by John Abbott and John Blackman were located adjacent to the Denison Bridge, on the eastern bank of the Macquarie River.

Larger land grants were acquired in the area as early as the 1820s as Governor Macquarie pushed for increased settlement by the early pioneers, with large areas overrun by stockmen and later permanent settlers.

By the 1820s, several large government buildings were erected in the town including brick barracks for soldiers, a store and granary and a large house for the commandment.[7] No records are available for other built structures at this time. Between 1820 -1840, little development occurred in the area as a result of climatic changes, emergence of bushrangers and continuing conflict with the Wiradjuri people, however the population of Bathurst did increase.[8]

In 1833, the first allotments in the town of Bathurst were sold and the first town plan was developed. The town plan centred on Seymour, Keppel, George, Ranken and Howick Streets and a police barracks, hospital, market, courthouse and gaol were also established during this time.[9]

[1] National Museum of Australia, Founding of Bathurst
[2] Ibid.
[3] Ibid.
[4] EMM, 2022: 29
[5] EMM, 2022: 29
[6] Barker, 1998
[7] Monitor Heritage Consultants, 2020: 8
[8] Ibid.
[9] Ibid.

The town grew steadily over the years and following the gold rush boom at nearby Ophir in the 1850s, many substandard structures for residential dwellings, outbuildings and small business were built, whilst the public buildings were constructed to a better standard.[10]

1.4.2 THE STUDY AREA

Despite the pace at which Bathurst was developing, a bridge was not constructed over the Macquarie River until 1856. The inability to cross over the river posed a number of issues for the settlers of the area who had been waiting for over forty years for a bridge to be constructed.[11] In February 1854, a public meeting took place in Bathurst to discuss the issue; and in March, the Bathurst Suspension Bridge Company was announced with a proposed capital of £10,000. At this time a Government officer was sent to Bathurst to choose a site along the Macquarie River to construct the bridge. The design of the bridge was based off the Yass bridge which had been recently constructed in NSW. By November 1854, carpenters arrived from Yass to begin the planning and construction of the bridge. [12]

In 1855, the construction of a long timber bridge with five laminated arches began. The bridge was reported to have costed £11,000 rather than £10,000 a previously reported. The bridge was designed by William Weaver and supervised by William Christofer Bennett from the Colonial Architects Department. The bridge was subsequently constructed under the supervision of Weaver's 'Clerk of Works' Mr. William Downey.

On the 1 January 1856, Governor Sir William Denison opened the bridge to the public. The event was celebrated by over 3,000 people and included a celebratory banquet with a roasted bullock.[13] The bridge was hereafter named the 'Denison Bridge' after Sir William Denison. The community of Bathurst were so impressed and pleased with the new bridge, that individuals donated money for a testimonial and present for William Downey who constructed the bridge. .

Eleven days after the Denison Bridge was opened, a second bridge was opened approximately 1 km downstream by George Ranken, a local entrepreneur.[14] This bridge was known as the Eglinton Bridge or Rankin's Bridge. However, in 1867, a flood swept through Bathurst which destroyed the Denison Bridge, its debris flowing down the Macquarie River, and destroying the Eglinton Bridge also. The destruction of the towns' only two bridges, left the community with limited means of crossing the river once more (only by ferry or ford). A temporary wooden bridge was placed near the remains of the original Denison Bridge.

Plans for a new bridge begun in late 1867 (just after the flood event) by William Christopher Bennett. The new Denison Bridge was constructed between 1869 to 1870 and was located 100 m downstream from the original bridge site and a new road alignment was created to allow access to the new bridge.[15] This bridge was designed by Gustavus Alphonse Morrell and William Bennett and constructed by Peter Nicol Russell from P.N Russell & Co. The bridge was constructed for £18,818, which consisted of iron which was manufactured in the P.N Russell & Co foundry in Sydney.

[10] Monitor Heritage Consultants, 2020: 8
[11] Engineering Heritage Committee, 1994: 11
[12] Ibid.
[13] SHI, 2003: https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5051846
[14] Dunn for the State Library of NSW Sydney Dictionary, 2012
[15] Ibid.

Figure 3 – Denison Bridge Bathurst, NSW c.1872 (source: Trove)

1.4.2.1 GUSTAVUS ALPHONSE MORRELL

Gustavus Alphonse Morrell moved to Australia in 1863 and worked as a design engineer for defence installations.[16] This involved planning of the varying defence works in Sydney, Newcastle and Botany under Sir William Jervois and Major General Scratchley.[17] In 1867, Morrell was appointed as the Assistant Engineer to Commissioner Bennett for the Department of Roads. While he was working as an Assistant Engineer, Morrell designed the Denison Bridge, with his signature appearing on the original bridge drawings.

Morrell established his own business in 1879 with John Edward Kemp, as a consulting engineer and architect. During this period, he designed a number of significant buildings across the colony, including the Mutual Fire Assurance Company's office, Circular Quay, Her Majesty's Theatre in Pitt Street, Sydney and the Swifts Mansion in Darlington Point.[18] Morrell also oversaw a Royal Commission into the conditions of various railway bridges across the colony.

Due to his achievements and successes throughout his career, Morrell was elected as one of the founding members of the Engineering Association of NSW which was established on the 25 September 1870.

[16] SHI, 2003: https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5051846
[17] Engineering Heritage Committee, 1994: 25
[18] State Library of NSW Sydney Dictionary, n.d.

1.4.2.2 WILLIAM CHRISTOPHER BENNETT

William Christopher Bennett (1824 - 1889) was and engineer and surveyor for a number of railways and drainage works, whilst also working on border surveys in Ireland prior to 1852 where he then moved to South America.[19]

In South America, Bennett explored the possibility of a canal link being introduced between the Magdalena River with Bogota. Bennett then moved to England from Cambodia, where he planned an embankment for the river Thames which did not go ahead, and instead Bennett moved back to Ireland to continue to work with railways. In 1853, Bennett once more went on an expedition of Latin America and soon returned back to England. In 1854, Bennett went to New Zealand in search of work, however, could not find any and arrived in Sydney in early 1855.

Upon Bennetts arrival to Sydney, he met Sir Thomas Mitchell and accepted a position in the Survey Department and nine months later, became an assistant engineer on sewage works, under Edward Bell. In 1857, Bennet was in charge of the railway extension in Campbeltown. In 1858, Bennett was made the assistant engineer of the main roads where he was worked on damaged roads and bridges. In 1859, Bennett became an engineer for the Department of Roads (which he was a founding member of). Bennett was in charge of a number of Commissions into water supply in sewage in Sydney and provided advice on a number of railways across NSW.[20]

Bennett became the Commissioner and Engineer for Roads and soon initiated plans for the new Denison Bridge shortly after the flood event destroyed the original. Bennett's signature is also on the drawings for the Denison Bridge (alongside Morrells), and it was Bennett's decision to construct a bridge that was of a high technical level but also economically beneficial to the community by ensuring it did not wash away in another flood event.

1.4.2.3 PN RUSSELL & CO

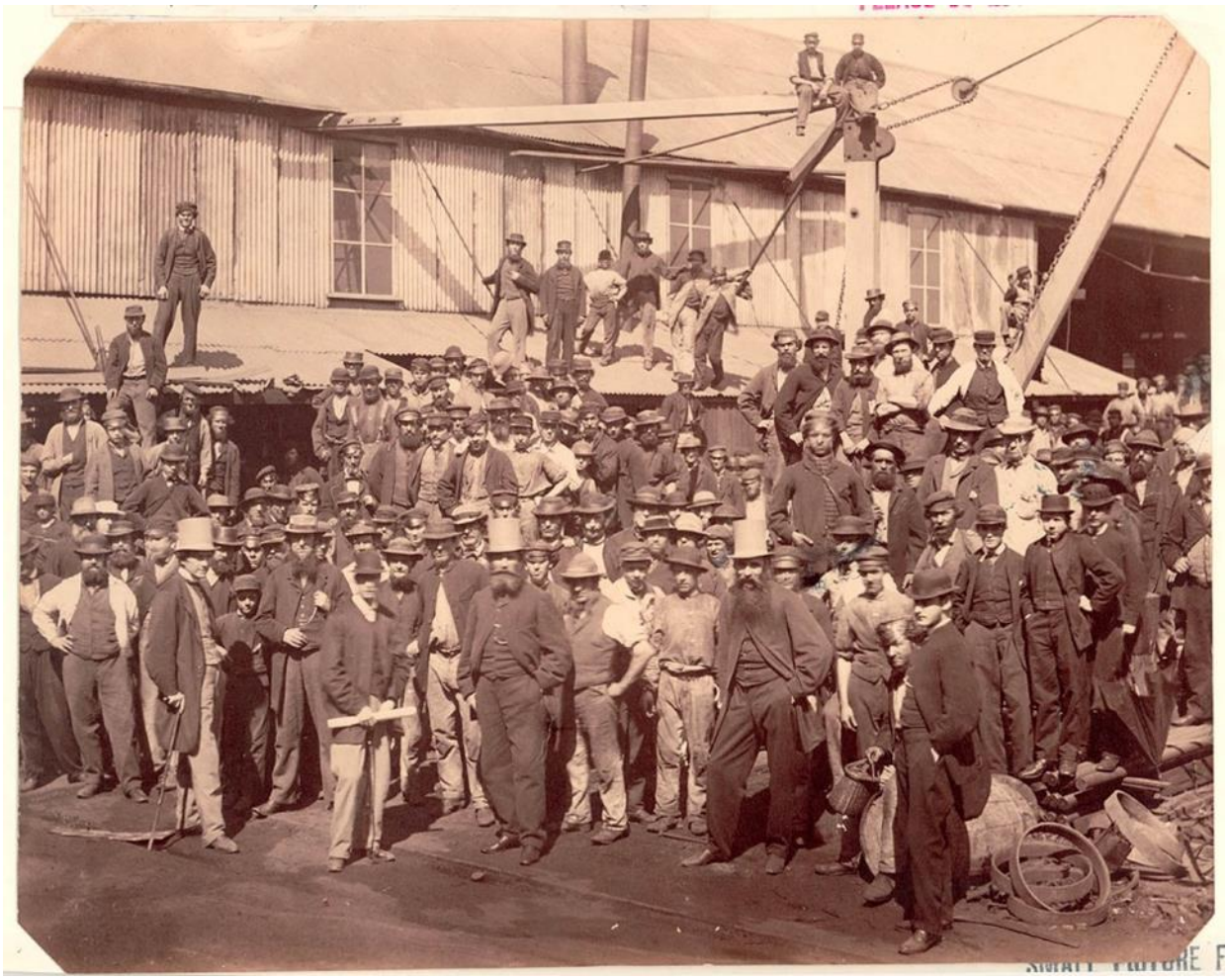
In 1832, Peter Nicol Russell (1816 – 1905), his father Robert Russell, and brothers Robert Jnr, Peter, George and John moved from England to Hobart, Tasmania, and opened a foundry and engineering business. As the settlement of Hobart was small, the business was not able to grow as speedily as the family would have liked and so, in 1838, they moved to Sydney, New South Wales. The family re-established their company in Sydney and named it 'Russell Bros' following their fathers' retirement. At their foundry, they manufactured iron work and sold imported machinery (including gas fittings, and steam engines from Scotland).[21] The company slowly expanded and in 1842, Peter Russell purchased a second foundry in George Street (without the support of his two brothers). Here, Peter worked on casting iron and brass into kitchen ranges, hot plates, parlour grates, balcony and tomb railings, stairs and palisades. At this time, the original foundry (now Russell & Co) which was run by Robert Jnr and John, also expanded into shipbuilding. However, in 1843, Russell & Co went into insolvency and shut down. Robert and John then joined Peter at his foundry and the fourth brother, George, operated the marine engineering works shipyard in Sussex Street, Sydney (referred to as George Russell & Co). In 1855, George Russell & Co was absorbed by PN Russell & Co who was thereafter run by all Russell brothers (aside from Robert who died in 1949) and JW Dunlop who was the company's foreman.

[19] Engineering Heritage Committee, 1994: 18
[20] Ibid.
[21] Dunn for the State Library of NSW Sydney Dictionary, 2012

PN Russell & Co operated as a foundry and an importing and exporting business. Their site in Darling Harbour became one of the largest engineering facilities in Australia and manufactured rail cars, rolling stock, road and railway brides, columns and ornamental architectural iron work, steam dredges, engines, gun boats for New Zealand and also crushed batteries for gravel and mining activities.[22] The company closed down in 1875 due to industrial unrest and a division between the owners of the company. At this time, the company had 1,000 staff and had a reported capital of £250,000.

Peter Russell donated £50,000 to the University of Sydney in 1895 (and a second donation in 1904) to endow the School of Engineering which was soon renamed the Peter Nicol Russell School of Engineering. Peter was also one of the founding members of the Engineering Association of NSW, alongside Gustavus Alphonse Morrell.

Figure 4 – The PN Russel & Co (source: State Library of NSW)[23]



[22] Ibid.
[23] State Library of NSW (n.d.) [Assembled workmen, P.N. Russell & Co., engineers & iron founders]

Figure 5 – Markers Plate on the Denison Bridge (source: Engineers Australia)

1.4.2.4 THE DENISON BRIDGE

After completion of the new structure in 1870, The Denison Bridge was officially opened by the Governor, who at this time, was the Earl of Belmore. The bridge opened one year after the death of Sir William Denison however, the bridge retained its original name, 'The Denison Bridge'. The establishment of a second bridge was necessary for the continued access and easy communication with nearby towns within the colony.

During the late 1800s, developments, including bridges, were heavily influenced by British technologies.[24] This bridge was the first America Pratt truss bridge constructed in New South Wales and emphasises an open design and construction which allowed for easy maintenance. This ability to easily maintain the bridge is likely part of the reason the Denison Bridge could carry traffic for over 130 years (and 153 years for pedestrians).[25]

The bridge is 337 feet long and consisted of three openings of approximately 100 feet each. The bridge was supported by cast iron piers which were formed of 6 feet cylinders bolted together, forming long pillars (as was the standard practice at the time, and for the thirty years following). Each pillar was filled with brick and cement to support a capstone at the top.[26] The bridge consists of six timber beam approach units with a 6.7m (or 22 foot). There are three iron trusses on the bridge, two of which span 33.82m (111 foot) and the third, 34.44m (113 foot).[27] The original deck of the bridge was constructed of timber.

[24] Engineers Australia, n.d.
[25] Ibid.
[26] Illustrated Australian News for Home Readers, 1872: 209
[27] Engineering Heritage Committee, 1994: 15

Following the construction of the Denison Bridge, the suburb of Kelso located on the eastern bank of the Macquarie River began to grow throughout the 19th and 20th centuries. This area was dominated by market gardens and some small pastoral holdings, which helped to support the towns commercial centre over this period. [28]

Footways were incorporated into the original design of the Denison Bridge, however, were not built when the bridge was constructed. In 1950, the Department of Main Roads installed a steel footbridge on the upstream side of the bridge. [29]

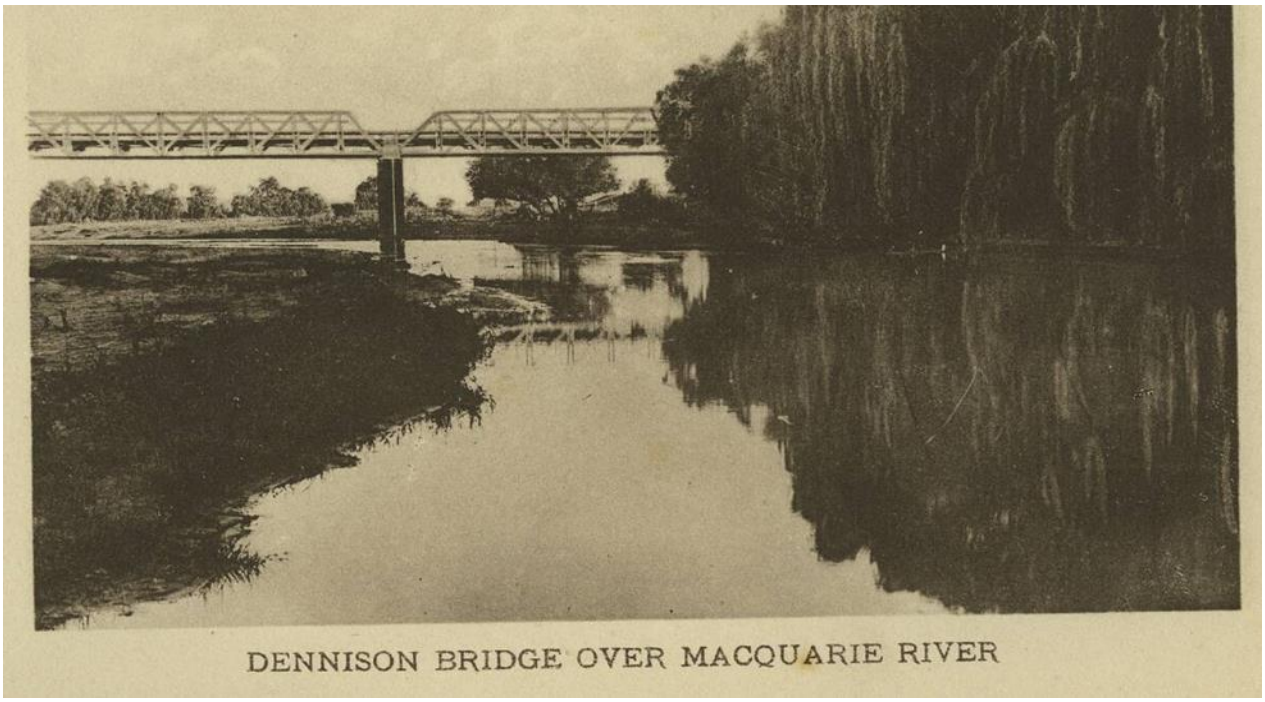
As per government policies at the time, materials used for the construction of the Denison Bridge were sourced from local firms to reduce the cost of imports. Iron bars were supplied by the Fitzroy Iron Works who were based in Mittagong, which were then formed into structural shapes at the Pyrmont Rolling Mills and the erection of the bridge. Construction of the bridge was conducted by PN Russell & Co who were a Sydney based company. [30]

In 1963, a 300 mm diameter sewer pipeline was installed on the western side of the Denison Bridge. Electric mains and cables were also installed, and the bridge soon evolved into a significant carrier of utility between Bathurst and Kelso. Between 1964 to 1965, further alterations were made to the bridge. During this period, twenty-three of the stringers on the bridge were replaced and six piles were added under the timber approach spans. The expansion bearings were repaired while one of the girders were also replaced. Six of the round timber girders were also renewed while the timber decking was replaced with high tensile bolts and the deck was emulsion sprayed and grit covered. In 1981, a concrete deck was then introduced. [31]

In March 1990, the blade of a road-hauled bulldozer damaged one of the trusses of the Denison Bridge. Eleven iron truss members which were rivetted tightly between nearby iron members were damaged in the accident and were removed.[32] Repair works were undertaken by the Lithgow Division Department of Roads and Traffic, supervised by Foreman Garry Dennis. Seven of these members were replaced with fabricated plates or angles while all new members were bolted into place with high tensile bolts. Lattice type bracing pieces were also damaged in the accident and replaced with fabricated pieces, bolted to new members. All new replacement members were fabricated locally by Carter Bros. Engineering of Kelso (instead of being transported from Sydney as most of the original materials had been). The new sections were painted in the original colour of the bridge and the Denison Bridge opened to the public nine days after the incident without any restrictions.[33] This emphasises the robustness of Morrell's bridge design and PN Russell & Co's construction.[34]

[28] EMM, 2022: 30
[29] SHI, 2003: https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5051846
[30] Engineering Heritage Committee, 1994: 15
[31] SHI, 2003: https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5051846
[32] Engineering Heritage Committee, 1994: 52
[33] Ibid.
[34] Engineering Heritage Committee, 1994: 16

Figure 6 – Denison Bridge Postcard (source: private collection)[35]



In 1992, the Denison Bridge becomes redundant as a vehicular bridge due to the construction of a new concrete, four-lane bridge located upstream (Evans Bridge). Up until this time, the Denison Bridge was the main entrance into Bathurst from Sydney (by road), which evidently had a major impact on the economy and development of the town over the years. Hereafter, the Denison Bridge ceased its use as a road bridge and was adapted as a footbridge.

In 2009, a second 300 mm sewer main was installed on the eastern elevation of the Denison Bridge. This pipeline was secured to the walkway and metal framework (which was installed in the 1950s) to ensure it did not impact upon the significant fabric of the bridge. The colour of the pipe also remained complimentary to those on the bridge. This water main replaced a 300mm raising main which was located under the 300mm water main on the western side of the bridge which had become disused.[36]

In 2013, an emergency sewer pipe was also installed on the Denison Bridge which was recommended by the Bathurst Regional Council's Heritage Advisor, to be basic in colour (i.e. a grey to black or natural steel colour).[37]

Today, the Denison Bridge remains the second oldest metal truss bridge in all of NSW (second to the Prince Alfred Bridge in Gundagai which was constructed in 1867). The Denison Bridge has retained almost all original fabric and remains in excellent condition. Overall, the purpose and use of the Denison Bridge has evolved over time with the installation of service pipes. The Denison Bridge began as an essential piece of infrastructure which allowed for transport from one side of the Macquarie River to the other, and in the 1960s, became an essential piece of infrastructure for the transportation of utilities across the Bathurst region.

[35] McRae, accessed from the Western Advocate, 2019: https://www.westernadvocate.com.au/story/5943507/yesterday-today-long-wait-to-get-a-safe-macquarie-crossing/
[36] Bathurst Regional Council, 2009: 2-3
[37] Bathurst Regional Council, 2013, 1

1.5 Physical Analysis

The site is located in the city of Bathurst, located approximately 200km west of Sydney, in the Central Tablelands of New South Wales. The city is situated along the south and western banks of the Macquarie River which meanders north to south. The site is located within the County of Bathurst and Parish of Bathurst on the southern side of the Macquarie River and on the northern side of the river the site is located within the County of Roxburgh and Parish of Kelso and is situated within the Bathurst Local Government Area (LGA).

An inspection of the Denison Bridge was undertaken by Latisha Ryall (Archaeologist, Premise) and Tamera Rudd (Graduate Archaeologist, Premise) on 7 December 2023. The inspection was non-intrusive and included a photographic record of the Denison Bridge and associated service pipes (non-original fabric).

The proposal to install the new service pipe on the downstream side (northern side) is supported as this will assist to mitigate further visual impacts to the heritage significance of the site. Further to this, it is recommended that the original fabric of the bridge be avoided, and that the new pipework be attached to non-original fabric where possible. The proposed works will involve the design of an appropriate bracket to attach the service pipe below the extant infrastructure.

A description of the Denison Bridge is provided in **Section 1.2.1**.

The Denison Bridge and associated features are shown below in **Figure 7** to **Figure 24.**

Figure 7 – Denison Bridge View South

Figure 8 – Denison Bridge View Southwest

Figure 9 – Denison Bridge View East (West Bank)

Figure 10 – Denison Bridge View Northeast

Figure 11 – West Side Service Pipes (Upstream)

Figure 12 – West Side Service Pipes (Upstream)

Figure 13 – West Service Pipes (Downstream)

Figure 14 – West Service Pipes (Downstream)

Figure 15 – East Service Pipes (Upstream)

Figure 16 – East Service Pipes (Upstream)

Figure 17 – East Service Pipes (Upstream)

Figure 18 – Pipes & Additional Fabric (East Side)

Figure 19 – West Service Pipe View Northeast

Figure 20 – West Service Pipes View Northeast

Figure 21 – Service Pipes View From Bridge Deck

Figure 22 – Denison Bridge Pedestrian Crossing/Deck

Figure 23 – Northeast View Across Denison Bridge

Figure 24 – Makers Plate In Context

2. SIGNIFICANCE ASSESSMENT

2.1 Statement of Significance

A statement of significance has been prepared for the Denison Bridge as provided by the SHR Heritage Inventory sheet for the item (SHR #01665). It should be noted that there are some discrepancies in the description relating to the age of the bridge between heritage database inventories.

The information has been replicated below as stands on the SHI.

> *The Denison Bridge, a three-span wrought iron bridge, is an early metal truss bridge built in 1870. Its advanced design was a major engineering achievement at the time and represents the maximum achievable by truss spans. The bridge is associated with three important colonial engineers: William Christopher Bennett (Commissioner and Engineer for Roads), Gustavus Alphonse Morrell (Assistant Engineer and designer) and Peter Nicol Russell (P N Russell & Co). The bridge is a prominent local landmark which has played an important role in the history of Bathurst and the Central West. It was the fifth oldest metal truss bridge in Australia until recently but is still the second oldest in NSW (after Gundagai 1867).*

A second statement of significance has also been prepared for the Denison Bridge and is listed on the Australian Heritage Database (RNE):

> *The bridge is a significant technical accomplishment. Completed in 1870, it replaces an earlier bridge that was opened in 1856 and destroyed in 1867. The present bridge is a metal truss bridge and is the fourth oldest of existing Australian metal trusses, following Hawthorn (1861), Gundagai Road Bridge (1867) and Redesdale (1868).*

Figure 2 identified the heritage curtilage of the Denison Bridge in blue hashing.

2.1.1 SIGNIFICANCE ASSESSMENT

Determining the significance of heritage items or a potential archaeological resource is undertaken by utilising a system of assessment centred on the Burra Charter (Australia ICOMOS 2013). The principles of the charter are relevant to the assessment, conservation and management of sites and relics. The assessment of heritage significance is outlined through legislation in the Heritage Act and implemented through the *Guidelines for preparing a statement of heritage impact 2023* (NSW DPE) and the *Assessing heritage significance 2023* (NSW DPE) guidelines.

Heritage impacts that arise from both visual and/or physical changes to a place must be assessed against the identified significance of the place. Not all impacts are negative and having an impact does not mean that a proposal cannot proceed. Sufficient information regarding the proposed heritage impacts is required to determine if the overall impact is acceptable and the long-term conservation of the place has been considered.

An assessment of significance for the Denison Bride is provided in **Table 2,** based off the SHR heritage listing, and, in accordance with heritage significance criteria outlined in *Assessing heritage significance 2023* (NSW DPE).

Table 2 – Heritage Significance

Criteria	Description
Criterion (a) Historical significance	The Denison Bridge has a high level of historic significance as one of the earliest bridges to be constructed in Bathurst, replacing the original Denison Bridge (the first bridge in Bathurst) following its destruction in 1867. The Denison Bridge is the fourth oldest metal truss in all of Australia, the second oldest metal truss bridge in all of NSW and the oldest Pratt style truss bridge in NSW. There are four colonial bridges extant in Bathurst today, the Denison Bridge being the oldest of these. The erection of the Denison Bridge similarly impacted heavily on the economy of Bathurst during the late 1800s and onwards, as it increased access through the town to nearby settlements (especially important for the trading of goods across NSW) and because it was constructed with local materials, by nearby business. Moreover, the bridge was used for 120 years as a road bridge and remains in use today as a footbridge. This contributed to the social stability of Bathurst and the development of the town.
Criterion (b) Historical association	The Denison Bridge has strong associations with three important colonial engineers including Gustavus Alphonse Morrell, Peter Nicol Russell and William Lawson Bennett. Morrell and Russell were both founding members of the Engineering Association of NSW with Russell also being a major benefactor of the School of Engineering at the University of Sydney. The bridge also holds associative significance to the Governor of NSW from 1855 to 1861, Sir William Denison, whom the bridge was named after.
Criterion (c) Aesthetic/creative/technical achievement	The Denison Bridge has a high level of aesthetic significance, particularly for its technical sophistication and innovation in design. During the late 1800s, there was an evident problem with the lateral bulking of the compression top chords of the trusses of bridges. The design of the Denison Bridge incorporated an innovative solution to this issue which allowed the length of the bridge to reach the structural limits of truss bridge technology. Overall, the bridge is a prominent engineering landmark set amongst an aesthetic context along the Macquarie River.
Criterion (d) Social, cultural and spiritual	The Denison Bridge holds social significance as an engineering landmark within the Bathurst landscape, which has existed for 150 years. The bridge has also been included in the Bathurst Heritage study, emphasising its importance to the local community. Moreover, the Denison Bridge is registered as an important heritage item under the National Trust and the National Estate as an item of local significance to the community.
Criterion (e) Research potential	The Denison Bridge has a moderate level of research potential as a late 18th century engineering achievement. The Denison Bridge is an example of the different types of forces, compression and tensions generated in bridge trusses during this period, and emphasises the fabrics used to create them (iron) and where they were sourced from. The Denison Bridge does, however, have a low level of archaeological research potential as it is located on a riverine environment which is subject to erosion. This

	means that any archaeological remains from the earlier Denison Bridge or from any activities which took place here, are likely to have washed away or been destroyed.
Criterion (f) Rare	The Denison Bridge is a rare as it represents the second oldest metal truss bridge in New South Wales (behind the bridge in Gundagai built three years earlier). The Denison Bridge also represents the fifth oldest metal truss bridge in all of Australia and more importantly, was the first ever American style Pratt truss bridge in all of Australia. Moreover, the Denison Bridge was in use for over 120 years for vehicular access, and remains not only in use today, but also remains in good condition over 150 years later.
Criterion (g) Representative	There are multiple metal truss bridges located across Australia dating to early European settlement. The Denison Bridge is the fifth oldest of these and is representative of other bridges from this period whilst being considered technologically more advanced and innovative than the others. The Denison Bridge also represents the growing influence of other nations (including America) in colonial Australia, as opposed to British technologies.

3. PROPOSED WORKS

3.1 The proposal

The proposed works form part of a larger scope of works associated with the Bathurst WHS pipeline route and is necessary to provide critical water infrastructure services for the Bathurst region. A detailed assessment of the pipeline proposal is provided in the REF prepared for the broader project.

In regard to the works proposed for the Denison Bridge, a pipe is proposed to be attached to the downstream side of the bridge so as to allow the approved pipeline to be constructed in an efficient manner to minimise environmental risks and impacts associated with pollution of land as a result of geological (fracout) construction methods and underboring along the Macquarie River.

3.1.1 CONSIDERATION OF ALTERNATIVES

The alternatives to underboring through the underlying geology have been considered and include:

- Retain the approach to underbore but increase the depth of the underbore so that the drilling is through underlying bedrock. This requires a longer underbore due to geometric requirements which would increase surface and subsurface impacts the context of heritage, soils, water and biodiversity;
- Install the pipe via trenching through the river using a coffer dam approach. This approach has been rejected in discussions with DPE Water, who consider this approach unacceptable due to impacts to the river and the associated aquatic environment;
- Realignment of the pipeline to avoid crossings of the river, to avoid building the pipeline through the original development site of the city of Bathurst, which features a large amount of heritage buildings and sites, including the state heritage listed Bathurst showground site, and a high potential for disturbance of relics. An assessment of options in the context of historic heritage was provided by EMM in support of the original REF and an earlier assessment considered the alignment of the pipe to the west of the river. Through careful consideration of risk and cost, it was determined that crossing the river and traversing the less constrained eastern side of the river was the preferred outcome.

Heritage impacts (and the need for heritage approval) would be result if this option was revisited. This option also required construction of the pipeline through existing roads, at a significantly higher project cost (around $25m compared to around $15-18m for the approved alignment).

- Attach the pipe to existing bridge structures (the preferred option).

The capacity of the Denison Bridge to accommodate the proposed loads associated with attaching the pipe has been considered by Premise engineers and it is determined that the bridge is structurally capable of accommodating the pipe on the basis of the following:

- The pipe represents an approximately 100 metre length, with weight contributions from the pipe itself (approximately 8.6 tonnes) and the weight of water being carried within the pipe (approximately 18.5 tonnes).
- The bridge, when operational for vehicles, was capable of accommodating dynamic loads associated with passing traffic, including heavy vehicles up to b-double in size (i.e., up to 32 tonnes per vehicle). Noting the 100 metre length of the bridge, it is possible that the bridge could host up to 8-10 x 19 m vehicles (4-5 per lane), with an overall dynamic load of over 250 tonnes.
- Essentially the pipe and water have a static weight equivalent to a one (1) heavy vehicle.

The proposed pipe would be attached to the bridge using purpose built brackets that would be connected to the bridge using existing plates located on the bridge (refer to **Appendix A**). It is understood that these plates historically accommodated brackets similar to those on the upstream side, which were removed at some time to accommodate bespoke brackets for the existing pipe on the downstream side (refer **Figure 25** and **Figure 26**). **Figure 17** shows these brackets in place on the upstream side of the river and **Figure 27** shows the plates that the new brackets would be connected to.

The new brackets are proposed to be designed with a bespoke aesthetic to tie in with the heritage aesthetic of the structure.

Figure 25 – Original design drawings (USYD)

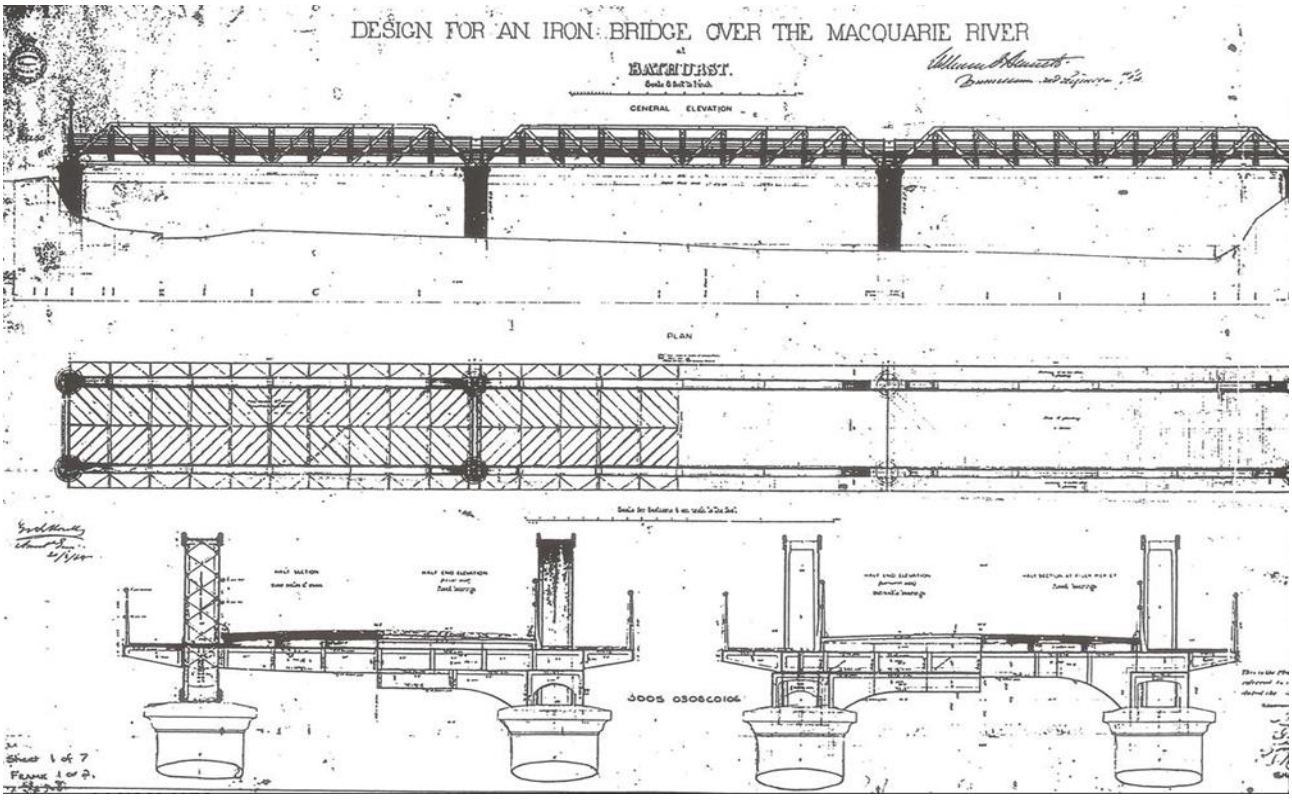


Figure 26 – Brackets

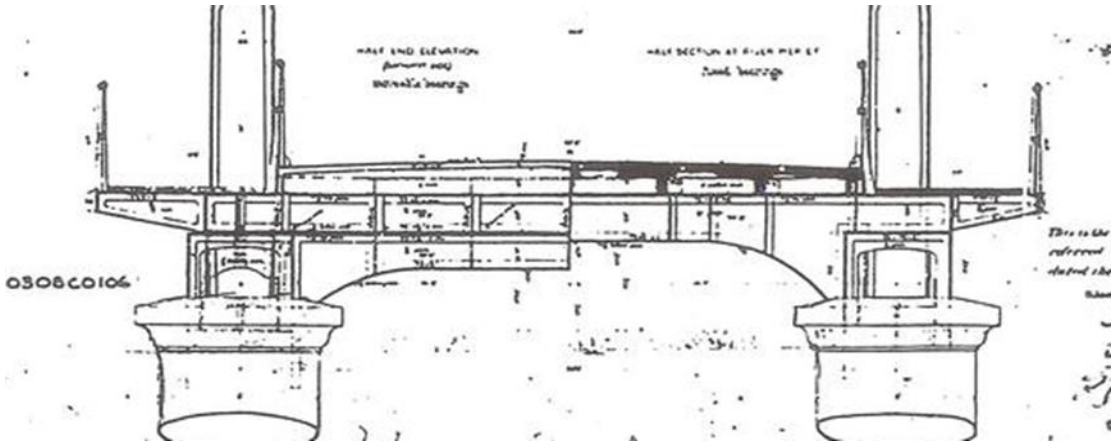


Figure 27 – Existing plates

Finally it is noted that the bridge currently accommodates a number of other pipes (in line with its intended vehicle and pedestrian traffic and servicing purpose), all of which are removable should they reach the end of their serviceable life, making any residual impacts reversible.

3.1.2 BACKGROUND

3.1.2.1 Pre-lodgement consultation

Pre lodgement consultation was undertaken for the proposed works with BRC, Premise and the Heritage Council of NSW..

Prior to Section 60 Approval, consultation with members of the Heritage Council of NSW approval committee, Premise and Bathurst Regional Council was held online on 6 February 2024. The objective of the meeting was to address heritage impacts associated with the proposed development and to gain an understanding of the proposed development.

The following items have been actioned in this report as an outcome of the meeting.

Table 3 – Heritage Council Considerations and Recommendations

Item #	Discussion item	Outcome and response
1	How did the design process discount alternative options for the route as historically under boring was approved for the works.	Premise and BRC advised that several options of the pipeline route were proposed at the concept design stage as part of the REF process, however geotechnical advice received for the project indicated that under boring would be more detrimental to the project. An alternative for installation of the pipes on the underside of the bridge was also discounted due to the levels of impact to the heritage fabric of the Denison Bridge, which would also result in permanent impacts, rather than the current proposal which can be removed with minimal impact.
2	Will the proposed works impact on the historical significance of the surrounding area?	Premise advised that there would be no impacts to the historical significance of the surrounding area. There would be no physical impacts to adjacent heritage curtilages of the showground and areas considered to be the earliest settlement phase of Bathurst. No adverse visual impacts will occur as a result of the installation of a new pipe.
3	Will there be any archaeological impacts?	Premise advised that during site observations, impacts would occur in areas that had previously been disturbed, with unlikely impacts to archaeological deposits or significant relics. Both the northern and southern embankments have historically been disturbed for the implementation of existing infrastructure.
4	Will the existing pipe be redundant?	Premise and BRC advised that the existing pipe carries potable water to the eastern side of the city, and the new pipe proposed is for untreated water, and as such, the two pipes are not interchangeable. The inclusion of this pipe is for critical service infrastructure.
5	Would BRC consider bespoke brackets to be included in the design elements. This would minimise impacts of nesting animals	BRC commit to ensuring the design of brackets is consistent with the heritage significance of the bridge and that these are designed to the satisfaction of a qualified heritage officer.
6	Would there be a consideration for the bridge to be repainted prior to installation of new infrastructure? If so, treatment of the existing bridge fabric would be required.	Bathurst Regional Council is supportive of the bridge treatment and repainting as part of the proposed works, however funding is not available at the present time for the whole bridge to be painted prior to installation of the new pipe. Several options could be considered in this instance: • The pipe and bracket design colour is aesthetically sympathetic to the bridge when installed.

		• The bridge and pipe are repainted at a later date when funding becomes available on construction • Heritage Grant approvals to aid in funding should be considered. The proposed works would not detract from the visual aesthetic of the extant bridge.
7	How has the infrastructure been designed for aesthetic values?	As above, considerations have been made within the design process to ensure that similar colour schemes are used for new infrastructure. With a recommendation to treat the existing fabric and repaint the extant bridge prior to installation of the new brackets and pipe should minimise aesthetic impacts to the surrounding area.

4. HERITAGE IMPACT ASSESSMENT

4.1 Matters for consideration

4.1.1 FABRIC AND SPATIAL ARRANGEMENT

The proposed works do not include the removal of any fabric from the Denison Bridge.

The proposed works will have a direct impact on Denison Bridge as it involves additions to the state listed heritage item itself. These additions will have a minor to moderate impact to the heritage significance of the Denison Bridge however, these impacts are partially mitigated as the proposed pipes are removable and are considered a slight alteration to the structure. To further mitigate these impacts, the pipes should also be placed on non-significant (that is, non-original) fabric of the bridge

4.1.2 SETTING, VIEWS AND VISTAS

The proposed pipe will not affect views or vistas towards the Denison Bridge from the north and northeast aspects. A negligible change in the visual setting will occur on the south and southwestern aspects with the addition of infrastructure, however this is considered negligible in nature and would not result in adverse cumulative vista impacts to the heritage item or surrounding landscape

The new pipe will be seen when viewing the bridge from the surrounding landscape and likely will also be viewed from pedestrians whilst viewing from the bridge platform. The bridge is located within the BHCA , however, is not considered to be located in a cultural landscape. Views and vistas towards the structure are shown in **Section 1.2**.

Visual impacts from the nearby state heritage listed item (Showground SHR #01960) located to the southwest of the bridge will not be impacted. There will be no impacts to the BHCAin which the heritage item is positioned.

Historically, additional service pipes have been attached to the original fabric. of the Denison Bridge, therefore, the site has already been altered from its original context and setting. To further mitigate impacts to the heritage significance of the site, the pipe is proposed to be placed on the downstream side of the bridge so as to minimise visual impacts from the south and south eastern impacts, this placement is considered to have the least visual impacts for the items setting.

The proposed addition of the new pipe has been designed sympathetically so as not to detract from this item. It is recommended that the existing bridge be maintained with the existing fabric treated and repainted prior to installation of new infrastructure so as to not detract from the item and its setting.

4.1.3 LANDSCAPE

No significant landscape works are proposed.

4.1.4 USE

The proposed works will not trigger any change of use classification under the *National Construction Code*. Furthermore, the Denison Bridge is currently being used to support service pipes, including carrying potable water and telecommunications services, among others.

4.1.5 DEMOLITION

No demolition works are proposed.

4.1.6 CURTILAGE

No impacts to curtilage are proposed.

4.1.7 MOVEABLE HERITAGE

N/A.

4.1.8 ABORIGINAL CULTURAL HERITAGE

The Denison Bridge is an item of both state and local European heritage significance and does not hold any Aboriginal cultural heritage values.

Separate Aboriginal heritage investigations have been undertaken for the broader BRC water harvesting scheme as addressed in the supporting REF for the works (EMM).

4.1.9 HISTORICAL ARCHAEOLOGY

Observations undertaken on site indicate ground disturbance activities have historically occurred within the items heritage curtilage, with the connection of existing infrastructure into the ground subsurface on both the northern and southern embankments (both upstream and downstream) of the bridge. It is proposed the new pipe will not impact on intact archaeological deposits. Impacts would therefore not occur to potential archaeological remains located within the curtilage boundaries of the heritage item.

4.1.10 NATURAL HERITAGE

N/A

4.1.11 CONSERVATION AREAS

The Denison Bridge is located within the heritage curtilage of the Bathurst Conservation Area. The proposed alterations and additions to the Denison Bridge are consistent with previous alterations to the heritage item. The proposed pipes will be implemented 'like for like' and will not result in major aesthetic or visual impacts. It is therefore, considered that the proposed activity will not impacts the Bathurst Conservation Area.

4.1.12 CUMULATIVE IMPACTS

The proposed works do not pose any cumulative impacts to the heritage item, HCA or heritage listed sites in close proximity. The proposed works are considered very minor in nature. The proposed works are designed in a way that will ensure fabric can be removed without altering or impacting on original fabric of the structure. The new pipe will be sympathetic to design and style so as not to detract from the visual context of the item, to avoid juxtaposition between new and old infrastructure. There are no cumulative impacts of concern.

4.1.13 THE CONSERVATION MANAGEMENT PLAN

The relevant heritage conservation management plan (CMP) for the Denison Bridge is the *Bridges Conservation Management Plan* which refers to all heritage listed bridges in the Bathurst region.[38] Policies within this CMP are detailed below in **Table 4.**

Table 4 – Consistency with CMP policies

Policy no.	CMP Policy	Consistency Assessment
1	Work in a manner that will retain the significance of the bridge by managing the components that make this bridge important e.g. original fabric.	The proposed works do not include the removal of any original fabric to the bridge. The importance of the bridge also relates to the utilities which have been implemented since the late 1900s. the addition of further utilities pipes will add to the ongoing significance and importance of the bridge to the local community.
2	Assess the relative importance or significance of all the components that make up the bridge and its context so that the most significant components are retained and conserved, while those elements that detract from its significance can be changed or removed.	The most significance fabric on the Denison Bridge are the metal pratt trusses which will not be impacted upon by the development.
3	Undertake best practice to conserve the bridge work including conservation, reconstruction, repairs, etc.	The development will not impose upon the ability to perform conservation works or repairs on the bridge.
4	Where necessary, make specific decisions regarding components such as original stone or timber abutments, timber decking, supporting piers, wing walls and balustrades.	No impacts will occur to original fabric. Brackets will be designed to be removable and sympathetic to the existing structure.
5	Ensure that the work is carried out by a suitably qualified person(s) for the particular component in a manner that is best practice.	The proposed works will be conducted by an adequately qualified person engaged by BRC
6	Assess the comparative value of the work to be undertaken and identify its urgency and priority.	The proposed works are considered to be a priority for the Bathurst community as it will assist in the critical supply of water to the region.
7	If significant elements must be removed or a bridge replaced, retain evidence of their	No elements of the Denison Bridge will be removed.

[38] Hickson and Murphy (2010) prepared for Bathurst Regional Council

Policy no.	CMP Policy	Consistency Assessment
	original location through photography, drawings and sketches or the retention of components in-situ.	
8	Consider works required for the management of the curtilage of a bridge to maintain existing and significant visual and physical links, significant views and preserve its historic location.	The proposed works will not impact upon the curtilage of the Denison Bridge heritage site.
9	Where possible, retain the relevance of the bridge for the movement of vehicles, pedestrians and services.	The proposed works will not impede on existing pedestrian access. Existing services will continue to operate.
10	If additional services are added to a bridge consider methods that minimise visual impact.	Measures to mitigate visual impacts to the bridge have been provided in **section 4.1.2**.
11	Comply with any statutory requirements that apply to the bridge.	The development will require a Section 60 approval under the Heritage Act prior to works commencing.
12	Consider the requirements of the owner of the bridge.	BRC are required to maintain the bridge as it serves as a public accessed structure and would be required to maintain the associated pipe infrastructure as a critical water source for the community, however the bridge is also to be maintained so as to conserve the original fabric with repainting of the bridge as an option when funds are available. Therefore, Heritage Grant funding would be suitable for the upgrades or maintenance of this item. At the time this report was prepared, bracket designs had not yet to be prepared but will have the objective of ensuring effective integration of the infrastructure without degradation of the appearance or maintenance of the bridge.
13	Consider the requirements of other interested persons including the local community, adjoining owners, historical groups and tourists.	The addition of water infrastructure on the Denison Bridge benefits the community as it aids in the provision of water across the region. The proposed works will have minor impacts on the visual amenity of the building which will be undertaken in a 'like for like' manner so limit impacts to the community. Proposed upkeep of the bridge, repainting and the implementation of updated interpretation panels would also benefit the community.

Policy no.	CMP Policy	Consistency Assessment
14	Consider work safe practices.	The development will be carried out in accordance with all relevant work health and safety policies and guidelines.
15	Consider value for money on work carried out and grant opportunities.	The opportunity for Heritage Grant funding is supported, for repainting of the bridge and ongoing maintenance. At the current time, funding is not available through BRC for the bridge to be repainted and will need to be undertaken at a later stage.

4.1.14 OTHER HERITAGE ITEMS IN THE VICINITY

Nearby state heritage listed items include the Showground (SHR #01960) located to the southwest of the Denison Bride. The proposed works will result in indirect impacts to the Showground including visual impacts. However, these impacts are considered negligible as the new pipes will not be viewed from the Showgrounds site. Nearby heritage sites are shown in **Figure 2**.

4.1.15 COMMONWEALTH/NATIONAL HERITAGE SIGNIFICANCE

N/A

4.1.16 WORLD HERITAGE SIGNIFICANCE

N/A

4.1.17 OTHER GENERAL CONSIDERATIONS

A section 60 approval from Heritage NSW will be required (under the Heritage Act 1977) prior to the proposed works commencing at the Denison Bridge.

No additional controls are required for the proposed works under the Bathurst DCP. The works will be approved via a state regulatory authority being Heritage NSW.

The proposed works will not result in adverse heritage impacts. Although the proposed works will result in a direct impact to the Denison Bridge, this infrastructure is critical for servicing water in the Bathurst district.

The proposed works will be mitigated by the extant service pipes which have been introduced to the bridge from the 1960s onwards. Furthermore, the proposed pipe will be detachable. To further mitigate these impacts, it is recommended that the pipe be constructed on the downstream side of the bridge to minimise visual impacts, as the context of the upstream side is more consistent with the original setting of the area. This original setting should be retained as much as possible, with no detrimental impacts to the original built fabric or the landscape surrounding it. The new pipework should be painted in similar colours to align with the colour scheme of the existing Denison Bridge. It is also recommended that the bridge in its entirety be treated and repainted, however this is subject to available funds and can be undertaken at a later stage This will avoid a visual detraction and juxtaposition between the new infrastructure against existing

materials. The proposed pipe materials should be matched to the bridge so as to have a 'like for like ' approach.

4.1.18 ASSESSMENT OF SPECIFIC WORKS

4.1.18.1 Alterations and additions

The impacts of the proposed alterations and additions to the Denison Bridge is provided in **Table 5**.

Table 5 – Proposed Development Heritage Impact Assessment

Proposed Change to Heritage Item	Statement of Heritage Impact Considerations	Comments
Alterations and additions	Do the proposed works comply with Article 22 of *The Burra Charter*, specifically *Practice note* article 22 — *new work* (Australia ICOMOS 2013b)?	Article 22 practice note states: new work should respect the significance of a place through consideration of its siting, bulk, form, scale, character, colour, texture and material. Imitation should generally be avoided. The proposed works are consistent with the current use of the bridge for supporting other critical infrastructure service pipes. To ensure that the proposed works comply with the Burra Charter, it is recommended that the new pipe maintains a modest size and shape and appropriate colour scheme. This will ensure that the significance of the Denison Bridge and its original fabric is not distracted by new infrastructure. The proposed placement of the 450 mm pipe is considered sympathetic to the above. It is proposed that bespoke brackets would be installed to accommodate the pipe. Prior to any additions, the extant bridge and fabric is also to be treated and repainted so that the proposed pipe integrates effectively with the bridge appearance and does introduce a discordant appearance. This would be subject to available funding. Heritage Grant fund applications would be suitable for this project. Similarly, it is recommended that an interpretation panel be introduced at the site to recognise the services pipes on the bridge as recent additions which have benefited the Bathurst community since their installation on the bridge.
	Are the proposed alterations/additions sympathetic to the heritage item? In what way (e.g.	The proposed additions have been designed sympathetically to the bridge design, the appropriate form, proportion and scale are to match existing infrastructure added to the bridge historically. The method of attachment will be consistent with the style

	form, proportion, scale, design, materials)?	and form of existing pipe attachments (bespoke brackets) and is consistent with the current appearance of the bridge, which hosts a number of other service pipes. As mentioned above, it is also recommended that the bridge undergo painting, noting this could occur at a later date.
	Will the proposed works impact on the significant fabric, design or layout, significant garden setting, landscape and trees or on the heritage item's setting or any significant views?	The proposed works will not impact on significant or original fabric of the Denison Bridge. Installation will occur in areas that have been subject to previous disturbance through the c.1963, 2009 and 2013 pipe installation, and/or additions to original fabric. The pipe would be attached on the downstream side to minimise visibility to the general public.
	How have the impact of the alterations/additions on the heritage item been minimised?	Impacts to the Denison Bridge have been minimised by ensuring that the pipe is removable, is sympathetic in design and will not impact on the significance of the item.
	Are the additions sited on any known or potentially significant archaeological relics? If yes, has specialist advice from archaeologists been sought? How will the impact be avoided or mitigated?	There is a low likelihood for archaeological potential at the site due to its location along a river which is prone to flooding and heavy erosion. The additions to the Denison Bridge are therefore also unlikely to impact any archaeological relics at the site. It is noted that both embankments have been subject to previous ground disturbance where existing pipes enter the ground subsurface. Archaeological relics are unlikely to be insitu where this disturbance has previously occurred.
Physical changes to fabric identified as significant	Has the fabric that will be impacted by the proposed works been assessed and graded according to its significance?	An assessment of the Denison Bridge's significance and fabric is provided in **Section 2.**
	Has specialist advice from a heritage professional, architect, archaeologist or engineer been sought?	This report has assessed the impacts of the proposed works on the heritage item and has been prepared by a qualified Archaeologist in consultation with the Heritage Council of NSW. The nature of the works will not adversely affect the heritage item. A heritage architect has not been engaged; however engineers have consulted with the Archaeologist on the best approach for design and location.
New services and service upgrades	Are any of the existing services of significance? In what way are they affected by the proposed works?	Yes, existing service pipes are located on both the upstream and downstream locations of the Denison Bridge and provide critical services for the community. however, the fabric of these services is not considered significant

		Original construction elements of the bridge are considered significant and will not be impacted on. The proposed works are to minimise impacts to this significant fabric.
	How have the impacts of the installation of new services on heritage significance been minimised?	The impacts of the introduction of a new service pipe to Denison Bridge will be minimised by ensuring the pipe is removable. This means that the Denison Bridge could be returned to its original state if required. Similar strapping elements are proposed to attach the pipe to existing infrastructure.
	Are any known or potential archaeological deposits affected by the proposed new services?	There are no known archaeological deposits at the site nor are they likely to be identified in the future. The proposed pipe will have no impact to potential archaeological relics.

5. SUMMARY AND RECOMMENDATIONS

The proposed works are considered minor to moderate in nature and will not have adverse impacts to the heritage significance of the Denison Bridge State Heritage listed item. The proposed works are required to service water for the city of Bathurst and are considered critical infrastructure as part of a broader scope of works being the Bathurst WHS

It is recommended that the installation of the additional service pipe be positioned on the northern frontage of the bridge (downstream side) to mitigate visual impacts to the heritage context of the Denison Bridge and its surrounding landscape. Views from the southwestern location likely represent the original context of the bridge when constructed in 1870, however, it has been assessed that the installation of new infrastructure will not adversely impact on nearby state heritage listed items (Showground SHR #01960) or impact on the BHCA.

The Denison Bridge has been subject to previous additions including service pipes located on both frontages and the erection of cement piers associated with the abovementioned infrastructure. The installation of these service pipes has become an important aspect of the history of the Denison Bridge which has evolved into a significant structure for utility supply across the region. The addition of the proposed pipe to the Denison Bridge is therefore consistent with past alterations and additions and to the historic significance of the bridge.

It is proposed to install the pipe below existing infrastructure pipes located on the northern side. Consolidation of existing brackets would also be considered in detailed design and a recommendation for bespoke elements to be included in this design. A concept bracket attachment design is provided in the project drawings. This would be further refined through engagement with a heritage professional. The pipe should also be consistent with the existing bridge colour scheme; a grey colour pipe is recommended. It is recommended that the Denison Bridge be treated and repainted so as to enhance and cohesively connect the heritage item with existing and new fabric, noting this would be subject to available funds and could be completed at a later date. Heritage Grant applications would be suitable for the maintenance and upkeep of this heritage item.

A recommendation for updated interpretation signs for the bridge is proposed. Interpretation panels could be installed in the immediate locality to show a timeline of the bridge construction and change in use over time as well as the aesthetic changes. It is noted that the existing interpretation panels have deteriorated and should be replaced.

The proposed works will be subject to a section 60 approval through Heritage NSW before works can proceed. It is expected that conditions of consent will be imposed to ensure Heritage NSW sign off of final bracket design and pipe placement.

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APPENDICES

APPENDIX A

DESIGN DRAWINGS

EXISTING SERVICES

ALL EXISTING SERVICES ARE TO BE LOCATED BY THE CONTRACTOR THROUGH CONTACTING THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORK

N

LEGEND:

- PROPOSED DN450 GRP PN16 STORMWATER RISING MAIN UPDATED ALIGNMENT
- PROPOSED STORMWATER RISING MAIN PREVIOUS ALIGNMENT
- PROPOSED STOP VALVE (WSAA DWG WAT-1304)
- PROPOSED SCOUR VALVE (WSAA DWG WAT-1307)
- PROPOSED AIR VALVE (WSAA DWG WAT-1302)
- PROPOSED THRUST BLOCK (WSAA DWG WAT-1205/1207)
- 650.0 EXISTING MAJOR CONTOUR (1.0m INTERVAL)
- EXISTING MINOR CONTOUR (0.5m INTERVAL)
- LV EXISTING LV ELECTRICAL
- T EXISTING TELECOMMUNICATIONS
- G EXISTING GAS
- dOF EXISTING FIBRE OPTIC CABLE
- W EXISTING WATER PIPE
- S EXISTING SEWER
- D EXISTING STORMWATER
- EXISTING STOP VALVE
- EXISTING SEWER MANHOLE
- EXISTING TELECOMMUNICATIONS PIT
- EXISTING WATER METER
- EXISTING HYDRANT
- EXISTING ELECTRICAL POLE
- EXISTING LIGHT POLE
- EXISTING GRATED INLET PIT
- 'I.L.unk' UNKNOWN INVERT LEVEL
- 'unkDIA' UNKNOWN DIAMETER
- H.DEF HORIZONTAL DEFLECTION
- V.DEF VERTICAL DEFLECTION

INFORMATION - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
22/12/2023	A	ALTERNATIVE PIPELINE ALIGNMENT	IW	DW

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DESIGNED IW
CHECKED DW
PROJECT MANAGER DW

SCALE
0 15 30 45m
SCALE 1:750(A1)
ORIGINAL SHEET SIZE A1

CLIENT BATHURST REGIONAL COUNCIL
PROJECT BATHURST STORMWATER HARVESTING SCHEME - STAGE 1
LOCATION BATHURST, NSW
SHEET TITLE DENISON BRIDGE - ALTERNATIVE PIPELINE ALIGNMENT

JOB CODE 220224_13
SHEET NUMBER C001
REV 1

EXISTING SERVICES

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- PROPOSED STORMWATER RISING MAIN PREVIOUS ALIGNMENT
- PROPOSED STOP VALVE (WSAA DWG WAT-1304)
- PROPOSED SCOUR VALVE (WSAA DWG WAT-1307)
- PROPOSED AIR VALVE (WSAA DWG WAT-1302)
- PROPOSED THRUST BLOCK (WSAA DWG WAT-1205/1207)
- EXISTING MAJOR CONTOUR (1.0m INTERVAL)
- EXISTING MINOR CONTOUR (0.5m INTERVAL)
- EXISTING LV ELECTRICAL
- EXISTING TELECOMMUNICATIONS
- EXISTING GAS
- EXISTING FIBRE OPTIC CABLE
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- EXISTING SEWER
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			REC	APP

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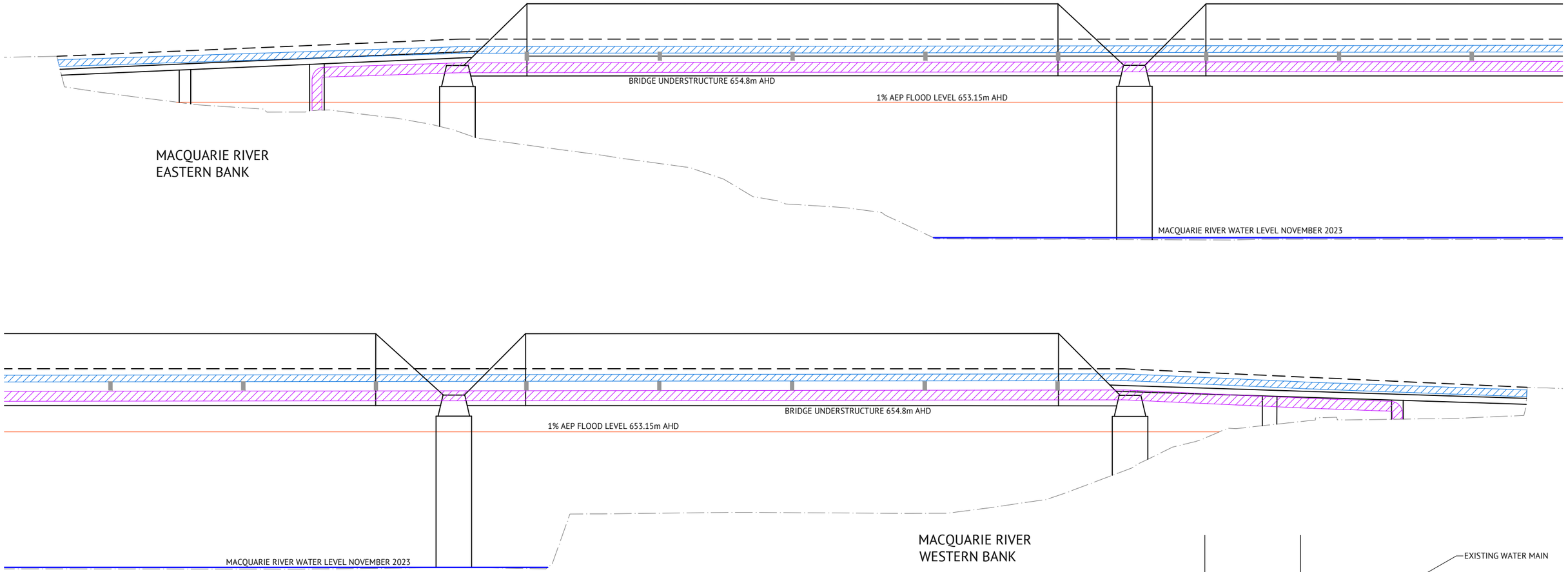
PROJECT MANAGER: DW

SCALE
0 15 30 45m
SCALE 1:750(A1)
ORIGINAL SHEET SIZE A1

CLIENT: BATHURST REGIONAL COUNCIL
PROJECT: BATHURST STORMWATER HARVESTING SCHEME - STAGE 1
LOCATION: BATHURST, NSW
SHEET TITLE: HEREFORD STREET BRIDGE - ALTERNATIVE PIPELINE ALIGNMENT

JOB CODE: 220224_13
SHEET NUMBER: C002
REV: 1



1 C001 SECTION
SCALE 1:250

LEGEND:

- PROPOSED DN450 DICL PN20 STORMWATER RISING MAIN
- EXISTING WATER MAIN
- DENISON BRIDGE (STRUCTURE)
- DENISON BRIDGE (DECK)
- 1% AEP FLOOD LEVEL
- EXISTING GROUND LEVEL
- MACQUARIE RIVER WATER LEVEL NOV 2023
- EXISTING, VACANT MOUNTING POINTS

EXISTING SERVICES

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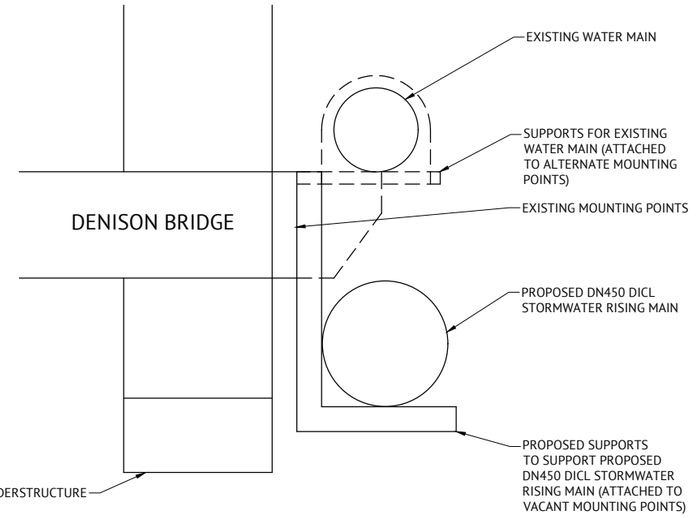
NOTE

LOCATION AND EXTENT OF WORKS, BRIDGE STRUCTURE AND NATURAL FEATURES ARE CONCEPTUAL ONLY & SUBJECT TO DETAILED DESIGN.

PRELIMINARY
NOT FOR CONSTRUCTION

PLATE 1: DENSION BRIDGE PROPOSED PIPE MOUNTING LOCATION



2 C001 SECTION TYPICAL PIPE MOUNTING
SCALE NTS

INFORMATION - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION	REC	APP
22/12/2023	A	ALTERNATIVE PIPELINE ALIGNMENT	IW	DW

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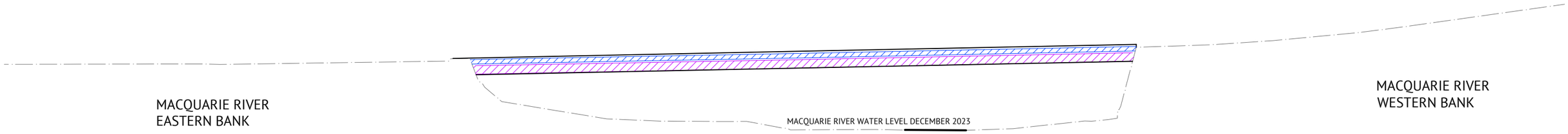
DESIGNED IW
CHECKED DW
PROJECT MANAGER DW

SCALE
0 15 30 45m
SCALE 1:750(A1)
ORIGINAL SHEET SIZE A1

CLIENT BATHURST REGIONAL COUNCIL
PROJECT BATHURST STORMWATER HARVESTING SCHEME - STAGE 1
LOCATION BATHURST, NSW
SHEET TITLE DENISON BRIDGE - TYPICAL SECTIONS

JOB CODE 220224_13
SHEET NUMBER C003
REV A



3 C002 SECTION
SCALE 1:100

LEGEND:

- PROPOSED DN375 DICL PN20 STORMWATER RISING MAIN
- EXISTING WATER MAIN
- HEREFORD STREET BRIDGE (STRUCTURE)
- EXISTING GROUND LEVEL
- MACQUARIE RIVER WATER LEVEL DEC 2023

PRELIMINARY
NOT FOR CONSTRUCTION

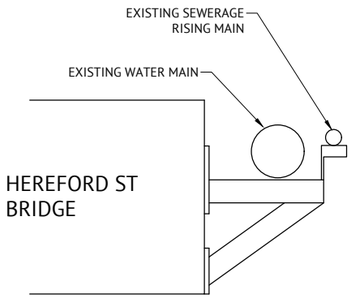
EXISTING SERVICES

ALL EXISTING SERVICES ARE TO BE LOCATED BY THE CONTRACTOR THROUGH CONTACTING THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORK

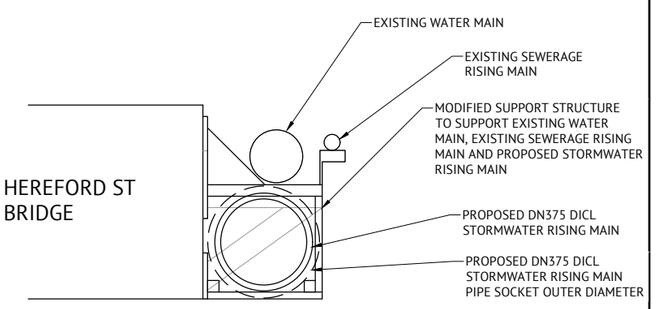
NOTE

LOCATION AND EXTENT OF WORKS, BRIDGE STRUCTURE AND NATURAL FEATURES ARE CONCEPTUAL ONLY & SUBJECT TO DETAILED DESIGN.

PLATE 2: HEREFORD BRIDGE PROPOSED PIPE MOUNTING LOCATION



EXISTING MOUNTING



PROPOSED MOUNTING

4 C002 SECTION TYPICAL PIPE MOUNTING
SCALE NTS

INFORMATION - NOT FOR CONSTRUCTION

DATE	REV	DESCRIPTION		
22/12/2023	A	ALTERNATIVE PIPELINE ALIGNMENT	IW	DW

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ORIGINAL SHEET SIZE A1

CLIENT BATHURST REGIONAL COUNCIL
PROJECT BATHURST STORMWATER HARVESTING SCHEME - STAGE 1
LOCATION BATHURST, NSW
SHEET TITLE HEREFORD STREET BRIDGE - TYPICAL SECTIONS

JOB CODE 220224_13
SHEET NUMBER C004
REV A

APPENDIX B

HERITAGE INVENTORY LISTING

Item Details

Name

Denison Bridge

SHR/LEP/S170

SHR #01665

Address

Macquarie River Great Western Highway BATHURST NSW 2795

Local Govt Area

Bathurst Regional

Local Aboriginal Land Council

Bathurst

Item Type	Group/Collection	Category
Built	Transport - Land	Road Bridge

All Addresses

Addresses

Records Retrieved: 3

Street No	Street Name	Suburb/Town/Postcode	Local Govt. Area	LALC	Parish	County	Electorate	Address Type
	River Road	BATHURST/NSW/2795	Bathurst Regional	Unknown			BATHURST	Alternate Address
	Bridge Street	BATHURST/NSW/2795	Bathurst Regional	Unknown			BATHURST	Alternate Address
Macquarie River	Great Western Highway	BATHURST/NSW/2795	Bathurst Regional	Bathurst			BATHURST	Primary Address

Significance

Statement Of Significance

The Denison Bridge, a three-span wrought iron bridge, is an early metal truss bridge built in 1870. Its advanced design was a major engineering achievement at the time and represents the maximum achievable by truss spans. The bridge is associated with three important colonial engineers: William Christopher Bennett (Commissioner and Engineer for Roads), Gustavus Alphonse Morrell (Assistant Engineer and designer) and Peter Nicol Russell (P N Russell & Co). The bridge is a prominent local landmark which has played an important role in the history of Bathurst and the Central West. It was the fifth oldest metal truss bridge in Australia until recently but is still the second oldest in NSW (after Gundagai 1867).

Criteria a)

Historical Significance

Denison Bridge is of state significance as the fifth oldest metal truss bridge in Australia until recently and the second oldest in NSW (after Gundagai 1867). Further, the bridge is a significant technical accomplishment in the management of compressive and tension forces in metal truss members. Its design and innovative solution to the pressures of compression and tension is of historical significance in demonstrating the development of engineering and truss bridge technology.

Completed in 1870, it replaces an earlier bridge that was opened in 1856 and destroyed in 1867. The present bridge is a metal truss bridge and is currently the fourth oldest existing Australian metal trusses, following Hawthorn (1861), Gundagai Road Bridge (1867) and Redesdale (1868).

It is the oldest Pratt type truss bridge in NSW and the oldest of four colonial bridges in Bathurst. Its fabrication and erection are important as it used substantial amounts of materials and skills already available in the colony with subsequent economic benefits to the government. It is significant for being in almost continual use throughout its 120 year history as a road bridge which contributed significantly to the social stability and growth of Bathurst, making possible the continuous flow of people and goods between Sydney and the western districts of New South Wales.

Criteria b)

Historical Association
Significance

The Denison Bridge is of state significance for its associations with three important colonial engineers: the government engineers W. C. Bennett and G. A Morell; and P N Russell, who formed P. N. Russell and Co and was a major benefactor of the University of Sydney.

The Denison Bridge is also significant for its association, through its name, with Sir William Denison, Governor of New South Wales 1855-1861.

Criteria c)

Aesthetic/Technical Significance

The Denison Bridge is of state significance for its technical sophistication and innovation. The structure incorporates an innovative and practical solution to the problem of lateral buckling of the compression top chords of each truss, which was years ahead of the theoretical solution and is of historical significance in demonstrating the development of engineering and truss bridge technology. This solution allowed the length of the bridge to approach the structural limit of truss bridge technology. The clean, open arrangement of members and joints made for easy maintenance which contributed greatly to its long service life.

Spanning the Macquarie River and Morse and Berry Parks, the Denison Bridge is locally significant as a prominent engineering landmark and enjoys a picturesque setting.

Criteria d)

Social/Cultural Significance

The Denison Bridge has local significance as a engineering landmark. This significance is demonstrated by its inclusion in the Bathurst Heritage Study, the Register of the National Trust, an Historic Engineering Marker plaque from Engineers Australia (formerly IE Aust) in 1994 and the Register of the National Estate.

Criteria e)

Research Potential

The Denison Bridge is of state significance as an engineering achievement. Through the distribution of its ironwork the fabric displays the types of forces, compression and tension generated in the members of trusses.

It is unlikely to display any archaeological significance in relation to previous occupation due to the riverine environment and unlikely to display any archaeological potential in relation to the earlier bridge.

Criteria f)

Rarity

The Denison Bridge is rare. It is of state significance as the fifth oldest early metal truss bridge in colonial Australia, and second oldest in NSW after Gundagai (built 1867).

Criteria g)

Representative

The Denison Bridge is one of a number of early metal truss bridges in colonial Australia and is representative of its type. It is, however, the second oldest in New South Wales (after Gundagai) and is technologically innovative. This bridge was the first American type Pratt truss in NSW.

Integrity/Intactness

Fair - Good

Owners

Records Retrieved: 0

Organisation	Stakeholder Category	Date Ownership Updated
No Results Found		

Description

Designer	Builder/Maker
Gustavus Alphonse Morrell	P. N. Russell & Co

Physical Description **Updated**

This is an early metal truss bridge that carries 6.1 metres of roadway and a footpath. It has nine spans in all, three timber spans of 6.7m then three wrought iron trusses: 34m, 34.5m, 34m and then three again in timber at 6.7m. Total length of the bridge is 474ft (143.5m).

The main spans consist of wrought iron pony trusses of the Pratt type. Support piers consist of timber piles under the approach spans and four pairs of cast iron cylinders 1.83m diameter braced with wrought iron crossed rods. The ten panel Pratt trusses are simply supported and have horizontally positioned I-sections for the upper chords and sloping end diagonals, but flat metal strips for the tension bottom chords and for the tension diagonals. There are metal stringers on metal cross girders, the whole being located at about the mid depth of the main trusses. The piers are twin metal cylinders.

The bridge has four lamp standards, two at each end, and in the centre two signs. On an interpretive sign about the river and people swimming there, and the original makers sign stating : 'DENISON BRIDGE P. N.RUSSELL & Co. BUILDERS - SYDNEY 1870' . Beside the bridge and supported off it, are service pipes.

Physical Condition **Updated** 04/23/2003

Fair to good, in need of regular maintenance.

Modifications And Dates

1856: First Denison Bridge (timber, des: William Weaver) opened.

1867: First Denison Bridge washed away in a storm.

1869-70: Second Denison Bridge (des. G.A. Morrell) built. This bridge has had periodic maintenance.

1964-65: six piles were driven under the timber approach spans, 23 stringers were replaced, 6 round timber girders renewed, longitudinal sheeting replaced and deck bitumen sealed, timber decking replaced by high tensile bolts in three top chord joints, expansion bearings were repaired and one girder replaced. The deck was emulsion-sprayed and grit-covered.

1975-76: repairs cost $11,377.

1981: A concrete deck was laid.

Early 1990s: closed to vehicular traffic and adapted for use as a footbridge.

Further Comments

supported as high significance by Bathurst/Evans focus group 27/3/2002

Current Use

footbridge, annual festivities

Former Use

Aboriginal land, riparian vegetation / floodplain, Main road bridge

Listings

Listings

			Records Retrieved: 3		
Heritage Listing	**Listing Title**	**Listing Number**	**Gazette Date**	**Gazzette Number**	**Gazzette Page**
National Trust of Australia register		870	5/18/1987 12:00:00 AM		
Heritage Act - State Heritage Register		01665	8/1/2003 12:00:00 AM	121	7597
Heritage study		A 261 L			

Procedures/Exemptions

Records Retrieved: 1

Section of Act	Description	Title	Comments	Action Date	Outcome
57(2)	Exemption to allow work	Standard Exemptions		11/9/2020 12:00:00 AM	

History

Historical Notes or Provenance **Updated**

Aboriginal people and colonisation.
Aboriginal occupation of the Blue Mountains area dates back at least 12,000 years and appears to have intensified some 3000-4000 years ago. In pre-colonial times the area now known as Bathurst was inhabited by Aboriginal people of the Wiradjuri linguistic group. The clan associated with Bathurst occupied on a seasonal basis most of the Macquarie River area. They moved regularly in small groups but prefered the open land and used the waterways for a variety of food. There are numerous river flats where debris from recurrent camps accumulated over a long period. European settlement in this region after the first documented white expedition west of the Blue Mountains in 1813 was tentative because of apprehensions about resistance from Aboriginal people. There was some contact, witnessed by sporadic hostility and by the quantity of surviving artefacts manufactured by the Aborigines from European glass. By 1840 there was widespread dislocation of Aboriginal culture, aggravated after 1850 by the goldrush to the region (HO and DUAP, 1996, 88).

Prior to European settlement in Australia, the Wiradjuri Aboriginal group lived in the upper Macquarie Valley. Bathurst was proclaimed a town by Lachlan Macquarie on 7 May 1815, named after Lord Bathurst, Principal Secretary of State for the Colonies (Barker 1992:25). Bathurst is Australia's oldest inland township. It was proclaimed a town in 1815 with the discovery of gold.

Bathurst:
Governor Macquarie chose the site of the future town of Bathurst on 7 May 1815 during his tour over the Blue Mountains, on the road already completed by convict labour supervised by William Cox. Macquarie marked out the boundaries near the depot established by surveyor George Evans and reserved a site for a government house and domain. Reluctant to open the rich Bathurst Plains to a large settlement, Macquarie authorised few grants there initially, one of the first being 1000 acres to William Lawson, one of the three European explorers who crossed the mountains in 1813. The road-maker William Cox was another early grantee but later had to move his establishment to Kelso on the non-government side of the Macquarie River (GAO, 2005, 8).

A modest release of land in February 1818 occurred when ten men were chosen to take up 50 acre farms and 2 acre town allotments across the river from the government buildings. When corruption by government supervisor Richard Lewis and acting Commandant

William Cox caused their dismissal, they were replaced by Lieutenant William Lawson who became Commandant of the settlement in 1818 (ibid, 8).

Macquarie continued to restrict Bathurst settlement and reserved all land on the south side of the Macquarie River for government buildings and stock, a situation that prevailed until 1826. In December 1819 Bathurst had a population of only 120 people in 30 houses, two thirds being in the township of Kelso on the eastern side of the river and the remainder scattered on rural landholdings nearby. The official report in 1820 numbered Bathurst settlers at 114, including only 14 women and 15 children. The government buildings comprised a brick house for the commandant, brick barracks for the military detachment and houses for the stock keeper, and log houses for the 50 convicts who worked the government farm. Never successful, the government farm was closed by Governor Darling in 1828 (ibid, 8).

Governor Darling, arriving in Sydney in 1825, promptly commenced a review of colonial administration and subsequently introduced vigorous reforms. On advice from Viscount Goderich, Darling divided colonial expenditure into two parts: one to cover civil administration, funded by New South Wales; the other for the convict system, funded by Britain (ibid, 10).

By this time, J.McBrien and Robert Hoddle had surveyed the existing grants in the vicinity. Surveyor James Bym Richards began work on the south side of the river in 1826. But the town was apparently designed by Thomas Mitchell in 1830 and did not open until late 1833 after Richards had completed the layout of the streets with their two-road allotments. The first sales were held in 1831 before the survey was complete (ibid, 10).

In 1832 the new Governor, Major General Sir Richard Bourke, visited Bathurst in October. He instructed the Surveyor General Major Thomas L. Mitchell to make arrangements for 'opening the town of Bathurst without delay' and he in turn instructed the Assistant Surveyor at Bathurst J.B. Richards to lay out the blocks and streets. This was done in September 1833. It is believed that Major Mitchell named the streets, with George Street being named after King George III.

The very architecture of the city (of Bathurst) is a gallery in itself,, Georgian Colonial, Victorian and Edwardian buildings feature in the panoply of architecture, that was classified by the National Trust (of Australia (NSW)) in the 1970s. Bathust can lay claim to some of the oldest buildings in the colony; first Church of England over the Blue Mountains, once part of the Bishopric of Calcutta, Holy Trinity...on the hill at Kelso, St. Steven's Presbyterian, while not the original church, is still one of the oldest Presbyterian churches in the colony, Old Government Cottage, near the Macquarie River is part of the original government enclave. Not only is it the first inland European settlement, but it has museum collections of national significance... (Friend, 2021).

Bridging the Macquarie River:
Despite the growing importance of Bathurst as the principal urban centre over the Blue Mountains, the Macquarie River, which flows past the town on the Sydney side, was not bridged until 1856.

After years of local agitation, a long timber bridge with five laminated timber arches was started in 1855 and was opened on 1 January 1856 by the Governor, Sir William Denison. A bullock was roasted on a spit and 3000 people celebrated the new bridge, named after the Governor.

This was the last 'official' bridge designed by the Colonial Architect's Department under its brief direction by architect and engineer, William Weaver (1828-68). It was supervised by his Clerk of Works, WIlliam Downey, during 1855 (Maguire, 1984, 46).

Eleven days later another bridge over the Macquarie River a kilometre downstream was opened by a local entrepreneur, George Ranken (frequently quoted as Rankin): this bridge was known as the Eglinton Bridge or Rankin's Bridge.

The Denison Bridge was washed away by the great flood of 1867 and its debris also destroyed Rankin's Bridge, so after eleven years of having two bridges, Bathurst again found itslelf with only a ford or a ferry to cross the Macquarie. A narrow temporary wooden bridge was put across near the remains of the Denison Bridge later in 1867, but this was closed for safety reasons in June 1868. The government recognised that a permanent replacement was urgently needed. A new site was chosen 100 metres downstream from the first Denison Bridge and a realignment was made to the road approaches.

The new Denison Bridge was designed by Gustavus Alphonse Morrell, Assistant Engineer to the Department of Roads and foundation member of the Engineering Association of NSW. The bridge contract drawings bear Morrell's signature and that of William Christopher Bennett, Commissioner for Roads.

The bridge was constructed in 1869 to 1870 by the prominent engineering firm, P. N. Russell & Co at a cost of 18,818 pounds through the NSW Public Works Department. Most of the angle irons and bars were specially rolled for the job at P. N. Russell & Co's Pyrmont Rolling Mills and at Bathurst's two iron foundries of that time, including the nearby Denison Foundry. Only heavy iron plates and bars were imported.

Like the first bridge, the new one was opened by the Governor of the time, who was now the Earl of Belmore. Denison had left the colony in 1861 for Madras and then to retirement in England, where he died in 1871. But the new bridge, opened in June 1870, was the replacement of the Denison Bridge of 1856 and the name of Denison was retained.

Although incorporated in the original design, footways were never built as part of the bridge. A steel footbridge was erected in 1950, on the upstream side, by the Department of Main Roads.

In use for over 120 years as a road bridge, its service life was interrupted only for a 9-day repair period in the 1960s. It was superseded by a prestressed concrete bridge upstream and closed to vehicular traffic in the early 1990s and adapted for use as a footbridge.

HISTORICAL NOTES ON KEY INDIVIDUALS

The supervisor of the original bridge design was engineer, William Christopher Bennett. Bennett came from Ireland where he worked on railway and drainage works, and in South America on canal works. Arriving in Sydney in 1855 he met Sir Thomas Mitchell, Colonial Surveyor, and joined the Department. He worked on sewerage and railway works before being appointed Assistant Engineer of Main Roads.

On 1 January 1859 Bennett became Engineer to the Department of Roads which he helped to form and eventually was appointed Commissioner for Roads on 1st November 1862. In his term of office, roads were extended nearly 6,000 miles (9,600km) 2,000 miles (3,200 km) surfaced, with a total length of bridges of 40 miles (64 km). Bennett's signature appears on the Denison bridge contract drawings as commissioner, dated 20th August, 1868. A steel footbridge was erected in 1950 on the upstream side by the Department of Main Roads.

The bridge designer, Gustavus Alphonse Morrell, arrived in Australia in 1863 and initially worked on defence installations. He was appointed Assistant Engineer on 13 June 1867. After establishing his own business he presided over a Royal Commission into the condition of railway bridges in the colony. He was also a foundation member of the Engineering Association of New South Wales formed on 24 September 1870. Morrell, as Assistant Engineer, also signed the Denison bridge drawings.

The Russell brothers and P. N. Russell and Co: The Russell brothers arrived with their father in 1838 and established a foundry and engineering works on the banks of the tank stream. In 1842 Peter started his own business, the Sydney Foundry and Engineering Works. In 1855 P. N. Russell & Co was formed comprising Peter Russell who served in London as the overseas representative, and John and George Russell and J. W. Dunlop (the works foreman) . The firm flourished, establishing workshops on a large waterfront area at Darling Harbour and by the 1870s employing 850 men. During this period, the firm completed the contracts for the Denison Bridge in 1870 and the Hume Bridge at Yass in 1871. However, industrial trouble beginning in 1873 saw the closure of the company in 1874.

In 1896 P. N. Russell endowed the School of Engineering at Sydney University with $100,000, followed by a second bequest of $100,000 in 1904. John Russell was also a foundation member of the Engineering Association of New South Wales.

Historic Themes

Records Retrieved: 18

National Theme	State Theme	Local Theme
8. Culture	Creative endeavour	Technological innovation and design solutions
3. Economy	Transport	Unknown
3. Economy	Transport	Engineering the public road system
3. Economy	Technology	Technologies of bridge building
3. Economy	Environment - cultural landscape	Developing local, regional and national economies
2. Peopling	Aboriginal cultures and interactions with other cultures	Wiradjuri Nation - lines of communication
1. Environment	Environment - naturally evolved	River flats
1. Environment	Environment - naturally evolved	Cultural: Rivers and water bodies important to humans
1. Environment	Environment - naturally evolved	Changing the environment
8. Culture	Defence	Technological innovation and design solutions
3. Economy	Aboriginal pre-contact	Unknown
3. Economy	Aboriginal pre-contact	Engineering the public road system
3. Economy	Utilities	Technologies of bridge building
3. Economy	Events	Developing local, regional and national economies
2. Peopling	Aboriginal post-contact	Wiradjuri Nation - lines of communication
1. Environment	Exploration	River flats
1. Environment	Exploration	Cultural: Rivers and water bodies important to humans
1. Environment	Exploration	Changing the environment

Recommended Management

Management Summary

Management

Records Retrieved: 0

Management Category	Management Name	Date Updated
No Results Found		

Report/Study

Heritage Studies

Records Retrieved: 0

Report/Study Name	Report/Study Code	Report/Study Type	Report/Study Year	Organisation	Author
No Results Found					

Reference & Internet Links

References

Records Retrieved: 18

Type	Author	Year	Title	Link
Written	Field, Samantha	2021	Bathurst: City of Museums	www.history.org.au
Tourism	Attraction Homepage	2007	Denison Bridge	http://www.bathurst.nsw.gov.au/community/1464.html
Tourism		2007	Denison Bridge	http://www.visitnsw.com.au/Operator.aspx?ProductId=9019437
Tourism	Bathurst Regional Council	2006	Denison Bridge Visitor Information	http://www.bathurst.nsw.gov.au/community/1464.html
Written	Government Architect's Office	2005	Bathurst Hospital Conservation Management Plan	
Written	Jacinta Carroll	2003	Lamps set for heritage listing (West. Advocate 29/3/03)	
Written	Barbara Hickson	2002	Denison Bridge SHI form and ICMS Strategy	
Written	Irwin Johnston & Partners	1994	Conservation Guidelines for Denison Bridge	
Written	Inst, Engrs, Australia, Syd. Div.	1994	Nomination Report for plaquing Denison Bridge	
Written	Theo Barker	1992	A History of Bathurst, Vol 1	
Written	Bathurst City Council	1989	Heritage Trail	
Written	Damaris Bairstow	1989	Bathurst Archaeological Inventory	
Written	entry on Morrell, Gustavus A	1988	Proc. Engineering Association of NSW, Vol IV	
Written	Maguire, Roslyn	1984	'Introducting Mr William Weaver, architect and engineer'	
Written	entry on Russell, Peter Nicol	1972	Australian Dictionary of Biography, Vol III	
Written	entry on Bennett, William C	1972	Australian Dictionary of Biography, Vol III	
Written	III. Sydney News, 10 October, p.209	1872	New iron bridge over Macquarie River	
Written	Sydney Mail, June 18, p.10	1870	Denison Bridge Completion	

Data Source

The information for this entry comes from the following source:

Data Source	Record Owner	Heritage Item ID
Heritage NSW	Heritage NSW	5051846

Every effort has been made to ensure that information contained in the State Heritage Inventory is correct. If you find any errors or omissions please send your comments to **heritagemailbox@environment.nsw.gov.au**