Database No. 82

McMillans Road Bridge, Rokewood

Rokewood - Skipton Road, Mt Missery Creek, Melway/Vicroad Ref: 76 C7, Rokewood

Lot No. **Plan No.**

Municipal Rate No.

Architectural Style

Designer(s)

Contractor(s)

Source: Victorian Heritage Register

Legislative Registers	Nominated	Registered
Victorian Heritage Register No.	☑	H1847
Heritage Inventory No.	☐	
Precinct Heritage Overlay No.	☐	
Precinct Heritage Overlay Nam		
Individual Heritage Overlay No.	☐	

Other Registers	Registered
National Estate RNE - Database	102761
RNE Legal Status	Indicative
National Trust (Vic.) File	B7004
Nat. Trust Classification	☐

Statement of Significance

National Estate Register:
It is of historical significance for its 1856 abutments, which are among the very earliest surviving examples of Victorian bridge technology. It is associated with significant engineers: Charles Rowland; Charles AC Wilson, an unusually skilled and adventurous Shire Engineer; and Professor WC Kernot. The early date of the bridge is indicative of the route's importance in the pastoral pioneering of the Western District, and between Geelong and the Ararat and Streatham goldfields in the 1850s. It is an extremely rare surviving example of a bridge built by Victoria's short lived Central Road Board. The 1888-9 wrought-iron superstructure represents another major era in Victoria's transport history, in which the main responsibility for maintaining Main Road infrastructure fell to the newly instituted rural municipalities which proliferated after 1870.

Whereas the original main road bridge had been wholly designed and built by the State road authority, only 25% of the 1888 cost was met by the State. The new superstructure was locally funded, designed, and built. It was built at Geelong. by Humble and Nicholson's important Vulcan Foundry. Its span length and deck width are notable among Victoria's metal truss and timber deck bridges.

It is of scientific (technical) significance as one of Victoria's earliest surviving examples of a composite road bridge, combining an unusual mixture of sandstone masonry abutments, riveted wrought-iron lattice truss girders, and a longitudinally planked timber deck. The 1856 abutments are very rare examples of superior

goldrush masonry bridge abutments (as distinct from integrated masonry arches), constructed according to an old European tradition. Most extant rural examples of such stone masonry abutments for big composite road bridges post-date the freak state wide floods of 1870, which forced a major reconsideration of rural bridge technology and encouraged more high level structures. By contrast, the 1888 wrought-iron trusses, of notable span, drew heavily upon the scientific theory and testing facilities of Professor Kernot's Department of Engineering at the University of Melbourne, and are extremely light, efficient and advanced examples of current bridge technology. The bridge represents an important step in the local evolution of wrought-iron trusses for use in bridge construction: considerable economies were achieved, and iron bridge superstructures became more competitive with traditional hardwood alternatives.

It is of aesthetic significance particularly for the superb red sandstone masonry abutments which support the later neat wrought-iron superstructure elements. The abutments and wing walls feature coursed rusticated stone work, with finely worked string courses and an ornate stepped profile. The design of these substantial masonry abutments is quite distinct from that of other colonial Victorian masonry structures, and possibly reflects the style of Telford, Brunel and early nineteenth-century British engineers who influenced David Lennox and in turn his pupil, Charles Rowland. Although two 1859 sandstone arch bridges survive, sandstone was a far less common bridge-building material in Victoria than the more durable basalt or bluestone.

Source: Victorian Heritage Register -
What is significant?
McMillans Bridge is situated on the Little Woady Yalloack River crossing of the Rokewood-Skipton Road 6 kilometres west of Rokewood. It was originally built in 1856 by the Central Road Board to the design of Charles Rowland, and incorporates 1888-9 modifications by the Shires of Leigh and Grenville to the design of Charles A.C. Wilson. It comprises two double-intersection wrought-iron deck-trusses which in 1889 were seated upon 1856 red sandstone abutments (originally constructed for a timber truss superstructure). The longitudinal timber deck is supported by timber cross beams laid across the tops of the iron trusses. The 29 metre single span wrought-iron lattice-girder trusses, connected by iron cross bracing, are of unusually light construction. The original deck width of 6.1 metres has been widened to 7.3 metres. The single-layer longitudinal timber deck is currently unsurfaced. It now has armco rails. The broad road reserve and open grassland terrain allow easy observation of the bridge's impressive stone-masonry and iron work.

McMillans Bridge is of historical, scientific (technical) and aesthetic significance to Victoria.

It is of historical significance for its 1856 abutments, which are among the very earliest surviving examples of Victorian bridge technology. It is associated with significant engineers: Charles Rowland; Charles AC Wilson, an unusually skilled and adventurous Shire Engineer; and Professor WC Kernot. The early date of the bridge is indicative of the route's importance in the pastoral pioneering of the Western District, and between Geelong and the Ararat and Streatham goldfields in the 1850s. It is an extremely rare surviving example of a bridge built by Victoria's short-lived Central Road Board. The 1888-9 wrought-iron superstructure represents another major era in Victoria's transport history, in which the main responsibility for maintaining Main Road infrastructure fell to the newly instituted rural municipalities which proliferated after 1870. Whereas the original main road bridge had been wholly designed and built by the State road authority, only 25% of the 1888 cost was met by the State. The new superstructure was locally funded, designed, and built. It was built at Geelong by Humble and Nicholson's important Vulcan Foundry. Its span length and deck width are notable among Victoria's metal truss and timber deck bridges.

It is of scientific (technical) significance as one of Victoria's earliest surviving examples of a composite road-bridge, combining an unusual mixture of sandstone masonry abutments, riveted wrought-iron lattice-truss girders, and a longitudinally planked timber deck. The 1856 abutments are very rare examples of superior goldrush masonry bridge abutments (as distinct from integrated masonry arches), constructed according to an old European tradition. Most extant rural examples of such stone masonry abutments for big composite road bridges post-date the freak state-wide floods of 1870, which forced a major reconsideration of rural bridge technology and encouraged more high-level structures. By contrast, the 1888 wrought-iron trusses, of notable span, drew heavily upon the scientific theory and testing facilities of Professor Kernot's Department of Engineering at the University of Melbourne, and are extremely light, efficient and advanced examples of current bridge technology. The bridge represents an important step in the local evolution of wrought-iron trusses for use in bridge construction: considerable economies were achieved, and iron bridge superstructures became more competitive with traditional hardwood alternatives.

It is of aesthetic significance particularly for the superb red sandstone masonry abutments which support the later neat wrought-iron superstructure elements. The abutments and wing walls feature coursed rusticated

stone work, with finely worked string courses and an ornate stepped profile. The design of these substantial masonry abutments is quite distinct from that of other colonial Victorian masonry structures, and possibly reflects the style of Telford, Brunel and early nineteenth-century British engineers who influenced David Lennox and in turn his pupil, Charles Rowland. Although two 1859 sandstone arch bridges survive, sandstone was a far less common bridge-building material in Victoria than the more durable basalt or bluestone.

National Trust:
CITATION
McMillan's Bridge, originally built in 1856 by the Central Road Board to the design of Charles Rowland and incorporating 1888-9 modifications by the Shires of Leigh and Grenville to the design of Charles A.C. Wilson, is of scientific, aesthetic and historical significance at a State level.

It is notable technically as one of Victoria's earliest surviving examples of composite road-bridge construction, combining an unusual but aesthetically pleasing mixture of sandstone masonry abutments, riveted wrought-iron lattice-truss girders (forming a single main span of 29 metres or 95 feet) and a longitudinally planked timber deck (7.3 metres or 24 feet wide). The red sandstone abutments of 1856 are very rare examples of superior goldrush masonry bridge abutments, constructed according to an old European tradition. By contrast, when they were added in 1888 the extremely light but efficient wrought-iron trusses of the current bridge were of advanced design, and drew heavily upon the scientific theory and testing facilities of Professor W. C. Kernot's Department of Engineering at the University of Melbourne. The current McMillan's bridge represents an important step in the local evolution of wrought-iron trusses for use in bridge construction. By significantly decreasing the weight of lengthy and cumbersome truss components, considerable economies were achieved both in terms of materials and of construction costs, and iron bridge superstructures became more competitive with traditional hardwood alternatives.

Aesthetically, McMillan's Bridge is significant particularly for its superb sandstone masonry abutments, which support the later neat wrought-iron superstructure elements. The masonry abutments and wing walls feature coursed rusticated stone work, with finely worked string courses and an ornate stepped profile. The design of these historic and substantial masonry abutments is quite distinct from that of other colonial Victorian masonry structures, and possibly reflects the style of Telford, Brunel and early nineteenth-century British engineers who influenced David Lennox and in turn his pupil, Charles Rowland. Though two sandstone arch bridges dating from 1859 still survive in Victoria, sandstone was a far less common bridge-building material than the more durable basalt or bluestone.

McMillan's Bridge is also of considerable historical importance. Charles Rowland designed the unusual masonry abutments for a substantial composite bridge of 1856, built by Victoria's short-lived Central Road Board, which places them among our very earliest surviving examples of Victorian bridge technology. Very few detached stone-masonry road-bridge abutments (as distinct from integrated masonry arches) of the 1850s goldrush era are known to exist in Victoria. Most of our extant rural examples of such stone masonry abutments for big composite road bridges post-date the freak state-wide floods of 1870, which forced a major reconsideration of rural bridge technology and encouraged more high-level structures. Surviving elements from Central Road Board bridges of any type are extremely rare today. The early date of the bridge is indicative of the importance of the road as an early trunk route, both to the Western District squatters, and between Geelong and goldfields at Ararat and Streatham in the 1850s.

The current wrought-iron superstructure elements of 1888-9 represent a very different era in Victorian road and bridge development, when the State had off-loaded the main responsibility for maintaining Victoria's main road infrastructure to newly instituted rural municipalities which proliferated after 1870. The original main road bridge had been wholly designed and built by the State road authority, at State expense, but only 25% of the 1888 reconstruction cost was met by the State. The adjoining Shires of Leigh and Grenville contributed most of the cost from local rates revenues, for a locally-designed superstructure constructed by a Geelong engineering firm.
Class: State

Description

National Estate Register:
McMillans Bridge is situated on the Little Woady Yalloack River crossing of the Rokewood-Skipton Road 6 kilometres north west of Rokewood. It was originally built in 1856 by the Central Road Board to the design of Charles Rowland, and incorporates 1888-9 modifications by the Shires of Leigh and Grenville to the design of Charles A.C. Wilson. It comprises two double-intersection wrought-iron deck-trusses which in 1889 were

seated upon 1856 red sandstone abutments (originally constructed for a timber truss superstructure). The longitudinal timber deck is supported by timber cross beams laid across the tops of the iron trusses. The 29 metre single span wrought-iron lattice-girder trusses, connected by iron cross bracing, are of unusually light construction. The original deck width of 6.1 metres has been widened to 7.3 metres. The single-layer longitudinal timber deck is currently unsurfaced. It now has armco rails. The broad road reserve and open grassland terrain allow easy observation of the bridge's impressive stone-masonry and iron work.

Condition and Integrity: Not Available

Source: Victorian Heritage Register -
Additional Information Comparisons: In terms of over-all age, there are very few bridges of any type in Victoria for which any substantial part of the current structure can be positively dated to the 1850s. The 8.1 metre single-span bluestone masonry arch bridge over Youl Creek at Woolsthorpe, built by the Belfast Road Board in 1856, is generally regarded as Victoria's oldest surviving bridge. Other surviving 1850s bridges all date from 1859 and include the six-span sandstone masonry arch bridge over Hughes Creek at Avenel, the five-span bluestone masonry arch bridge at Batesford and the single-span sandstone masonry arch bridge over Djerriwah Creek near Bacchus Marsh. The finely crafted red-sandstone masonry abutments which first carried goldfields traffic in 1856, are a substantial part of the present McMillan's Bridge and they rate among Victoria's very oldest surviving bridge artifacts of any sort.

McMillan's Bridge in its present (post-1889) form is one in an impressive series of colonial Victorian wrought-iron lattice-girder deck-truss road bridges. When built in 1888-9 it represented a significant evolution in bridge design which drew upon the latest engineering theory and the scientific testing facilities of the University of Melbourne to achieve maximum load-bearing capacity and durability in a lengthy single span, using a minimal quantity of imported iron materials. The lightness of the intelligently engineered wrought-iron trusses also made construction relatively simple and therefore economical, especially when used in conjunction with massive pre-existing sandstone abutments. McMillan's Bridge is also very unusual among its kind, in that it remains in service today.

The 1871 Glenmona Bridge over the Bet Bet Creek at Bung Bong was the first of several locally-produced Victorian wrought-iron lattice-girder road bridges to be constructed to a deck-truss design for rural crossing places on major roads. This new type of wrought-iron lattice-girder road bridge was designed specifically in response to the disastrous state-wide floods of 1870, which devastated many of the colony's big timber river bridges and led to government flood subsidies for many affected municipalities. When built, in 1871, Glenmona Bridge was rated amongst the most expensive bridges constructed in rural Victoria, the cost being twice that of McMillan's Bridge in 1889 (although the latter bridge used pre-existing masonry abutments, and was considerably shorter).

Several other colonial Victorian bridges combine stone-masonry substructures with wrought-iron girders of a different type, and timber decks. Among the best known are Shelford Bridge from 1874, and Keilor Bridge built in 1868, both of which use wrought-iron box-girders in conjunction with stone substructures and timber tops, at what were once major rural road crossings. The smaller 1870 Hotspur Bridge, in the old Shire of Portland, used a simpler through-truss rivetted-plate-girder construction with stone-masonry abutments and a timber deck, to create a very different visual effect.

The Redesdale (or Mia Mia) Bridge of 1868 stands out from all other Victorian stone-masonry, iron and timber-topped colonial bridges for several reasons. It was constructed earlier than the other rural lattice-girder truss bridges, all of which were built with benefit of hindsight into the devastating potential of freak floodwaters that had been unleashed across Victoria in 1870. Timber generally reigned in Victorian rural road-bridge construction prior to 1870, except at a few very difficult stream crossings on major roads where masonry-arch bridges had provided the only practicable solution (for example, Hughes Creek, Sydney Road, Avenel, late 1850s). The actual manufacture of the Redesdale Bridge iron trusses goes back to Britain of the 1850s, where they had been constructed to be used in a deck-truss design as at Hawthorn Bridge, for which site they were originally intended.

The Redesdale Bridge is the oldest and most visually impressive of a small series of rural Victorian wrought-iron lattice-girder bridges built in the colonial era, and mainly congregated in our Central Goldfields region. It is an oddity in such a rural situation, its iron-truss materials having been imported in 1859 to bridge a major urban river crossing at Hawthorn. The divided-lane through-truss design at Mia Mia, linked and stabilised by unusual overhead iron arches, was created for this specific difficult Campaspe-crossing site and is unique. Its tall imported wrought-iron through trusses were massively heavy and very expensive when compared to the

locally-manufactured and cleverly engineered light-weight wrought-iron trusses produced in Geelong for use on McMillan's Bridge in 1888-9.

Jorgensen's Bridge near Clunes dates from 1874 and is a similar type of structure to Glenmona Bridge, utilising continuous wrought-iron lattice-girder deck trusses on stone-masonry abutments and piers. Cressy Bridge which dates from 1880 is larger, with significantly longer spans. It is unlike the earlier lattice-truss bridges in having a buckle-plate deck on iron cross beams. The second Government Bridge over Creswick Creek at Clunes was built in 1896 on stone-masonry abutments previously associated with a laminated timber arch structure. It also used wrought-iron lattice-girder trusses, twenty-two metres in length, in a deck-truss design. Built on the much earlier stone foundations of an original laminated-timber-arch bridge, it has itself since been replaced except for the historic masonry abutments.

In terms of its wrought-iron lattice-truss technology, McMillan's Bridge built near Rokewood in 1889 by a Geelong contractor was a very advanced light-weight and efficient bridge design for its era, created by an unusually skilled and adventurous shire engineer who drew upon the resources of the Engineering Department of the University of Melbourne headed by Professor W. C. Kernot. In this case, a large single-span road-bridge superstructure was supported by only 30 tons 11 cwt of imported wrought-iron, incorporated into an unusually light-weight deck-truss design for that era. Such economical and efficient wrought-iron bridge construction was only made possible by the up-to-date theoretical and scientific-testing input of Professor W. C. Kernot's university department. Kernot was at that stage beginning to have a little success in what had been a long-standing struggle to convince 'practical' engineers of the old school that 'abstract' scientific theory could make a major contribution to the development of an efficient Victorian infrastructure.

History

National Estate Register: Not Available.

Thematic Context

Recommendations

Source: Victorian Heritage Register