HERITAGE COUNCIL OF WESTERN AUSTRALIA

REGISTER OF HERITAGE PLACES

Removed Entry

The interim registration of this place was not made permanent and therefore lapsed on 15 August 2004. Notice of this decision under the Heritage of Western Australia Act 1990 appeared in the Government Gazette on 10 June 2005.

1. DATA BASE No. 13081

2. NAME *Brockman's Bridge* (1907)
FORMER NAMES Lower Blackwood Dudinyillup Bridge also known as Dudinalup Bridge

3. LOCATION Grid Reference 62918 E 38487 N
Cundinup - Dudinalup Road, Nr Nannup

4. DESCRIPTION OF PLACE INCLUDED IN THIS ENTRY
Main Roads Western Australia Bridge No. 3965 over the Blackwood River located on the Cundinup-Dudinyillup Road, Nannup as is defined by Heritage Council of Western Australia survey Drawing No 13081 prepared by Steffanoni Ewing & Cruickshank Pty Ltd.

5. LOCAL GOVERNMENT AREA Shire of Nannup

6. OWNER Shire of Nannup

7. HERITAGE LISTINGS

Register of Heritage Places:	Interim Entry	15/08/2003
National Trust Classification:		----------
Town Planning Scheme:		----------
Municipal Inventory:		----------
Register of the National Estate:		----------
Institution of Engineers Australia	Large Timber Structures Survey	1998

8. CONSERVATION ORDER

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9. HERITAGE AGREEMENT

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10. STATEMENT OF SIGNIFICANCE

Brockman's Bridge, a nine-span girder timber road bridge with timber stringers and driven piles constructed entirely of jarrah, built over the Blackwood River in 1907, has cultural heritage significance for the following reasons:

the place is the only intact timber bridge built in the first decade of the twentieth century over the Blackwood River surviving in its original form, one of a very small number of such bridges in Western Australia and one of the oldest in the State;

the place was built during a period of intense activity in the Nannup district, and from its completion played an integral part in the

development of the region as the essential means of access to the road at the south of the river that enabled development of the properties to the north of the river;

the place is a good example of a girder timber bridge built in the late nineteenth and early twentieth centuries in Western Australia;

the place has aesthetic value as a well constructed nine-span timber bridge that appropriately overcomes the restrictions imposed by its isolation with considerable elegance by using local timbers in a forest setting; and,

the place is closely associated with the Brockman family, who made significant contributions to development in the district, particularly E. J. T. Brockman, who purchased the nearby property at Dudinalup in 1919, and his father, Edward Brockman, the first secretary of the Lower Blackwood Road Board in 1890, as evidenced in the name *Brockman's Bridge*, by which the place has been known since 1919.

ASSESSMENT OF CULTURAL HERITAGE SIGNIFICANCE

The criteria adopted by the Heritage Council in November 1996 have been used to determine the cultural heritage significance of the place.

PRINCIPAL AUSTRALIAN HISTORIC THEME(S)

3.7.3.1 Building and maintaining roads

HERITAGE COUNCIL OF WESTERN AUSTRALIA THEME(S)

203 Road transport

11. 1 AESTHETIC VALUE [1]

Brockman's Bridge, has aesthetic value as a well constructed nine-span timber bridge that appropriately overcomes the restrictions imposed by its isolation with considerable elegance by using local timbers in a forest setting. (Criterion 1.1)

The design devices employed in *Brockman's Bridge* are typical of the period and were used in a number of timber bridges constructed in the late nineteenth and early twentieth centuries. (Criterion 1.2)

11. 2. HISTORIC VALUE

Brockman's Bridge is significant as one of a number of bridges built over the Blackwood River in the latter half of the nineteenth and the early twentieth century. They were an essential part of the development of a network of roads in the South-West of Western Australia that provided the necessary infrastructure for the development of agricultural and timber industries in the region. (Criterion 2.1)

Brockman's Bridge was built in 1906-07, during a period of intense activity in the Lower Blackwood (Nannup) district, that lay the foundations for the future development of the region. *Brockman's Bridge* provided access to the Lower Blackwood(Nannup)-Balingup Road on the south of the Blackwood River for the properties to the north of the river, enabling their future development. (Criterion 2.2)

Brockman's Bridge was designed by Roads and Bridges Engineer G. E. Farrar, and built by James Pratt. (Criterion 2.3)

Brockman's Bridge is closely associated with the Brockman family who have

made significant contributions to development in the district, particularly E. J. T. Brockman, who purchased the nearby property at Dudinalup in 1919, son

1 For consistency, all references to architectural style are taken from Apperly, Richard; Irving, Robert and Reynolds, Peter *A Pictorial Guide to Identifying Australian Architecture: Styles and Terms from 1788 to the Present* , Angus & Robertson, North Ryde, 1989.

of Edward Brockman, the first secretary of the Lower Blackwood Road Board in 1890. The name *Brockman's Bridge*, by which the place has been known for more than 80 years, evidences the continuing association with the Brockmans. (Criterion 2.3)

Brockman's Bridge is a technical achievement utilising timber to construct a bridge capable of withstanding severe river flooding since 1907. (Criterion 2.4)

11. 3. SCIENTIFIC VALUE

Brockman's Bridge is a benchmark site as the only site exhibiting timber bridge construction as practised in the late 1890s and early 1900s over the Blackwood River and possibly within Western Australia. (Criterion 3.1)

Brockman's Bridge is a technical achievement requiring innovation to transport materials and construction equipment to the remote site. (Criterion 3.3)

11. 4. SOCIAL VALUE

Brockman's Bridge is valued by the community of Nannup for social and cultural reasons as it has provided transport over the Blackwood River for much of the twentieth century, which was essential in the development of the properties to the north of the river, and thus in the development of the district. (Criterion 4.1)

Brockman's Bridge contributes to the community's sense of place as an early timber bridge across the Blackwood River at Dudinalup, off the Balingup-Nannup Road. (Criterion 4.2)

12. DEGREE OF SIGNIFICANCE

12. 1. RARITY

Brockman's Bridge has rarity value as the only intact timber bridge built in the first decade of the twentieth century over the Blackwood River surviving in its original form. It is one of a very small number of such bridges extant in Western Australia and one of the oldest in the State. (Criterion 5.1)

12. 2 REPRESENTATIVENESS

Brockman's Bridge is a good example of the design of girder timber bridges built in the late nineteenth and early twentieth centuries in Western Australia. (Criterion 6.1)

Brockman's Bridge, utilising sawn timber stringers and corbels, represents the early technology of timber bridge construction and is typical of timber bridges built in the late nineteenth and early twentieth centuries in Western Australia. (Criterion 6.2)

12. 3 CONDITION

Brockman's Bridge is in need of extensive reconstruction to remain as an operational bridge for vehicular traffic and is currently in poor condition and requires maintenance.

12. 4 INTEGRITY

Brockman's Bridge is of high integrity as it remains essentially as originally

constructed with all the key elements remaining.

Continued deterioration of the key timber elements of the bridge will impact on the long-term viability of the place sustaining the values it currently presents.

With further maintenance of the timber elements consisting of pile strengthening and replacement of elements of the bridge the structure could be retained to portray the integrity of the place, although not as an operational vehicular traffic. More extensive rebuilding and replacement of the timber elements is required for the bridge to be used to carry vehicular traffic.

12. 5 AUTHENTICITY

The fabric of the bridge is of high authenticity and it exhibits the technology of timber bridge construction over the flood prone Blackwood River utilised in the late 1890's.

13. SUPPORTING EVIDENCE

The documentary evidence has been compiled by Robin Chinnery, Historian. The physical evidence has been compiled by Jim Paton, Engineer, with Kelsall Binet, Architects.

13. 1 DOCUMENTARY EVIDENCE

Brockman's Bridge is a nine-span girder timber bridge over the Blackwood River at Dudinalup. In 1905, the bridge and approaches were designed by Roads and Bridges Engineer G. E. Farrar. The place was built by Jas. Pratt in 1906-07.

Through the second half of the nineteenth century and into the first decade of the twentieth century, the Nannup district was known as Lower Blackwood, hence the nomenclature used in the Documentary Evidence.

Brockman's Bridge became known by this name in the inter-war period, and the usage has continued through the twentieth century and into the twenty-first century. It is MRDWA Bridge 3965, which was initially designed as Lower Blackwood River Bridge at Dudinyillup, and most often referred to in the early period as Dudinyillup Bridge or Dudinalup Bridge. Dudinyillup was the earlier name for the district. However, in the early twentieth century both names are used almost interchangeably in much of the documentation. In the late twentieth century, the name is generally recorded as Dudinalup. In the Documentary Evidence, the use of the names parallels that found in the respective sources.

In 1835, the first substantial road bridge in the Swan River Colony was built at Drummond's Crossing, Guildford. In the period prior to the introduction of convict transportation in 1850, only a small number of road bridges were completed. In December 1851, the first contingent of the Royal Engineers arrived in the Colony. In the subsequent period, under their supervision, an extensive public works programme was implemented employing convict labour, including the construction of roads and bridges. The latter was assisted by the ready availability of a good supply of timber suitable for bridge building.[2]

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2 The Engineering Heritage Panel, Western Australian Division, Large Timber Structures in Western Australia (The Institute of Engineers, Australia The Institution of Engineers

In 1851, Charles Bussell and J. G. Reynolds were the first Europeans to settle in the present Nannup district when they took up a joint lease of 16,000 acres in the Dudinyillup area, in the vicinity of the confluence of St. John's Brook and the Blackwood River. In 1852, a survey undertaken by Surveyor A. C. Gregory included parts of the districts around the Blackwood and Donnelly Rivers. In 1858, W. R. Bunbury took over Reynold's leases, and in the same year Surveyor Austin surveyed the district, including W. R. Bunbury's station. The survey included Nelson Locations 6 and 7, which were transferred to Bunbury in December. Thereafter, for most of the remainder of the nineteenth century, the property was referred to as Bunbury's cattle station on the Blackwood.[3]

European settlers from around Bunbury and Vasse (Busselton) and other areas already settled in the South-West, including some pioneering families such as the Bussells and Brockmans, began to push southwards in search of fresh pastures. Running east to west across their migratory path, the Blackwood River offered a limited number of suitable crossings. Consequently, the pattern of road development and the growth of settlements and towns was integrally linked to the location of the fords, including those at Geegelup Ford (Bridgetown) and Nannup Ford. Other fords on the Blackwood River included Jalbarragup and Milyeannup, farther downstream.[4]

In 1861-62, bridges were built over St. John's Brook and the Blackwood River near their confluence. The bridges were located on a branch road from the main route being established between Vasse and Blechynden's Farm on the Blackwood (Bridgetown). A bridge was also commenced adjacent to Geegelup Ford, but before completion it was washed away in a flood, and the new bridge was built upstream, adjacent to Blechynden's homestead.[5]

In August 1870, a Post Office was established at Lower Blackwood. This nomenclature continued until 1907.[6]

In 1870, a Legislative Council was established to advise the Governor. One of the first measures passed by the Council was the *Municipalities Main Roads Board Act 1871*, which created municipal councils and roads boards with jurisdiction over roads, drains, public buildings, ponds, fences and sanitation. Whilst the Roads Boards were given the power to levy rates and charges, with limited income they continued to be dependent upon government grants, and the Government provided most of their major public works.[7]

In 1874, Governor Weld proposed the establishment of a works office separate from the Surveyor General and responsible to the Governor. In 1876, J. H. Thomas was appointed as government engineer. He became the Director of Public Works and Commissioner of Railways. Richard Roach Jewell was appointed Supervisor of Works, retaining that position until his retirement in 1884. He was succeeded by George Temple Poole,

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Australia, Western Australian Division, 1998) pp. 2-1.

3 Gilbert, Charles History of Nannup (Nannup Shire Council, 1973) pp. 10- 13.

4 Jalbarragup Bridge (ruin) 1900, HCWA Data Base No. 3364, p. 3.

5 ibid, pp. 3-4. Note: In 1888, this bridge was replaced by another on the same site, as occurred again in 1936. The replacement of earlier bridges by a new bridge on the same site or in close proximity was common practice in the nineteenth and twentieth centuries.

6 Gilbert, Charles op. cit., p. 25.

7 Crowley, F. K. Australia's Western Third: A History of Western Australia from the first settlements to modern times (Macmillan & Co. Ltd., London, 1960) p. 76; and Edmonds, Leigh The Vital Link: A History of Main Roads Western Australia 1926-1996 (University of Western Australia Press, Nedlands, 1997) pp. 15-16.

subsequently Director of Public Works from 1889.[8]

Following the death of W. R. Bunbury in late 1887, his leases at Dudinyillup were renewed in the names of his Executors, R. Fairbairn and E. R. Brockman. In 1889, Bunbury's station was sold to Henry McKenzie, in whose ownership it continued to 1919.[9]

In 1890, the Lower Blackwood Roads Board was formed. In that year, approval was given for expenditure of £5,000 on roads and bridges in Western Australia, the allocation to Lower Blackwood being £ 85.[10]

In the 1890s, consequent to the granting of Responsible Government in 1890, and the Gold Boom, Western Australia experienced a period of rapid development and increased expenditure on public works, in which the Public Works Department (PWD) evolved further. In May 1891, Poole was appointed Assistant-Engineer-in-Chief and Architect-in-Charge of public buildings, positions he held until his resignation in 1896. Poole developed a range of standard designs for public buildings, a practice which was adopted also for the design of bridges in the late nineteenth and early twentieth centuries.[11]

Standard plans for bridges were adjusted according to the parameters of individual sites, including height, length, and foundation conditions. This practice reinforced the existing trend towards simple easy-to-built (sic)-and-maintain bridges.[12] Whilst early bridges rarely employed corbels, in the 1890s, the use of corbels to support stringers over piers had become almost universal. From the 1890s until the late 1920s, sawn jarrah stringers were the norm.[13]

In the last decade of the nineteenth century and the first decade of the twentieth century, a greater number of bridges were built, and they were generally of sturdier construction than those of the earlier period. In 1897, Alexandra Bridge was built over the Blackwood River. In the late twentieth century, the original bridge was no longer extant. All that remained were a few spans at the northern abutment, which were reported to be in a ruinous state.[14]

In the period 1904-08, the Lower Blackwood Roads Board was very active in the development of roads and bridges in the district. In the financial year 1904-05, the Roads Board's major expenditure was on the Balingup-Lower Blackwood Road. Recognising that future development was dependent on improved transport and communications, the Roads Board also campaigned vigorously and eventually successfully for the extension of the Jarrahwood railway line to Lower Blackwood, and for the provision of telephone

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8 Creating the Public Realm: Public Architecture in Western Australia: 1890-2000 Presented by The Library and Information Service of Western Australia and the Building Management Authority, 1994, pp. 12-13; and Oldham, Ray and John George Temple Poole: Architect of the Golden Years 1885-1897 (University of Western Australia Press, Nedlands, 1980) p. 120.

9 Gilbert, Charles op. cit., p. 13. Note: In the 1890s, Brockman settled in the Lower Blackwood district. He played a prominent part in the development of the district, and was the first Secretary of the Lower Blackwood Roads Board. (ibid, p. 35.)

10 ibid, pp. 1-7. Note: Footnote 2 in Jalbarragup Bridge (ruin) 1900, HCWA Data Base No. 3364 (p. 4) mistakenly records the larger figure as the amount distributed by ëthe Shire of Nannupí.

11 Oldham, Ray and John op. cit., p. 127.

12 Institution of Engineers op. cit.

13 ibid. See Appendix for Glossary of Road Bridge Terms.

14 Jalbarragup Bridge (ruin) 1900, HCWA Data Base No. 3364, p. 4.

services.[15]

In 1905-06, the Roads Board received a special government grant for road works in the district. In September 1905, a Committee appointed by the Board submitted to the Board a list of works to be carried out on the Balingup-Lower Blackwood Road funded by the grant, totaling around £200. In December 1905, the meeting of the Board noted the acceptance of the tender from A. H. W. and J. W. Scott to construct a bridge across Sheepyard Gully on the Balingup Road, and also the tender of W. Vincent to construct a bridge on Bishop's Road.[16]

In 1905, plans for Lower Blackwood River Bridge at Dudinyillup and Approaches Contract were drawn by the Engineer for Roads and Bridges, G. E. Farrar. The plans were for a nine-span timber bridge, 179ft in length, two spans of 18ft and seven spans of 20ft, with the northern approach 104ft 6ins in length and the southern approach 249ft 6ins. The Abutments and Approaches Elevation Plan and Cross Section utilised the PWDWA Roads and Bridges Branch Standard Drawing.[17]

George Edward Farrar (b. 1848, Yorkshire) after experience in engineering work in Britain, emigrated to Melbourne in 1871. In Victoria, he became identified with the staff of the Mines Department and the Lands and Surveys Office for about six months.[18] In September 1874, he was appointed as assistant in the Engineer-in-Chief's Department, Adelaide, South Australia, occupying that position for five years, before going into private practice. From 1884 to 1889, he was Engineer for the North Midland Roads Board, followed by c. six months in the Railway Construction Branch of the Victorian Railways. From 1889, he was Assistant Engineer for Roads and Bridges in South Australia, before coming to Western Australia in February 1894, to take up the position of Engineering Surveyor in the Public Works Department, mainly in roads and bridges. In 1902, he was appointed Principal Engineer for Roads and Bridges.[19]

On 6 February 1906, tenders were called for the construction of a bridge and approaches across the Blackwood River at Darradup, Lower Blackwood.[20] On 15 March, tenders were called for the construction of a bridge and approaches on the Blackwood River at Dudinyillup, Lower Blackwood.[21]

In April 1906, the Lower Blackwood Roads Board carried a motion that the Board request in the Government Estimates for the next financial year a grant of £100 to open up a road from Dudinalup to Cundinup, and also a motion that £50 be requested to open up a road from L. Brockman's to the river bridge at Dudinalup. At the same meeting, correspondence received included notification from the PWD that the grant for the year ending June 1906 would

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15 The South-Western News 1905-07; and Lower Blackwood Roads Board Balance Sheet for Year ending 30 June 1905 in Government Gazette 18 May 1906, p. 1468.

16 The South-Western News 15 September and 8 December 1905, p. 3 respectively.

17 PWDWA 12344/5 Drawing nos. 1-3, MRDWA Developmental Roads Bridge over Blackwood River at Loc. 777 Shire of Nannup, MRDWA 2998.

18 Battye, J. S. The Cyclopedia of Western Australia (The Cyclopedia Company, Perth, 1912-13) Vol. 1, p. 498.

19 ibid. Note: From 1907, Farrar was also Acting Engineer for Harbours and Rivers. He was a Fellow of the Society of Engineers of London and a member of the Western Australian Society of Engineers, which he served as Honorary Secretary. (ibid.)

20 Government Gazette 9 February 1906, p. 451.

21 Government Gazette 16 March 1906, p. 885.

be £400.[22]

On 20 April 1906, James Pratt was awarded the contract for the bridge at Dudinyillup, at a cost of £591 7s. 1d., and also the contract for the bridge at Darradup at a cost of £281 14s. 11d. on 30 May.[23]

In mid 1906, *The South-Western News* reported Nannup is progressing, if only slowly.[24] In recent months, two new buildings had been erected, a store for Mr. Kearney, and a jarrah timber cottage for Mr. Tom Kearney.[25]

On 6 July, it was reported that work on the Dudinyillup Bridge was proceeding slowly, as heavy winter rains and the swollen state of the river were militating against ordinary progress.[26] Later that month, it was reported that work had commenced also on the long delayed Darradup Bridge, which was expected to be completed within the next month.[27] However, neither bridge progressed as anticipated, the former due to continued heavy rainfall through the remainder of the winter and early spring, and the latter because the Roads Board sought to have a traffic bridge, as originally requested, built at Darradup instead of a footbridge. The Darradup site was inspected by a PWD engineer and subsequently the Roads Board was advised that the PWD would accede to the request. However, in September, the Roads Board was advised that the decision to build a traffic bridge had been revoked, and only a footbridge would be built.[28]

In February 1907, the PWD advised the Roads Board that £50 was available for construction of the Dudinalup Bridge road.[29] In May, the Roads Board was advised of a grant of £4 for 'screwing up' the Darradup Bridge, the final stage in the construction of timber bridges in the late nineteenth and early twentieth centuries. In the same month, the survey of the route for the extension of the Jarrahwood rail line to Lower Blackwood was announced.[30]

In June 1907, the Roads Board carried a motion that £50 be requested in the Government Estimates to complete the road to Dudinalup Bridge, and also £100 for the Dudinalup-Cundinup Road.[31] The Board was successful in these requests and also obtained a grant of £10 for 'screwing up' the Dudinalup Bridge.[32]

Accounts passed for payment at the above meeting included £29 19s. to R. T. Avery for construction of the first stage of the Dudinalup Bridge Road, and also to £20 5s. to S. Smith for the Dudinalup Bridge Road. Avery refused to complete the second stage of the road, maintaining that when he agreed to the condition in the contract that he would carry out the second stage at the same price as the other contractor, in the event of the other contractor declining to sign for No. 2 section, he had understood that the 30ft bridge was

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22 The South-Western News 13 April 1906, p. 3.
23 Government Gazette 27 April and 4 May 1906, p. 1281 and p. 1324 respectively.
24 The South-Western News 22 June 1906, p. 3.
25 ibid.
26 ibid, 6 July 1906, p. 3.
27 ibid, 20 July 1906, p. 3.
28 ibid, 10 and 31 August, and 27 September 1906, p. 3 respectively.
29 ibid, 22 February 1907, p. 3.
30 ibid, 3 and 24 May 1907, p. 3 respectively. Note: The term 'screwing up' the bridge is not one familiar to current bridge engineers, but was likely to have been tightening bolts and screws. (Trevor Slattery, MRDWA, telephone conversation with Robin Chinnery, 14 August 2002.)
31 ibid, 14 June 1907, p. 3.
32 Lower Blackwood Roads Board Balance Sheet for the Year ending 30 June 1908 in Government Gazette 31 July 1908, p. 1988.

included; however, the bridge was a separate contract.[33]

The PWD Bridges Register does not include the Dudinalup bridge or note its completion.[34] However, the Roads and Bridges Statement of Works completed, undertaken or initiated during the year 1906-07, and Farrar's Report for the Year ending 30 June 1907 include both the Darradup and Dudinyillup Bridges, and show both had been completed in the year 1906-07. The description of the Dudinyillup Bridge noted the deck was 12ft., approaches, about 354 feet, metalled to a width of 15 feet, and fenced on both sides.[35] The Dudinyillup Bridge was founded on jarrah driven piles, and the bracing timbers were hewn, typical of bridge construction in the late nineteenth and early twentieth century in Western Australia.[36]

For the year ending 30 June 1907, the sum of £584 10s. 8d. was expended on Dudinyillup Bridge, and a total of £778 5s. 5d. to 30 June 1907. This was a greater expenditure than that on all but five bridges under construction in the year ending 30 June 1907.[37]

On 2 August 1907, *The South-Western News* reported that accounts passed for payment by the Lower Blackwood Roads Board included £7 to T. and W. Blythe for screwing up the Dudinyillup and Darradup bridges.[38] In October, the Roads Board accepted the tender of Nat Bishop for forming and gravelling at the Dudinyillup Bridge, and near H. Ellis' property. In November, the accounts passed for payment included £20 4s. 6d. for this work.[39] In 1907, Lower Blackwood was re-named Nannup, which had been in general use for some time, as evidenced in the aforementioned article.[40]

In 1919, E. J. T. Brockman, son of E. R. Brockman purchased the property at Dudinalup known as Bunbury's station, at Nelson Locations 6 and 7. Subsequently, the Dudinalup Bridge became known as *Brockman's Bridge*, by which name the place has continued to be known through the twentieth and into the twenty-first centuries. From its completion in 1907, and through the twentieth century, *Brockman's Bridge* provided essential access for the properties on the north side of the Blackwood River to the Lower Blackwood(Nannup)-Balingup Road on the south of the river.[41]

In the inter-war period, the place was one of three bridges over the Blackwood River within a distance of six to eight miles. It was much better constructed than the other bridges, and thus suffered less damage in floods. These bridges enabled the successful development of farming in the Nannup district on the northern side of the Blackwood River in the twentieth century. In the 1920s, winter flooding of the Blackwood River occurred frequently, with the flood waters reaching one to two feet above the decking of

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33 The South-Western News 14 June 1907, p. 3.

34 PWD Bridges' Register SROWA Cons. 6519 WAS 2542 Item 2.

35 Roads and Bridges Statement of Works completed, undertaken or initiated during the Year 1906-1907, in Public Works Department Report for the Year ending 30 June 1907 in Votes and Proceedings 1907 Fourth Session, p. 25. Note: Darradup Bridge was later converted to a traffic bridge. In 1975, it was replaced by a new bridge. All that remains of the original bridge are a few piles, visible only when the river is low. (Jalbarragup Bridge (ruin) 1900, HCWA Data Base No. 3364, p. 4.)

36 R. H. Brockman telephone conversation with Robin Chinnery, 11 July 2002.

37 Statement No. 1 showing Expenditure out of Loan Funds on Roads and Bridges to 30 June 1907, in ibid, p. 63.

38 ibid, 2 August 1907, p. 3.

39 The South-Western News 25 October and 22 November 1907, p. 4 and p. 3 respectively.

40 Gilbert, Charles op. cit., p. 25.

41 R. H. Brockman op. cit.

Brockman's Bridge in most years. The flooding did little damage to the bridge, and when minor repairs were required they were carried out by the Roads Board.[42]

On 31 December 1925, the Main Roads Bill was assented in the Western Australian Parliament, and it came into force on 7 June 1926. Bridges were included in the responsibilities of the newly created Main Roads Board.[43] At a later period, bridges were enumerated throughout the State, the Dudinyillup Bridge being MRDWA Bridge 3965.

In 1955, 1963, and in the early 1980s, there were record floods of the Blackwood River, when levels above the deck of *Brockman's Bridge* reached 8ft., 4ft. 6ins. and 20ft. respectively.

In the 1970s and 1980s, several reports on the place were filed at Main Roads WA. The first report, in October 1972, was of a rudimentary nature and recorded the bridge as in poor condition. At that date, it was under the control of the Forests Department (now Department of Conservation and Land Management) and was being utilised for access to the pine plantations north of the Blackwood River.[44]

Following the floods in 1982, a more detailed inspection recorded that the decking had been renewed and some of the stringers replaced in 1974. When flooding of the Blackwood River occurs, it has been the practice to remove the hand railing in case the bridge is over-topped, and this occurred at the time of the 1982 floods. This report estimated that the bridge was likely to remain operational for a further 10 to 15 years.[45]

In 1984, further maintenance was carried out by the Nannup Roads Board including the replacement of some stringers and installation of longitudinal 'running planks' over the decking.[46] At this period, the Main Roads Department constructed new timber abutments, leaving the original abutments in position.[47]

In 1998, The Institution of Engineers Australia, Western Australian division completed a survey of large timber structures in this State. At that period, there were 1,500 timber bridges in service on public roads in Western Australia, and in addition approximately 150 timber bridges on roads reserved for use by the Department of Conservation and Land Management and the Water Corporation. The survey included 282 timber road bridges considered to be significant. A ranking system, numbered from 1 to 5, was adopted to help give each a heritage significance classification, as follows:

1 Limited individual significance

2 Feature (s) of significance

3 Timber bridge history important at site

4 Current structure and features significant bridge (bridge in use/maintained)

5 Current structure and features significant (work needed for public access to be

42 ibid.

43 Edmonds, Leigh The Vital Link: A History of Main Roads Western Australia 1926-1996 (University of Western Australia Press, Nedlands, 1997) pp. 24-28.

44 Main Roads File 51-3965-15VB.

45 ibid.

46 ibid; and R. H. Brockman op. cit.; and drawing no. 3 of PWDWA 12344/5 op. cit.

47 ibid; and Peter Newhouse, Engineer MRD, Bunbury, telephone conversation with Robin Chinnery, 3 July 2002.

maintained) [48]

In addition, bridges with every high heritage value were denoted with an asterisk. Bridges ranked 4 or 5 were considered to be of major heritage importance.[49]

Brockman's Bridge, was one of 50 bridges given rankings of 4 or 5. It was given a ranking of 4, as it was still open to traffic in 1998, and was reported to be in fair to poor condition, as shown in photographs.[50] The original sawn timber stringers and driven timber piles were extant. The survey noted that the place was the original bridge at the site, abutments had been recently replaced and the bracing strengthened, and visual impact of modifications now important. An asterisk denoted the bridge had very high heritage value, and a heritage assessment was recommended.[51]

Subsequent to the 1998 survey, a detailed inspection was made by Main Roads, in November 2002, following which *Brockman's Bridge* was closed to traffic due to its deteriorated condition. In 2002, it is intended to demolish the bridge in order to construct a new bridge in the same location.[52]

In June 2002, Kelsall Binet Architects, Robin Chinnery, Historian, and Jim Paton, Engineer, were commissioned by Main Roads WA to undertake this Heritage Assessment of the place to comply with the requirements of GHPDP.

13. 2 PHYSICAL EVIDENCE

Located at Dudinalup over the Blackwood River, *Brockman's Bridge* is a timber structure 54 metres in length between the abutments.

The bridge consists of nine 6-metre spans with the timber decking 6 metres above the normal summer river level. The width of the bridge between kerbs is 3.7 metres. The existing structure is as the original design.

Located 80 metres to the north of the Nannup/Balingup Road on the Dudinalup/Cundinup Road the bridge blends into the embankments either side of the river.

The bridge connects to unmade roads in 10 metre wide reserves. One to the north connects to Cundinup Road and the other to Revelly Bridge over the Blackwood River 6 kilometres downstream from *Brockman's Bridge*.

The bridge provides access to houses facing the Dudinalup/Cundinup Road immediately north of the bridge.

The terminology utilised in describing the components of the bridge is attached and is according to terminology included in the Institution of Engineers listed in volume 2 "Large Timber Structures".

The bridge consists of 8 piled timber piers and at each abutment support structures to the end spans and also retaining the earth embankments.

Each of the eight piers consist of three bush timber piles in the order of 400 mm in diameter driven to a depth of 3 metres into the bed of the river.

The tops of the piles at each pier are connected by half caps consisting of 300

48 Institution of Engineers op. cit., p. 2-2.
49 ibid.
50 ibid, and Entry 1357.
51 ibid.
52 Bridge 3965 - Heritage Assessment - Draft Study Brief, p. 1.

mm by 150 mm sawn timbers bolted into shoulders at the top of the piles.

The piles at each pier are tied together at normal water level by two horizontal walers of 200 mm by 75 mm sawn timbers bolted to the piles.

The three piles at each pier are diagonally braced with 175 mm by 75 mm sawn timbers bolted to the piles.

The 200 mm by 75 mm timber decking is supported on five 300 mm by 150 mm sawn timber longitudinal stringers bearing on sawn timber corbels 1600 mm in length bolted to the half caps.

The timber handrails are supported from 150 mm by 100 mm sawn timber posts at 2000 mm centres bolted to the outside stringers.

The three piles at each abutment are tied at the top with 300 mm by 150 mm half caps on which the ends of the five stringers bear. These piles also support 225 mm by 75 mm horizontal timbers retaining soil, together with wing walls consisting of 225 mm by 75 mm timbers behind vertical piles.

Documentary evidence indicates that a number of maintenance works were completed between 1972 and 1984.

During the inspection on the 7th July, 2002 further maintenance changes were noted, these being as follows:

> additional half caps installed beneath the original half caps at some piers where the original half caps indicated signs of failure.
>
> additional steel columns set into concrete footings at the rivers edge on each side.
>
> metal bands bolted around some of the piles to maintain timber integrity.
>
> the vertical timber handrails were in position, however the horizontal rails removed and wire ring lock fencing installed.

At the time of inspection on 7th July, 2002 the bridge was closed to vehicle traffic, although it was evident that it was being utilised for access to the properties adjacent to the northern approaches.

The closure of the bridge resulted from a detailed inspection by Main Roads WA in November, 2001[53] when it was determined that the cost of the maintenance work required to retain it in a satisfactory operational condition would be better directed to the construction of a replacement bridge.

The decking of the bridge has deteriorated to the extent that it requires complete replacement, and it is uncertain as to whether timber preservative has been regularly applied.

As previously outlined, replacement of half caps, corbels, stringers and bracing is also necessary together with the driving or splicing of replacement piles as required due to deterioration of the timber.

The bridge has withstood flood conditions in the Blackwood River with recorded overtopping to a depth of 2.4 m above deck level in the 1955 flood, and the flood level in the 1982 overtopping is recorded on site.

Retaining a bridge across the river in this location requires either extensive reconstruction, or construction of a replacement bridge.

In view of the heritage significance of the place retention of the existing

53 ibid

structure based on limited restoration is recommended, with the construction of a replacement bridge immediately upstream.

A new alignment requires some modification of the road reserve on the northern embankment, however it is possible to minimise this impact.

Preservation of the existing structure requires steel banding of the piles at river level and cementations, grout injection into the timber, replacement of the pile bracing at the piers and replacement of the bolts in PVC sleeves and where necessary replacing the walers and half caps.

The necessity to extend the restoration to the stringers and decking is dependent on the intended utilisation of the retained structure.

13. 3 COMPARATIVE INFORMATION

As Engineer for Roads and Bridges, G. E. Farrar, was responsible for the design of most bridges built under the supervision of the PWD in the first decade of the twentieth century. His annual reports enumerate the bridges built in the State each year, and specifically record the larger bridges, i.e. those greater than 100ft in length.

In 1905, Farrar designed Lower Blackwood River Bridge at Dudinyillup, now known as *Brockman's Bridge*, a nine-span timber bridge, 179ft. in length. In 1905, contracts were let for five bridges between 100ft. and 200ft. in length: Mortlock River Bridge, Seabrook Siding (100ft.), Bellevue, Helena River Bridge (179ft.), Wongong River Bridge, Kelmscott (119ft.), Gordon River Bridge, Tambellup (139ft.), and Marbellup Townsite Bridge (119ft.).[54]

In 1906-07, 28 bridges were completed or under construction, including Dudinyillup Bridge (179ft.) and the footbridge at Darradup (199ft.). Bridges between 100ft. and 200ft. included Dooling's Ford Bridge No. 2 (119ft.), Westbrook, G. S. Railway (179ft.), Hotham River Bridge, Yomaning Siding No. 2 South (139ft.), Hotham River Bridge, Merwanga (159 ft.), Buchanan River Bridge, Ballagin Road to Bartonís Siding (159ft.), Collie-Darkan Road Bridge (159ft.), Arthur River, Nobleís Crossing (139ft.), Deningup Brook, Upper Blackwood (119ft.), Coorinup Brook, Wadgekanup River, Broome Hill (139ft.), Laymanís Gully, Capel (159ft.), and Kalgan River Bridge, Woogenelup (119ft.).[55] The details of expenditure on 30 bridges for the financial year ending 30 June 1906, reveal an expenditure of £584 10s. 8d., with a total expenditure to 30 June 1907 of £778 5s. 5d. Only five bridges incurred greater expenditure in that year, the Avon, near Kokeby Siding, Mortlock, Wonnerup, Wilberforce, and Williams River, Crossmanís Crossing.[56]

The Blackwood River presents a significant barrier in the area, and commencing in the late 1800s is characterised by the construction of a number of bridges over the river in the area from upstream of Bridgetown to downstream of Nannup. Nearly all the bridges have suffered flood damage requiring rebuilding, and of the early bridges the only remaining reasonably intact bridge is *Brockman's Bridge* at Dudinalup.

The only other remaining evidence of the Blackwood Bridges representative of the 1890's technology is Alexandra Bridge (Numbered 1142) and Jalbarragup Bridge (1358).

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54 G. E. Farrar, Engineer for Roads and Bridges, Report, 21 March 1906, in Report of Public Works Department for the Year 1905 in Votes and Proceedings 1907, p. 25.

55 ibid, Report, 20 August 1907, in Votes and Proceedings 1907, Fourth Session, p. 21.

56 Statement No. 1 showing Expenditure out of Loan Funds on Roads and Bridges to 30 June 1907, in ibid, p. 63.

The Alexandra Bridge, constructed in 1897, was 342ft. 6ins. in length and consisted of 17 spans each of 20ft. The bridge was substantially demolished in the 1980's and little remains.

In 1900, Jalbarragup Bridge, designed under C. S. R. Palmer, Engineer-in-Charge of Roads and Bridges, was built over the Blackwood River at Lower Blackwood. It superseded the ford on the road between Busselton and Lower Blackwood (Jalbarragup Road). The Jalbarragup Bridge, 54 metres in length, consisting of 9 spans each of 6 metres, is the only bridge, other than *Brockman's Bridge*, with any evidence of its original form,. However, Jalbarragup Bridge is in an advanced state of deterioration despite the efforts of the National Trust to have it preserved. (9). In 1988, it was closed to traffic as it was in poor condition, the abutments having substantially collapsed. Subsequently, it has further deteriorated. In 1998, when *Jalbarragup Bridge (ruin)* was assessed for inclusion in the State Register of Heritage Places, it was reported that there was pressure to have the bridge demolished. On 2 June 1998, *Jalbarragup Bridge (ruin)* was registered on a permanent basis.[57]

There are in the order of 1,500 timber bridges in service in Western Australia, with another 150 reserved for Water Corporation and Department of Conservation and Land Management use, and also over 20 closed road bridges or ruins of heritage importance. 282 of these bridges, excluding CALM bridges, are included in the Institution of Engineer study on Large Timber Structures. In this study *Brockman's Bridge* is classified as of high heritage significance. It is certainly the oldest remaining reasonably intact Blackwood River Bridge, and one of the oldest intact timber bridges in Western Australia, possibly the oldest.

As of August 2002, there are nine bridges entered into the State Register, of which five are road bridges. Besides Jalbarragup Bridge, described above, the only other timber road bridge Registered is P1166, Maley's Bridge, McCartney Road, Greenough. The bridge consists of limesone abutments and piers with a timber superstructure. It was erected by convicts in c.1860. There are stone walls flanking the roadway at either end of the bridge.

13. 4 REFERENCES

Brockman's Bridge in Large Timber Structures - Institution of Engineers Australia, WA Division

Main Roads WA - Bridge Inspection November, 2001,

File MRDWA Developmental Roads Bridge over Blackwood River at Loc 777 Shire of Nannup

13. 5 FURTHER RESEARCH

Further research may reveal more information about the place, and whether it is the oldest intact timber bridge in Western Australia.

57 ibid. HCWA Data Base Place No. 3364, pp. 4-5.