



REGISTER OF HERITAGE PLACES – ASSESSMENT DOCUMENTATION

11. 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.

The documentation for this place is based on the heritage assessment completed by students of the Research Institute for Cultural Heritage, Curtin University, supervised by Historians Jacqui Sherriff and Dr Bobbie Oliver, in October 2003, with amendments and/or additions by HCWA staff and the Register Committee.

PRINCIPAL AUSTRALIAN HISTORIC THEME(S)

- 3.8.5 Moving goods and people on land
- 3.8.7 Building and maintaining roads
- 4.2 Supplying urban services

HERITAGE COUNCIL OF WESTERN AUSTRALIA THEME(S)

- 107 Settlements
- 203 Road transport

11.1 AESTHETIC VALUE*

Guildford Road Bridge displays rustic aesthetic characteristics in its use of timber on the slabs and handrails. (Criterion 1.1)

The bridge is an important landmark when viewed from the river and terminates the vista up river when viewed from Point Reserve and Kings Park Meadow. (Criterion 1.3)

Guildford Road Bridge is an important western entrance statement to the heritage precinct of Guildford. The aged bush pole timbers used in construction harmonise with the remnant vegetation of the Swan River precinct and Federation style architecture of nearby Swan River Lodge, Earls Ferry and Penn-Rose. (Criterion 1.4)

* 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.

11. 2. HISTORIC VALUE

Guildford Road Bridge was constructed in 1937 to service increased transport loads to the Perth hinterland as population increased, and to maintain access between Guildford and West Guildford (now Bassendean) at a river crossing point used since 1831, the site of two previous bridges. (Criterion 2.1)

Guildford Road Bridge continues to be a regional landmark for the indigenous population, who have used the site as a meeting place and camping ground since before European settlement in Western Australia. (Criterion 2.2)

Guildford Road Bridge was designed and supervised by E.W. Godfrey, Transport Engineer for the Main Roads Department from 1928 to 1957. During this period, Godfrey was responsible for the design of all road bridges in the State, as well as overseeing construction of the major ones. (Criterion 2.3)

11. 3. SCIENTIFIC VALUE

Modification to *Guildford Road Bridge* decking and structure since the 1970s, including concrete overlay and the introduction of steel girders, demonstrate innovative maintenance of timber bridges developed by the Main Roads Department. (Criterion 3.3)

11. 4. SOCIAL VALUE

Guildford Road Bridge is valued by the community as it provides a link over the river for pedestrians, cyclists, and vehicle transport. The bridge and reserves on both sides of the river are used by the community for recreational activities including swimming, fishing, diving, canoeing and walking. The site also functioned as a social meeting place for indigenous people when they could not go into town due to the curfew on their movements in the years prior to 1967. (Criterion 4.1)

Guildford Road Bridge contributes to the community's sense of place as an entrance statement to Guildford and an important part of the landscape. (Criterion 4.2)

12. DEGREE OF SIGNIFICANCE

12. 1. RARITY

12. 2 REPRESENTATIVENESS

Guildford Road Bridge is representative of the standard design and construction of timber bridges in Western Australia in the period of the 1930s and 1940s (Criterion. 6.1).

The bridge demonstrates the techniques of bridge maintenance that were developed by the Main Roads Department from the 1970s (Criterion 6.1).

Guildford Road Bridge is representative, both in design and construction, of the work of E. W. Godfrey, who was the Bridge Engineer for the Main Roads Department from 1928 to 1957.(Criterion 6.2).

12.3 CONDITION

Guildford Road Bridge is generally in good condition.

12.4 INTEGRITY

Being in continuous use as a traffic bridge since 1937, *Guildford Road Bridge* has a high degree of integrity.

12.5 AUTHENTICITY

Additions to the original structure, including re-decking, a concrete overlay and the implication of steel girders, have been applied in sympathy with the original structure. This has resulted in the body of the 1937 bridge remaining, giving *Guildford Road Bridge* a moderate to high degree of authenticity.

13. SUPPORTING EVIDENCE

The supporting documentary and physical evidence was compiled by the students of the Research Institute for Cultural Heritage, Curtin University, with engineering evidence provided by Jim Paton, Engineer. Historians Jacqui Sherriff and Dr Bobbie Oliver supervised the compilation of evidence.

13.1 DOCUMENTARY EVIDENCE

*Guildford Road Bridge*¹ (Main Roads WA 910) spans the Swan River, linking the towns of Guildford to the east and Bassendean to the west.² Completed in 1937, this bridge was the third to be constructed in the vicinity after the first two fell into disrepair. *Guildford Road Bridge* provides a transportation link between the City of Perth and the agricultural areas to the east, forming an entry statement to the towns of Guildford and Bassendean, marking the transition from the more light industrial area of Bassendean to the historic precinct of Guildford. The area is also an important recreational site for walking, canoeing, bike-riding and fishing.

Prior to European settlement in Western Australia, the Guildford area had significance for the indigenous community. The Swan River in particular was highly respected as it was believed that the 'Waughal', responsible for the formation of the Swan River, inhabited the deep, calm waters of the Guildford area.³ As the Waughal moved downstream, the scales that were scratched from its body were believed to create rocks and other features of the river, until the creature finally came to rest in the area close to *Guildford Road Bridge*.⁴ The site of the Waughal was treated with both respect and caution by the indigenous community, as they believed that swimmers in this part of the river did not return.⁵

During the period before European settlement in the area of *Guildford Road Bridge* the site was also known and used by the indigenous people as a camping ground.⁶ It was used then, and continues to be used in contemporary society, as a meeting place for campers and the homeless. The camp provides the indigenous community with a place to meet and enables easy access to the surrounding areas of Midland, Guildford and Caversham.

In 1827 Captain James Stirling explored the Swan River and concluded that Guildford should be the site of the third Swan River Settlement after

1 Guildford Road Bridge has been known variously as The Bridge over the Swan, Bassendean Bridge, The Guildford – Bassendean Bridge and The West Guildford Bridge.

2 Until 1922 Bassendean was named West Guildford.

3 The Waughal was envisaged as a many-legged creature with a head resembling a horse's with a mane, and a long tail. The Shire of Swan. *Guildford: A Study of its Unique Character*, Guildford Study Group, Guildford, 1981, p. 4 (Appendix 1).

4 Preliminary Report on the Survey of Aboriginal Areas of Significance in the Perth Metropolitan and Murray River Regions, July 1985. Department of Indigenous Affairs File 3536 Folio 72-73.

5 The Shire of Swan. *Guildford: A Study of its Unique Character*, Guildford Study Group, Guildford, 1981, p. 5 (Appendix 1).

6 Guildford Road Bridge, Aboriginal Camps in the Swan-Guildford Area, April 1976, February 1978. Department of Indigenous Affairs, File 3571.

Fremantle and Perth.⁷ At that time, Guildford was located at the upper limit of navigation on the Swan River. The clay loam soils were recognised for their good agricultural potential and the first agricultural grants, encompassing most of the land fronting the Swan and Helena Rivers were allocated to the Swan River Colony in 1829. Stirling himself chose an area north-east of the townsite to build his country retreat, having admired the scenery around Guildford.⁸

In 1829, a town plan of Guildford was drawn up by Mr. J. C. Sutherland, showing a street named Bridge Street, in anticipation of the construction of a bridge between Guildford and West Guildford.⁹ A map dated 1830 shows Junction Road running down to a site opposite Bridge Street leading to what appears to be a ferry landing,¹⁰ In 1831 a ferry service was established across the Swan at West Guildford. A horse ferry was built in 1834 and operated by James Dodd, owner of the adjacent Cleikum Inn¹¹, by agreement made during a meeting of the Agricultural Society, who met regularly at Dodd's inn.¹²

The development of land in the Avon Valley to the east – Toodyay, Northam and York – increased Guildford's importance as a transportation centre during the 1840s, and alleviated the depressed economic situation of the 1830s. The introduction of convict labour from 1851 resulted in dramatic development in Guildford.¹³ Two bridges were built in the area – Barker's Bridge, between Guildford and Caversham to the north of Guildford, and the Helena Bridge over the Helena River to the South of Guildford – completed in 1854 and 1867 respectively. These bridges enabled road travel between Fremantle on the coast and the Avon Valley's agricultural centres. However, they did not benefit the residents of West Guildford, who felt disadvantaged.¹⁴ The ferry service was abandoned in 1880.¹⁵

Residents of West Guildford had no immediate access across the Swan River, and they subsequently contributed subscriptions totaling £350 towards the cost of building a bridge linking West Guildford to the main township in 1874.¹⁶ Initial opposition to the bridge was overridden¹⁷ and a bridge on the

7 Robinson, D. B. *The Swan Valley A Perspective in Time and Place*, n.d. p. 13 (publisher and place unknown).

8 Robinson, D. B. *The Swan Valley A Perspective in Time and Place*, n.d. p. 13 (publisher and place unknown).

9 Bourke, M. J. *On the Swan: A History of the Swan District Western Australia*, UWA Press, Nedlands, 1987, p. 171.

10 The Shire of Swan. *Guildford: A Study of its Unique Character*, Guildford Study Group, Guildford, 1981, p. 24.

11 Bourke, M. J. *On the Swan: A History of the Swan District Western Australia*, UWA Press, Nedlands, 1987, p. 92.

12 Thomas, A.T. *The History of Bassendean*, Bassendean Roads Board, Bassendean, 1947, p. 12.

13 The Shire of Swan. *Guildford: A Study of its Unique Character*, Guildford Study Group, Guildford, 1981, p. 13.

14 Carter, J. *Bassendean: A Social History 1829-1979*, Bassendean Town Council, Bassendean, 1986, p. 59.

15 Cogan, M. *Bassendean and Guildford Sketchbook*, Guildford, 1976, p. 1.

16 Gibbons, L. *Guildford 1829-1929. A Century of Progress*, The Imperial Printing Company Ltd for the Council of the Municipality of Guildford, W.A, 1929, n.p.

site of *Guildford Road Bridge* was eventually completed in 1885/86 at a cost of £600.¹⁸

Following the demolition of the first bridge in 1904, a replacement was constructed in 1905 at a cost of £1770.¹⁹ The second bridge had a proposed length of 459 feet with abutments that provided more security against flooding. The additional length was also in order to straighten the dog-leg in the approach to the first bridge.²⁰ During this year electric lighting was supplied to Guildford. In 1906 a footpath approximately 6 feet in width was proposed for the south side of the approach to the bridge.²¹ Such improvements encouraged social use of the bridge, as pedestrians used the bridge for leisure purposes as well as necessity. Students from West Guildford were able to attend Guildford School via this bridge following the closure of their own school in 1915.²² The bridge also offered an excellent vantage point for spectators of the annual sporting event, the 'Swim through Guildford'.²³

Throughout the 1920s temporary repairs were undertaken on the bridge in order to alleviate increasing problems with subsidence.²⁴ The Main Roads Board's allocation of £900 for the financial year 1927/1928 for upkeep of the bridge was clearly inadequate and disputes erupted regarding whose responsibility it should be to foot the many repair bills.²⁵ In May 1928, consideration of a replacement bridge was voiced by Executive Engineer Young to Assistant Engineer E.W.C. ('Ernie') Godfrey, suggesting that continuous repairs would cost more than construction of a replacement bridge.²⁶

E.W. Godfrey was appointed Bridge Engineer at the Main Roads Department in 1928, a position he held until 1957. Godfrey was responsible not only for the design of all road bridges in Western Australia but also for construction of major ones²⁷ and their ongoing maintenance²⁸. Godfrey was

17 Legislative Council, Parliamentary Debates, vol.VI (1881-2nd session), pp. 215 - 216. As cited in Bourke, M. J. *On the Swan: A History of the Swan District Western Australia*, UWA Press, Nedlands, p. 247. It was thought that only the 25 residents of West Guildford would benefit from the bridge, however, another notion that the bridge would encourage new inhabitants to West Guildford later proved accurate.

18 Thomas, A.T. *The History of Bassendean*, Bassendean Roads Board, Bassendean, 1947, p. 14.

19 Thomas, A.T. *The History of Bassendean*, Bassendean Roads Board, Bassendean, 1947, p. 14.

20 Plan number PWD WA 10809 10, 11 August 1904.

21 Guildford Municipal Council Minutes, 23 August 1906. Accession number 1110, number 6, State Records Office.

22 Carter, J. *Bassendean: A Social History 1829-1979*, Bassendean Town Council, Bassendean, 1986, p. 213.

23 Patton, E.M. and O'Hanlon, G. OH 2603/18, 1996 (oral history interview).

24 MRB file 153 / 1926 Accession number 1140.

25 MRB file 153 / 1926 Accession number 1140. 30 June 1928.

26 MRB file 153 / 1926 Accession number 1140. 28 May 1928.

27 Leigh Edmonds, *The Vital Link: A history of Main Roads Western Australia 1926-1996*, University of Western Australia Press, Nedlands, 1997 p.154.

28 Main Roads File 596/59 Note Godfrey's regular correspondence and reports on maintenance of *Guildford Road Bridge*.

an exceptional organiser, which enabled him to build various structures on difficult sites and often under budget.²⁹

In 1930 the Main Roads Board declared that the existing bridge should be the joint responsibility of the Guildford Municipality and the Bassendean Roads Board, the Main Roads Board refusing to accept any further responsibility for it.³⁰ During the next three years, lack of funds resulted in continued deterioration in the fabric of the bridge.³¹ Finally, in July 1933, a referral was made to the Minister for advice regarding a new bridge.³² Minister A. McCallum met with a deputation of seven representatives from the Bassendean Road Board, Guildford Municipal Council and a local MLA in July 1933. The deputation reasoned that a new bridge would be beneficial in three areas: addressing the problem of the existing bridge being unsafe for heavy traffic, providing for the expansion northwards of the metropolitan area that had resulted in a higher volume of traffic across the bridge, and through construction of a new bridge somewhat alleviating the high level of unemployment in the area. A decision was also made to investigate the Metropolitan Traffic Pool as a source of funds.³³ By October of that year, an allocation of £6000 was received from the traffic pool towards estimated costs of building a new bridge.³⁴ Formal approval was given by the Main Roads Board for the construction of the new bridge in 1935.³⁵ Minister for Works, Mr. J.J. Kenneally, allocated £11,700 for that purpose.³⁶ In comparison, the much larger Canning Bridge and the Fremantle Traffic Bridge, constructed in 1937 and 1938, cost £24,830 and an estimated £75,000 respectively.³⁷

In order to accommodate the new bridge, which was to be situated upstream of the existing bridge so that the bridge and approach roads would provide a more streamlined route for traffic, proposals were effected to resume areas of land belonging to Mrs. Clara Fitzgerald, owner of Guildford Town lot 7, and Mr. Cornelius Wilfred Fauntleroy, owner of Guildford Town lots 9 and 10.³⁸

The new *Guildford Road Bridge* was of timber construction, consisting of a two-lane roadway 18 feet 8 inches in width, with a footpath of 5 feet in width

²⁹ Lloyd Margetts of Main Roads Department, conversation with Lucy Moore, 16 September, 2003.

³⁰ MRB file 153 / 1926 Accession number 1140. 5 March 1930.

³¹ Guildford Municipal Council Minutes, 25 March 1933 Accession number 1881, number 4, State Records Office.

³² Guildford Municipal Council Minutes, 21 July 1934 Accession number 1881, number 4, State Records Office.

³³ MRD file 596/59 Box number 42 Accession number 1692 21 July 1933 pp. 3-4 State Records Office.

³⁴ Guildford Municipal Council Minutes, 25 October 1934 Accession number 1881, number 4, State Records Office.

³⁵ Guildford Municipal Council Minutes, 27 June 1935 Accession number 1881, number 4, State Records Office.

³⁶ MRD file 596/59, Box number 42, Accession number 1692, 23 May 1935, State Records Office.

³⁷ Edmonds, pp. 86, 87.

³⁸ Perth– Guildford via Bayswater & Bassendean, Road Board Minutes, 1935, Accession number 1140, An 213, item 404, State Records Office. Claims for compensation regarding land resumption could be made within two years of the publication in the Government Gazette of notice to resume land.

on the downstream side.³⁹ Timber hand-railing on either side of the bridge as well as between the footpath and the roadway consisted of a top rail as well as a mid rail.⁴⁰ Timber kerbing was bolted to the decking, with openings for drainage.⁴¹ A photograph of *Guildford Road Bridge* under construction shows it being built like a jetty, progressing westward from the east bank of the river.⁴² The bridge was completed in November 1937.⁴³

The superseded second bridge was also destroyed in 1937. However, the Main Roads Department suggested that 'the landing stage ..., with a little expenditure could no doubt be made very satisfactory for public use'.⁴⁴ A traffic census of the *Guildford Road Bridge*, undertaken by the Main Roads Board in 1937, reported that, on average, 2757 vehicles used the bridge each day.⁴⁵ The percentage of bicycles to the total traffic at the *Guildford Road Bridge* was 36%, a significantly higher percentage than at the Causeway, Fremantle Traffic Bridge and Canning Bridge, where bicycles were 30%, 26% and 18% respectively.⁴⁶ It may be conjectured that high bicycle usage on the *Guildford Road Bridge* reflected its importance to local residents.

In 1938, Main Roads Department secretary, Mr. M. Glendinning wrote that he could not 'fix an exact date for the completion of this surfacing work', which referred to the approaches to the new bridge, suggesting that work was still being performed on the bridge a year after its completion.⁴⁷

In January 1945, bituminous surfacing of the decking of the *Guildford Road Bridge* was completed.⁴⁸ The decking was further gravelled and bituminised in 1951.⁴⁹ In July 1959, Main Roads Board advised police, Bassendean Roads Board and Guildford Municipal Council that work to widen the *Guildford Road Bridge* would commence on 12 July.⁵⁰ New wandoo and jarrah stringers were used in maintenance of the bridge and a Water Authority 23 inch diameter pipe was attached to the upstream side of the bridge.⁵¹ It was noted that 'in

³⁹ Main Roads Plan Drawing Number 2, Sheet 1, 6 June 1935.

⁴⁰ Main Roads Plan Drawing Number 2, Sheet 1, 6 June 1935.

⁴¹ Main Roads Plan Drawing Number 2, Sheet 1, 6 June 1935.

⁴² Carter, Jennie, *A Social History of Bassendean 1829-1979*, Town of Bassendean, Perth 1986 p.126. Note incorrect year in caption '1939 constructing the new bridge'.

⁴³ Thomas, A.T. *The History of Bassendean*, Bassendean Roads Board, Bassendean, 1947, p. 14. Searches of relevant files and newspapers have so far been unsuccessful in establishing the names of builders or details of any opening ceremonies. Such issues need further research.

⁴⁴ MRD file 596/59, Box number 42, Accession number 1692, 5 March 1937, State Records Office. It appears that a jetty was made here. The remains of a timber structure are still visible in the water. According to an interview between Ellen and Ern Henley, two long time residents of Guildford, local residents made use of this jetty for fishing and swimming. Swimmers also jumped from the Guildford Road Bridge into the river below. Conversation with Elizabeth Hof, August 2003.

⁴⁵ Main Roads Board Annual Report 1937, p. 5.

⁴⁶ Main Roads 1937 Annual Report pp. 5,6,7.

⁴⁷ MRD file 596/59, Box number 42, Accession number 1692, 8 November 1938, State Records Office.

⁴⁸ Main Roads Plan Drawing number 2, Sheet number 1, 6 June 1935.

⁴⁹ Main Roads Plan 1603 Drawing number 1, Sheet number 1, 1935.

⁵⁰ MRD file 596/59, Box number 42, Accession number 1692, 10 July 1959, p. 114, State Records Office.

⁵¹ Main Roads Plan 1603 Drawing number 5, Sheet number 1, 1959.

ten years, the bridge will reach capacity and the [Main Roads] Department will be faced with duplication'.⁵²

Proposals to duplicate the bridge arose again in 1973; however, it was not until 1979 that this became a serious issue. In 1978, the gravel and bitumen surface of the *Guildford Road Bridge* had been removed and replaced with a reinforced concrete deck and 25mm bituminous concrete topping.⁵³ By this time more than 27,000 vehicles per day were using the route across the bridge, causing congestion at each end as the four-laned roads met the two-laned bridge.⁵⁴ In August 1979, the Minister for Transport announced the appointment of consultants to design a duplicate bridge with funds to be set aside in the 1980-81 budget.⁵⁵ Although the Bassendean Town Council supported the idea,⁵⁶ the Swan Shire Council was in opposition, as it had already embarked on a policy of traffic reduction in Guildford⁵⁷ and favoured instead the construction of a northern by-pass route linking Morley Drive with Morrison Road.⁵⁸ Locals were also opposed to the duplication as a threat to the historic atmosphere of Guildford.⁵⁹ In late November a 400-signature petition was presented to Parliament by Mr. John Skidmore, Labour MP for Swan.⁶⁰ The value of *Guildford Road Bridge* as an attractive entrance to the town of Guildford was expressed by Councillor Christine Quinn.⁶¹ By late December Swan Shire formally committed itself to support for the by-pass⁶² and this was agreed to by the Minister for Transport in January 1980.⁶³

In 1983, protective buffers, consisting of rubber tyres, were fitted to eight of the piles to protect the piles from impact by river craft.⁶⁴ *Guildford Road Bridge* was widened in 1994, in order to create dual use paths either side of the bridge.⁶⁵ Concrete decking was replaced in 2000.⁶⁶

Traffic levels continued to increase, and in 2001 an allocation of \$760,000 allowed maintenance work to be carried out to strengthen the bridge as well as to make it safer and more streamlined. As well as prolonging the life of the bridge, the work aimed to maintain the bridge's historical appearance through the use of recycled timber.⁶⁷

52 MRD file 596/59, Box number 42, Accession number 1692, Plan 1603, 10 July 1959, State Records Office.

53 Main Roads Plan 7730-370-1, 19 December 1977.

54 *The West Australian*, East Suburban News Supplement, 16 August 1979, p. 4.

55 *The West Australian*, East Suburban News Supplement, 16 August 1979, p. 4.

56 *The West Australian*, East Suburban News Supplement, 29 November 1979, p. 2.

57 *The West Australian*, East Suburban News Supplement, 5 July 1979, p. 2.

58 *The West Australian*, East Suburban News Supplement, 23 August 1979, p. 10.

59 *The West Australian*, East Suburban News Supplement, 13 September 1979, p. 2.

60 *The West Australian*, East Suburban News Supplement, 29 November 1979, p. 1.

61 *The West Australian*, East Suburban News Supplement, 29 November 1979, p. 1.

62 *The West Australian*, East Suburban News Supplement, 27 December 1979, p. 1.

63 *The West Australian*, East Suburban News Supplement, 31 January 1980, p. 1.

64 Main Roads Plan 8330-0119, 14 July 1983.

65 Main Roads Plan 9430-0680-1, December 1994.

66 Main Roads Plan 9930-0954-2, RC Deck Overlay.

67 *Eastern Suburbs Reporter*, 17 April 2001, p. 3.

In 2005, *Guildford Road Bridge* continues to be used as a road bridge, maintained by the Main Roads Department, and is a major crossing point over the Swan River.

13.2 PHYSICAL EVIDENCE

Guildford Road Bridge which crosses the Swan River at Bassendean, provides a landmark transition between the commercial area on Guildford Road in Bassendean and the historic precinct of Guildford. Its timber structure reflects the woodland setting bordering the river around the bridge.

The proposed curtilage⁶⁸ is a grassed and wooded area that is subject to occasional flooding. For this reason the area contains no other built elements and has retained a pleasant rural appearance. North of the eastern abutment of the bridge is a high mound of soil which was placed there in preparation for a planned but unbuilt duplication in the 1980s. Both east and west banks of the river have a border of common indigenous trees which stretches north and south as far as can be seen. The trees include Flooded gum (*Eucalyptus rudis*), Swamp paperbark (*Melaleuca raphiophylla*) and Swamp sheoak (*Casuarina obesa*). A row of pines thought to be Maritime pine (*Pinus pinaster*) borders the road reserve south of the eastern abutment. These appear to have been planted after the bridge was built. Near them is a row of immature Golden robinia 'Frisia' (*Robinia pseudoacacia*) There are several Golden wreath wattles (*Acacia saligna*) south of the eastern abutment.

There are remains of timber structures in the water within the proposed curtilage south of the bridge on both east and west banks of the river. Those near the east bank appear to be the remains of a jetty which may be clearly seen in aerial photographs taken in the late 1940s and early 1950s. This jetty is remembered as a popular swimming and fishing amenity by two long-time residents of Guildford, Ern and Ellen Henley.⁶⁹ Timber structure remnants near the east bank of the river south of the bridge are just within the boundary of the road reserve and their position implies that they were part of a structure built after the second bridge was completed in 1905.⁷⁰ They may be remnants of the landing stage mentioned in a letter to the Main Roads Department in May 1937.⁷¹

Guildford Road Bridge is constructed of timber piles and decking with a concrete overlay. The bridge is 140.2 metres in length between earth abutments consisting of 21 bays 6.096 metres in length and a navigation span of 12.192 metres.

⁶⁸ See attachment 1.

⁶⁹ Interview with Ern and Ellen Henley by Elizabeth Hof, September 2003.

⁷⁰ See attachment 4 for diagram showing position of earliest bridge.

⁷¹ Main Roads Dept file available at State Records Office in Box No 42 Accession no 1692 File 596/59 Main Roads, Perth-Guildford [sic], Division: Metropolitan, Local Authority: Bassendean, Bassendean Bridge over the Swan River, No 1030. 5/3/1937

MRD confirmed road approach to old bridge land in control of Gford Municipality '...the landing stage which, with a little expenditure, could no doubt be made very satisfactory for public use. 'Letter from one Williams, for Land Resumption Officer, to Engineer, MR (also in MR81/34, now destroyed)

On the eastern embankment are two Water Corporation wastewater pumping stations delivering into a pressure main located under the bridge.

The principle components of the original bridge still remain, namely the timber piles, stringers and timber decking and the steel beams supporting the decking over the navigation channel.

The bridge carries a two lane roadway 7.77 metres wide consisting of an asphalt surfacing over a reinforced concrete decking laid on the original timber decking. The original 12 x 9 inch half caps were replaced with 380 PFC steel channels when the upstream dual use path was added to the bridge in 1994.

Under the reinforced concrete vertical walls between the supporting piles, the earth abutments consist of horizontal timbers held by timber piles driven into the ground. The wing walls of the abutment supporting the earthen embankment consist of horizontal timber planks supported by driven timber piles.⁷² The original timber abutments have been provided with further support with the installation of reinforced concrete panels attached to the piles.

Each of the pier supports, with the exception of the navigation span, are constructed with five driven 18 inch rounded timber piles. The piles at either side of the navigation channel (Piers 8 and 9) are each constructed from eight driven piles. Piers 1, 2, 3, 4, 5, 18, 19 and 21 on each side of the bridge are above the average river level, while the remainder of the piles are below the river bed.⁷³ The drilling borehole drilling records indicate that the ground through which the piles are driven consists mainly of sand and sandy clay with indications of mud on the Guildford side. The piles generally terminate on stiff sand. At river level, double horizontal 10" x 5" timber walings are bolted to the piles with 9" x 4" timber braces bolted to the piles.

The timber stringers are squared off at the top with a damp course between the top of the stringer and the 9" x 5" spiking plank bolted to the stringer. The 9" x 5" deck planks are spiked into the spiking plank.

Bearing directly on the crossheads are the navigation span beams consisting of 24" x 7 1/2" 90 pound rolled steel joists with additional 7/8" flange plates and bed plates and bearing plate. The timber deck planks across the navigation span are spiked to squared 9" x 9" timber stringers supported by 8" x 6" rolled steel joists bolted transversely to the webs of the 24" x 7 1/2" steel beams. Angled 'wings' project each side of the navigation channel to protect the bridge piles from impact by river craft.

The 4' x 6' wide pedestrian walkway on the southern side of the bridge is constructed with 5" x 2" timber decking spiked to 6" x 4" timber stringers bearing on 9" x 5" timbers at 6' 8" spacing bearing on the main bridge stringers. For the navigation span, the timber walkway decking is spiked to timber stringers supported by RSJs bolted between steel beam flanges. The original timber hand-railing has been replaced with steel vehicle safety barriers supported from the deck structure on the roadway side. Timber

⁷² Detail from Main Roads Plan Drawing No 2, Sheet 1, 6 June 1935. Physical evidence suggests that the embankments remain as constructed.

⁷³ See Plan 1603, Drawing 1, Sheet 1, 1935 for depths below deck level and river level at the time of construction.

handrails remain on the outside of the dual use path. Bracing to support the half caps under the walkway was installed when the bridge was widened in 1959 (and the walkway was moved further downstream). The steel beam under the navigation channel was also installed at this time to support the walkway.

The 2.5 metre dual use path on the upstream side also has timber decking, a steel vehicle safety barrier on the roadway side and timber handrailing on the outside.

13.3 COMPARATIVE INFORMATION

Guildford Road Bridge is a surviving example of the timber bridges constructed by the Main Roads Department while E.W. Godfrey was the Department's bridge engineer.

Three timber bridges were built on the Swan River during the 1930s.⁷⁴ They were the upstream Garratt Road Bridge (1934-35), *Guildford Road Bridge* (1936-37) and the Fremantle Traffic Bridge (1938-39). During the same decade the bridge over the Helena River at Great Eastern Highway (1934-35) and the Canning Bridge over the Canning River at Canning Highway (1937-38) were constructed.⁷⁵

More recently constructed timber road bridges in the locality of *Guildford Road Bridge* are the downstream Garratt Road Bridge (1971), Barkers Bridge (1950) and the Swan River Bridge at Middle Swan (1957, the year E.W. Godfrey retired).⁷⁶ These bridges retain the design characteristics of those built during the 1930s.

The Helena River and Barkers Bridges are, like *Guildford Road Bridge*, on the sites of earlier bridges. All three bridges occupy river-crossing sites of economic and social importance to the area, dating back to the first years of European settlement. Earlier Helena River and Barkers Bridges were destroyed by flood damage.

The upstream Garratt Road Bridge deviates from the standard timber bridge design of the 1930s with its steel navigation span.⁷⁷ The Helena River Bridge was constructed as a three span bridge and a 15 span bridge separated by a causeway. The three span bridge has since been demolished.⁷⁸

All these timber bridges have, like *Guildford Road Bridge*, the round timber piles, corbels and stringers used after the 1920s, with the stringers flattened on two sides, providing contact with the corbels and spiking rails. *Guildford Road Bridge* incorporates the features seen in a standard 1930s plan.⁷⁹ The

⁷⁴ Attachment 3 is a map showing locations of all bridges noted in 13.3.

⁷⁵ Main Roads 1935 Annual Report, Appendix III; Main Roads 1936 Annual Report, Appendix XIII, p.12; Edmonds, Leigh. *The Vital Link*, op. cit. p.90.

⁷⁶ The Institution of Engineers, Australia, Western Australian Division *Large Timber Structures in Western Australia*, 1998, Vol. 1, pp. 1062, 1377, 1378.

⁷⁷ The Institution of Engineers, Australia, 1998, op. cit. p.1061.

⁷⁸ The Institution of Engineers, Australia, 1998, op. cit. p.1016.

⁷⁹ MRD Standard Type 16' bridge Plan MRBWA 101 11 Drawn March 1927; see also Main Roads Department of WA *International Training Course in Road Engineering, Vol 6 Bridges and Contracts*, p.5.11 Fig 1A and Edmonds, Leigh (op.cit) p.87

use of standardised bridge types, having 'no frills such as shaped beams, pressure treated piles or any other relatively costly treatments'⁸⁰, was one of the 'secrets of economical timber bridging'.⁸¹

Guildford Road Bridge demonstrates the maintenance techniques developed by Main Roads since the 1970s. Concrete decks; concrete pile and abutment overlays; removal of decayed timber and its replacement with structural epoxy filler; sealing of endgrain in decking and tops of wingwall piles; diffusible fungicides; clearance of undergrowth to lower surrounding humidity; skilled inspections, and treatment of metal components are some of the means which make it possible for timber bridges to remain in use 'almost indefinitely'.⁸² *Guildford Road Bridge* has had a concrete deck added. This keeps the timbers underneath dry, thus controlling rot and deterring termites, and spreads the bridge load more evenly over the stringers.⁸³ The replacement of original timber half-caps with steel girders as in *Guildford Road Bridge* is also a common method of prolonging timber bridge use under heavy loads and widened roadways. Steel girders have replaced timber half-caps on all timber bridges over the Swan River constructed during the 1930s, on the nearby Helena River Bridge at Great Eastern Highway and on the downstream Canning Bridge at Canning Highway. The more recently constructed Middle Swan Bridge and Barkers Bridge still have their timber half-caps. All of the above bridges now have concrete decks, all of them now have some piles encased in concrete and all of them now have some concrete abutment overlays. Replacement of some wooden piles with steel columns is also noted in all of these bridges.

In the years ending 30 June 1934 and 30 June 1935, Main Roads expended £15,800 and £20,903 on the Helena River Bridge on Great Eastern Highway and the Garratt Road Bridge respectively.⁸⁴ In the financial year ending 30 June 1936, £6,356,⁸⁵ more than half the final cost of £11,700⁸⁶, was expended on *Guildford Road Bridge*. That year E. W. Godfrey was responsible for construction of 23 bridges wholly of timber. These included a 13/20' span bridge over the Hotham River near Boddington; a 16/25' & 2/20' span bridge over the Blackwood River near Bridgetown; a 10/20' span bridge over the Williams River in the Williams Road District and a 20/20' span bridge over the Canning River at Gosnells.⁸⁷ The 460 foot long *Guildford Road Bridge* was completed in November 1937. In the financial year ending 30 June 1937, £2,685 was expended on *Guildford Road Bridge*.⁸⁸

80 *International Training Course* op cit p5.2

81 *International Training Course* ibid. p5.2

82 Margetts, Lloyd, 'Timber Bridges Need Loving Care' in *Western Roads*, Vol 15, No2 August 1990 pp.6,7, Western Australia's Old Timber Bridges' in *Western Roads*, Vol 13 No3 October 1988 p.12.

83 Margetts, Lloyd, 'Timber Bridges Need Loving Care' in *Western Roads*, Vol 15, No2 August 1990 p7

84 Main Roads 1935 Annual Report, Appendix III.

85 Main Roads 1936 Annual Report, Appendix XIII, p.12.

86 Main Roads file 596/59 p.33.

87 Main Roads 1936 Annual Report, p.14.

88 Main Roads 1937 Annual Report p. 14.

The 1950s timber bridges on the Swan River near *Guildford Road Bridge*, Barkers Bridge and the Middle Swan Bridge, like the earlier Helena River Bridge and *Guildford Road Bridge*, abut onto winding river banks. All four are edged with common indigenous trees in settings of considerable beauty that compliment their timber construction. Together these four bridges contribute to the surviving rustic character of the Swan Valley and its southern approaches through Guildford.

Guildford Road Bridge is representative of the work of E.W. Godfrey. It exhibits the design, materials, and later maintenance techniques of other timber bridges constructed in the 1930s over the Swan River, the Canning River at Canning Highway and the Helena River at Great Eastern Highway. Of these earlier bridges, only the Helena River Bridge at Great Eastern Highway shares *Guildford Road Bridge*'s proximity to the winding river's fringe of indigenous trees, pleasant rustic setting and a historic town precinct.

The Institution of Engineers' study of large timber structures in Western Australia notes in section 2, which deals with railway bridges, that there has been 'a steady decline in the number of timber bridges'.⁸⁹ There is a similar decline in the number of timber road bridges in use in Western Australia, because sourcing new timber for maintenance or re-building is difficult.⁹⁰ Two hundred and eighty-two timber road bridges are surveyed by the Institution of Engineers' study of large timber structures in Western Australia, which classifies *Guildford Road Bridge* as having very high heritage value.⁹¹

13.4 KEY REFERENCES

The Institution of Engineers, Australia, Western Australian Division *Large Timber Structures in Western Australia*, 1998, Vol. 1

13.5 FURTHER RESEARCH

Further research may establish the names of the builders and contractors of the 1937 *Guildford Road Bridge*, and whether there was a ceremony to mark the occasion of its opening. Indigenous use of the area requires further research as does the determination of the origins of timber-structure remnants, within the proposed curtilage. These may be seen in the river south of the bridge near both east and west banks.

⁸⁹ *Large Timber Structures ...* Vol 1 p1-9.

⁹⁰ Wayne Giles of Main Roads Department, conversation with Elizabeth Hof, October 2003.

⁹¹ The Institution of Engineers, Australia, Western Australian Division 1998 p. 1059.