



HERITAGE
COUNCIL
OF WESTERN AUSTRALIA

REGISTER OF HERITAGE PLACES Assessment Documentation

11. ASSESSMENT OF CULTURAL HERITAGE SIGNIFICANCE

Cultural heritage significance means aesthetic, historic, scientific, social or spiritual value for individuals or groups within Western Australia.

In determining cultural heritage significance, the Heritage Council has had regard to the factors in the *Heritage Act 2018* and the indicators adopted on 14 June 2019.

11(a) Importance in demonstrating the evolution or pattern of Western Australia's history

AA Dam No.190 James, Lake Grace was the first experimental roaded catchment dam in Western Australia, and became the prototype for the standard design and layout of roaded catchments implemented throughout the Wheatbelt from the 1950s and for decades afterwards.

The initial establishment of *AA Dam No.190 James, Lake Grace* in 1914 is associated with the State Government's investment and active role in providing adequate water supply in the Wheatbelt during the early twentieth century, to encourage and facilitate development.

AA Dam No.190 James, Lake Grace is representative of the small-scale government dams, bores and wells that were established in the 1890s-1910s period in less critical settlement areas that were not reached by the large-scale Goldfields Water Supply Scheme.

AA Dam No.190 James, Lake Grace is associated with the State Government's program to rehabilitate or construct new dams in Wheatbelt areas during the 1940s that were not reached by the large-scale Comprehensive Water Supply Scheme.

The expansion and improvements to *AA Dam No.190 James, Lake Grace* in 1949 is evidence of the State Government utilising new technologies and experimenting with new materials to develop a more efficient method of water collection and storage, with low cost and little labour.

11(c) Potential to yield information that will contribute to an understanding of Western Australia’s history;

Through scientific investigation, research and analysis, *AA Dam No.190 James, Lake Grace* has the potential to uncover information about methods of water collection and storage within the Western Australian climate.

11(d) Its importance in demonstrating the characteristics of a broader class of places;

AA Dam No.190 James, Lake Grace demonstrates characteristics of the ‘roaded catchment’ method of water collection, which became the standard design and layout of roaded catchments in the Wheatbelt region.

11(e) Any strong or special meaning it may have for any group or community because of social, cultural or spiritual associations;

AA Dam No.190 James, Lake Grace has evidence of local community value, for its former use as a local meeting place, for social events and sporting activities.

11(f)² Its importance in exhibiting particular aesthetic characteristics valued by any group or community;

The ‘wave-like’ roaded catchment, formed from excavated ridges and compacted furrows, provides some picturesque qualities within the landscape.

11(h) Its importance in demonstrating a high degree of creative or technical achievement;

The innovative roaded catchment at *AA Dam No.190 James, Lake Grace* was the first of this type in Western Australia, and as such is a technical achievement, and is a benchmark site in the development of water collection and supply in the Wheatbelt.

12. DEGREE OF SIGNIFICANCE

12.1 CONDITION

AA Dam No.190 James, Lake Grace appears to be in fair condition.

² For consistency, all references to architectural style are taken from Apperly, R., Irving, R., Reynolds, P. *A Pictorial Guide to Identifying Australian Architecture. Styles and Terms from 1788 to the Present*, Angus and Robertson, North Ryde, 1989.
For consistency, all references to garden and landscape types and styles are taken from Ramsay, J. *Parks, Gardens and Special Trees: A Classification and Assessment Method for the Register of the National Estate*, Australian Government Publishing Service, Canberra, 1991, with additional reference to Richards, O. *Theoretical Framework for Designed Landscapes in WA*, unpublished report, 1997.

12.2 INTEGRITY

This section explains the extent to which the fabric is in its original state.

Fabric relating to the 1949 expansion and improvements to *AA Dam No.190 James, Lake Grace* has high integrity. Physical evidence suggests the 1949 fabric to be largely intact and in its original state.

The original 1914 fabric of the dam is no longer evident, as it was superseded in 1949 by the expansion of the dam itself and addition of the roaded catchment.

12.3 AUTHENTICITY

This section explains the extent to which the original intention is evident, and the compatibility of current use.

AA Dam No.190 James, Lake Grace has high authenticity.

Although it is not currently in active use as a water source, it continues to collect and store water, and its original intention is clearly evident with the fabric remaining largely intact and unaltered.

13. SUPPORTING EVIDENCE

The documentation for this place has been prepared by the Department of Planning, Lands and Heritage, based on *Heritage Report – P16460 AA Dam No.190 James, Lake Grace* by Archae-aus Ptd Ltd (April 2021), with amendments and/or additions by the Heritage Council and the Department.

13.1 DOCUMENTARY EVIDENCE

AA³ *Dam No.190 James, Lake Grace* comprises a square earth dam (1914, 1949) with concrete inlet chute (1949), and ‘wave-like’ roaded catchment with earth channel (1949), located on a remnant bushland reserve. The dam was originally constructed in 1914, as part of the initial agricultural settlement of the Lake Grace district, and was later expanded and improved in 1949 with a roaded catchment⁴ of experimental design that was a key innovation in the provision of agricultural water supply in Western Australia.

The district of Lake Grace is located in the eastern Wheatbelt region of Western Australia, approximately 270km south east of Perth. It is located within the Aboriginal cultural region of Ballardong.⁵ In this region, the Ballardong Noongar group is known as the *Njakinjaki* (also known as the *Njaki Njaki*), who lived for tens of thousands of years in extended family groups along the shores of the saline Lake Grace.⁶ The traditional Aboriginal way of life began to be impacted by the arrival of Colonial settlers from 1829, with surveyors penetrating the inland Wheatbelt area in the late 1840s to 1870s.⁷

The township of Lake Grace was gazetted in 1916,⁸ as the terminus of the Great Southern Railway line spur from Wagin via Dumbleyung.⁹ The spur line was a consequence of the 1905 report from the Royal Commission on Immigration and Land Settlement that decreed that any settler in wheat farming areas should be serviced by a rail line no more than 15 miles from the farm gate. This led to the West Australian Government Railways (WAGR) building a series of light agricultural railways throughout the Wheatbelt region. The Wagin to Dumbleyung railway was opened in 1907, which was extended to Kukerin in 1912 and Lake Grace by 1916.¹⁰

³ The abbreviation ‘AA’ stands for ‘Agricultural Area’.

⁴ ‘Roaded Catchment’ is a sloped area with excavated ridges and furrows forming a corrugated ‘wave-like’ surface, that collects and channels rainwater into a dam.

⁵ ‘About the Ballardong Region’, *South West Aboriginal Land and Sea Council* website, accessed 3 May 2021, <https://www.noongarculture.org.au/ballardong/>;

⁶ ‘About the Ballardong Region’, *South West Aboriginal Land and Sea Council* website, accessed 30 October 2020, <https://www.noongarculture.org.au/ballardong/>; ‘A1: Nyaki Nyaki/Njaki Njaki’, *ASTLANG Database*, AIATSIS Colleciton website, accessed 30 October 2020, cited in Preliminary Review Place P26460 AA Dam No 190 James, Lake Grace, DPLH, 2020. <https://collection.aiatsis.gov.au/austlang/language/a1>; and extensive search was undertaken for the original name of Lake Grace, however no record was found.

⁷ Gray, L, *Shire of Lake Grace Municipal Inventory of Heritage Places*, Shire of Lake Grace, 1998, pp. 5-6. , cited in Preliminary Review Place P26460 AA Dam No 190 James, Lake Grace, DPLH, 2020.

⁸ J Bird, *Across the lake 1911-1992*. Bookmark Publishing House, Guildford, 1992, pp. 10, 36.

⁹ Heritage Council of Western Australia, *State Register of Heritage Places – Assessment Documentation for P12670 Lake Grace Hospital* (2002), p.3.

¹⁰ ‘Shire of Dumbleyung Municipal Heritage Inventory’, by Heritage Today (1998), Place Record Form for ‘Dumbleyung Railway Station’.

The lack of reliable water supplies was a significant obstacle to the development of settlement and agriculture in the eastern Wheatbelt.¹¹ However, in conjunction with the development of the rail network throughout the region, the State Government facilitated the development of reliable water supplies both for the steam trains and for the needs of farmers and local settlements.¹² This in turn prompted a dramatic eastwards expansion of the Wheatbelt region during the early twentieth century.¹³ Substantial government investment in water provision was subsequently facilitated via the Goldfields Water Supply Scheme, opened in 1903,¹⁴ and at less critical settlement areas, water was provided via government established bores, wells or dams.¹⁵

AA Dam No.190 James, Lake Grace is one of these such government dams, and was originally known as 'James Dam'.

Initially, the only water supply for the Lake Grace district was from 'White Dam' (P12761 White Dam) (established in 1908), a government dam constructed at a sand soak about 3km west of the lake, and approximately 12km west of the future townsite of Lake Grace.¹⁶

In 1914, in anticipation of the gazetting of the Lake Grace townsite (in 1916) and ahead of the arrival of the railway line (also in 1916),¹⁷ a second dam, known as 'James Dam', was established approximately 8km north of the Lake Grace townsite. This dam was the first iteration of *AA Dam No.190 James, Lake Grace* and was originally gazetted as 'James Dam' under the description 'No 6—Lake Grace'. The use of James Dam is unclear as it was described as 'public water supply',¹⁸ which could mean that it was used to provide drinking water to town residents, by farmers for agricultural and stock purposes, or both. Both residents and farmers would have had to collect and transport the water for their use. After completion, the dam was placed under the control of the local Roads Board.¹⁹ 'James Dam' was apparently a local name, as the Department for Water Supply had no record of it under that name.²⁰

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- 11 Giles, J, Venn, F, Paynet, H, Clarkson, B, *Progress Report of the Royal Commission on the Agricultural Industries of Western Australia on the Wheat-Growing Portion of the South-West Division of the State, Parliament of Western Australia*, 1917, p. xiv; Appendix IX pp. 735-736. Cited in Preliminary Review Place P26460 *AA Dam No 190 James, Lake Grace*, DPLH, 2020.
- 12 RA Morgan, *Running out? Water in Western Australia*, UWA Press, Crawley, 2015. Archae-aus Pty Ltd, A Thematic Historical Heritage Assessment of 137 Agricultural and Other Dams in Western Australia's Wheatbelt and Goldfields regions. Unpublished report for Water Corporation, 2020, pp.6-7.
- 13 Preliminary Review Place P26460 *AA Dam No 190 James, Lake Grace*, DPLH, 2020.
- 14 RA Morgan, *Running out? Water in Western Australia*, UWA Press, Crawley, 2015, pp. 45-46
- 15 Morgan, R, *Running out? An environmental history of climate and water in the southwest of Western Australia, 1829 to 2006*, PhD Thesis, University of Western Australia, 2012, pp. 81-87., cited in Preliminary Review Place P26460 *AA Dam No 190 James, Lake Grace*, DPLH, 2020.
- 16 J Bird, *Across the lake 1911-1992*. Bookmark Publishing House, Guildford, 1992, pp. 10, 36.
- 17 Gray, L, *Shire of Lake Grace Municipal Inventory of Heritage Places*, Shire of Lake Grace, 1998, p. 6; information provided by Water Corp.
- 18 SROWA cons1869 1918/1642 folios 18-23.
- 19 *Government Gazette*, May 15, 1914, p. 2080.
- 20 SROWA cons1869 1918/1642. A.A.W.S. Lake Grace. Location 10990 Reserve 16318 Tank A.A. 190. Folio 2. The Southern Argus and Wagin-Arthur Express, 28 October 1916, p. 2. <http://nla.gov.au/nla.news-article204869419>

A plan of the site in 1921 shows the dam comprised a 'tank' – probably an area of excavated earth that had been compacted and made water tight²¹ – surrounded by raised earth banks on three sides, located adjacent to an area of 'good catchment', which was probably an area of naturally sloping land that had been cleared to create a surface that would allow water to flow unhindered to the tank at the base of the slope.²²

Within less than a decade of its construction, an inspection report on the condition of the reserve and dam highlighted the importance of James Dam as a public water supply in view of the shortage of water in the Lake Grace district.²³

From 1916, the community and region of Lake Grace started to slowly develop and grow. Solider Settlement in the area following World War I boosted development and by 1923 the town had a population of 200. Two years later the spur rail line was extended east to Newdegate and the population reached 970.²⁴

During this period, James Dam became established as an important meeting place for the local community. Social events included the Wheatgrowers' Union annual picnic. Sports facilities were established at the site, including the Lake Grace Cricket Association from the summer of 1925-26 which resulted in the construction of a concrete cricket pitch and playing field for the 1926-27 season. The cricket club played there until relocating in the 1950-51 season, and the cricket pitch remains at *AA Dam No.190 James, Lake Grace* in 2021.²⁵ Tennis courts were also added by 1933,²⁶ but these are no longer extant.

By the early 1920s, further calls were being made to the government to expand the provision of water in the eastern Wheatbelt,²⁷ however, at the time the government was concerned with large, centralised water infrastructure, and in the late 1920s constructed three District Water Supply Schemes,²⁸ none of which served Lake Grace. Farmers in the Lake Grace district continued to rely on their own bores and wells during this period, carting water from government dams – such as James Dam - when their properties ran dry or became saline.²⁹

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- 21 'Tanks' are usually defined as 'excavated depressions along flood plains or near water sources'. 'Thematic Study Wheatbelt Dams, Western Australia', by Department of Planning, Lands and Heritage (June 2020). It is thought that the 'tank' shown on the site plan is an area of excavated earth, rather than an above or below ground structure of stone or concrete.
- 22 Plan of James Dam and catchment, J Collinson, 24 September 1921, SROWA cons1869 1918/1642 folios 18-23. Reproduced in *Heritage Report – P16460 AA Dam No.190 James, Lake Grace* by Archae-aus Ptd Ltd, dated April 2021, p. 11.
- 23 SROWA cons1869 1918/1642 folios 18-23.
- 24 Heritage Council of Western Australia, State Register of Heritage Places – Assessment Documentation for P12670 *Lake Grace Hospital* (2002), p.3.
- 25 J Bird, *Across the lake 1911-1992*. Bookmark Publishing House, Guildford, 1992, pp. 254ff.
- 26 *Wagin Argus, and Arthur, Dumbleyung, Lake Grace Express*, 23 November 1933, p. 4. <http://nla.gov.au/nla.news-article257810118>
- 27 Morgan, *op cit.*, p. 87; 'Farm Water Supplies and Granite Rocks', *Western Mail*, 13 October 1921, p. 5; 'Zantippe Rocks Catchment Dam;', *North-Eastern Courier*, 19 September 1924, p. 2
- 28 Such as No 1 Lake Brown, No 2 and No 3 Kondinin. 'Kondinin water Scheme', *Kondinin-Kulin Courier and Karlgarin Advocate*, 18 December 1926, p. 3; "Banquet Tendered to Minister", *Dampier Herald*, 28 February 1929, p. 4; 'Water for Farms', *The West Australian*, 28 October 1929, p. 15; Fernie, *op cit.*, p. 205
- 29 'On the Land', *The West Australian*, 30 March 1940, p. 7; 'From the Wheatbelt', *Western Mail*, 16 April 1936, p. 36; 'Water For Stock. Question of Salt Content', *Western Mail*, 18 September 1941, p. 10; 'Country Water Supply', *The Southern Districts Advocate*, 20 April 1936, p. 2

In the late 1940s, the management of James Dam moved from local to State Government and the place was re-vested in the Minister for Water, with the responsibility for maintenance being awarded to the Public Works Department (PWD).³⁰ In 1947, a communal sheep dip was constructed on the north-west corner of the reserve, after requests from local farmers.³¹ This suggests that even if James Dam was not originally used by farmers, by the late 1940s it had become an important place for local sheep stockists. During the drought of 1944-1945 Lake Grace relied on water brought eastward by steam train from Collie, farmers anxiously lining up to collect it from the railway siding.³²

Following World War II, the problem of water supplies in the Wheatbelt remained a challenge. A number of agricultural towns had reached the supply capacity of their local water resources, and water restrictions or water carting was increasing.³³ Water supply issues for Lake Grace were initially proposed for resolution as part of the State Government's Comprehensive Agricultural Areas Water Supply Scheme in 1946,³⁴ which involved increasing the storage at both Mundaring Weir (P8538 Mundaring Weir, Gardens and Village Precinct), and Wellington Dam (P6344 *Wellington Dam* [RHP]), and increasing the capacity of the Goldfields Water Supply Scheme by constructing pipelines, pumping stations and reservoirs to towns in the Great Southern. However this scheme was later revised to exclude much of the southern Wheatbelt region including the Lake Grace district.³⁵

Outside the areas serviced by the Comprehensive Water Supply Scheme – such as at Lake Grace – the PWD focused on the rehabilitation, including enlargement, of existing dams, as well as building new dams to create a network of key dams to provide reserve supplies.³⁶ Two significant technological innovations were embraced during this period which dramatically changed the PWD's approach to the collection and storage of water in areas outside of a comprehensive scheme – earth moving machinery and improved methods of water run-off. Earth moving machinery became more readily available during the immediate post war period, making it more economical to construct new earth dams than to roof existing dams to prevent evaporation (which had been the initiative of the 1930s). Experiments to improve water run-off were explored at this time through the creation of artificial catchment areas (for collecting rainwater and directing it into water storage

30 SROWA cons 1109 1948/74. A.A.W.S. Lake Grace district – formalities to re-vest control of certain tanks with Minister, folios 2-8. Order in Council approved 10 March 1949. *Government Gazette* March 18, 1949, p. 503.

31 *Government Gazette*, June 11, 1948, pp. 1327, 1331.

32 Richard Broome, Charles Fahey, Andrea Gaynor and Katie Holmes, *Mallee Country Land, People, History*, p. 188.

33 Morgan, *op cit.*, p. 119-120; Davis, J E, 'PWD supplementary public water supply schemes', *Journal of Agriculture*, 1977, vol 18, no 3, pp. 74-76; Kelsall, K J, "The Comprehensive Water Supply Scheme", *Journal of Agriculture*, 1977, vol 18, no 3, pp. 68-69

34 JSH Le Page, *Building a state: the story of the Public Works Department of Western Australia*, Water Authority of Western Australia, Leederville, 1986, pp. 500 ff. KJ Kelsall, The Comprehensive Water Supply Scheme, *Journal of Agriculture* 18, pp. 68-72.

35 Menck, *op cit.*, p. 37; Ruth, *op cit.*, p. 121-122; Kelsall, *op cit.*, pp. 68-70; see also assessment documentation, P6344 *Wellington Dam Precinct* (RHP)

36 *Western Mail*, 16 December 1948, page 66. 'Saga of the key dams.' <http://nla.gov.au/nla.news-article39089121>

infrastructure such as a dam). Experimentation with bitumen catchments had begun in 1935 in Narrogin,³⁷ however, this was a relatively expensive solution.

The first experimental roaded catchment was built at *AA Dam No.190 James, Lake Grace* in April 1949. As indicated by the abbreviation 'AA' - which stands for Agricultural Area - *AA Dam No.190 James, Lake Grace* was used for agricultural purposes. A 'roaded catchment' is a sloped area with excavated ridges and compacted furrows forming a corrugated 'wave-like' surface that collects and channels rainwater into a dam. Water collection using the flattened, cleared areas beside roadways had already been identified in the 1940s, and the new roaded catchment dams were an extension of this idea.³⁸

In addition to the construction of the new roaded catchment area at *AA Dam No.190 James, Lake Grace*, other works that were carried out at this time included excavating and enlarging the existing James Dam to increase its capacity from 300,000 gallons to 2,000,000 gallons,³⁹ excavation of a silt pit and bywash, concreting the inlet channel, stone pitching, replacing the windmill, tank and stand, and replacing the rabbit-proof fencing.⁴⁰

The resulting dam infrastructure – *AA Dam No.190 James, Lake Grace* – was heralded as an 'outstanding achievement'⁴¹ in establishing a new and extremely effective method of rain water collection, particularly suitable to the arid, poor rainfall areas of Western Australia. In review of the roaded catchment experiment at *AA Dam No.190 James, Lake Grace*, prominent Government Engineer V.C. Munt reported that:

*... the institution of these roaded catchments for farmers is the greatest single advance in water conservation that has been made in this state.*⁴²

Due to a number of design features, the experiment at *AA Dam No.190 James, Lake Grace* proved that roaded catchments were extraordinarily efficient at capturing and directing rainwater. The compacted soil produced a surface that was more impervious to water absorption than un-compacted natural sloping surfaces. It provided a relatively steep fall that resulted in efficient water run-off, thereby reducing the time that the rainwater would be exposed for evaporation or could be absorbed into the soil.⁴³ Another significant advantage of this new roaded catchment method was that it was relatively cheap and easy to construct.⁴⁴

37 JE Davis, PWD supplementary public water supply schemes, *Journal of Agriculture* 18, 1977, p. 75. *Western Mail*, 13 May 1948, p. 67, 'Sealed artificial catchments as an adjunct to water conservation. Irrigation aids.' <http://nla.gov.au/nla.news-article39088116> *Great Southern Herald*, 11 July 1952, p.5.

38 'Romance of the East-West Road', *The Eastern Recorder*, 19 September 1941, p. 4; 'Municipal Council's Reply', *Harvey Murray Times*, 22 October 1922, p. 1; "Greater Bunbury", *Harvey Murray Times*, 2 February 1945, p. 2

39 'Lake Grace Water', *The West Australian*, Thursday 15 July 1948, p. 13; 'Lake Grace Road Board', *The Wagin Argus and Arthur, Dumbleyung, Lake Grace Express*, 23 December 1948, p. 8

40 SROWA cons1869 1918/1642 folios 57-60. Correspondence.

41 Public Works Department Western Australia, Roaded catchments for farm water supplies, *Journal of the Department of Agriculture, Western Australia, Series 3, 5, No. 6, 1956, p. 667.*

42 Quoted in Public Works Department Western Australia, Roaded catchments for farm water supplies, *Journal of the Department of Agriculture, Western Australia, Series 3, 5, No. 6, 1956, p. 667.*

43 Public Works Department Western Australia, Roaded catchments for farm water supplies, *Journal of the Department of Agriculture, Western Australia, Series 3, 5, No. 6, 1956, pp. 668, 670.*

44 Morgan, *op cit.*, pp. 134-135; Davis, *op cit.*, pp. 74-75; 'Wheatbelt Water', *The West Australian*, 19 May 1953, p. 4

The simplicity and low cost of the roaded catchment method enabled the design to be implemented on a smaller scale for privately-owned individual farm dams. Evaluation of the initial experiments at *AA Dam No.190 James, Lake Grace* and a second at Kulin (in 1950) led to the development of standard advice about the design and layout of roaded catchments.⁴⁵ The State Government, PWD and Department of Agriculture publicised the roaded catchment method as ideal method for farmers' dams.⁴⁶ To promote this method further, in 1952 the PWD started assisting farmers to establish roaded catchments on their own land, and by the end of 1955, 332 such catchments had been constructed.⁴⁷

The roaded catchment method empowered and enabled individual farmers to establish their own water storage facility. This meant that farmers would be less reliant – or sometimes completely independent of – government and its water supply infrastructure. It also allowed expansion into and farming of land in arid areas that had previously lacked the water supply to support agriculture and settlement.

As the population of the Lake Grace district continued to grow through the mid-twentieth century,⁴⁸ pressure for reliable water increased. In 1958, a new Lake Grace town water scheme opened, supported by a 12 million gallon earth dam with 20 acres of bituminised catchment and 156 acres of roaded catchment.⁴⁹ Twenty years later in 1975, the town was finally connected to the Comprehensive Water Scheme, which provided reliable water supply to the town for the first time.⁵⁰

As a result of these improved water supply schemes, better on-farm water supplies and better water collection through technologies such as the roaded catchment, many government dams thereafter became surplus to requirements and fell out of use or into disrepair.

By the 2000s, *AA Dam No.190 James, Lake Grace* was under the management and responsibility of the Water Corporation. During this time, the Water Corporation initiated a program to review its infrastructure in agricultural areas with the intention to dispose of assets that were surplus to requirements.

In 2004 and 2020, *AA Dam No.190 James, Lake Grace* was considered surplus to requirements and considered for disposal out of government ownership. Due to its value as the first roaded catchment in Western Australia, in 2021 it was assessed for consideration for the State Register of Heritage Places.

45 Laing, IAF, Improved catchments for farm dams, *Journal of the Department of Agriculture, Western Australia*, Series 4: Vol. 26: No. 3 1985, pp. 67-69. Burdass, WJ, Negus, TR; Prout, AL; and Laing, IAF, Water supplies: dams and roaded catchments, *Journal of the Department of Agriculture, Western Australia*, Series 4, Vol. 26, No. 3, 1985. Stanton, D, *Roaded catchments to improve reliability of farm dams*. Department of Agriculture and Food, Western Australia, Perth. Bulletin 4660, 2005.

46 Public Works Department Western Australia, *Roaded catchments for farm water supplies*, *Journal of the Department of Agriculture, Western Australia*, Series 3, 5, No. 6, 1956, pp. 678.

47 Public Works Department Western Australia, *Roaded catchments for farm water supplies*, *Journal of the Department of Agriculture, Western Australia*, Series 3, 5, No. 6, 1956, pp. 678. 'Dundas Road Board', *The Norseman-Esperance News*, 26 July 1956, p. 2; 'News in Brief', *The Pioneer*, 12 May 1950, p. 5; 'Yorketown Fire Unit in Action', *The Pioneer*, 15 December 1950, p. 5; 'Northern Areas Tour', *The Irwin Index*, 14 June 1952, p. 4; 'Water Schemes in Country to be Resumed', *The West Australian*, 24 December 1952, p. 2.

48 Gray, L, *Shire of Lake Grace Municipal Inventory of Heritage Places*, Shire of Lake Grace, 1998, pp. 8, 9.

49 J Bird, *Across the lake 1911-1992*. Bookmark Publishing House, Guildford, 1992, pp. 410-413.

50 Gray, L, *Shire of Lake Grace Municipal Inventory of Heritage Places*, Shire of Lake Grace, 1998, p. 9.

In 2021, *AA Dam No.190 James, Lake Grace* continues to collect and store water, but is not currently in active use.

13.2 PHYSICAL EVIDENCE

The following indented physical evidence is quoted from the report *Heritage Report – P16460 AA Dam No.190 James, Lake Grace* by Archae-aus Ptd Ltd, dated April 2021, pages 15-26. This text has remained unchanged, save the removal of references to maps, photos and figures in the original report.

AA Dam No.190 James, Lake Grace is a standard earth dam with clay liner, located within a remnant bushland water reserve, in a larger agricultural landscape, some 8km north of Lake Grace townsite and immediately east of the Lake Grace-Kulin Road. The roaded catchment is immediately to the east of the bushland reserve. The bushland reserve has a number of features associated with past recreational use of the dam including a playing field and possible camping area. There is also a sheep dip.

Artefactual material identified during the site visit was limited and comprised an assortment of broken bottle glass and, in the bushes on the east side of the possible camping area, some scattered metal containers.

Dam (1914, 1949)

The dam currently measures about 90m x 90m to the tops of its steep banks, although the central, water-holding part is much smaller than that. The dam is square, with a concrete sedimentation basin and inlet chute on its southeast side, and a concrete spillway on the northwest side. The sedimentation basin is currently filled with silt. The inlet chute is approximately 25m long, 2.40m wide at the top, tapering to 1.85m wide at the bottom. Its sides are 30cm high. The spillway is rectangular and approximately 6m long by 3.10m wide, and also has 30cm high sides.

On the northwest side of the dam, outside the bank near the spillway, there are two metal and timber tank stands, one of which has a corrugated iron water tank on it. This new tank was installed as part of the 1949 works.

The current configuration of the dam reflects the works carried out in 1949. The sedimentation basin was also constructed in 1949. The enlargement in 1949 involved removing the bank on the north side and making a new excavation. The present footprint of the dam clearly shows that it was enlarged on the north-east side. The previous configuration of the dam is no longer visible.

The sedimentation basin was installed in 1949 and the inlet chute was concreted at the same time. The new channel was also constructed in 1949 as part of the improvement to the catchment and replaced the drains shown on the 1921 and 1949 plans are no longer visible. These older drains are no longer visible.

Roaded Catchment

The roaded catchment covers an area of approximately 6.9ha, with maximum dimensions of 307m (N/S) by 270 m (E/W). The catchment slopes gently down from the northeast to the southwest, from where it feeds into the channel that runs to the dam.

The catchment has been created by excavating a series of around 35 northeast/southwest oriented ridges and furrows, forming a corrugated 'wave-like' surface. The catchment area is bordered to the west and south by deeper channels, with another larger channel (270m long by 5 m wide) running through the middle of it on a west-southwest/east-northeast alignment. These channels serve to collect the water from the ridges and furrows and feed it into the channel that supplies the dam, which runs from their confluence at (637685 mE/6344635 mN).

The majority of the ridge tops are spaced around 6 m to 7 m apart and are raised about 0.5 m from the bases of the furrows.

Channel (1949)

A constructed water channel that feeds into the dam runs on a west-northwest alignment from the southwest end of the roaded catchment area. The channel is about 300m long, 3m wide, and up to 1 m deep in places. A series of six, what appear to be roughly constructed concrete pipe bearers were identified along the length of the channel. There are also a set of steel vehicle tracks and a bridge of timber sleepers spanning the central part of the channel, which would have enabled cars and people to cross it.⁵¹

Sheep Dip (1947)

There is a concrete sheep dip approximately 50 m north of the northern corner of the Dam, 65m east of the Lake Grace – Kulin Road. The concreted holding pen and race have dimensions of 24m (N/S) x 17m (E/W) and cover an area of about 240m². There are also associated yards to the north and northwest, with timber fence posts and wire surviving. Two handprints and some illegible letters have been set into the concrete on the east side of the race.

The original intention for the Sheep Dip was for yards at either end of the race. Only one of these is visible today.

Playing Field (1927)

The area to the southeast of the dam was part of the original catchment, prior to the construction of the roaded catchment area to the east. The playing field is still clearly visible. It measures approximately 160m (NW/SE) by 100 m (SW/NE), covering an area of about 1.17ha. The concrete cricket wicket survives in the middle of the playing field.

The tennis courts are first reported in 1933 and are shown on the 1949 plan at the north-west end of the playing field. There does not appear to be any evidence of the tennis courts. However, an old tennis ball was found amongst the trees in that area. Two timber uprights identified at the western edge of the playing field may have once supported a scoreboard (637443 mE/ 6344677mN).

Camping Area (possible)

There is an open, flat area of about 0.3ha measuring approximately 32m (NW/SE) by 95m (SW/NE) to the west of the roaded catchment. It is

⁵¹ Adjacent landowners have indicated that the set of steel vehicle tracks and bridge of timber sleepers spanning the central part of the channel may have been introduced c.2010

possible that this was once either the site of a construction camp dating from when the roaded catchment and channel were built, or else an area where people camped during community sporting events. Three fireplaces (circles of rocks) were identified along the western edge and there is a large truck wheel which appears to have been used as a brazier or barbecue.⁵² Three star pickets in the open ground at southeast end of the area mark the location of what appears to be a water bore (637667mE/6344694mN).

13.3 COMPARATIVE INFORMATION

Principal Australian Historic Theme(s)

- 2.2 Adapting to diverse environment
- 3.11.3 Irrigating Land
- 3.11.5 Establishing water supplies
- 3.16 Struggling with remoteness, hardship and failure
- 3.17 Inventing devices

Heritage Council of Western Australia Theme(s)

- 107 Settlements
- 108 Government Policy
- 110 Resource exploitation and depletion
- 112 Technology and technological change
- 302 Rural industry and market gardening
- 207 Water, power, major transport routes

Comparative Analysis

In Australia, the provision of water and water services is one of the most crucial requirements for any settlement. Both Aboriginal and later colonial settlements were intimately linked to places where dependable water supplies could support a population, and the ways in which different groups adapted to the dry environment or modified the environment to suit their purposes have shaped the development of the Western Australia.⁵³

The spread of settlement into different regions of the State differed, depending on the available water, and the ability of the population to manipulate natural water supplies. In the Wheatbelt region, the development of adequate water supplies can be categorised into five phases: Traditional Aboriginal Culture; 1829-1890 Early Settlement and Colonial Water Sources; 1890-1915 Gold Boom Expansion and Railway Water Solutions; 1915-1945 Rock Catchments and Centralised Schemes; 1945-2000 Reticulation and beyond.⁵⁴

AA Dam No.190 James, Lake Grace was originally constructed in 1914, and then extended and improved in 1949, and so aligns with both '1890-1915 Gold Boom

⁵² Adjacent landowners have indicated that the three fireplaces (circles of rocks) and large truck wheel may have been introduced c.2010

⁵³ 'Thematic Study Wheatbelt Dams, Western Australia', by the Department of Planning, Lands and Heritage (June 2020).

⁵⁴ 'Thematic Study Wheatbelt Dams, Western Australia', by the Department of Planning, Lands and Heritage (June 2020).

Expansion and Railway Water Solutions’ and ‘1945-2000 Reticulation and beyond’ phases.

1890-1915 Gold Boom Expansion and Railway Water Solutions

The ‘1890-1915 Gold Boom Expansion and Railway Water Solutions’ phase covers the period when the prosperity of the Gold Boom triggered the construction of the railway from Perth to the Goldfields. There was no ready water supply along this route sufficient for the volume required for the steam trains, and so a series of dams was established in conjunction with the railway line. This phase also saw the construction of the Goldfield Water Supply Scheme that piped fresh drinking water to the Goldfields from Mundaring.⁵⁵

A search of the Historic Heritage database for dams in the Wheatbelt region constructed within the 1890-1915 time period produces 38 results. Of these 38 results, the majority (15) were built for railway purposes, with the remaining being built for early settlement/town water supplies (2), agricultural purposes (5), private water supply (2), and for travellers (2). The origins of the remaining dams are unclear.

The establishment of *AA Dam No.190 James, Lake Grace* in 1914 was related to early settlement/town water supplies, and therefore is comparable to this sub-section of dams. None of these places are included in the State Register of Heritage Places or Assessment Program. They are:

- P2790 New Zealand Gully Dam, Yilgarn (1895) – built to supply water to the town of Southern Cross. Its use was superseded by the Goldfields Water Supply Scheme in 1903. It is now vacant and unused.
- P9023 Badgarning Dam & Puntapin Dam/Rock Reserve, Wagin (1913) – built to supply water to the town of Wagin. The dam was superseded in 1930 by the Putapin Rock Catchment Scheme.

1945-2000 Reticulation and beyond

The ‘1945-2000 Reticulation and beyond’ phase saw the State Government supporting agricultural expansion of the Wheatbelt through the implementation of the Comprehensive Water Supply Scheme, which was supplemented in less important areas with a program of rehabilitation of existing dams and construction of new dams. New technologies enabled the efficient collection and storage of water, and encouraged farmers to develop their own dams.⁵⁶

The extension and improvement of *AA Dam No.190 James, Lake Grace* in 1949 was as part of this program implemented outside of the Comprehensive Scheme.

The expansion and improvement of *AA Dam No.190 James, Lake Grace* in 1949 is a key event within this ‘1945-2000 Reticulation and beyond’ phase. The improvements included the construction of an experimental roaded catchment, the first of this design in Western Australia. The roaded catchment was a significant technological innovation for the development of agriculture in Western Australia, and provided an extremely effective method of rain water collection. It became the

55 ‘Thematic Study Wheatbelt Dams, Western Australia’, by the Department of Planning, Lands and Heritage (June 2020).

56 ‘Thematic Study Wheatbelt Dams, Western Australia’, by the Department of Planning, Lands and Heritage (June 2020).

prototype for the standard design and layout of roaded catchments in Western Australia.

A search of the Historic Heritage database for dams in the Wheatbelt region constructed within the 1945-2000 time period produces 7 results. All of these places are associated with town water supplies, some were additionally used for agricultural/farming purposes. None of these places are included in the State Register or Assessment Program.

Those dams that were used for agricultural/farming purposes are the most comparable to *AA Dam No.190 James, Lake Grace* in its 1949 redevelopment. These are:

- P4467 The Humps Dam, Kondinin (1983).
- P5891 Mt Roe Key Dam (1971).
- P12467 Mocardy Rock & Dam, Wongan Hills (1950).

None of these examples included an innovative, experimental or first-of-its-kind design feature.

Roaded catchments

AA Dam No.190 James, Lake Grace includes the first roaded catchment constructed in Western Australia. Following the experiment in Lake Grace, a second dam was trialled in Kulin in 1950 - P6964 Kulin Town dam – Site of.

Other roaded catchments that have been identified include:

- P15346 Kujia North Dam, Koorda – the dam was established in 1942, it is not known when it was converted into a roaded catchment dam.
- P6742 Red Dam, Cowcowing - established at Wyalkatchem in the 1930s, the dam was later redeveloped into a roaded catchment dam and abandoned in the 1970s.

It is known that by the mid-1950s roaded catchment dams were increasingly being built by farmers on their land for private use. Due to the public inaccessibility to these places, this may explain why these places are not recorded in the Historic Heritage database. It is thought that it is likely that many roaded catchment dams still exist in the Wheatbelt, and that many may still be operational.

As the first example of the roaded catchment design in Western Australia, *AA Dam No.190 James, Lake Grace* is a technical achievement, and a benchmark site in the development of water supply in the Wheatbelt.

13.4 KEY REFERENCES

Heritage Report – P16460 AA Dam No.190 James, Lake Grace by Archae-aus Ptd Ltd. (April 2021).

Preliminary Review Place P26460 AA Dam No 190 James, Lake Grace, by the Department of Planning, Lands and Heritage (October 2020).

'Thematic Study Wheatbelt Dams, Western Australia', by the Department of Planning, Lands and Heritage (June 2020).

13.5 FURTHER RESEARCH

Further research or physical investigation may confirm whether the possible camping area was the site of the construction camp for workers dating from when the roaded catchment was built.

Further research may be able to confirm whether the original 1914 James Dam was constructed to provide water to local Lake Grace residents, or for agricultural/farming purposes, or both.