HERITAGE COUNCIL OF WESTERN AUSTRALIA

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.

PRINCIPAL AUSTRALIAN HISTORIC THEME(S)

- 3.7.4 Building and maintaining railways
- 3.11.5 Establishing water supplies

HERITAGE COUNCIL OF WESTERN AUSTRALIA THEME(S)

- 102 Aboriginal occupation
- 105 Exploration and surveying
- 107 Settlements
- 110 Resource exploitation and depletion
- 202 Rail and light rail transport
- 404 Community services and utilities

11.1 AESTHETIC VALUE*

The artificially-constructed features of *Railway Dam, Merredin* complement and contrast with the natural environment, with low scale meandering stone catchment walls, imposing slab rock channels, picturesque water filled dam and raised dam embankments, providing a built aesthetic in the otherwise harsh natural landscape. (Criterion 1.1)

Railway Dam, Merredin is an important water catchment and storage system, combining the collection of runoff water with storage and subsequent supply through a system of stone catchment walls, channels and a dam. (Criterion 1.4)

11.2 HISTORIC VALUE

The place is significant for its key role as a water source, firstly for Aboriginal people of the area, later for travellers on the Goldfields Road, and, after the construction of the dam in 1895, for the steam locomotives on the Eastern Goldfield Railway line. (Criterion 2.1)

Railway Dam, Merredin supplied the Eastern Goldfields Railway with water from 1895 to 1969, and is significant for its support role in the development of the

* 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Canberra, 1991, with additional reference to Richards, O. *Theoretical Framework for Designed Landscapes in WA*, unpublished report, 1997.

Eastern and Northeastern Goldfields. It was the last railway water supply in use on the Eastern Goldfields line. (Criterion 2.2)

Railway Dam, Merredin symbolises the importance of water in low rainfall areas of Western Australia such as the Wheatbelt and the Eastern Goldfields. (Criterion 2.3)

Railway Dam, Merredin is associated with explorer and surveyor Charles Hunt, who developed a series of wells and catchments in the district; and with Public Works Department engineers C.Y. O'Connor, who oversaw the provision of water to the goldfields regions through the 1890s, and William Herbert Shields, who designed the place, together with other railway water supply facilities between Northam and Coolgardie. (Criterion 2.3)

Railway Dam, Merredin represents high technical and engineering achievement in its innovative design, taking advantage of existing resources. (Criterion 2.4)

11.3 SCIENTIFIC VALUE

Railway Dam, Merredin, an example of a water source constructed by settlers on soaks located around granite outcrops well known as a water supply for Aboriginal people of the area, has the capacity to provide information on the use and appropriation of Indigenous water sources by European settlers. (Criterion 3.1)

Railway Dam, Merredin represents creative responses to water collection in the design and construction of its various elements, and has the capacity to provide information on systems associated with steam trains and the railways, that are no longer practiced. (Criteria 3.2 & 3.3)

11.4 SOCIAL VALUE

Railway Dam, Merredin is valued as a recreational venue by the local community, and for its associations with the steam railway operation on the Eastern Goldfields line. (Criterion 4.1)

Railway Dam, Merredin and associated Merredin Peak are landmarks in the bush landscape that contribute to a sense of place for the local and wider community. (Criterion 4.2)

12. DEGREE OF SIGNIFICANCE

12.1 RARITY

12.2 REPRESENTATIVENESS

Railway Dam, Merredin represents an example of engineering associated with the use of local materials and natural landforms. (Criterion 6.1)

Railway Dam, Merredin is a good representative example of an 1890s railway water supply facility utilising a rock catchment. (Criterion 6.2)

12.3 CONDITION

Railway Dam, Merredin is in good condition.

12.4 INTEGRITY

Railway Dam, Merredin no longer has a railway association, but still clearly has the capacity to collect and store water, and therefore has a high degree of integrity.

12.5 AUTHENTICITY

Railway Dam, Merredin shows minimal evidence of changes to the fabric. The place displays a high degree of authenticity.

13. SUPPORTING EVIDENCE

The documentation for this place is based on the heritage assessment completed by Irene Sauman, Historian and Laura Gray, Heritage and Conservation Consultant, in January 2006, with amendments and/or additions by HCWA staff and the Register Committee.

13.1 DOCUMENTARY EVIDENCE

Railway Dam, Merredin comprises a well (1865); and a rock catchment with channel walls constructed of stone that feed a former railway dam, constructed in 1895 by railway contractor Joseph McDowell.

Soaks located around granite outcrops were well known as a water supply, and were used by the Aboriginal people and later European explorers, sandalwood cutters and settlers. The granite outcrops in the Merredin area would have been of particular importance to the Njakinjaki people, who inhabited the region[1].

In 1865, Surveyor Charles C. Hunt passed through what became the Merredin region on his second of three journeys exploring and mapping inland areas to the east of Perth.[2] On 20 February 1865 he and his team sunk a well at Merredin Peak at the site of a natural spring. The well was seven feet deep and eight feet wide at the top and lined with poles and stones. Hunt recommended that a 20 acre reserve be created around the well, which is described as being 'on a small gully bearing westerly from the base of the rock'.[3] Hunt died in 1868 at the age of 35, leaving a surveyed track with 26 wells, tanks and soaks, which significantly aided later travellers through the Yilgarn, particularly those travelling to the Goldfields.[4]

With the discovery of gold in the Yilgarn, prospectors beat a track to the area. The York to Yilgarn road passed to the north side of Merredin Peak, which was a watering and camping spot for travellers to the Yilgarn goldfields. Hunt's well remained, fed by the Peak's extensive granite surface, which acted as a catchment area.

The first Merredin townsite was established near the well. The area was declared Merredin Peak Reserve 2914 on 19 March 1891, but when the Goldfields railway line was built to Southern Cross in 1894 it passed south of the Peak, so a new townsite was established at the railway siding. Because of its location, about halfway between Perth and Kalgoorlie, Merredin became an important railway centre and a junction for lines branching out into the newly developing Wheatbelt.[5]

Steam railway locomotives required large amounts of good quality water with little mineral content, but on the route to Southern Cross there was no permanent water east of Burlong Pool on the Avon River at Northam.[6] C.Y. O'Connor, recognising that the proposed railway would fail without reliable water supplies,

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1 Tindale, N. (1974) *Aboriginal Tribes of Australia*. Available at: http://www.samuseum.sa.gov.au/orig/tindale/HDMS/tindaletribes/about.htm

2 HCWA Register documentation P00556 *Gnarlbine Soaks (Well No.22)*.

3 Water Authority of Western Australia, ''The Wells of Explorer Charles Hunt: An assessment of their condition and historical significance as a groundwater resource', November 1991, p.12.

4 HCWA Register documentation P00556 *Gnarlbine Soaks (Well No.22)*.

5 A more detailed history of the early development of Merredin can be found in Heritage Council assessment documentation for Merredin Post Office (4035).

6 A comprehensive overview of the development of water supplies along the Eastern Goldfield railway line can be found in the Heritage Council assessment documentation for Bullabulling Rock Water Catchment & Dams, P03933, pp. 4-6.

sent William Herbert Shields, newly appointed Assistant Engineer with the Public Works Department (PWD), to search for potential water sources. A survey was conducted to find possible locations for reservoirs and wells along the line, and it was reported that at Merredin:

> [A] large rock existed, about 20 acres of which drained into a rock valley about 6 feet to 14 feet deep, filled with detritus from the rock. [It was]… planned to clean out this hollow, and build a concrete wall across the lower end to form a basin.[7]

Shields considered that a dam such as described would be insufficient and that large reservoirs of some depth would be required to offset the expected high water loss by evaporation. In January 1894, the PWD successfully constructed a test reservoir at Parker's Range (Moorine), and around May 1894, a contract was let to J. McDowell, the Goldfields railway contractor, for construction of the 6,800,000 gallon (30 Megalitres) Cunderdin dam, and the 7,470,000 gallon (33 Megalitres) *Railway Dam, Merredin*. The contract price for the construction of *Railway Dam, Merredin* was £3,500.[8]

Railway Dam, Merredin was situated on ground with a fall of about 1 in 100, and had an excavation with an average 16ft (4.8m) in depth and measuring 200 ft (60m) by 80ft (24m) at the bottom, with sloping sides at a ratio of 2-to-1. The excavation was surrounded by a 40ft (12m) 'berm' and an embankment.[9] The catchment covered 40 acres (16 ha) of rock, with stone walls to direct the water into a rock channel, which in turn fed into the Dam. The channel was about 2'3" (0.65m) deep and about 100m long. An iron sluice-gate with balancing weight was suspended over the channel at its entrance and a second somewhat similar flood-gate was fixed near by. Under ordinary operation, the sluice gate was locked open and the floodgate locked shut to allow water to run into the dam. In the event that the dam was likely to overflow and flood the town, the sluice-gate could be closed and the flood-gate opened to divert the water away from the Dam.[10] The dams along the line from Northam to Coolgardie were described as being 'practically the same as' *Railway Dam, Merredin*, 'despite the configuration of the ground, the design being considered successful in minimising evaporation'.[11]

A footbridge, approximately 125ft in length, extended out from the bank to the centre of *Railway Dam, Merredin*, where it was supported by a tower-shaped pylon. Within the base of the tower was a stone-lined pipe well, 3ft in diameter and sunk 3ft into the bottom of the Dam. A 4-inch galvanised-iron flanged pipe carried the water up through the tower and along the footbridge to the tank at the railway siding.[12]

The water from *Railway Dam, Merredin* was pumped to the water tower in the Merredin railway yard. The water tower comprised a square tank with a capacity of 40,000 gallons (182,000 litres) on a 45ft (12m) high stand.[13] The water was

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7 Shields, William Herbert, 'Water-supply on the Yilgarn Railway, Western Australia', Paper no. 2336, *Minutes of Proceedings of the Institution of Civil Engineers*, Vol. 146, London, The Institution, 1901, pp. 242-257.

8 Shields, William Herbert, op cit, p. 246; LePage, J. S. H. *Building a State: the Story of the Public Works Department of Western Australia, 1829-1985*, Perth, WAWA, 1989, p. 265; Public Works Department, *Annual Report*, 1894, op cit, p. 4.

9 A berm is a narrow path between a slope and an embankment, although a 12-metre wide path could hardly be described as narrow.

10 Shields, William Herbert, op cit, p. 255.

11 Shields, William Herbert, op cit, p. 255.

12 Plan CRWA 787, drawing 5, undated, SROWA, PWD 2717 (microfiche) 'Merredin Water Supply, former railway dam'.

13 Public Works Department (PWD), Plan 2364, 12 June 1893.

gravity fed from the water tower to the railway engines. *Railway Dam, Merredin* and the water tower were part of a wider system of over 100 dams and tanks managed by the Railways Department along its many kilometres of railway line.[14] When water on route was not available, the engines had to haul water trucks and leave them at strategic points along the way.[15] While water from the Goldfields Pipeline was available along the length of the line to Kalgoorlie, the Railways Department preferred to supply their own water whenever possible, due to quality and cost.

The Government took over the Northam-Southern Cross line from the contractor on 1 July 1894, although work was still being done on ballasting and other finishing and *Railway Dam, Merredin* was not completed until 1895. In 1896, improvements and additions 'of an extensive nature' were made to the principal dams on the line – Cunderdin, Merredin and Parker's Road – on which the railway 'more immediately depends for water for engines'. The catchment area of *Railway Dam, Merredin* was increased to 60 acres (24 ha) and the reservoir rendered more watertight.[16] Further improvements by 1901 had increased the catchment to 1,250 acres (506 ha), and the channel walls were raised to 3'9" (1.14m) in height.[17] Total cost of construction to 1901 was £5,366.[18]

At some time, a cottage was provided east of the Dam for a caretaker and a second house, referred to as 'plumbers residence' on a 1940s plan, was located west of the Dam.[19]

In the second half of the 1930s, the region experienced a dry spell and *Railway Dam, Merredin* was empty for periods up to six months a year. Roofing of the dam, at an estimated cost of £4,250, was suggested in an effort to reduce evaporation, but it was decided that enlarging the Dam's holding capacity by 1.25 million gallons was a better and less expensive option. An estimate of £3,250 for the work included wages of £2,500 for 26 men over 20 weeks. The expenditure was approved by the State Treasury and the work was put in hand in mid 1939. The catchment improvements were undertaken first, as rain had filled the Dam and made excavation impossible. The channels were enlarged with concrete and 'Terolas' lining (a bitumen substance). This added to the cost, as the original estimate for the channels involved lining with sleepers covered with cheap Terolas, but this method was abandoned when it proved unsatisfactory elsewhere. Further adding to the £701/12/0 blow-out in the estimate was the delay in excavating the Dam due to the water level, the rock encountered during the excavation, and increases in the basic wage during the period of work, which extended to June 1940.[20]

Railway Dam, Merredin was a popular swimming spot for local children, and the servicemen and women stationed at Merredin took advantage of the place as well, despite the 'No Swimming' signs. In 1944, this use was blamed for

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14 WAGR, *Annual Report*, 1905-1906, p. 74.

15 Affleck, Fred, *On Track: The Making of Westrail 1950-1976*, Perth, Westrail, 1978, p. 11.

16 PWD, *Annual Report*, 1896, p. 22 & 1897, p. 52.

17 Shields, William Herbert, op cit, p. 255.

18 WAGR, *Annual Report*, 1905-1906, p. 38.

19 Unnumbered plan, 25 August 1942 & WAGR plan 37783, 3 February 1949. Neither house is extant.

20 Railways Dept file, 'Merredin, railway water supply', 1939-1974, SROWA, WAS 1208 CONS 4792 Item R4519; PWD, *Annual Report*, 1939, p. 18 & 1940, pp. 16-17. Local histories state the work was done by sustenance workers. Projects listed in 1935 as attracting Commonwealth funds for sustenance work did not include Merredin Railway Dam (C'wealth Dept of Treasury, 'Schemes for relief of unemployment - Western Australia', 1934-1936, National Archives, A461/8, G351/1/9 Part 2) and there is no indication in Railways Dept files or annual reports that the work was done under that scheme. Full wages appear to have been paid to the men employed.

disturbing the off-take suction, causing sand to enter and damage the pump. A floating suction with trunnion (a supporting mechanism) was installed at the bottom of the dam at a cost of £85, as it was noted that 'locomotives were sent to Merredin in an effort to prolong the boiler life on the good dam water'. Water from *Railway Dam, Merredin* also supplied the gardens at the Railway Institute.[21]

During the 1949-50 drought, the railways hauled up to 10 million gallons (455 million litres) of water each week to keep the steam locomotives running. The process of replacing the steam locomotives with diesel locos was begun in the early 1950s.[22] As this took effect, railway water supplies were gradually handed over to either the local government authority or to the PWD Country Water Supply. *Railway Dam, Merredin* continued to be required for the use of the railways until 1969, when the last steam locomotive was taken out of commission.[23]

In 1972, *Railway Dam, Merredin* was transferred to the management of the PWD Country Water Supply and in 1999 the Reserve was vested in the Shire of Merredin.[24] In 2002, the National Trust installed interpretation panels at *Railway Dam, Merredin* as part of the Golden Pipeline Heritage Trail.[25]

In 2006, the water from *Railway Dam, Merredin* is used to irrigate the Merredin recreation ground.

13.2 PHYSICAL EVIDENCE

Railway Dam, Merredin comprises Hunt's Well No. 8 and the former railway dam comprising a rock channel connection through to Merredin Peak granite outcrop with a stone wall catchment system around the base of the rock.

Railway Dam, Merredin is located approximately 200m to the east of Benson Road, at the east side of the Merredin townsite, adjacent to the light industrial area north of the railway line and Great Eastern Highway. The 2/1 Australian General Hospital is located another 200m to the northeast of the car park entry to *Railway Dam, Merredin*.

Merredin Peak is a landmark in Merredin, but the evidence and extent of the well, dam, channel and stone catchment walls are only discernable on closer inspection. The site is accessed off Benson Road, via a gravel track that leads to a gravelled level car park area at the base of the southeast corner of the dam. The car park is surrounded by treated timber bollards. A set of timber steps has been installed into the gravity retaining wall around the dam, on that southeast corner. Signage indicates they were constructed by a LEAP (Learning Effectiveness Alliance Programme) project in 1994. Recent interpretation elements are located around the parking area and elsewhere, except for the site of the caretaker's cottage on the east side of the car park, which has a rather crude sign indicating its location. There are no obvious remnants at that site.

At the top of the access steps on the southeast corner, the dam, half full of water, is clearly viewed, with the channel outlet central on the north side, and overflow drainage on the south side. The dam has stone lining on the interior embankments in places. The external perimeter is natural earth embankments with an expansive levelled area around the top of the bank, where there are

21 Correspondence, 17 October 1944, Railways Dept file, Item R4519, op cit.

22 Affleck, Fred, op cit. p. 11.

23 Railways Dept file, Item R4519, op cit.

24 Correspondence 28 October 1970, Railways Dept file, Item R4519, op cit; Reserves Index, Reserve 2914.

25 *The golden pipeline heritage trail guide*, Perth, National Trust of Australia (WA), 2002; physical evidence; information provided by the National Trust.

picnic tables and mature Flooded gums (*Eucalyptus grandis*). The channel opens into the dam at the south end with a metal chute into the dam.

The rock channel, connecting the stone catchment wall at the north to the dam at the south, is a slab construction with splayed slab walls and a slab base. The channel is approximately 1.5m deep with earth banked up against both sides. There is a wide gravel path along the top of the channel on the east side. Single slabs span the width of the channel at each end providing access across the channel.

The catchment walls are constructed of slabs of local stone, mortared together and tilted back against earth build-up, to form a vertical wall to channel the runoff from the granite outcrop into the dam. The stone catchment walls vary in height from 0.5m to 1.0m high meandering around the base of Merredin Peak. Approximately 50m west of the channel connection with the catchment wall, there is a steel sluice gate on the wall, suggesting an apparatus by which the gate was opened and closed to release water from the catchment area and divert from the channel and dam. There is a timber ramp structure that straddles the stone catchment wall to facilitate easy access to Merredin Peak.

Merredin Peak is an expansive granite outcrop. There are minimal plantings, and these are located on the westward side near the top of the rock, but otherwise the rock is barren. Merredin Peak rises out of the flat environment surrounding it, with the golf course to the west and north boundaries, natural environment to the east, and the 2/1 Australian General Hospital site and revegetation on the southeast.

On the east side of Merredin Peak, there is clear evidence of the former water pipe that connected to the hospital's water tank on the eastern rise of Merredin Peak. The concrete water pipe supports are still evident in place across the rock. The rectangular tank site is delineated by a concrete kerb, blue metal infill, and interpretation signage identifying the site. On the eastern side there is also evidence of stone being quarried from the Peak.

Hunt's Well No. 8 was not located or inspected on the site visit. An image from 1981 shows a comparatively shallow, water-filled depression in the granite.[26] Historical records state that it was lined with poles and stones, but this cannot be confirmed from the image.

Railway Dam, Merredin is in good condition.

13.3 COMPARATIVE INFORMATION

The 1994 *Survey of Railway Heritage in Western Australia* lists over 100 existing dams, which were associated with railway operation. The list does not include former railway dams later used for local domestic and stock water purposes.[27]

Railway dams are represented on all railway lines constructed in the State. Those which are known to be associated with a rock catchment include: Bonnie Rock Water Tank & Rock Catchment (P12837); Berringbooding Water Tank & Rock Catchment (P12838), Muckinbudin; and, Geelakin Tank, Well, Stock Trough and Runoff (P12057) all on the Wyalkatchem-Bullfinch agricultural line.[28]

The Eastern Goldfields line has the greatest concentration of railway dams associated with rock catchments, and which were constructed in the 1894-96

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26 Water Authority of Western Australia, ''The Wells of Explorer Charles Hunt: An assessment of their condition and historical significance as a groundwater resource', November 1991, plate 8.

27 Uhe (Rogers), Phillipa, *Survey of Railway Heritage in Western Australia*, National Trust of Australia (WA), March 1994, Appendix, Railway Water Supplies

28 Heritage Council database and assessment documentation

period. Rock Water Catchment Area, Cunderdin (P03534), has an associated 25,000-gallon tank on stand in the railway yard, which is entered on the State Register as *Railway Water Tower, Cunderdin* (P0647). The Cunderdin rock catchment includes a tunnel cut through granite to carry water to the dam. Moorine Rock Dam (P10065) has an associated stationmaster's house; Yellowdine Catchment & Dams (P10069) and Boorabbin Rock Catchment & Dams (P3936) each have two dams. Both places are entered on the relevant municipal inventories. *Bullabulling Rock Water Catchment & Dams* (P03933) has two dams and is entered on the State Register. *Karalee Reservoir, Rock Catchment & Aqueduct* (P10062) is entered on the State Register.[29]

Railway Dam, Merredin is a good example of an early railway water supply using a granite rock catchment.

13.4 KEY REFERENCES

No key references.

13.5 FURTHER RESEARCH

A site inspection of Hunt's Well no. 8 may indicate whether the original pole and stone lining is extant.

Archaeological investigation of the Caretaker's site may reveal remains and/or artefacts.

[29] Heritage Council database and assessment documentation.