



**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)

- 2.1 Living as Australia's earliest inhabitants
- 2.2 Adapting to diverse environments
- 3.5.3 Developing agricultural industries
- 3.11.5 Establishing water supplies
- 4.5 Making settlements to serve rural Australia
- 8.1.4 Enjoying the natural environment

HERITAGE COUNCIL OF WESTERN AUSTRALIA THEME(S)

- 102 Aboriginal occupation
- 103 Racial contact & interaction
- 104 Land allocation & subdivision
- 107 Settlements
- 111 Depression & boom
- 404 Community Services and utilities
- 507 Water, power & transport routes
- 602 Early settlers
- 605 Innovators

11.1 AESTHETIC VALUE*

The water reservoir, weir wall, surrounding man-made structures and natural landscape that comprise *Toapin Weir* are of aesthetic significance as a place of scenic beauty. The construction of the dam wall in 1912, the raising of the wall in 1935, and construction of other elements associated with the operation of the place for water supply purposes have enhanced the visual quality of the natural environment by the creation of the water reservoir now contained within the natural hollow of the granite outcrop. (Criterion 1.1)

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Canberra, 1991, with additional reference to Richards, O. *Theoretical Framework for Designed Landscapes in WA*, unpublished report, 1997.

Toapin Weir, comprising the water reservoir in its natural granite setting, the concrete weir wall constructed in 1912 and raised in 1935, walls constructed through the catchment, the pump-house, pipelines and fencing in a natural landscape setting, comprises a significant cultural landscape. (Criterion 1.3)

11. 2. HISTORIC VALUE

Toapin Weir is the largest reservoir and most comprehensive water scheme privately constructed in Western Australia and its subsequent extension to provide a water scheme for the town and district of Quairading is unique. (Criterion 2.1)

Toapin Weir was constructed in a period of agricultural expansion in the Wheat Belt following extension of the railway to Quairading, and financial assistance towards raising of the weir wall (in 1935) was part of a national programme of works for unemployment relief. (Criterion 2.1)

Toapin Weir illustrates the development from the early 1900s, of a reservoir and water scheme to serve agriculture, the railway and towns that were necessary to enable expansion of agriculture, and associated towns in Western Australia in particular in the Wheat Belt areas and the South-West. (Criterion 2.1)

Toapin Weir illustrates a place originally privately constructed to provide a water service to 'Dangin Park' and the town of Dangin that was later purchased by the Government for the Soldier Settlement Scheme in 1919-20 and declared a Water Reserve. (Criterion 2.2)

Toapin Weir is associated with J. S. W. Parker, the original owner of the project, and prominent engineers T.C. Hodgson and N. Fernie. (Criterion 2.3)

Toapin Weir illustrates the innovation of J.S.W. Parker in developing a substantial reservoir and water scheme to supply agricultural land and a town in 1912, and as the only such private and comprehensive scheme implemented in this State, it is an unparalleled achievement. Well known Engineer T. C. Hodgson designed it and supervised its construction by E. A. Wankey., and the raising of the weir wall and extension of the water scheme to Quairading is associated with Engineer N. Fernie. (Criteria 2.3 & 2.4)

1. 3. SCIENTIFIC VALUE

Toapin Weir, and the associated water scheme, demonstrates a high level of technical achievement and, as the first such structure in the Wheat Belt, is a benchmark site. The place has potential to contribute to a wider understanding of the techniques and materials employed in construction of reservoirs utilising a natural granite outcrop. (Criterion 3.1)

Toapin Weir and its surrounding area has the archaeological potential to provide a wider understanding of the history of the c.1855-75 sandalwood cutting industry, and the earlier phases of occupation. (Criterion 3.1 & 3.2).

Toapin Weir and its surrounding area has potential to contribute to a wider understanding of the history of human occupation of Toapin Rock including the possible Aboriginal occupation of the area prior and subsequent to the construction of the weir. (Criterion 3.2)

11. 4. SOCIAL VALUE

Toapin Weir is highly valued for social, cultural and aesthetic reasons by the local community who have benefited from the water scheme and have enjoyed it as a picnic area since 1912-13. The place is included in the Municipal Inventory for the Shire of Quairading, with the recommendation for entry in the Register of Heritage Places. (Criterion 4.1)

Toapin Weir contributes to the community's sense of place as an integral part of the district and a most admired beauty spot in the region. (Criterion 4.2)

12. DEGREE OF SIGNIFICANCE

12. 1. RARITY

Toapin Weir is unique in Western Australia firstly for the scale of the original scheme and its construction by a private landowner and secondly for its subsequent expansion to provide for as large an area as that of the Dangin-Quairading Water Board. (Criteria 5.1 & 5.2)

12. 2 REPRESENTATIVENESS

Toapin Weir is a representative example of a concrete gravity dam constructed to retain water in a naturally occurring reservoir created by a granite outcrop in the Wheat Belt area of Western Australia. (Criterion 6.1)

Toapin Weir, with its large granite outcrops and natural setting, represents a skilfully modified cultural landscape utilised for the purpose of water supply. (Criterion 6.1)

12. 3 CONDITION

The infrastructure and natural landscape that comprise *Toapin Weir* are in good condition. The gravel carpark, fencing and visitor facilities are well cared for and are not intrusive. The weir wall appears to be sound as far as can be determined. Pipes and other water-supply infra-structure appear to be regularly maintained to a high standard.

12. 4 INTEGRITY

Toapin Weir has high integrity and remains in use for its original purpose of providing a water source for the local area.

12. 5 AUTHENTICITY

Toapin Weir has very high authenticity and retains the original fabric of the place as constructed in 1912 and as raised in 1935.

13. SUPPORTING EVIDENCE

The documentation for this place is based on the heritage assessment completed by Robin Chinnery, Historian, and Rosemary Rosario, Architectural Heritage Consultant of Heritage and Conservation Professionals, in November 2010, with amendments and/or additions by State Heritage Office staff and the Register Committee.

The recommended curtilage comprises the whole of Reserve 21618.

13.1 DOCUMENTARY EVIDENCE

Toapin Weir is a natural granite rock catchment reservoir, with a weir wall constructed in 1912, for J. S. W. Parker, to supply his Estate, including share farms that were established in association with the place, and the town of Dangin. In 1935, the height of the wall was raised to increase the capacity of the reservoir and the water scheme was extended to the town and district of Quairading under the Dangin-Quairading Water Board.

From 1836, Stephen Parker (b. 1796, arr. 1830, d. York, 1879) established his farm named 'Northbourne' at York, and took up extensive pastoral leases to the east of the Avon Valley¹, including an area around Dangin Springs. The name Dangin Springs is believed to be derived from Danjin, an Aboriginal word meaning 'the place of the needle bush or hakea'² that grew in profusion in the area. The local Aboriginal people used it as a meeting place, where trade and ceremonies were often performed.³ It was also thought of as 'a good hunting ground with many rock holes filled with water', where up to 600 Aboriginal people sometimes camped.⁴

In the late 1850s, Edward Read Parker (b. England, 1820, d. 1905) moved from farming with his father at 'Northbourne' to establish the property he named 'Dangin', clearing and developing the land and engaging in sandalwood cutting and carting. At periods between 1855 and 1875, he employed 27 ticket-of-leave men.⁵ There were 'enormous quantities' of sandalwood cut in the region but 'not a single tree of this fragrant variety' remained in 1907, when 'the ruined walls of a house once a depot for the convenience of the hewers' stood below 'a steep shelf of granite rocks, marked on the map Toapin'⁶ that formed a natural reservoir assuring a ready source of water throughout the year. In 1860, James Morrison selected pastoral land in the vicinity of Toapin Rock, where he constructed a dwelling believed to be the early building surviving there in 1930, which is no longer extant although some archaeological traces may remain in 2010.⁷ Toapin

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- 1 Erickson, Rica (ed.) *Bicentennial Dictionary of Western Australians pre 1829-1888* University of Western Australia Press, Nedlands, 1988, p. 2415.
 - 2 *History of Country Town Names*, Landgate, Accessed 27/07/11 from <http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+Country+Town+Names>.
 - 3 *Quairading*, Western Australia Now & Then, Accessed 27/07/11 from <http://wanowandthen.com/quairading.com/quairading.html>.
 - 4 Eaton, Frances *The Golden Grain and the Silver Fleece: A History of Quairading from 1859-1930* Wescolour Press, East Fremantle, 1979, pp. 12.
 - 5 *ibid*, p. 13; & Erickson, Rica (ed.), *op. cit.*, p. 2410 & p. 2413.
 - 6 'L.B.J.' in *Western Mail* 16 Nov. 1907, p. 10.
 - 7 *ibid*; Eaton, Frances, *op. cit.*, p. 186; Erickson, Rica (ed.), *op. cit.*, p. 2241; & site visit, Robin Chinnery & Rosemary Rosario, 18 August 2010.

Rock is not a listed Aboriginal heritage site in the Shire of Quairading,⁸ but Aboriginal people may have known and used the water source there at some period.⁹

In the late nineteenth century, pastoralism was the principal land use in the Dangin and Toapin district, but plants such as York Road poison and Box poison were a hazard to stock and could cause severe loss.¹⁰ In 1888, Parker retired to York, and his son, Jonah Smith Wells Parker (b. 1863, d. 1914) took over 'Dangin', most of which remained as leasehold. In 1892, Jonah Parker established a distillery to extract eucalyptus oil from salmon gum leaves, which was noted for its purity and won awards at the Melbourne Exhibition (1893) and the Glasgow Exhibition (1901). After the vats at the distillery were damaged by a severe storm, and in the face of increasing costs and competition from Eastern States manufacturers, Parker sold the manufacturing rights to F. H. Faulding, of Perth, who continued to manufacture the oil in the twentieth century.¹¹

During the 1890s, under the conditional purchase system Parker progressively acquired more land in the vicinity of his Dangin Estate, which was the only developed property in the area and included a dam known as Toapin Dam.¹² In 1897, his Estate was said to contain 'some of the best land in the colony', and he held much of 'the good land available at Dangin under freehold and conditional purchase', a total of 24,830 acres (10,031ha.).¹³ The homestead was surrounded by four large poison leases, and the Toapin Rocks, which Parker took over as a poison lease at three farthings an acre in 1898, were 'surrounded with three different kinds of poison.'¹⁴ Such leases were available at a low price on the basis the lessee would eradicate the poison and facilitate a larger landholding at a cheap price.¹⁵ In 1899, Inspector Whittaker reported 'a splendid belt of country between Dangin and Cubbine' was 'one of the largest stretches of almost uniformly good land' he had seen in Western Australia, and when there was a direct railway line to York via Greenhills 'nothing will be wanted for the development of a new and important agricultural centre for the Toapin Rocks will always conserve plenty of water', but 'the cartage would cost too much to allow corn growing to pay.'¹⁶ Following the opening of the railway more settlers began arriving in the district in the early 1900s, to select land suitable for wheat growing and sheep farming and the proposed extension of the railway from Greenhills to Quairading was welcomed.¹⁷

⁸ Shire of Quairading, in Aboriginal Heritage Sites Register.

⁹ A database search of the Department of Indigenous Affairs' registered sites was also undertaken for Toapin Rock and the immediate surrounding areas of Quairading. No registered sites were found.

¹⁰ *West Australian* 18 Nov. 1879, p. 3; & Ludbrook, Juliet *The Big Q: A history of Quairading and its surrounding districts* Shire of Quairading, 2003, p. 26.

¹¹ *ibid*, Eaton, Frances.

¹² Eaton, Frances, *ibid*, pp. 13-16; & *West Australian* 11 June 1897, p. 3.

¹³ Letter signed 'Common Sense' in *West Australian* 26 Jan. 1897, p. 6; & *Western Mail* 29 Jan. 1897, p. 13.

¹⁴ 'Common Sense' in *West Australian* 25 Dec. 1896, p. 2; Eaton, Frances, *op. cit.*, pp. 13-16; & Ludbrook, Juliet, *op. cit.*, p. 89.

¹⁵ Ludbrook, Juliet, *ibid*, p. 26

¹⁶ Report by Inspector Whittaker to Minister of Lands in *Western Mail* 12 May 1899, p. 5.

¹⁷ Eaton, Frances, *op. cit.*, pp. 13-16.

In December 1906, the Greenhills-Quairading Railway Act was passed. In April 1907, construction began and the line opened in April 1908.¹⁸ Parker recognised the opportunity and told H. St. B. Moore, Inspector of Lands, Avon District, of his intention 'to lay out a townsite on his estate as soon as he obtains his Crown Grants & the line is completed', and established the township of Dangin (1907).¹⁹

In mid-1908, when H. St. B. Moore, inspected Dangin for possible 'repurchase', he reported the country was 'exceedingly well watered', but with 'a good deal of poison on it', and Parker had had a townsite surveyed adjoining the rail siding, and about 20 lots had been sold.²⁰ He suggested the Estate could be subdivided into farms, each of about 600 acres (242ha.), noted 'great demand for land in the neighbourhood of Dangin for agricultural settlement', and considered that if the Estate was 'cut up' it would be 'immediately selected'²¹; however, the re-purchase did not proceed at this date. Parker 'presented the Government with sites for a school-house', gave land for a Roads Board Hall and Offices, Agricultural Hall, Anglican and Methodist Churches, agricultural show grounds and recreation at Dangin, renaming his surrounding property 'Dangin Park' to distinguish it from the town. He built most of Dangin including the temperance hotel (demolished) and served as a member of East Beverley and Beverley Roads Boards and was an executive of the Farmers and Settlers' Association.²²

In 1910, it was reported there were 'two very large bold rocks or hills' east of Dangin, i.e. Toapin Rock, and 'Nookaminny' from which 'a running spring of beautiful fresh water' supplied water to Parker's large vegetable garden and the railway.²³ Having recognised 'the great natural advantages of a water catchment of solid granite rock, forming a basin' 100 acres (40.5ha.) in area and sloping to a centre at Toapin Rocks, Parker sought expert advice, and appointed T. C. Hodgson, a well experienced engineer, to design a weir and water supply to provide water to 'Dangin Park', to reticulate the town of Dangin and to provide water for the railway.²⁴ Hodgson had come from Victoria to join the Public Works Department (PWD) of Western Australia in the mid-1890s, and was the officer in command under C. Y. O'Connor for the Coolgardie Water Scheme, including the construction of Mundaring Weir.²⁵

In 1912, under Hodgson's supervision E. A. Wankey, constructed a concrete wall, about 220 ft. (67m) long, 18 ft. (5.4m) high, 12 ft. (3.6m) thick at the base tapering to 10 ins. (250mm) at the top, across the natural basin at the outlet of the catchment area to create *Toapin Weir* with a capacity of 1,150,000 gallons (5,221,000 litres). About three chains (60m) below the reservoir a shed accommodated the pumping plant, a 9 horse-power (6.6 kilowatts) Tangye oil

¹⁸ Ludbrook, Juliet, op. cit., pp. 29-33.

¹⁹ H. St. B. Moore to U/Sec. Lands & Improvements, 12 Dec. 1906, quoted in *ibid*, p. 85.

²⁰ H. St. B. Moore, Inspector of Lands, Avon Dist., Report on Dangin Estate, SROWA Cons. 541 Item 1908/07094, 2 June 1908.

²¹ *ibid*.

²² Battye, J. S. *Cyclopedia of Western Australia* Cyclopedia Company, Perth, 1913, Fasc. Ed. Hesperian Press, Carlisle, 1985, Vol. 2, pp. 510-516; & Erickson, Rica (ed.) *Bicentennial Dictionary of Western Australians pre 1829-1888* University of Western Australia Press, Nedlands, 1988, p. 2410 & p. 2413.

²³ *Eastern District Chronicle* 21 May 1910, quoted in Eaton, Frances, op. cit., p. 18.

²⁴ Battye, J. S., op. cit., p. 511.

²⁵ Le Page, J. S. H. *Building a State: The Story of the Public Works Department of Western Australia 1829-1985* Water Authority of Western Australia, Leederville, 1986, p. 275, p. 282 & pp. 305-306.

engine with a Tangye vertical three-throw pump, to pump water to a storage tank, with a capacity of almost 150,000 gallons (680,000 litres), about 9,600 ft. (3km) distant from the reservoir. Eight miles (12.8km) of main and distributing pipes carried water from the tank to supply 'Dangin Estate', the town of Dangin and the railway.

Toapin Weir was the first structure of its kind to be constructed in the Wheat Belt, and as such preceded the development of other natural rock catchment water supplies in the area, which didn't occur until the 1920s when agricultural expansion required water and the PWD utilised natural rock catchments where possible to provide a district water supply. The first was at Kondinin (No. 3 District), where a reservoir was constructed (1925-27) at Yeerakine Rock with a pumping station and a service reservoir with a capacity of 150,000 gals. (681,000 litres) on top of the rock, whence the water gravitated to the reticulation scheme to service the town of Kondinin, the railway and 43,000 acres of farms in the district from May 1927.

The *Toapin Weir* water scheme cost Parker £5,000, and he was highly praised for his enterprise, because 'instead of waiting on Governments, hat in hand, for assistance, he set himself personally to solve the water problem in what was condemned as a dry waterless area.'²⁶ The *Cyclopedia of Western Australia* stated 'for the extent and method of its conservation and the area covered in distribution, this scheme is unequalled by any private enterprise of a similar nature in the Commonwealth.'²⁷ Early photographs show a front view of the weir wall and of the reservoir and wall viewed from the rear.²⁸ A plaque in the wall stating it was 'founded by J. S. W. Parker, 1912, T. C. Hodgson engineer, E. A. Wankey builder', does not appear to be extant in 2010.²⁹

In 1912-13, 'Dangin Park' encompassed a total of about 16,000 acres (6,464 ha.) and was said to be 'one of the largest farming propositions' in Western Australia and 'equalled by few in the whole of the Commonwealth.'³⁰ In addition to *Toapin Weir*, there was another large dam, wells and soaks at 'Dangin Park' which 'would alone have caused the property to rank among the premier farms of the State with regard to watering features.'³¹ Following construction of *Toapin Weir*, Parker leased about half of his 8,000 acres (3,232 ha.) of cleared land at 'Dangin Park' to farmers on a share system whereby he supplied the land, seeds and manure etc., and profits of the share farming, worked on the fallow system, were divided equally. Parker and his sons grew about 1,000 acres (404 ha.) of hay annually and had a well regarded flock of sheep, a small herd of Jersey cattle, and horses including some prize winning Clydesdales.³²

In spring 1913, the Parker family and the share farmers held a picnic at *Toapin Weir*, to which the general public were invited. It was 'conducted on a field of green grass, fringed with shade trees, under which the picnickers lunched', and the subsequent sports included foot races, sheaf throwing for men, a stepping

26 *West Australian* 3 Oct. 1913, p. 7.

27 Battye, J. S., op. cit., pp. 511-514.

28 Photographs by C. E. Farr, in *ibid*.

29 *West Australian* 3 Oct. 1913, p. 7; & site visit, Robin Chinnery & Rosemary Rosario, 18 August 2010.

30 Battye, J. S., op. cit., p. 510.

31 *ibid*, p. 514.

32 *ibid*, pp. 513-515.

race for ladies, some horse events and a tug of war between Parker's employees and the share farmers.³³ Several hundred people attended and enjoyed the sports and the 'charming physical surroundings.'³⁴ It was 'the most successful affair of the kind in the district', and Parker and the share farmers 'decided to make it an annual event' which was 'much enjoyed' in subsequent years.³⁵

Following World War I, about 38,000 British ex-servicemen and women were granted free passage to migrate to Australia in 1919-22, under the repatriation initiatives for Australian and Imperial ex-servicemen. In Western Australia, the only State that forged ahead with a vigorous scheme of land settlement linked to immigration, 14 million acres (5.67 million ha.) was set aside for the Soldier Settlement Scheme, which with credit made available through the Agricultural Bank put more than 5,000 soldier settlers on the land and enabled a major expansion of agriculture in the Eastern Wheat Belt utilising the network of light agricultural railways constructed in the pre-war period.³⁶

'Dangin Estate', with the existing railway and an assured supply of water from *Toapin Weir*, was well suited for the Soldier Settlement Scheme and accordingly it was surveyed for sub-division into 19 lots/locations in March 1919. The plans show Toapin Rock at Location 21618 with 'proposed Reserve for Water Supply, 100 acres, with pumping plant', the capacity of the dam recorded as 3.5 million gals. (15.9 million litres), a cottage and engine room; and a mill and iron tank on a proposed Reserve 1 acre (.404 ha.) in area, the pipeline from the *Toapin Weir* to the tank, with a capacity of 140,000 gals. (635,600 litres) at Location 21619, and the pipeline to Dangin.³⁷ After the Repatriation Department purchased the property the question of water supply on the Estate had to be settled prior to a final decision on the price for each lot. On 1 March 1920, the Surveyor-General advised the Controller of Soldier Settlement there was one concrete dam (*Toapin Weir*) and another smaller dam, and about six miles of piping with a total value of £4,900. The alternatives were to sell the pipes and pump and reserve the reservoirs for bad seasons, or to declare a Water Area, to be controlled by the Minister for Works 'if the settlers and townspeople clamoured for a water supply.'³⁸ On 31 March, the *Government Gazette* advertised prices for lots at Dangin Estate and the plan showed the Water Area, which subsequently was reserved as noted above.³⁹ On 30 April 1920, Avon Location 21618, Reserve 17433, was gazetted as a Class C Reserve, for the purpose of water. It was vested in the Minister for Water Supply, Sewerage, and Drainage for this purpose on 23 December 1921, and Northam Water Supply carried out maintenance and pumping at *Toapin Weir* until 1927, when responsibility was transferred to the

33 *West Australian* 3 Oct. 1913, p. 7.

34 *ibid.*

35 *ibid.*; & Eaton, Frances, *op. cit.*, p. 20.

36 Crowley, F. K. *Australia's Western Third: A History of Western Australia from the first settlements to modern times* Macmillan & Co Ltd, London, 1960, pp. 201-04; & Burvill, G. H. 'The forward move, 1889-1929' in Burvill, George H. (ed.) *Agriculture in Western Australia, 1829-1979* University of Western Australia Press, Nedlands, 1979, p. 25 & pp. 30-32.

37 Plans for proposed sub-division of Dangin Estate in Dangin Estate - Parker, J.S.W. Shire of Quairading, Land Admin. File, SROWA Cons. 541 Item 1919/06777 Vol. 2, initialled BGB, 7 March 1919.

38 Correspondence in *ibid.*, 1 March 1920.

39 Correspondence in *ibid.*, Oct. 1919-March 1920; & Eaton, Frances, *op. cit.*, p. 27; & Ludbrook, Juliet, *op. cit.*

PWD.⁴⁰ In the 1920s-30s, large sums were expended to construct reservoirs and reticulation schemes for the farming districts and their towns,⁴¹ and the opportunity to acquire *Toapin Weir* and associated water scheme with Dangin Estate was unique.

In 1922, the Engineer for Water Supply made a visit to the district 'to see about securing a better water supply for Quairading, and to ascertain if it were possible' for it to be supplied 'from the Toapin reservoir.'⁴² In 1923, the Water Reserve and *Toapin Weir* were surveyed by engineers with a view to connecting Quairading to the existing water scheme to ensure an adequate supply.⁴³ In 1924, when consideration was being given to a comprehensive water supply for agricultural areas, Quairading residents again suggested *Toapin Weir* supply the town and district, but Dangin residents were concerned there would not be sufficient water for both communities and resisted the proposal.⁴⁴ In 1929, Quairading Road Board estimated costs for a water supply from *Toapin Weir*. At the local elections in 1930, the majority of voters at a water poll were in favour, but in the depths of the Great Depression no further action was taken.⁴⁵

In 1930, PWD Engineer Norman Fernie outlined the advantages of a rock catchment including the large percentage run-offs obtained, a very important feature in areas of marginal rainfall and minimum maintenance. He noted that due to their elevation, rock catchments were 'generally suitable for economic conservation', and most of the 'necessary building materials' were available on site,⁴⁶ as *Toapin Weir* had demonstrated since its construction in 1912.

In 1932, a water diviner employed by Quairading Road Board was unsuccessful in efforts to find water in the town. In 1933, a committee was appointed to investigate a Town Dam and a scheme to supply water. In December, the Road Board wrote to the Department of Water Supply and referred to the 1930 poll, stating residents were in favour of increasing the capacity of *Toapin Weir* by raising the height of the retaining wall. In March 1934, owners and occupiers of land in the town met and advised the Road Board that they agreed that this scheme should proceed.⁴⁷ In April, when the Minister for Works laid the foundation stone for additions to the Road Board Hall, H. M Growden, Road Board Chairman, led a deputation of residents to request he 'facilitate the enlargement of the Toapin Rock Weir with the object of supplying Quairading with water', and that the Minister take the necessary steps towards their goal including the formation of a water board.⁴⁸

40 *Government Gazette* 30 April 1920, p. 788, & 23 Dec. 1921, p. 2618; & Ludbrook, Juliet, op. cit., p. 240.

41 Crowley, F. K., op. cit., p. 204.

42 *West Australian* 24 Oct. 1922, p. 8.

43 *West Australian* 3 Oct. 1923, p. 12.

44 *West Australian* 23 Sept. 1924, p. 7; & Ludbrook, Juliet, op. cit.

45 Ludbrook, Juliet, *ibid*, pp. 240-241.

46 Fernie, N. 'Water Supplies from Rock Catchments in the Western Australian Wheat Belt' in *Journal of The Institution of Engineers, Australia*, 1930, quoted in Le Page, J. S. H. *Building a State: The Story of the Public Works Department of Western Australia 1829-1985* Water Authority of Western Australia, Leederville, Western Australia, 1986, pp. 428-432.

47 Ludbrook, Juliet, *ibid*, pp. 240-241.

48 *West Australian* 14 April 1934, p. 9.

In August 1934, the Chief Engineer, Norman Fernie, approved the 'Toapin Rock Water Scheme'⁴⁹, and his report was read to a meeting held at Quairading for people interested in the proposed Quairading Town Water Scheme to be supplied from *Toapin Weir* at an estimated cost of £7,000. Dangin residents opposed the proposed extension from *Toapin Weir* to Quairading and for a local water board as they were concerned the scheme would benefit Quairading at their detriment. The PWD allayed their concerns and ensured the agreement with Soldier Settlers on the Dangin Estate was honoured, and the Dangin-Quairading Water Board was established to control the two distinct areas of Dangin and Quairading.⁵⁰ In November, the Dangin-Quairading Water Board notified it intended to proceed to raise the wall of the existing storage reservoir (*Toapin Weir*) by 4 ft. 9 ins. (and increase the catchment area from 14 acres to approximately 64 acres (5.5ha. to 25.8ha.)); to lift the existing galvanised iron rising main between the storage reservoir on Reserve 17434 and replace it with asbestos pipes and to roof the service reservoir (not included in this assessment); to install an engine, pump and windmill on the new rising main; to lay a gravitation main, 161 chains (3km) asbestos pipes and 67 chains (1.3km) of galvanised iron pipes, between the service reservoir and Quairading townsite; and to lay all pipes and apparatus to reticulate the town.⁵¹ After several petitions, it was agreed the wall would be strengthened at the base and raised 6 ft. (1.8m) above its original height⁵², i.e. from 18 ft. to 24 ft. (5.4m to 7.2m).

In early February 1935, it was announced the Commonwealth government would provide £1 million for a national programme of works for unemployment relief, with Western Australia to receive £125,000 for its country water schemes programme and the projects included raising the weir wall at *Toapin Weir*. It was anticipated work would start within eight weeks, continue over 20 weeks, and employ 40 men, and 15 local men by mid-March.⁵³ *Toapin Weir* was drained for the extensive works, at a cost of £6,710, which increased the storage capacity to approximately 5 million gals (22.7 million litres) ensuring a plentiful supply of water for both towns in the late 1930s. In May 1935, a photograph of 'Toapin Dam' shows construction in progress on raising the height of the weir wall, and the project was completed on 30 June 1935.⁵⁴

In October 1935, the water works were vested in Dangin-Quairading Water Board comprising Reserve 17433, the storage reservoir 'on Toapin Rock' together with all associated valves, pipes, outlets and inlet drains; fencing to this Reserve; the service reservoir; the rising main between the storage and service reservoirs; the gravitation main from the main reservoir to Dangin townsite and the reticulation

49 *West Australian* 20 August 1934, p. 10.

50 *West Australian* 7 August & 6 Oct. 1934, p. 8.

51 *West Australian* 24 Nov. 1934, p. 16.

52 Ludbrook, Juliet, op. cit., p. 241.

53 *West Australian* 4 Feb. & 18 March 1935, p. 15 & p. 13 respectively.

54 *West Australian* 2 July 1936, p. 8; photo, in *ibid*, 31 May 1935, p. 24. Note: Eaton, Frances, op. cit. p. 186, stated the scheme was completed at a cost of £5,940, £1,080 below the estimated cost, & storage capacity was increased to 6 million gals., & Ludbrook, Juliet, op. cit., also stated this capacity.

mains etc. in the townsite; and an easement on each side of the pipelines through Avon Locations 21605, 21607 and 21613, with effect from 1 July 1935.⁵⁵

On 24 June 1936, the Minister for Water Supply, Mr. H. Millington, officially opened the Quairading water scheme at 'Toapin Rock Weir'.⁵⁶ The official party included Mr. J. J. Mann, M.L.A., Messrs. C. F. Baxter, V. Hamersley and G. B. Woods, M.L.C.s, C. A. Munt, Under-Secretary of Works, E. Tindale, Director of Works, and Engineer N. Fernie, and was attended by members of Quairading Road Board, whose chairman, Mr. V. E. Clemens, presided, and representatives from neighbouring municipalities and road boards.⁵⁷ A tablet at *Toapin Weir* commemorated the original works (1912), extension and improvements (1935) and the official opening (1936).⁵⁸ The extension of the water scheme from the originally privately owned *Toapin Weir* to supply Quairading was unique.

In the late 1930s, *Toapin Weir* continued as a popular picnic area for residents of Dangin and Quairading, and groups such as the Dangin Methodist Sunday School.⁵⁹

In the Inter-War period, some large dams that were constructed to serve country towns included roofing to counter heavy evaporation and some existing dams were also roofed in this period. In April 1940, *Toapin Weir* was 'completely dry', and subsequently, on the advice of the PWD, Dangin-Quairading Water Board decided to erect an iron roof over *Toapin Weir*, supported by 365 piles that were of white gum brought to the site from Talbot Brook, west of York. The Secretary of Quairading Road Board, J. Keast, supervised the work, which was carried out by the Road Board employees, and it was completed in spring 1941.⁶⁰ The roof served its intended purpose for some years before it fell into disrepair and was removed. In 2010, some small iron fixtures remain in the rocks around the perimeter of the reservoir showing where the roof used to be fastened.⁶¹

In the 1930s, a comprehensive water supply scheme to agricultural areas was proposed and investigated. However, the State government's request for Commonwealth assistance for the proposal, which included raising the height of Mundaring Weir, did not receive a favourable response in 1939. The PWD further considered it in the early 1940s, but no further progress was possible until after World War II, when Commonwealth assistance was sought for the so-called 'Comprehensive Agricultural Areas and Goldfields Water Supply Scheme', at an estimated cost of £9,333,000. In 1948, the Commonwealth agreed to subsidise the Modified Comprehensive Scheme to serve a reduced area and a number of towns.⁶²

55 Correspondence, & Draft for Order-in-Council, in TWS - Dangin-Quairading - Vesting of the Service, Reserve, Easements, etc. in Water Board, SROWA Cons. 541 Item 1935/0733, May-August 1935; & *Government Gazette* 11 October 1935, p. 1954.

56 *West Australian* 2 July 1936, p. 8.

57 *ibid.*, & *York Leader and Quairading and Dangin Herald* 3 July 1936.

58 Eaton, Frances, *op. cit.*, p. 186.

59 *West Australian* 19 Oct. 1936, p. 9.

60 Correspondence in TWD Dangin-Quairading-Quairading Reticulation, Cons. 1869 Item 1936/0850, 1941; Eaton, Frances, *op. cit.*, p. 187; & Ludbrook, Juliet, *op. cit.*, p. 242.

61 Site visit, Robin Chinnery & Rosemary Rosario, 18 August 2010.

62 Le Page, J. S. H., *op. cit.*, pp. 474-478.

In the early 1940s, two wells in the vicinity of *Toapin Weir*, one of which had been disused, were resumed for water purposes to augment the water supply to Quairading, with a windmill at each well to pump the water to the reservoir.⁶³ Water usage in the town was increasing as people established small gardens and lawns and Quairading Road Board sought further underground supplies. A disused well on the local golf course was reconditioned and equipped to provide some additional supply.⁶⁴

In 1945, other than towns the Goldfields Water Supply served, there were only 36 country towns, including Quairading and Dangin, with a reticulated water supply operated by a local Water Board. Subsequent to the *Country Water Supplies Act, 1947*, the number of Water Boards declined as more and more opted to have the Water Supply Department take over their scheme when faced with the need to augment supply and/or undertake costly maintenance on existing facilities. In the post-war years, in addition to the Agricultural Areas Water Supply Scheme the PWD was heavily involved in providing town water supplies, and the number of country towns provided with a reticulated water scheme doubled by 1958. In the same period, improvements were made to many existing water schemes.⁶⁵

In the 1940s, and the post-war period, there was concern about a lack of water in *Toapin Weir* in dry years, and regarding a sufficient supply in the post-war period of agricultural expansion. In 1959, Quairading residents voiced concern that the water supply problem was retarding growth and development of the town and it was recognised connection to the Goldfields Water Supply would resolve it.⁶⁶ In 1964, the PWD Water Supply Department commenced laying a main from the pipeline at Cunderdin to Quairading. In December 1965, it was connected to *Toapin Weir*, which continued in use for some years before it ceased, and subsequently *Toapin Weir* was retained for emergency use as a water supply.⁶⁷

In 1996, *Toapin Weir* was included in the Municipal Heritage Inventory for the Shire of Quairading, and entry in the Register of Heritage Places (RHP) was recommended.⁶⁸

In early 2008, the Quairading Tidy Towns Committee decided to focus on one main project, namely *Toapin Weir*, including cleaning up the area, and 'provision of toilets and a rail on the rock to assist climbers'⁶⁹, but the latter was not realised. The clean up was undertaken and picnic shelters provided at *Toapin Weir* for local visitors and others who visit the place. In winter 2008, it was proposed to plant some young wattles at *Toapin Weir*, and attention was drawn to the lack of road signage to the place, and subsequently new signage was installed.⁷⁰ In 2010, *Toapin Weir* remains in use as a reservoir capable of providing additional water supply to Quairading and Dangin if required, and the

63 Crowley, F. K., op. cit., p. 204; & Correspondence in Dangin-Quairading W.S. Land Resumption, SROWA Cons. 1109 Item 1936/0353, 1941.

64 Eaton, Frances, op. cit., p. 187; & Ludbrook, Juliet, op. cit., p. 242.

65 ibid, pp. 505-506.

66 Ludbrook, Juliet, ibid.

67 ibid, pp. 242-243.

68 *Toapin Weir*, in Municipal Inventory, Shire of Quairading, Adopted 18 April 1996.

69 Correspondence received, Minutes, Quairading Shire Council, 28 Feb. 2008.

70 Minutes, Quairading Shire Council, July to Sept. 2008.

picnic area is well maintained. Local residents and other visitors, including tourists, appreciate the very fine aesthetic qualities of *Toapin Weir*.

13.2 PHYSICAL EVIDENCE

Toapin Weir is a natural granite rock catchment reservoir with a weir wall constructed in 1912, located on part of J. S. W. Parker's original Dangin Estate to the east of York. In 1935, the height of the wall was raised to increase the capacity of the reservoir and the water scheme was extended to the town and district of Quairading.

Today, *Toapin Weir* comprises part of Reserve 17433 (Avon Location 21618) and covers an area of approximately 57 hectares. The majority of the reserve is natural bushland. A reservoir located approximately centrally on the reserve is contained within a natural rock formation with a weir wall constructed across the south-eastern end. A series of low walls extend across the catchment, designed to channel run-off into the reservoir.

Toapin Weir is located approximately 5 km north-west of Quairading, a town approximately 170 km east of Perth in the Western Australian Wheat Belt. There are a number of access roads that lead to the weir. From Quairading, the most direct route is to travel north on the Quairading-Cunderdin Road (also known as Adamson Road), turn left onto Dorakin Road, left onto Weir Road and right onto Toapin Road. Toapin Road is located on the southern boundary of Reserve 17433. From Toapin Road a gravel track leads to the carpark outside the fence that encloses the weir. The carpark contains a timber framed shelter, a barbecue, picnic table and rubbish bins. There is a wire mesh fence approximately 2m in height enclosing the weir and reservoir area.

Reserve 17433 comprises an elevated area of land featuring a large granite outcrop that has been used to create the weir. The reservoir is located on the southern side of the hill and is contained within the natural granite outcrop with a weir wall constructed on the south-eastern side. The concrete weir wall, constructed in two stages in 1912 and in 1935, is 7.2m high, 67m in length and 3.6m in thickness at the base. The 1935 work raised the wall by 1.8m. When viewed from the south-east, the later section of the concrete wall is slightly different in colour to the original section and it possible to see the level from where the wall was raised.

The weir wall at *Toapin Weir* is built on the principle of solid concrete gravity dam wall construction. In this form of dam construction the water is retained in the reservoir by the mass of the weir wall. Stability is achieved by the construction of the dam wall so that its weight is greater than the weight of the water it retains. The wall is designed so that the force of the water pressure and weight falls within the base of the dam, which is therefore thicker. The weir is designed so that when it reaches capacity, water spills over the top of the wall and runs down into the valley below.

In the 1940s, the weir was roofed to prevent evaporation. The roof is not extant; however, a number of the fixings for the roof remain evident around the perimeter and along the top of the concrete weir wall. Around the north-western and north-eastern sides of the reservoir low stone walls ranging from 300mm to 500mm in height have been erected and the pins that held the roof are cemented into the top of these.

At the north-western end of the reservoir a cleared area contains some remnants of timber and corrugated iron that suggest a former structure or shelter. The site of a former cottage constructed by James Morrison and still extant in the 1930s, may be the collection of stones located to the west of the weir wall.

On each side of the weir wall, low stone walls extend across the catchment area. These walls meander with the contours of the land and appear to be designed to maximise run-off into the water reservoir. The walls are approximately 500mm high and 100mm across, and constructed of local stone with a cement mortar containing local sand. Near the former cottage on the south-western side of the weir, a channel has been constructed between two low walls.

On the south-eastern side of the weir wall there is an outlet valve and pipeline that leads to a pump station inside a cyclone mesh fenced enclosure. The pump-house is a small rectangular building clad with painted corrugated walls and a corrugated iron gabled roof. There is a vent in the end of the gabled roof and cream coloured timber painted door.

There is a pipeline running across the reserve in a north-south direction that appears to link with the water distribution system for the area. The pipe is 250mm diameter, supported on concrete mounts, and continues in line with the carpark to connect with the main pipeline near Toapin Road. This pipe appears to link water from *Toapin Weir* with the general water supply for the area. There is a concrete inspection pit with a yellow tubular steel rail around the perimeter near to the main entry gate to the weir on the north-eastern side of the carpark. There is a steel mesh cover over the inspection pit.

There are no other structures or man-made elements within the reserve which is lightly wooded and features indigenous vegetation around the granite outcrops. The surrounding area comprises agricultural land, and views both within and from the reserve are peaceful and attractive.

The condition of *Toapin Weir*, both in terms of the infrastructure and the natural landscape, appears from visual inspection to be good. The gravel carpark, fencing and visitor facilities are well cared for and are not intrusive. The weir wall appears to be sound as far as can be determined. Pipes and other water-supply infra-structure appear to be regularly maintained to a high standard.

13.3 COMPARATIVE INFORMATION

In 1893-94 the PWD dams associated with granite outcrops were constructed at Yellowdine, Koorarawalyee, Boorabbin, Woolgangie and Bullabulling between Southern Cross and Coolgardie.⁷¹ A number of the dams and reservoirs on the goldfields were roofed to reduce the rate of evaporation, and the original clay lining was sometimes replaced by asphalt, which had a lower absorption rate.⁷² Of the abovementioned dams only that at Bullabulling has been Entered on the Register to date, as *Bullabulling Rock Water Catchment & Dams* (RHP 03933), which is an unused railway water catchment and storage facility in the early

⁷¹ Public Works Department, Annual Report, 1894, in *Votes & Proceedings*, 1895, p. 4; Shields, William Herbert, "Water-Supply on the Yilgarn Railway, Western Australia", *Minutes of Proceedings of the Institution of Civil Engineers*, The Institution, London, 1901, Vol. 146, p. 242.

⁷² Le Page, J. S. H., op. cit., pp. 265 & 269-272.

2000s. *Karalee Reservoir, Rock Catchment and Aqueduct* (RHP 10062), constructed as a water source for the Eastern Goldfields Railway in 1897, comprises natural granite formations and stone retaining walls, an earth and stone reservoir, and associated structures.

In 1930, PWD Engineer Norman Fernie outlined the advantages of a rock catchment including large percentage run-offs obtained, a very important feature in areas of marginal rainfall, minimum maintenance, and due to their elevation rock catchments were “generally suitable for economic conservation”, and most of the “necessary building materials” were available on site⁷³, as *Toapin Weir* had demonstrated since its construction in 1912. It has not been possible to ascertain how many such dams or reservoirs were constructed for provision of a district water supply or how many of those constructed continue in use in 2010. There is no information on the HCWA database about privately constructed reservoirs, dams or weirs that utilise a natural rock outcrop such as that at *Toapin Weir*.

Conclusion: As noted in the Documentary Evidence, no other private landowner constructed as large a water scheme as that constructed for Jonah Parker at *Toapin Weir* to service ‘Dangin Park’ and the town of Dangin. *Toapin Weir* is the only such place to have been enlarged to extend a water scheme to as large an area as that covered by the Dangin-Quairading Water Board. *Toapin Weir* is unique in Western Australia and has high rarity value.

13. 4 KEY REFERENCES

No key references.

13. 5 FURTHER RESEARCH

Further research in records held at State Records Office, Shire of Quairading and elsewhere may yield additional information about indigenous use of *Toapin Weir* in the pre and post European settlement periods and about the use of the place for water supply to Dangin and Quairading in the twentieth century.

Archaeological investigation may provide further information regarding former structures on the site. Remnants of possible former structures were identified at the north-western and south-western sides of the reservoir.

⁷³ Fernie, N. ‘Water Supplies from Rock Catchments in the Western Australian Wheat Belt’ in *Journal of The Institution of Engineers, Australia*, 1930, quoted in Le Page, J. S. H. *Building a State: The Story of the Public Works Department of Western Australia 1829-1985* Water Authority of Western Australia, Leederville, Western Australia, 1986, pp. 428-432.