



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)

- 3.4.3 Mining
- 3.11.5 Establishing water supplies
- 8.14 Living in the country and rural settlements

HERITAGE COUNCIL OF WESTERN AUSTRALIA THEME(S)

- 303 Mining (incl. mineral processing)
- 404 Community services & utilities
- 604 Local heroes and battlers

11.1 AESTHETIC VALUE*

The form and proportion of the Stone Tank, the Station Creek Reservoir and the Stone Tankstands at *Leonora-Gwalia Water Supply Group* demonstrate strong aesthetic values. (Criterion 1.1)

The place demonstrates innovation and achievement of the quality workmanship and design of the local stone constructions of the Stone Tank and Stone Tank Stands in difficult to access sites in remote locations. (Criterion 1.2)

Located high on Smoodger's Hill, the Stone Tank is a landmark in the Leonora townsite commanding views over the town of Leonora and surrounds. (Criterion 1.3)

Mt George is a strong natural element in the landscape, enhanced in its landmark quality by the three sets of Stone Tank Stands on the two hills that form the Mount, with the vistas from the site making visual connections with other elements of *Leonora-Gwalia Water Supply Group* at Leonora to the south and Station Creek to the north. (Criterion 1.4)

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Canberra, 1991, with additional reference to Richards, O. *Theoretical Framework for Designed Landscapes in WA*, unpublished report, 1997.

11.2 HISTORIC VALUE

Leonora-Gwalia Water Supply Group was constructed to address the scarcity of water in the area, a problem common in inland regional Western Australia, and to provide a regular water supply to sustain the local mining industry, supplying water from the early 1900s to the 1990s for the Mt Margaret goldfield towns of Leonora and Gwalia and their associated mining operations, including the rich Sons of Gwalia Mine. (Criteria 2.1)

The construction of *Leonora-Gwalia Water Supply Group* in 1907 bears testimony to the importance of the goldmining industry in the district, and in particular to the Sons of Gwalia Mine, at a time when many goldfield towns were in rapid decline. (Criterion 2.2)

Leonora-Gwalia Water Supply Group was closely associated with William Snell, Mayor (1900-04) and Councillor (1904-07) of Leonora, whose experiences in the goldfields prompted his lifelong interest in improving water supplies in the arid regions of the State. (Criterion 2.3)

Leonora-Gwalia Water Supply Group is associated with the Sons of Gwalia Mine, whose operations required large amounts of water from the scheme. (Criterion 2.3)

11.3 SCIENTIFIC VALUE

Leonora-Gwalia Water Supply Group demonstrates the innovative use of resources to construct a water supply scheme in the remote goldfields. (Criterion 3.1)

11.4 SOCIAL VALUE

Leonora-Gwalia Water Supply Group is valued by the residents of Leonora and Gwalia for its associations with the provision of a reticulated water supply for domestic use and for the mines that support the towns. (Criterion 4.1)

Leonora-Gwalia Water Supply Group contributes significantly to a sense of place for the local community for the landmark quality of the set of elements. (Criterion 4.2)

12. DEGREE OF SIGNIFICANCE

12.1 RARITY

In the design, use of local materials, construction method, location and intactness, the three sets of Stone Tank Stands and the Stone Tank are rare examples of their type. (Criterion 5.1)

Leonora-Gwalia Water Supply Group is a rare intact example of a group comprising an entire water supply system for a remote northeastern goldfields town in the early 1900s. The entirety of the system is demonstrated by the water supply elements in the remaining two wells and Reservoir on Station Creek, the Stone Tank Stands at Mount George and the Stone Tank in the town of Leonora, from which the town received a reticulated gravity fed water supply. (Criterion 5.2)

12.2 REPRESENTATIVENESS

Leonora-Gwalia Water Supply Group is a fine and mostly intact example of an early 1900s water supply system in the remote northeastern goldfields, of which it is a comprehensive and rare type. (Criterion 6.1)

12.3 CONDITION

Overall, *Leonora-Gwalia Water Supply Group* is in fair condition. The Stone Tank is in fair to good condition, despite some fretted mortar and disintegration of renders. The Station Creek Reservoir is in fair to good condition, with the only obvious damage being the south pillars and part of the lower wall sections to the south. The wells are in fair condition with some evidence of rusted elements and disintegration of the timber lining boards. The surrounding concrete slab at Well 4 is in poor condition, having cracked and subsided significantly on the edge of the well. The shaft of Well 5 was not inspected. Mt George Stone Tank Stands are in fair condition with some fretted mortar and stonework succumbing to the elements.

12.4 INTEGRITY

Overall, *Leonora-Gwalia Water Supply Group* demonstrates a moderate to high degree of integrity. The Stone Tank is still able to store water and Station Creek Reservoir still functions as a water catchment and dam, with both elements retaining a high degree of integrity. The wells are no longer operational but remain intact, and although the Mt George Stone Tank Stands are in ruins, they retain a moderate degree of integrity.

12.5 AUTHENTICITY

Overall, *Leonora-Gwalia Water Supply Group* is mostly intact, and demonstrates a high degree of authenticity with no evidence of intervention to the original fabric, except a roof over the Stone Tank and coverings on the wells.

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 September 2004, with amendments and/or additions by HCWA staff and the Register Committee.

13.1 DOCUMENTARY EVIDENCE

Leonora-Gwalia Water Supply Group comprises a rectangular Stone Tank on Reserve 8575 in Leonora, Station Creek Reservoir and two wells on the boundaries of Reserves 11267 and 9699, and three substantial Stone Tank Stands at the former service tank site on Mt George, two of which are on Reserve 7146 and the third on Crown Land.¹ The Stone Tank was constructed for the Leonora Municipal Council in 1903 and the other elements were established in 1907 by the Mines Department Water Supply division. The existing pump house at Station Creek and the operational circular storage tanks at Mt George and Leonora are modern constructions.

Gold was first found in the Mount Margaret area, north of Menzies, in July 1895, and in March 1896 prospectors A. Glendinning, Jack Carlson and Frank White discovered the reef, which was the beginning of the Sons of Gwalia mine.² The township of Leonora developed between Sons of Gwalia and other mining leases four miles to the north, and took its name from Mount Leonora, which had been named by John Forrest in 1869. In March 1897, the Mount Margaret goldfield was gazetted as a field in its own right, with the warden's office situated at Malcolm.³ The township of Leonora was gazetted on 15 April 1898.⁴

Leonora grew rapidly, as was common with goldfield settlements. It was gazetted a municipality on 21 August 1900.⁵ In 1901, the town was described:

The town is lighted by kerosene lamps and footpaths have been formed, gravelled and kerbed. The first view of the locality impresses the beholder with an idea of solidity and prosperity; for, although there are the customary iron and wooden structures which are to be found in all goldfields' settlements, the hotels and different large business establishments have a most imposing appearance, being constructed mostly of brick... The business establishments, which must be regarded as the barometer of the commercial element, undeniably indicate that Leonora is advancing by rapid strides.⁶

In February 1901, construction began on the railway line from Menzies to Leonora.⁷ Leonora became the railhead for the Mount Margaret goldfield and outer mining settlements and for the pastoral industry that had developed in the region to supply meat to the prospectors and mining towns.

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- 1 In 1906, the Peak Hill-Leonora stock route Reserve 9699 was diverted to Station Creek to avoid encroaching on miner's homestead leases in the area. The stock route then encroached on water Reserve 11267 with the result that the reservoir and wells may actually be located just within the boundary of Reserve 9699. Water Corp is to advise of exact location. PWD file, Stock route Reserve 9699, SROWA WAS 211 CONS 6614 Item 11763-1904-01RO.
 - 2 Webb, Martyn & Audrey, *Golden Destiny: The centenary history of Kalgoorlie-Boulder and the Eastern Goldfields of Western Australia*, City of Kalgoorlie-Boulder, 1893, p. 178.
 - 3 *West Australian Government Gazette*, 12 March 1897, p. 452.
 - 4 *West Australian Government Gazette*, 15 April 1898, p. 937.
 - 5 *West Australian Government Gazette*, 21 August 1900, p. 3171.
 - 6 *Twentieth Century Impressions of Western Australia*, Facsimile of 1901 edition, Perth, Hesperian Press, 2000, p. 659.
 - 7 Gunzberg, Adrian & Austin, Jeff, op cit, p. 207.

Residents and businesses in Leonora relied for their water supplies on wells, rain and water vendors, who sold water that had been purified in condensers or drawn from their own wells. The mines supplied water from their workings, and also generally supplied their workers with several gallons a day. In 1898, the Mining Warden, located in Malcolm, advised the Government against installing water storage tanks in Leonora, as the population, estimated at the time at 1,000, 'could adequately serve themselves by sinking wells'.⁸

As the town grew and prospered, the Municipal Council considered the possibility of establishing a reticulated town water system that would provide a supply with sufficient pressure for fire fighting and water for the streets (to keep the dust down). A report on such a scheme was presented to the Council at a special meeting on 4 November 1901 by former town clerk P.G.D. Lavater. The scheme required:

... that a tank to be placed on the summit of the hill in Rajah-street, a main be attached and run down the said street and up again and down Tower-st., details to be decided later.⁹

In February 1902, the Colonial Treasurer made available a grant of £250 toward the water scheme.¹⁰ Tenders for construction of tanks and pipe laying were called. H. McLeod won the work of erecting two 5,000 gallon iron tanks on Smoodger's Hill with a price of £37/10 and E. A. Anderson's quote of £80 for pipe laying was accepted. The initial water scheme was opened in June 1902, and comprised the two tanks on Smoodger's Hill filled by water pumped from the Municipal well (previously known as the Alabama well) by a large windmill.

The success of the water scheme for fire purposes in Leonora is now assured... Very soon after the mill was turned on, with only an eight-mile wind, the water commenced to flow into the tanks, which are now full. The well contains an inexhaustible supply of water, which is being drawn and forced 225ft into the tanks. The scheme cost a little over £1000, and will serve the dual purpose of fire extinguishing and street watering.

It is intended, if assistance can be obtained from the Government, to build a large reserve tank, or reservoir near the present tanks, when the water will be available for domestic use.¹¹

Mayor William Snell was praised for ensuring that the scheme was pursued despite considerable criticism, including from his own councillors who 'openly asserted that if it failed the Mayor was to blame'.¹²

William Albert Snell had grown up in Victoria and had worked for the Shire engineer in Hamilton, gaining experience in building roads and bridges. He arrived in Fremantle in 1892, at the age of 20, with his road building plant and horses, but found no work in that capacity. He joined the gold rushes and had to bury a mate who died from lack of water, almost perishing himself and spending three months in Perth hospital as a result. He gave up prospecting for storekeeping, opening a business in Menzies in 1897 before returning to Hamilton to marry and bring back his wife, Mary Jane. In 1898, they moved to Leonora and opened a storekeeping business as Snell & Co. In October 1900,

⁸ Reid, D. & D. *Leonora & Gwalia: An historical sketchbook*, Leonora Tourist Committee, 1976, p. 10, quoting from Warden's report.

⁹ *The Mount Leonora Miner*, 9 November 1901, p. 3. The hill, known originally as Smoodger's Hill and possibly sometimes later called Tank Hill, terminated the east end of Rajah Street.

¹⁰ *The Mount Leonora Miner*, report on Municipal Council meeting, 15 February, p. 2.

¹¹ *The Mount Leonora Miner*, 28 June 1902, p. 2

¹² *The Mount Leonora Miner*, 28 June 1902, p. 2

Snell was elected the first mayor of Leonora, a post he held until his resignation in June 1904, although he remained a councillor until February 1907, when he left to set up a camel transport business. Snell was later engaged to restore water supply equipment on the Canning stock route, thus continuing a lifelong interest in the subject.¹³

A pipeline was laid along Rajah and Tower streets by day labour and the storage capacity of the tanks on Smoodger's Hill was increased with the erection of a third iron tank. Council requested residents and businesses that wanted to be connected to the supply to register their interest and their expected requirements.¹⁴ With a reliable water supply available, a volunteer fire brigade was formed, and tenders for uniforms for the fire fighters and construction of a fire station were called in November 1902.¹⁵

The number of residents paying for a water supply was relatively small, and there was an ongoing problem with people freely taking water from the standpipes in the street. Residential use had to be restricted when the supply from the Municipal well did not hold up to expectations. The well was sunk a further 20 feet in January 1903. The Sons of Gwalia Mine was blamed for pumping out underground water and reducing water levels in wells throughout the area. Wells became increasingly brackish and the residents of Leonora continued to rely largely on rainwater and the purchase of condensed water at 12/6 per 100 gallons for their personal and domestic supplies.¹⁶

On 14 March 1903, tenders were called for construction of the Stone Tank reservoir on Smoodger's Hill. The Tank was to measure approximately 60 feet by 14 feet and hold 50,000 gallons of water, which would be a sufficient storage supply for fire fighting and street watering. The tender of Mr McCulloch was accepted for the construction, with a price of £269. The Stone Tank was completed several months later and covered with wire netting, presumably to prevent the water being fouled by birds drowning in it.¹⁷

To provide sufficient water for the town, Leonora Municipal Council requested the creation of a 1,000 acre reserve on Gum Creek for the site of a weir, and a pipe track reserve from the weir to the town. Gum Creek was located slightly southeast of Station Creek. Temporary Reserve 8811 was created for the purpose but not gazetted, to avoid the land being tied up if the scheme did not go ahead.¹⁸ Estimates were prepared by the Town Clerk for a dam, well, windmill and pipes for the scheme, with two figures of £4,933 and £7,697 being put forward. The cost was beyond the capacity of the Municipal Council. Tenders were called to supply condenser water to fill the tanks on Smoodger's Hill.¹⁹

When the Leonora-Gwalia tramway was extended later in 1903, a well, windmill, condenser and tanks were installed at the car barn to provide the necessary

¹³ Erickson, Rica, *Bicentennial Dictionary of Western Australians*, Perth, UWA Press, 1988, p. 844; Bremner, M. H. *The Glassy Goanna*, Perth, M. H. Bremner, 1979, pp. 1-4; *The Mount Leonora Miner*, 18 June 1904, p.2.

¹⁴ *The Mount Leonora Miner*, 12 July & 4 October 1902, p. 2 & 22 November 1902, p. 4.

¹⁵ *The Mount Leonora Miner*, 8 & 22 November 1902, p. 2.

¹⁶ *The Mount Leonora Miner*, 3 May 1905, p. 2.

¹⁷ *The Mount Leonora Miner*, 14 March 1903, p. 4, 20 March & 27 June 1903, p. 2.

¹⁸ *The Mount Leonora Miner*, 23 May 1903, p. 2; Correspondence, 29 September 1903 & map showing reserve 8811 and proposed pipeline track, DPI file 5751/1903.

¹⁹ *The Mount Leonora Miner*, 18 July 1903, p. 3.

water for the operation of the steam locomotive, thus reducing the draw on the town storage tanks.²⁰

By late 1904, the situation regarding the water supply was described as serious. Condenser water was still being used to fill the tanks at considerable cost to the Council. Part of the problem was lack of maintenance on the windmill at the Municipal Well, which was not pumping efficiently even when water was available. To supplement the supply to the tanks, a new well was sunk and fitted with a steam pump acquired from one of the mines. Suggestions were put forward from various sources that the Coolgardie pipeline should be extended to Menzies, Kookynie and Leonora. Many considered this idea ridiculous, but it was generally agreed that the Government should be providing assistance in the matter. This contention was given added support by the successful water supply scheme established by the Mines Department at Norseman on the Dundas goldfield.²¹

Leonora Municipal Council held discussions with the Mines Department and an engineer's report was prepared on the feasibility of a weir on Station Creek, about seven miles (11 km) north of Leonora. Station Creek was a popular picnic ground for local residents, having permanent water and shady trees and the area was known to produce 'beautiful fresh water at a depth of 10ft'.²² Following the engineer's favourable report, the Mines Department proposed a storage weir and several wells at Station Creek, from which water would be pumped to tanks on Mt George and then reticulated by gravitation to the tanks on Smoodger's Hill. The weir in the natural Creek basin could not be made deep enough to supply all the water needed, unless it was excavated at great cost, so the wells were necessary to supplement the supply.²³ The Sons of Gwalia and Tower mines both agreed to take minimum daily amounts of water from the scheme, the figure agreed to varying from 15,000 to 40,000 gallons a day, depending on the source of the information. The involvement of the mines was vital to the economic success of the scheme.²⁴

Following the sinking of test bores and the selection of the pipeline route from several alternate proposals, work on *Leonora-Gwalia Water Supply Group* finally commenced in 1907.²⁵

During the construction process, there was dissension among local residents regarding management of the scheme; some believing that Government control would cost residents less than if the scheme was controlled by a Council run Water Board. William Snell argued for a Council run scheme, and eventually a

20 *The Mount Leonora Miner*, 15 August 1903, p. 2.

21 *The Mount Leonora Miner*, 17 & 31 December 1904, 14 January, 8 February, 22 March, editorial 29 April, 6 May 1905, pp. 2 & 3.

22 *The Mount Leonora Miner*, 18 January 1902, p. 3.

23 *The Mount Leonora Miner*, quoting P. V. O'Brien, engineer for Mines Dept Water Supply, 3 May 1905, p. 2.

24 Correspondence, 28 March 1939, Leonora water supply, SROWA, AN/WAT/1 ACC 1109 Item 390/1919; *The Mount Leonora Miner*, 10 & 24 February 1906, p. 2; Correspondence, 29 October 1945, Leonora water supply general, SROWA AN7/WAT/1 ACC 1109 Item 1004/1937.

25 *The Mount Leonora Miner*, 21 December 1907, p. 2. No Mines Dept files for the project were located in SROWA archives for the years 1902-1919 and no details of the work during the construction period were found in the local newspaper.

Water Board comprising the Council was constituted by the Mines Department to manage the scheme on its behalf.²⁶

In September 1907, Reserve 11267 of some 25,755 acres on Station Creek was reserved for the purpose of water at the request of the Mines Department, and the Leonora water scheme was opened on 19 December 1907.²⁷ William Snell was not present to see the completion of his plans, having already left Leonora.

At the invitation of the acting-Mayor (Mr D. Barnes) the council and a representation (sic) gathering of ratepayers met at the pumping station of the Leonora Water Scheme on Thursday afternoon for the purpose of witnessing the inauguration of the scheme. There were between 60 and 70 persons present and a very enjoyable time was spent.

The party first proceeded to the engine house and the plant was set in motion to pump the first water of the long expected and much talked of Station Creek water supply into Leonora.... Mrs R. Stuart... broke a bottle of "gold-top" on the immense fly wheel of the pumping machinery...

After being shown over the plant... the party adjourned to the mess room, a cool and capacious bough structure, where a sumptuous repast had been laid out... Mr Barnes... [said] the opening of this scheme was one of the most important events that had happened in the history of Leonora... The future of Leonora and district was now assured and there would always be a great amount of comfort to the residents, from the copious supply of such excellent water. The scheme, as completed... reflected the greatest credit on those who conceived its possibilities some years ago...

Cr Stuart proposed the toast of ex-Mayor Snell, whom he designated "The father of the Leonora Water Scheme"...

The party then proceeded to the supply tanks on Mt. George, and the water was turned on from the three large tanks... By the time the party arrived at Leonora the mains were full of scheme water, ready to be tapped.²⁸

In the flowery sentiments of the day, the scheme was likened to the Mundaring Weir and Coolgardie pipeline scheme.

Details of the equipment installed were given in the Mines Department Annual Report of 1907:

Leonora-Gwalia Water Supply: To supply Leonora and Gwalia, also batteries, with fresh water. Pumping plant consists of Suction Gas Producer and 54 h.p engine, driving direct one two-throw D.W. Pump, one 10 h.p. dynamo and one high life Turbine pump. On the outlying wells are aermotor (sic) D.W. pumps, and powerful windmills as auxiliaries. Service tanks 60,000 gallons on Mt. George. Rising main, 3 miles, 4in. steel pipe. Gravitation main, 6 miles 4in., 2 miles 3in. Town reticulation, about 1½ miles, 2in pipe. Engine shed, driver's cottage, electric transmitter and recorder, telephone line 10 miles.²⁹

A 1908 map of the water supply scheme shows the Station Creek Reservoir, four wells, pump house, six circular tanks in two groups of three on the north hill of Mt George on Reserve 7146 and a rectangular timber tank on the south hill.³⁰ Physical evidence indicates that both the circular (iron) tanks and the timber tank were supported on Stone Tank Stands.

²⁶ *The Mount Leonora Miner*, 10 & 24 February 1906, p. 2, 7 December 1907, p. 3.

²⁷ DOLA file, Reserve for water supply, Station Creek reservoir Leonora, SROWA, AN3/24 ACC 1778 Item 7644.07, Vol 1; DOLA Reserves Index, Reserve 11267, gazetted 21 February 1908; *The Mount Leonora Miner*, 21 December 1907, p. 3.

²⁸ *The Mount Leonora Miner*, 21 December 1907, p. 2.

²⁹ Mines Department, *Annual Report*, 1907, p. 150.

³⁰ DOLA, Reserves Index, Reserve 7146, gazetted first as a Trig station (1901) and then for the purpose of water (1907).

Reticulation was provided throughout the township of Leonora and in 1911, the main pipeline was extended to the Gwalia township.

On 1 October 1913, the Public Works Department Water Supply, Sewerage and Drainage Department (WSSDD) took over the management of the Leonora water supply at the request of the Municipal Council. Neil McQueen, Acting District Engineer prepared a report on the system for the Department, which provides the first detailed description of the set of elements of *Leonora-Gwalia Water Supply Group*, and indicates that there had been additions to the system since the scheme had opened six years earlier. The additions comprised the installation of a second engine, the same as the original, two more wells, and likely the construction of a timber storage tank on Mt George.³¹

In the operation of the system, the water brought up from the wells first went into two storage tanks (16,000 gallons capacity) located at the pumping station, before being pumped to Mt George service tanks. The Mt George tanks were described as six iron tanks with a capacity of 60,000 gallons, and a large timber tank, which was described as 'not in such good order as there is a fair amount of leakage between the planks'.³²

From Mt George, the main pipeline continued toward Leonora, where a branch line accessed the Municipal tanks on Smoodger's Hill for the reticulation of the Leonora township. The main carried on toward Gwalia, where a 3-inch wrought iron main branched to the Gwalia township and a 4-inch wooden pipeline accessed the boundary of the Sons of Gwalia Mine. Inside the Mine boundary the pipeline fed into an elevated tank and other points within the site.³³ The staff of *Leonora-Gwalia Water Supply Group* consisted of the pumper in charge, a Mr Crump, and two other pumpers. A temporary pumper was put on for the summer months as continued operation of the system was required during that period, as well as the usual maintenance and repair work. Charcoal for the retort was provided by a contractor who carted wood, charred it and delivered it to the pumping station for £2-2-6 a ton.³⁴

About 100,000 gallons of water were being pumped daily in the summer of 1913-14, including 70,000 gallons to the Gwalia Mine. This was twice the amount originally estimated for the system and the pumping plant was overloaded. Larger pipes and other upgrading was required. The necessary works were planned to be carried out over several years.³⁵

In 1914, the Stone Tank required repairs. Its continued use was deemed necessary to prevent a shortage of water supply in the town. If the pumps were stopped for a day the supply at Mt George was quickly used by the Gwalia Mine, so the town relied on the water stored in the Stone Tank at these times. McQueen reported that 'the stone tank was built with poor mortar, the sand being I think of inferior quality. It is fraying badly outside from the weather'.³⁶ The tanks

³¹ Report on Leonora Water Supply, 9 December 1913, pp. 1-5, op cit; Map of Leonora water supply, September 1908, SROWA, CONS 4481 Item 44392.

³² Report on Leonora Water Supply, 9 December 1913, pp. 1-5, Leonora water supply general, SROWA, AN7/WAT/1 ACC 1109 Item 606/1918. There is no further mention of the timber tank in the files and it is presumed to have been decommissioned shortly after the report.

³³ Report on Leonora Water Supply, 9 December 1913, pp. 1-5, SROWA, Item 606/1918, op cit.

³⁴ Report on Leonora Water Supply, 9 December 1913, p. 2, SROWA, Item 606/1918, op cit.; PWD file, map of Leonora water supply, 1954, SROWA, Item 1004/1937

³⁵ Correspondence 13 December 1913, SROWA, Item 606/1918, op cit.

³⁶ Correspondence, 25 September 1914, PWD file, SROWA, AN7/WAT/1 ACC 1109 Item 715/1922.

on Smoodger's Hill were still owned by the Municipal Council and, after negotiations, the WSSDD purchased them for £50 plus a reduced charge for water for the streets. The Stone Tank was then re-pointed on the outside and a coat of hot tar and bitumen applied to the inside to stop leakage.³⁷

In 1921, a fire destroyed half the machinery at the Gwalia Mine and the underground operation was closed for rebuilding. Until the Mine reopened in October 1923, water was pumped during the winter months only from the Station Creek Reservoir, that being sufficient for the town supply. When the Mine reopened it was not taking even its minimum quota, resulting in a loss of £2,000 on the scheme in 1923-24.³⁸

In September 1934, Sons of Gwalia were preparing to treat a new source of low-grade ore and Mine management put the Minister for Water Supply on notice that they would need a larger quantity from the water supply scheme for the new operation. A welded pipe main of 7-inch external diameter steel pipe $\frac{1}{8}$ th inch thick lined with cement mortar, was laid from Mt George to the Stone Tank, replacing the existing 4-inch steel pipe, some of which was reused for new street mains. The work was undertaken at a cost of £6,000 by sustenance workers under the Commonwealth Employment Scheme. Only three of the five wells were operating at the time, and a fourth well was equipped with a new pump and brought into commission to increase the daily supply.³⁹

The Stone Tank was extensively renovated in 1935.

The counterforts had to be pulled down and rebuilt as the filling had fallen away and the stones were loose. Crevices in the tank wall were filled in with small chips of stone and cement mortar, and finished with a plaster coating overall.⁴⁰

The following year, a cover was installed on the Stone Tank to reduce evaporation and prevent the water being fouled by birds and other material, such as paddy melons thrown in by children. Rafters were fixed to wall plates bolted to the tank walls and covered with sheets of iron.⁴¹

In the 1940s, the water scheme required upgrading with new pipe and the installation of diesel motors and electric pumps. The new pipeline was to bypass the Mt George tanks, which were in poor condition, but shortage of materials during the post-war period delayed the completion of the work, and during the summer months of the early 1950s, the town was frequently without water.⁴² By mid 1953, two of the Mt George tanks had collapsed, and another two were past repair. Extra storage at Leonora or Gwalia was considered essential for the system to operate efficiently, with the towns using about 100,000 gallons a day in summer and the Stone Tank holding only half that amount. Gwalia Mine took 35,000 gallons a day direct from the main and 24 hour pumping was required to keep up the supply.⁴³

37 Correspondence, 27 April & 2 July 1915, PWD file, SROWA, Item 715/1922, op cit.

38 Correspondence, 7 October 1921 & 19 September 1934, SROWA, Item 606/1918, op cit.

39 Correspondence, 19 September 1934, 4 February & 5 April 1935, Leonora water supply general, SROWA, Item 606/1918, op cit.

40 Correspondence 21 October 1935, Leonora water supply general, SROWA, Item 606/1918, op cit.

41 Correspondence, 30 April & 25 May 1936, Leonora water supply, Item 390/1919, op cit.

42 Map of Leonora water supply, 1954, SROWA, Item 1004/1937, shows the pipeline diverted around Mt George, but it is unclear if this was done as the original pipeline route is still in use.

43 Correspondence, 1945-1954, SROWA, Item 1004/1937.

In 1954, the No. 3 well, which had not been used since 1917, was re-equipped and brought back into commission. Two 25,000-gallon squatters tanks were erected on a site between Leonora and Gwalia to provide additional storage. By 1962, it was found that most of the extra supply provided by the improvements was being used by the Gwalia Mine, which was using some 60,000 to 65,000 gallons a day during summer months.⁴⁴

In December 1963, the Sons of Gwalia mine closed. There was an immediate exodus of residents as the mine workforce of about 250 moved to the mines at Kalgoorlie-Boulder, and supporting businesses closed. In 1966, the population of Leonora and Gwalia was 338, compared to 970 in 1961 and 1900 in 1907.⁴⁵ The closure of the mine and reduction in population reduced water supply requirements to 30,000 to 40,000 gallons a day, which could be provided by 6 hours pumping.⁴⁶

In the mid 1960s, the standard gauge line was put through from Kalgoorlie to Fremantle. Nickel was discovered first at Kambalda, near Kalgoorlie, and later at Agnew, northwest of Leonora. At Teutonic Bore, also to the northwest, lead, silver and zinc deposits were located.⁴⁷ Leonora's function as railhead and administration and supply centre was enhanced by these developments and to facilitate the mining development a standard gauge line was laid from Kalgoorlie to Leonora in 1974.

With an increase in the mining activity came an increase in population, and the water scheme required upgrading to meet modern requirements. In 1975, the first production bores were sunk in the well field and the wells were gradually decommissioned. The bores were fitted with pumps powered by diesel motors with above ground fuel tanks.⁴⁸ It was probably around this time that the Stone Tank was fitted with a metal liner to reduce leakage.⁴⁹ The price of gold rose dramatically in 1980, leading to a resurgence in gold mining in the region. The Sons of Gwalia mine reopened in 1984 to be mined by open cut, and the Tower Hill mine was re-developed.⁵⁰ In 1993, a new storage tank was erected on Reserve 8575 to replace the Stone Tank, which was decommissioned.

In 1999, the Stone Tank and Station Creek Reservoir were entered on the Municipal Inventory. The Stone Tank was given a level 2 management category, recommending a high level of protection. The Reservoir was given a level 3 category, to retain and conserve if possible.⁵¹

In 2004, the set of elements of *Leonora-Gwalia Water Supply Group* are no longer in use, having been replaced by modern bores, tanks and pumping equipment, but the current water supply scheme continues to operate in the same manner as the original, with water pumped from the well field at Station Creek to a tank on Mt George and then to a tank on Reserve 8575 in Leonora.

44 Correspondence, 1954 & 1962, SROWA, Item 1004/1937.

45 Shire of Leonora Town Planning Scheme No. 1, p. 17.

46 Correspondence, 20 May 1964, SROWA, Item 1004/1937.

47 Webb, M. & A., op cit, pp. 814-835; *A Brief History of the Western Australian Government Railways*, WAGR, 1975, pp. 7-12.

48 Waters & Rivers Commission, *Leonora Draft Water Source Protection Plan*, July 2000, p. 4.

49 Physical evidence.

50 Webb, M. & A., op cit, pp. 903-917.

51 Ball, Julia & Aris, Kelly, *Shire of Leonora Municipal Inventory of Heritage Places*, December 1997, sites 26 & 27. It is not known if the Three Wells entered as place 7171 on the Heritage Council database are the wells at Station Creek, as their location is not given.

Three of the five wells at Station Creek have been filled in, and the remaining two are covered and no longer in use. The Reservoir continues to provide water to livestock and is used by the public for passive recreational purposes, such as picnics.⁵² The Stone Tankstands on Mt George remain unused and devoid of tanks and the Stone Tank on Reserve 8575 has been unused since 1993.

13.2 PHYSICAL EVIDENCE

Leonora-Gwalia Water Supply Group comprises a rectangular Stone Tank (1903) in Leonora, Station Creek Reservoir (1907) and two wells (1907) in the Station Creek bore field, and three sets of Stone Tank Stands (1907) at Mt George.

The Stone Tank is located in a prominent location atop Smoodgers Hill on the east side of the residential Queen Victoria Street, within and overlooking the Leonora townsite. It is accessed by a gravel track, off Rochester Street, that approaches the Stone Tank and the adjacent operational water storage tank from a southerly direction.

Approximately 12 kilometres northwest of Leonora, on the Leinster Road, Station Creek Reservoir and well 4 (Production bore 1/87) and well 5 (Production bore 2/87) are located approximately 3 kilometres northeast of the main road, in the Station Creek bore fields, predominantly on Braemore Station, overlapping into Mertondale Station (north). The Station Creek Reservoir is the first element on the gravel access road off Leinster Road. It is located in close proximity to the pump house, which is a recent steel framed and colourbond clad gable shed on a concrete slab, over an original well. Immediately adjacent to the pump house, on the north east corner, and separated by a chainlink fence, is the reservoir wall, aligned north south across Station Creek that flows east-west. Station Creek is picturesque, lined with white gums (*Eucalyptus wandoo*) along each embankment, reflecting into the waters of the creek.⁵³

Approximately a further 0.5 kilometre along a gravel track to the west of Station Creek Reservoir, is Well 4, and a further 1.0 kilometre to the north east is Well 5. Both wells have adjacent steel framed and clad operational pump houses associated with their respective production bores: 1/87 and 2/87.

From Station Creek Reservoir, a gravel road following the original pipeline route from Station Creek connects directly to Mount George, approximately 6.0 kilometres to the south. Mount George comprises a double hill, one to the north and one to the south, with a recent water storage tank located in the valley between the hills. Several hundred metres to the west of Mount George, the gravel track joins Leinster Road that continues in a southeasterly direction to Leonora town.

The Stone Tank is an extensive rectangular stone construction situated in a commanding position on top of a rocky outcrop (Smoodger's Hill). The stone walls are coursed and mortared, and have been rendered over. There is evidence that bricks are quoined into the corners of the structure. Substantial buttresses are also stone construction and have been rendered, although it is a different material and finish than the render of the tank walls. The buttress elements around the perimeter of the tank are not engaged to the tank. There is a steel ladder on the north end that accesses the roof of the tank. The tank is entirely roofed with steel sheeting in a high profile rib. The perimeter of the roof

⁵² Waters & Rivers Commission, op cit, p. 6.

⁵³ Chippendale, G. M. *Eucalypts of the Western Australian Goldfields*, Aust. Gov. Pub. Services, 1973.

has a steel guard rail (fence) in place. There is an access hatch and ladder down into the tank, which was empty. No inspection of the tank interior was undertaken. The tank appears to be steel lined.

The bore field in which Station Creek Reservoir and the wells are located are a pastoral grazing environment except for the gravel tracks and water supply elements. The wall construction of the Station Creek Reservoir is a concrete gravity wall tapered outwards towards the base that is submerged by the catchment water on the west side. The dam wall extends in a direct line across Station Creek, north from the pump house, and also extends some 100 metres or so to the south, before extending in an easterly direction in the form of a low concrete wall. There are the remains of a pillar at the corner junction at a site symmetrical about the main reservoir wall, corresponding with the pillar on the north. The reservoir wall has a pipeline attached along the west side immediately adjacent to the ledge, approximately 0.45 metres wide, along the top of the wall. The metal balustrade along the east side of the top of the wall is a pipe rail with supports bolted to the concrete reservoir wall. It is detailed with rounded knuckle joints and two horizontal wire lines.

The wells are isolated in the landscape. The site at Well 4 comprises the pump house associated with the bore production operation, and a steel framed fuel tank and stand. The Well is located central within a concrete slab. There is a concrete plinth with remains of bolt fixings at the side of the Well, indicating a pump or other equipment previously being attached. The Well has a steel sheet cover fixed over it for safety reasons. Due to the subsidence of the concrete slab, it was possible to view the interior of the Well under the steel cover. The Well is lined with horizontal timbers around the square shaft. There is a steel framed ladder to the depth of the well. Well 5 is similar to Well 4; there is a pump house, but no fuel facility. The Well 5 site is central on a mound, retained by sheets of corrugated iron along one side. The slab surrounding the well remains intact, with evidence of other fittings. The steel sheet cover is fixed and immovable. (Oral evidence verifies it is also a square timber lined well similar to Well 4.)

Mount George Stone Tank Stands are a series of stone walls parallel to each other, in three groups, on two hills, with a central valley in between where the operational water storage tank is located. The north hill is elongated on a north south alignment, and the south hill is on the same alignment. There are two groups of stone walls on the north hill, one to the north and one to the south with a random stone pile that is the trig station and marker central between the two. The Stone Tank Stands walls all run on an east west alignment. Each wall is a random stone construction, predominantly in a horizontal coursing with mortared joints, and stands approximately 1.5 metres in height, depending on the fall and structure of the natural ground, and many elements are of a considerable size. The walls are constructed of local stone on the natural earth, on and around rock outcrops. The tops of the walls are all the same level. On the north group on the north hill there are timber remnants, possibly the platforms that spanned the Tank Stands. The platforms would have supported the corrugated iron tanks that are no longer insitu (remnants remain on both sides of north hill). There are approximately 12 walls in each of the three groups, although the south most wall of the south group on the south hill is a series of three piers rather than a wall.

Overall, *Leonora-Gwalia Water Supply Group* is in fair condition. The Stone Tank is in fair to good condition, although the render over the Tank walls has deteriorated in places, revealing the stone construction. The buttresses similarly have been rendered and much has disintegrated, also revealing that mortar has

fretted in places and the continued erosion of the mortar has dislodged some stone. The Station Creek Reservoir is in fair to good condition, with the only obvious damage being the south pillars and part of the lower wall sections to the south. The wells are in fair condition. Well 4 shows evidence of rusted elements due to condensation of the enclosed shaft (sealed cover). The timber lining shows evidence of disintegration. The surrounding concrete slab at Well 4 is in poor condition, having cracked and subsided significantly on the edge of the well. The shaft of Well 5 was not inspected. Mt George Stone Tank Stands are in fair condition. There is some evidence of fretting mortar and the ends of some walls have disintegrated, but the form and fabric of the Tank Stands remain.

Overall, *Leonora-Gwalia Water Supply Group* demonstrates a moderate to high degree of integrity. The Stone Tank is still able to store water and has retained a high degree of integrity. Station Creek Reservoir has retained a high degree of integrity due to its continuous function as a water catchment and dam. The wells are no longer operational, but remain intact. Although the Mt George Stone Tank Stands will never support water tanks, their integrity as support elements has been retained.

Overall, *Leonora-Gwalia Water Supply Group* is mostly intact, and demonstrates a high degree of authenticity with no evidence of intervention to the original fabric, except a roof over the Stone Tank and coverings on Wells 4 and 5.

13.3 COMPARATIVE INFORMATION

The only other comprehensive water supply system listed in the Heritage Council database is the Mundaring Weir and Coolgardie pipeline scheme, which is difficult to compare due to the obvious difference in size, despite the two being favourably compared by Leonora residents in 1907. Water supply systems all have a similar schematic – a water source, pumping equipment, pipeline and storage tanks. There are many separate elements of water supply systems listed in the database, such as wells, reservoirs, rock catchments and dams, tanks for railway water supply, and the like, but only a few have been assessed.

Many goldfield and agricultural towns relied on the railway water supply for their early water needs, such as Warralakin, which used the railway tank supplied from Geelakin Rock catchment and reservoir until 1991, when the town was connected to Mundaring scheme water. Cue had a water supply pumped from Lake Nallan. Norseman's water supply came from a dam provided by the Mines Water Supply division, with water pumped into the town. In 1936, this system was superseded when the town was connected to the Mundaring water scheme.⁵⁴

The extent of the elements of *Leonora-Gwalia Water Supply Group* make it an impressive and rare example of its type.

13.4 KEY REFERENCES

Dept of Planning & Infrastructure files relating to the various reserves, located at DPI Records, Midland Square.

Public Works Department files relating to Leonora Water Supply as referenced, located at State Records Office of WA.

13.5 FURTHER RESEARCH

⁵⁴ Hocking Planning & Architecture, *Shire of Dundas Municipal Heritage Inventory*, 1995, p. 13.