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)
- 4.2 Supplying urban services

HERITAGE COUNCIL OF WESTERN AUSTRALIA THEME(S)
- 404 Community services & utilities

11. 1 AESTHETIC VALUE*

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth, two combined sewage pumping stations and men's toilets blocks in the Federation Free Classical style built to the same plan, to alternate hands, are very finely designed and detailed utility buildings, designed specifically for their prominent riverside locations. (Criterion 1.1)

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth represent high levels of design achievement for a simple utilitarian function. (Criterion 1.2)

Low Level Sewage Pumping Station No. 2 is a prominent feature in the otherwise predominantly flat grassed area of Langley Park. (Criterion 1.3)

11. 2. HISTORIC VALUE

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth are the survivors of the first three such buildings built in Perth to provide the necessary sewage pumping facility which also incorporated the facility of men's public toilets. (Criterion 2.1)

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth were built as part of the development of the Metropolitan Sewerage and Deep Drainage Scheme in the pre-World War One period. (Criterion 2.2)

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Canberra, 1991, with additional reference to Richards, O. *Theoretical Framework for Designed Landscapes in WA*, unpublished report, 1997.

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth are associated with several notable Australian engineers, each of whom contributed to the development of the Metropolitan Sewerage and Deep Drainage Scheme, particularly C. Napier Bell, Hugh Oldham, J. Davis, T. C. Hodgson, C. S. R. Palmer and F. W. Lawson. The buildings were designed by PWD architect A. R. L. Wright. (Criterion 2.3)

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth, together with the three original Low Level Sewage Pumping Stations at Fremantle, are important as examples of the technology employed in the provision of sewerage and deep drainage to the metropolitan area and its purpose designed accommodation, which was an innovation in Western Australia in the pre-World War One period. The buildings are notable also for the particular attention paid to their design and the high standards demonstrated in their execution. (Criterion 2.4)

11. 3. SCIENTIFIC VALUE

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11. 4. SOCIAL VALUE

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth are highly valued for social reasons, having served as utilities and public facilities through much of the twentieth century, and also for aesthetic reasons, as evidenced by their inclusion in the Municipal Inventory of the City of Perth and Classification by the National Trust of Australia (WA). (Criterion 4.1)

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth contribute to the community's sense of place as well known minor landmarks at Ozone Parade and Langley Park respectively. (Criterion 4.2)

12. DEGREE OF SIGNIFICANCE

12. 1. RARITY

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth represent a technology that is no longer is use. In 2005, five of the six original low level sewerage pumping stations at Perth and Fremantle remain, without their the original machinery, with submersible pumps superceding the technology of the stations. (Criterion 5.2)

12. 2 REPRESENTATIVENESS

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth represent the first stage and the technology of the first stage of deep sewerage for Perth, together with the notion of making utilitarian structures objects of aesthetic value in prominent locations. (Criterion 6.1)

12. 3 CONDITION

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth receive little maintenance and the fact that they are not put to a use at present has contributed to their neglect. However they are robustly constructed buildings. The flooding of the tanks to No 2 may have a detrimental impact on its fabric. Overall the buildings are in fair to good condition.

12. 4 INTEGRITY

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth no longer serve their intended function, and to the untutored eye their function is not readily apparent. Pumps have been removed and the toilets are closed, and some fittings have been removed. The buildings retain a moderate to high degree of integrity.

12. 5 AUTHENTICITY

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth have been subject to a small number of minor changes, such as grilles, gates and painting. Otherwise the changes have been associated with the removal of equipment and fittings. The remaining fabric retains a high degree of authenticity.

13. SUPPORTING EVIDENCE

The documentation for this place is based on the heritage assessment completed by Robyn Chinnery, Historian and Phillip Griffiths, Architect, in May 2004, with amendments and/or additions by HCWA staff and the Register Committee. Supporting evidence has been taken from 'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3)', prepared by Ian Kelly and Tony Moulds, July 1992.

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13. 1 DOCUMENTARY EVIDENCE

Low Level Sewerage Pumping Stations No. 1 and No. 2, Perth located at the Causeway and Langley Park respectively, are single-storey, low level sewerage pumping stations, with gentlemen's toilets at ground level, and twin underground reinforced concrete receiving tanks and a machinery room below. Designed by PWD architect A. R. L. Wright, they were constructed in 1914, to an identical plan, which was reversed for No. 1.

Following the foundation of Perth on 12 August 1829, the townsite of Perth was laid out between Mount Eliza and Heirisson Island, facing the Swan River on the south, and with a chain of swamps and lagoons to the north. Arrowsmith's plan (1833) shows the first layout of Perth, with the main streets following the lie of the land between the river and the wetlands to the north.[1]

In the 1860s, the public works programme carried out using convict labour included building a new causeway across the Swan River.[2] By the late 1860s, the city centre of Perth was consolidated on the grid laid out in the early survey.[3] In November 1869, William Dale, Inspector of Nuisances, reported that there had been much sickness, including fever, in Perth in recent years, attributable to bad drainage and problems with disposal of sewage, as cesspits were either defective or non-existent. He recommended that they should be built to 'a uniform scale' and cleaned monthly.[4] In the mid-1870s, drainage was improved with the building of Claisebrook Drain, but the sanitary condition of the city continued to cause concern, as evidenced by the reports of Dr Shaw in 1875, and Dr. Waylen in 1876-78. However, Perth City Council maintained it was powerless to remedy matters under the existing the Municipalities Act [5]

On 16 January 1878, amid growing public concern, approximately 80 people attended a public meeting to consider the sanitation problem and call for reform. The Colonial Secretary, having reminded his audience that the city of Perth had been referred to as a dunghill, "asserted that they were living on a dunghill", and proposed a resolution that the Municipalities Act be amended, which was carried unanimously.[6] A further resolution recommended introduction of the dry-earth

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1 Pitt-Morrison, Margaret 'Builders and Buildings' in Stannage, C. T. (Ed.) *A New History of Western Australia* University of Western Australia Press, Nedlands, 1981, pp. 514-515.

2 Crowley, F. K. *Australia's Western Third: A History of Western Australia from the first settlements to modern times* Macmillan & Co. Ltd., London, 1960, p. 37.

3 Campbell, Robin McK. in Pitt Morrison, Margaret, and White, John (Eds.) *Western Towns and Buildings* University of Western Australia Press, Nedlands, 1979, p. 104.

4 Stannage, C. T. *The People of Perth* Perth City Council, Perth, 1979, pp. 162-163.

5 ibid, pp. 169-170, and p. 176.

6 *Inquirer* 23 January 1878, quoted in ibid, p. 177.

closet system, which the meeting acknowledged would require government assistance as the cost would be too high to be borne by ratepayers alone. A sub-committee was appointed, which duly presented the meeting's recommendations to Perth City Council in late February. On 12 April, the Council carried a motion that "Sections 62 and 69 of the Municipal Institutions Act, 1871, be strictly enforced, and that the dry-earth closet system be fostered as far as possible."[7] The dry-earth closet system was never adopted.

In 1887, plans were drawn for proposed parklands to extend along the Swan River foreshore from the Government Domain eastwards beyond Plain Street towards the Causeway, including a proposed new cricket ground.[8] Although this proposal was not implemented, the concept of public open space endured, and, following reclamation works to the Swan River in the early twentieth century, the area known as Langley Park was developed.

Through the 1880s, improvements to the city's water supply and sanitation were on-going concerns. Committees were appointed, reports written, and water supply was somewhat improved after the opening of Victoria reservoir in October 1891. However, only minor improvements were effected to the sewerage system by the Perth Board of Health, established under the Public Health Act, 1886. In the 1890s, the rapid increase in population during the Western Australian gold boom heightened the long-standing sanitation problems, and, following an Act of Parliament, Perth City Council introduced a system of double-pan collection in 1893. In 1894, whilst William Traylen, Winthrop Hackett and some of their fellow members of Parliament advocated the introduction of deep drainage and sewerage, the majority view was 'that the people did not want sewerage', and that it was 'unwarranted' at an estimated cost of £200,000.[9] Traylen emphasised that a government instrumentality should be responsible for water and sewerage, and drew attention to the association between high infant mortality rates in Perth, the inadequacy of the city's water supply and its sanitation problems. In 1895, as the population increased further and shanty towns spread, 566 cases of typhoid were reported in Perth, with 70 deaths. The city's inadequate water supply and lack of sewerage was believed to be responsible, and 'The Ladies of Perth' petitioned Perth City Council regarding their concerns about the city's sanitation. In 1896, when the government created the Metropolitan Waterworks Board, Perth City Council advocated establishing a deep drainage system, but this was not implemented until a later date. The Board achieved notable improvements to water supply through to 1904, when it was abolished and the Minister for Works made responsible for water supply.[10]

In 1896, typhoid cases in Perth increased to 663, with 89 deaths, and rose to 1408 in 1897, with 134 deaths.[11] In 1897, C. Napier Bell, MICE, was commissioned to report upon the provision of sewerage for Perth and Fremantle.[12] Various schemes were submitted, but as the estimated cost had increased to £500,000 none were implemented. In 1898, doctors in Perth

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7 Minutes Perth City Council, 12 April 1878, quoted in Stannage, C. T. op. cit., p. 177.

8 Proposed New Cricket Ground and Public Gardens, PWDWA 38, reproduced in Richards, Oline *Theoretical Framework for Designed Landscapes in Western Australia*, Final Report, April 1997.

9 Stannage, C. T. op. cit., pp. 176-182, pp. 252-253 and pp. 270-281.

10 ibid, pp. 273-278; and Hunt, E. E. *Perth's Early Water Supplies* The Institution of Engineers, Australia, Perth, 1985, p. 21. Note: Nominally these two named schemes were C. Y. O'Connor's. (Hunt, E. E. ibid.)

11 Stannage, C. T. op. cit., p. 278.

12 Report of Principal Engineer, in First Annual Report Water Supply, Sewerage and Deep Drainage Department, 1912-13, in *Votes and Proceedings*, 1913, Vol. 2, p. 61.

petitioned the government to develop a deep sewerage system, but to no avail at this period.[13]

In 1900, consulting engineer Thomas Cowley Hodgson (b. Swanwater, Victoria, 1858), suggested modifications to the earlier proposed sewerage schemes for Perth and Fremantle.[14] Hodgson, after completing his Master of Civil Engineering at the University of Melbourne, served for four years as consulting engineer to the shires of Numurkah and Shepparton, Victoria, then practised as a consulting engineer to 14 water and irrigation trusts in Victoria and Tasmania. In 1905, he would come to Western Australia, 'lured' by 'the prospects and possibilities', to take up the position of Assistant Engineer-in-charge of the Perth Sewage Survey.[15] Hodgson's distinguished service to the State included selection of sites for reservoir purposes for the Coolgardie Water Scheme, as Engineer for Roads and Bridges, then as Engineer for Harbours and Rivers, and finally as Engineer-in-Charge of the Coolgardie Water Scheme.[16]

By 1900, the double-pan system was operating with twice weekly collections throughout Perth. The night soil was taken to the depot at Reserve 884 in Perth, from whence it was pumped to Reserve 954, near Walcott Street, to which it was directly carted from 1903.[17] Having completed a massive programme of public works in the period 1891-1903, including construction of Fremantle Harbour (1892-1900), the water pipeline to Coolgardie (completed 1903) and a wide network of railways, the State Government was finally able to address the question of deep drainage and sewerage in Perth following passing of the Public Works Act, 1902.

In the early 1900s, much of the Swan River foreshore between Barrack Street and the Causeway was reclaimed, as per a plan for Swan River Reclamation[18], including the future Supreme Court Gardens and future Langley Park areas.

From 1903, the general proposals for the sewerage scheme that would eventually come to fruition evolved under the direction of Hugh Oldham, M.I.C.E. (London)[19], Engineer-in-Charge of the General Water Supply and Engineer for the Metropolitan Water Supply and Sewerage, positions which were later amalgamated under his appointment in the pre-World War One period. Born in 1864, at Kapunda, South Australia, in 1887, after completion of his cadet ship and six years service in the South Australian Department of Public Works, Oldham had taken charge of the engineering work associated with the Mildura and Renmark irrigation scheme. During the gold boom, in c. 1896, he came to Western Australia, where he was appointed District Engineer for the Goldfields Water Supply.[20]

Under Oldham's direction, Hodgson's successor, C. S. R. Palmer, proposed a less expensive sewerage scheme. After endorsement by J. Davis, M.I.C.E., Under Secretary for Works in New South Wales, under Oldham's direction, designs were prepared by the Public Works Department (PWD). The method selected was a septic tank system incorporating recent technological advances in sewage treatment, and involved the collection of sewage at natural drainage

13 Stannage, C. T. ibid, p. 278.

14 Report of Principal Engineer, op. cit.

15 Battye, J. S., *The Cyclopedia of Western Australia* The Cyclopedia Company, Perth, 1912-13, Facsimile Edition Hesperian Press, Victoria Park, Western Australia, 1985, Vol. 2, p. 595.

16 ibid.

17 Stannage, C. T. ibid, p. 279.

18 Swan River Reclamation, 1902-03, SROWA PWDWA 2045.

19 Report of Principal Engineer, op. cit.

20 Battye, J. S. op. cit., Vol. 1, p. 497.

points and treatment by bacterial methods, prior to discharge into the Swan River at Perth and the Indian Ocean at Fremantle.[21] In addition to the proposed treatment works at Claisebrook, Oldham suggested 'that three bacterial plants should be established along the foreshores to treat the sewerage' from the area between the Causeway and Spring Street, and two separate plants for treating the sewerage from Highgate Hill to Norwood.[22]

In 1906, Frederick Waslington Lawson (b. Launceston, Tasmania, 1869), whose extensive engineering experience in New South Wales included work on low level sewerage schemes, was appointed to the PWD 'in connection with the sewerage scheme for the metropolitan area'.[23] In 1910, when the Metropolitan and Water Supply Department was formed, he was appointed Assistant Engineer for Sewerage[24], and served as Acting Engineer for the Metropolitan Area after the Water Supply, Sewerage, Drainage and Irrigation Department was created in 1912.[25] Lawson was among the notable Australian engineers whose expertise and wide experience benefited the sewerage scheme developed for Perth and Fremantle.

In June 1906, construction commenced on Claisebrook Sewage Treatment Works which included four septic tanks, of reinforced concrete construction, each measuring 100 feet by 50 feet by 10 feet deep, located on the side of the hill 'on the southern slopes of what is known as the old Claise Brook.'[26] The effluent was conveyed by syphon to percolating filters located 'slightly south of the Bunbury Bridge', via 15 inch cast-iron pipes, which led into the 22 inch cast-iron main.[27] These works were completed by 30 June 1907, at a cost of £20,968 7s 7d.[28]

In 1907, tenders were called for construction of Claisebrook Main Sewer[29] for Perth and Leederville, which was to follow the route of 'what was originally known as the Claisebrook Valley' to Lake Monger, and was designed with four main branch sewers flowing into it, the Terrace Main Sewer, the Parry Street Main Sewer, the Hyde Park Main Sewer, and the Mount Lawley Main Sewer, which was the last to be completed in 1913-14.[30] In 1907, a Sewerage plan shows the Main Sewer and the first three of the branch sewers, the septic tanks and the syphon to the filter beds.[31]

In 1907-08, good progress was made on the project towards provision of deep sewerage and stormwater drainage at Perth and Fremantle. Various stormwater drains had been completed at Perth, and it was anticipated that further would be completed in 1908-09, along with some at Fremantle. In 1907-08, Claisebrook Main Sewer and Parry Street Branch, and the Interception with Claisebrook Drain were completed, and work began on the third section of Claisebrook Main Sewer,

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21 Report of Principal Engineer, op. cit., pp. 61-62; and Hunt, E. E. op. cit., pp. 21-24.
22 Report upon the Sewerage of Perth and Its Environs, in *Votes and Proceedings*, 1903-04, p. 7.
23 Battye, J. S. op. cit., Vol. 1, pp. 497-498.
24 ibid, p. 498.
25 First Annual Report for Water Supply, Sewerage and Deep Drainage Department, op. cit., p. 1.
26 ibid, p. 62.
27 ibid.
28 Report of the Department of Public Works for 1906-07, in *Votes and Proceedings*, 1907, Vol. 1, p. 39.
29 ibid, p. 40.
30 *Votes and Proceedings*, 1913, Vol. 2, op. cit.
31 WAGR Sewerage Plan, 1907.

which was completed in October 1909.[32] In 1909, the second section of the Claisebrook Main Sewer, Hyde Park Main and Sewer and Mount Eliza Main Sewer were completed, and work commenced on the Terrace Main Sewer and Mount Lawley Main Sewer.[33]

In June 1909, a Royal Commission was appointed to inquire into the 'Methods of Construction and Supervision of all Sewerage and Stormwater Works in the Metropolitan Area' following unfavorable criticism in Parliament and the Press, to such a degree that PWD officers 'were practically charged with inefficiency and incompetency.'[34] In July 1909, the Commissioners, Calder Edkins Oliver, Engineer in Chief of Melbourne and Metropolitan Board of Works, Thomas Walker Fowler, Chairman of the Municipal Surveyors Board of Victoria, and J. Gahan, Vice Chairman of the Sewerage Committee of Melbourne and Metropolitan Board of Works, reported that they were 'greatly impressed with the good quality of the drain and sewer work generally.'[35] They had found the materials employed were of 'good quality', and the methods of manufacturing, testing and the system of supervision 'satisfactory'.[36] They reported that modifications made to the scheme, in particular the diversion of drainage from the Monger's Lake area from Claisebrook Main to Mounts Bay and the routing of the Main Claisebrook Sewer on a more direct alignment to the Treatment Works, had been properly authorised and were 'beneficial', and noted that contract costs were 'generally well within' the estimates.[37]

An unforeseen statutory limitation on access to privately owned land for the purpose of constructing reticulation was circumvented by the M.W.S.S. & D.D. Act, proclaimed on 24 January 1910.[38] In 1910-11, the Claisebrook Treatment Works were put into operation, and one tank and one filter were in work by June 1911.[39]

On 26 January 1912, notice was given in the *Government Gazette* of proposed works in Perth, comprising 'A Pumping Station constructed of concrete including the erection of electrical pumping machinery, a Rising Main about 700 feet long constructed of 8 inch diameter Cast Iron Pipes with manholes and all apparatus connected therewith', to be erected at Mill Street.[40] On 1 March 1912, Reserve Nos. 13948, 13949 and 13950, designated as Lots 481, 483 and 482 respectively, vested in the Public Works Department for the purpose of Pumping Station, were gazetted.[41] These were the respective sites on which Perth Low Level Sewerage Pumping Stations No. 3, Mill Street, No. 2, Hill Street, and No. 1, Causeway would be built in 1912-14.

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32 *Votes and Proceedings*, 1909, p. 19; and Metropolitan Sewerage and Arterial Storm-water Drainage in Water Supply and Sewerage in Report of the Department of Public Works for 1908-09, in *Votes and Proceedings*, 1910-11, Vol. 2, p. 20.

33 ibid.

34 Report of the Royal Commission on Methods of Construction and Supervision of all Sewerage and Stormwater Works in the Metropolitan Area in *Votes and Proceedings*, 1909, Vol. 1, pp. v-viii.

35 ibid, p. viii.

36 ibid, pp. vii-viii.

37 ibid.

38 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. 354-355; and 'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3), prepared by Ian Kelly and Tony Moulds, July 1992, p. 2.

39 Metropolitan Water Supply, Sewerage & Drainage Department, Annual Report for 1910-11, in *Votes and Proceedings*, 1910-11, Vol. 2, p. 21.

40 *Government Gazette* 26 January 1912.

41 ibid, 1 March 1912, p. 1084.

In 1912, PWD architect A. R. L. Wright designed three pumping stations to be built at Perth, identical in basic plan, with that for the Causeway site, Perth Pumping Station No. 1, being the reverse of the other two. Oldham noted on completion of the first, at Mill Street, that 'Special attention was paid to the design of the building, owing to the fact of its prominent position.'[42] Similar intent was evident in the design of the station built at Fitzgerald Terrace, Fremantle, in 1913. As the Perth Low Level Sewerage Pumping Stations were designed to incorporate a gentlemen's public toilet, the civic function attached to the buildings also permitted Wright to design them 'in a more dignified, domestic style of architecture than might otherwise have been the case.'[43]

Born in Wales, and trained in England, Wright immigrated to Brisbane in 1885. Recognising the opportunities available in the wake of the gold boom in Western Australia, he came thither in 1894, and found employment as a draughtsman in the PWD. In the post-World War One period, he served as president of the Western Australian Institute of Architects (1919 and 1921), and was 'instrumental in the passing of the Architects Registration Act (1922).'[44]

By June 1912, the Terrace Main Sewer, Parry Street Main Sewer, and Hyde Park Sub-Main were completed, and work was continuing on the Mount Lawley Main Sewer.[45] A plan, signed by Lawson, showing the area drained by Perth No. 1 Pumping Station - Causeway was probably drawn prior to autumn 1913, as none of the three Perth Pumping Stations were marked.[46]

In 1912, work commenced on the first Perth Low Level Sewerage Pumping Station at Mill Street, 'constructed of concrete blocks faced with a natural mixture sand and white cement', to give the building 'the appearance of a rich sandstone.'[47] In August 1912, as work progressed on this station, it was reported that 'Arrangements are well forward for other stations, both in Perth and Fremantle.'[48]

In 1912-13, Mounts Bay Road was widened and re-built, and Riverside Road, to the south of the future Langley Park, was built.[49] Further reclamation of the river in association with road works on these roads and the Causeway, in the inter-war period, in 1921-35, and in the post World War Two period, in 1955-60, and 1963-67, significantly altered the Swan River foreshore[50], and considerably increased the distance of the Low Level Sewerage Pumping Station at Mill Street from the river.

On 11 April 1913, on completion of the Low Level Sewerage Pumping Station at Mill Street, it was opened and put into operation. The machinery comprised 'two submergible motors of 32 b.h.p. direct coupled to centrifugal pumps', which were automatically controlled, starting and stopping when the wells were full and

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42 Report of Principal Engineer for Year ending 30 June 1913, in First Annual Report, Water Supply, Sewerage and Drainage Department, 1912-13, p. 70, in *Votes and Proceedings* 1913; and *Votes and Proceedings*, 1913, Vol. 2, p. 9 and p. 64.

43 'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3), prepared by Ian Kelly and Tony Moulds, July 1992, p. 3.

44 ibid.

45 *Votes and Proceedings*, 1913, Vol. 2, p. 62.

46 Drained by Perth No. 1 Pumping Station- Causeway. Copy of M.W.S.S. & D.D. W.A. 2611 (PWD 11120).

47 Report of Principal Engineer for Year ending 30 June 1913, op. cit.

48 Water Supply and Sewerage Annual Report in Public Works Department Annual Report, 1911-12, in *Votes and Proceedings*, 1913, p. 23.

49 Battye, J. S. op. cit., Vol. 1, p. 538.

50 Seddon, George *Swan River Landscapes* University of Western Australia Press, Nedlands, 1970, p. 114 and p. 121.

empty.[51] Subsequently, this Station was referred to in Annual Reports as No. 1 Mill Street, although shown on plans as No. 3. In 1913, Oldham reported that the pumps' performance had been 'very satisfactory', and noted 'the affect of the artificial stone is very pleasing.'[52] Photographs accompanying the report showed Mill Street Pumping Station, and views of the No. 1 Filter, with Mather and Platt Distributor, at Burswood Island and the Treatment Works at Claisebrook.[53]

In 1913-14, because the foundations of the original filter beds had suffered from instability, new filter beds were constructed 'slightly lower down' the Swan River, where there was 'a much more solid sub-strata.'[54] Work also proceeded on building further sewerage pumping stations at Perth and Fremantle. In February 1914, Perth No. 2, Hill Street (later known as Langley Park) was commissioned and completed and Perth No. 3, Causeway, was commissioned and completed in June that year.[55] However, both buildings bore the date 1913.[56] Thenceforward, through to the 1970s, pump attendants, known as 'pumpies' covered a circuit, per bicycle, from Claisebrook to Subiaco each day to check each of the stations. There was little change to the design or function of the three Perth stations over more than 60 years until 'reliable submersible sewage pumping units became available, making fully sealed automatic below ground pumping stations feasible' in the late twentieth century.[57]

A plan entitled Perth Low Level Sewerage Pumping Station Causeway Contract No. 111, signed by Lawson and Hugh Oldham, as Acting Engineer for Metropolitan and Agricultural Areas, shows No. 1 Pumping Station, the easternmost of the three pumping stations at the Causeway, the last to be built, as indicated by the contract number 111.[58]

A plan signed by Lawson, Engineer for Metropolitan Area, shows sewers and storm-water drains constructed and handed over to 30 June 1914. The Pumping Stations are shown numbered as follows: No. 3, at Mill Street; No. 2, at Hill Street; and No. 1, at the Causeway.[59] However, in Annual Reports, the stations were recorded per the sequence of construction as No. 1 Mill Street, No. 2 Hill Street and No. 3 Causeway.[60]

In 1914, four additional sewerage pumping stations were completed, the two aforementioned at Perth, and two at Fremantle, at Market and Essex Streets. The total cost of erection and machinery for the stations was £6,930. The Annual Report noted with satisfaction that 'the motors and pumps have given very little trouble during the year and have worked satisfactorily and efficiently.'[61]

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51 Water Supply and Sewerage Annual Report in Public Works Department Annual Report, 1911-12, op. cit., p. 9; and Report of Principal Engineer for Year ending 30 June 1913, op. cit.

52 ibid and p. 64.

53 Photographs in ibid.

54 ibid, and p. 64.

55 Second Annual Report, Water Supply, Sewerage and Drainage Department, 1913-14 *Votes and Proceedings*, 1914-15, p. 92.

56 Site visit, Robin Chinnery and Philip Griffiths, 13 May 2004.

57 'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3), p. 2.

58 Perth Low Level Sewerage Pumping Station- Causeway Contract No. 111.

59 City and Suburbs of Perth, Plan Shewing Sewers & Storm-Water Drains constructed and handed over to 30. 6. 1914, in Second Annual Report of Water Supply, Sewerage and Drainage Department, 1913-14, in *Votes and Proceedings* 1914-15.

60 Second Annual Report of Water Supply, Sewerage and Deep Drainage Department, 1913-14, in *Votes and Proceedings*, 1914-15, Vol. 1, p. 92.

61 ibid, and p. 15.

Photographs illustrating 'the class of building and machinery installed' showed the Fitzgerald Terrace, Fremantle, Low Level Pumping Station No. 2.[62]

In October 1921, per an Order in Council, Reserve 13950, the site of No. 1 Station, Causeway, was Classified as an 'A' Class Reserve, vested in the Minister for Water Supply, Sewerage and Drainage, and its designated purpose was changed from "Public Works Department (Pumping Station)" to "Pumping Station (Perth Sewerage)".[63] In October 1922, Reserves 13948 and 13949 were vested similarly, for the purpose of Water Supply (Pumping Station).[64]

Through the period 1914 to 1989, some changes were made to the three low level sewerage pumping stations at Perth at various periods, including replacement of machinery; removal of the float wells and subsequent filling of their pits, and modification to the wet wells when their floors were re-graded in the 1950s. At an unknown date, the exterior walls of each of the buildings were painted over in a light colour paint, reducing the visual impact of the surface textures and detailing. Some traces of the original coloration remained evident on small areas of the walls in 1992.[65]

On 29 May 1981, Class 'A' Reserve 13950 was amended to comprise Perth Lots 482 and 873, as per Diagrams 84477 and 80791.[66]

In 1987, a bronze plaque was fixed to the wall at the left of the entry door to No. 2 Station, Hill Street, by the Department of Aviation Historical Society commemorating the use of Langley Park as Perth's first airfield, between 1920 and 1924, and the initiation of the first regular airmail service in Australia from this site in December 1921.[67] The following year, a plaque was mounted on the wall to the right of the entry doors to mark 'the visit of the Australian Bi-Centennial Exhibition to Langley Park', from 23 to 29 April 1988, a Commonwealth funded Bicentennial project.[68]

In 1989, a new central sewage station was built in Perth, to the rear of the Mounts Bay Road bus station, and the three low level sewerage pumping stations at Perth (1913 and 1914) were decommissioned.[69] In September 1990, the site of No. 2 Station, at Langley Park, was transferred to the City of Perth, as per a Crown Land Record which registered Perth Lot 565, Class 'A' Reserve No. 12510, for the purpose of 'Parks, Gardens and Recreation', vested in the City of Perth, with the right to enter upon the portion of the land marked Easement on Diagram E421 granted to the Water Authority of Western Australia, 'for the purpose of exercising certain water, sewage and stormwater rights' as set out in the transfer.[70]

In 1992, at the time of the 'Assessment of Cultural Significance' for the three low level sewerage pumping stations at Perth, all had undergone some change through time and none was intact. At the No. 1 Station, at the Causeway, there was a new below ground pump and associated electrical cabinet located on the north side. Overall, this place was in good structural condition at this date, other than deterioration to the base of one of the timber doors to the pump room, some

62 ibid, no. page nos.
63 *Government Gazette* 7 October 1921, pp. 1821-1822.
64 ibid, 6 October 1922, p. 1884.
65 'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3) op. cit., p. 4.
66 *Government Gazette* 29 May 1981, p. 1622.
67 Plaque, site visit, Robin Chinnery and Philip Griffiths, 13 May 2004.
68 Plaque, site visit, Robin Chinnery and Philip Griffiths, 13 May 2004.
69 Philip Roeterdink, telephone conversation with Robin Chinnery, 4 May 2004.
70 Crown Land Record Vol. 3062 Fol. 491.

rotting of the timber fascia, a structural crack to the pilaster adjacent to the pump room, and a leak to the roof above the water closets. All pipe work and machinery had been removed, and suction pipes closed off. The public toilet continued in use, and the porcelain urinal and the wall tiling was believed to be original. The original metal stairs and cast-iron handrails were extant, 'and largely unaltered.'[71]

By 1992, the public toilet at No. 2 Station, Hill Street, at Langley Park, was no longer open to public use, and the original entry to it had been filled in. Its fixtures and fittings had been removed, whilst the original tessellated floor tiles were left in situ. An opening had been made in the wall from the former toilet room through to the pump room. As at No. 1 Station, all pipe work and machinery had been removed, and suction pipes closed off. Alterations had been made to the chequer plate flooring, the metal stairs and handrails. The assessment concluded that the interior of this station was the most altered, 'although some of the cast iron pipe work and the Greenfield gate valve is probably original.'[72]

In 2003, No. 3 Station, Mill Street, was demolished as part of the works associated with building of the new Convention Centre. A submersible pump and associated electrical cabinet, installed circa 1989, remain in situ for emergency use if required. The materials salvaged from the original building have been stored off-site.[73]

In 2005, No. 1 Station, Causeway and No. 2 Station, Hill Street, remain notable built features at Ozone Reserve and Langley Park respectively, albeit their main original use as sewerage pumping stations ceased some 15 years ago. The submersible pump at the former continues in use.

13. 2 PHYSICAL EVIDENCE

Low Level Sewage Pumping Stations Nos. 1 & 2, Perth comprises two combined sewage pumping stations and men's public toilets, constructed in concrete masonry with tiled roofs in the Federation Free Classical style and completed in 1914 to a design by A.R.L. Wright of the Public Works Department as part of a system of three sewage pumping stations.

Both pumping stations are located on the low land to the south of the city on land that was created by landfill along the edge of the Swan River. Low Level Sewage Pumping Station No. 1 is located at the Causeway, north of the line of Terrace Road, Low Level Sewage Pumping Station No. 2 is located south of Terrace Road near the junction of Hill Street, and Sewage Pumping Station No. 3 (demolished 2004) was located at the foot of Mill Street south of Mounts Bay Road.

All three stations were built to the same plan, albeit that the Causeway station is reversed.

Low Level Sewage Pumping Station No. 1 is set on flat ground and was originally a prominent feature in a lawned area. However, the contouring work completed as part of the construction of the Woodside Petroleum building in the 1980s has lead to the building being almost obscured from view from the south and the west.

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71 'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3) op. cit., p. 5.

72 ibid.

73 Brad Dyer, Water Corporation, conversation with Robin Chinnery and Philip Griffiths, 13 May 2004.

The area around the building is grassed and there are no plantings associated with the pumping station.

The pumping station is designed to a rectangular plan, with a shallow porch entry on the south that gives emphasis to the doors to the machinery room, and a deep porch to the west side of the building to provide a sheltered entry to the men's toilets. The result of this planning is a regular rectangular building with asymmetrical decorative elements that make each elevation different.

The south elevation comprises an offset portico with stucco pilasters, and deep pediment, with the initials W.S.D. in bas relief on the entablature. The main wall is charactersied by its stucco plinth, stucco pilasters, rusticated faced concrete blocks that are designed to give the appearance of stone, thin architrave, and roughcast render frieze. The roof is a gable tile format with a metal vent in a gablet facing south. The entrance doors are framed and boarded and these are flanked by a nine and single paned double hung sash to the east, and two fixed louvre and sashed windows to the west, all covered with a security mesh. All of the windows have stucco sills with dentil mouldings under them. The entrance to the toilets lies to the west and this has a modern metal security grille fixed over the opening.

The east elevation to the pump chamber is a gabled elevation, with the same wall and window treatments as the southern side. An electrical cabinet obscures part of this side of the building. The gable is elaborately decorated with part timber work and jetties out in two stages beyond the wall plane by means of simple brackets. The gable is further embellished with timber louvered vents with scalloped pattern louvre blades. The whole effect of the gable treatment is away from classical detailing and much more akin to Federation Arts and Crafts.

The north elevation is much like the south elevation, though stripped of its portico, and a fourth window is located in its place. In an area immediately adjacent to this elevation there are concrete pit covers, access covers, and controls for the submersible pumps that replaced the operational function of the 1914 pumping station.

Finally the west elevation is almost completely concealed from general view by a large earth bank that was created in association with the Woodside Petroleum building. It is similar to the eastern elevation, but features an entrance porch to the men's toilets, and it is a strong visual device comprising the stripped classical pilasters of the other elevations and a heavy pediment with bas relief lettering that reads '1913' and 'W.S.D.'.

The plan comprises the machinery room, shower room, and air vessel chamber on the working side of the building, and toilets on the public accessible side.

The machine room has a ground level portion, then a machine pit that is accessible by steel construction stairs, and two receiving tanks that are concealed from view. The floors are concrete, except where chequer plate access panels are located, and the walls tiled to dado height with white metro pattern tiling, terminating on a brown rolled dado tile. Above the tiling the walls are rendered and ruled out with ashlar lines. Double-hung sash windows provide light to the working areas. The roof is framed up with a timber king post truss and the soffit lined with 'V' joined tongue and grooved boards. A rolled steel joist carries a small motorized moveable winch. The tank walls and floors are constructed in concrete, with rendered upper walls and a tiled dado. The remaining evidence of the function of the tanks comprises sealed cast iron inlet and outlet lines, and minor pipework with gate valves. The pit is surrounded by a tubular iron balustrade system. There is an original writing slope in the south east corner of the ground floor level of the machine room, raised iron framed

platform with a chequer plate floor against the north wall, and an electrical distribution and meter board mounted over the platform.

The toilet side comprises two water closets, two urinals, and circulation space. The toilet cubicles are made in solid masonry construction. The area has a concrete floor with a granolithic finish, brown tiled skirtings, white metro tile dado, with a brown rolled dado tile at the top of the dado tiling. Upper walls are rendered with a ruled ashlar finish, with high level vent grilles, and plasterboard ceilings with coved cornices have been introduced. There are white vitreous china urinal stalls with a modern flushing cistern, and with vitreous china pans with modern plastic cisterns. Doors are solid four panel timber construction.

Changes include alterations to the setting, paint on the external masonry, grilled installed to the toilet entry porch, and the replacement of glass in the machinery room entrance doors, together with the addition of security grilles. On the interior, the close couple 8 inch centrifugal pumps and electrical motors, floats and major gate valves, reflux valves and the like have been removed. It seems likely that floor tiles have been removed from the toilet floor, cisterns replaced and a ceiling introduced in the toilet area.

The sealed submersible pumping station to the north of the original building now performs the functions of the 1914 station. Generally the place is in good condition, though does not receive regular maintenance. There is some deterioration in joinery elements, paint systems, and some tiling has been damaged.

Low Level Sewage Pumping Station No. 2 is set on flat ground and in the context of Langley park as it is currently configured, is a small scaled but prominent feature.

The area around the building is grassed and there are no plantings associated with the pumping station. A short length of concrete path laid to a curved pattern leads from the Hill Street access alignment to the doors of the pumping station.

The pumping station is designed to the same rectangular plan as Low Level Pumping Station No. 1, but is built to the opposite hand, with the toilets located on the eastern side.

The elevations are almost identical to Low Level Pumping Station No. 1*,* with the exceptions being that the pumping station doors are solid framed and tongue and groove boarded, and there are two commemorative plaques fixed to the south elevation. The first commemorates the fact that Langley Park was Perth's first airfield and served this purpose from 1920 to 1924, and the second is a plaque commemorating the Bicentennial Exhibition that took place at Langley Park between 23 and 29 April 1988.

The plan comprises the machinery room, shower room, and air vessel chamber on the working side of the building, and toilets on the publicly accessible side to the opposite plan, however, a crudely formed opening has been made to link the machine room and the toilets .

The machine room is the same as Low Level Pumping Station No. 1*,* however, the writing slope has been removed and some wall tiling also removed. The machine pit is leaking to a point of around 200 millimetres below floor level.

The toilet side comprises two water closets and circulation space, the urinals having been removed. The toilet cubicles are made in solid masonry construction. The area has a concrete floor with a black and white tessellated tile finish, brown tiled skirtings, white metro tile dado, with a brown rolled dado tile at the top of the dado tiling. Upper walls are rendered with a ruled ashlar finish, with high level vent grilles, and asbestos cement ceilings with coved cornices have

been introduced. There is one remaining vitreous china pan and all cisterns have been removed. Doors are solid four panel timber construction.

Changes include paint on the external masonry, grille installed to the toilet entry porch, and security grilles over windows. On the interior, the close couple 8 inch centrifugal pumps and electrical motors, floats and major gate valves, reflux valves and the like have been removed. A crude opening has been made between machine room and toilets. Urinals have been removed, together with one pan and cisterns, and a ceiling introduced in the toilet area.

Generally the place is in good condition, though does not receive regular maintenance. There is some deterioration in joinery elements, paint systems, and the gable sheeting has been fractured in a number of locations. Some tiling has been damaged. The machine room pit is flooded and damage that may be cased by flooding could not be ascertained.

13. 3 COMPARATIVE INFORMATION

In 1913, PWD architect A. R. L. Wright designed three low level sewerage pumping stations to an identical, 'classical tripartite plan'[74] for Perth, with that for No. 1 - Causeway (1914) being the reverse of the other two, namely No. 3 - Mill Street (1913, demolished 2003), and No. 2 - Hill Street (1914), known more recently as No. 2 - Langley Park as part of the metropolitan sewerage scheme. Each building included a public gentlemen's toilet at ground level, a riveted steel staircase, with wrought iron handrails and stanchions, leading to the machinery room below, which was lined with white glazed ceramic tiles to shoulder height, and twin underground receiving tanks constructed of reinforced concrete. There were two close-coupled8-inch centrifugal pumps with electric motors which drew from the receiving tanks and pumped into a cast-iron rising main, 6 inches in diameter. Other than the motors, pumps and gate valves, all the cast-iron fittings, pipe specials, float wells, reflux valves and so on, were fabricated by Perth foundries as per the details on the construction drawings.[75]

In 1913-16, three low level sewerage pumping stations were also built at Fremantle, the first being at Fitzgerald Terrace in 1913.[76] The two later stations were built to different designs, and those at Essex and Market Streets were reported to be the more elaborate in plan and detail.[77]

The six sewerage pumping stations built at Perth (1913-14) and Fremantle (1913-16) demonstrated 'a high degree of consistency in architectural style and detail, materials and construction.'[78]

Subsequently, Wright designed numerous W.S.S. & D.D. pumping stations and valve houses which were built in the metropolitan area.[79] However, most of the later buildings did not incorporate public toilet facilities, and, in general, they were of simpler design and lacked the fine details that were a notable feature of the six which were built at Perth and Fremantle in 1912-16. In 2005, five of these six original low level sewerage pumping stations at Perth and Fremantle are extant. Notwithstanding that the original machinery has been removed and/or replaced

74 'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3) op. cit., p. 3.

75 ibid.

76 Annual Reports, Water Supply, Sewerage and Drainage Department, 1912 to 1916 in *Votes and Proceedings* 1912-13 to 1917, op. cit.

77 'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3) op. cit., p. 3.

78 ibid.

79 ibid.

with more modern equipment, and various alterations made and/or fittings removed to degrees at each of them, all five retain their distinctive external appearance, and are well recognised built features in their respective settings.

13. 4 KEY REFERENCES

'Assessment of Cultural Significance of Perth Low Level Sewerage Pumping Stations (Nos: 1, 2 & 3)', prepared by Ian Kelly and Tony Moulds, July 1992.

13. 5 FURTHER RESEARCH

Further research may reveal additional information as to the various changes to each of the low level sewerage pumping stations.