

Steel pipes awaiting delivery, 1899



Description

This is a black-and-white photograph, measuring 21 cm x 16 cm, of 8 km of 76-cm diameter pipes ready for use in the Coolgardie Water Supply Scheme. The pipes are arranged in rows covering a huge area outside Mephan Ferguson's pipe factory in the Perth suburb of Falkirk (later known as Maylands), Western Australia. The main manufacturing building is shown at the rear, to the left. The inscription on the photograph reads 'Mephan Fergusons Pipe Factory "Falkirk" West Australia shewing five miles of 30 in. pipes awaiting delivery for Coolgardie Water Scheme 19.10.99'.

Educational value

- The photograph documents the steel pipes that made up the Coolgardie Water Supply pipeline, an engineering feat that attracted worldwide attention at the time and has subsequently been declared an Australian national engineering landmark.
- The pipeline opened in 1903 and immediately solved the water-shortage problems resulting from the gold rush that began in the 1890s when prospectors had rushed to Western Australia's inhospitable eastern regions following rich discoveries at the locations later known as Coolgardie and Kalgoorlie. Men literally died of thirst in the arid country, while others died of diseases that spread due to a lack of sanitation and clean water. Water was also needed for the gold-mining industry to develop but attempts to obtain water from local underground sources and dams proved unsustainable, so the pipeline was finally built at great expense.
- The Coolgardie Water Supply Scheme required 60,000 pipes laid end-to-end for delivering water uphill from a dam on the outskirts of Perth to the arid eastern gold fields through a pipeline 560 km long. The 940 pipe lengths, each 8.5 m long, seen in the photograph awaiting transport, would complete only 8 km of pipeline, an indication of the enormity of the Scheme.
- This photograph was taken almost a year to the day after the signing on 24 October 1898 of the pipe contracts, at the time the largest contracts ever signed by the WA Government. The contracts specified that delivery of all 60,000 pipes was to be completed within 26 months.



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- The pipes were assembled at two factories in Perth using an innovative new design that clamped sheets of steel together with locking bars, with each pipe taking about 6 min to produce. Therefore the pipes shown represent about 80 hours of factory production.
- The pipe factory shown was built alongside the eastern railway line so that the pipes could be transported by train. However, the pipe trains often had to wait for other traffic on the only rail line to the gold fields and compete with other freight for available wagons. Once they reached the construction site, they needed to be unloaded quickly so they did not interfere with other traffic on the line. These logistical problems meant the factory produced pipes faster than the railway could transport them.
- The pipes were the product of Australian innovation and labour combined with imported materials and components. There was no steel industry in WA at the time, so half of the 76,000 tons of steel plate used for the pipes came from the USA and the other half from Germany. The locking bars were invented by Mephan Ferguson (1843-1919), a Victorian engineer who owned the factory in the photograph, but were manufactured in England. The pipes were produced in Perth, but having to import materials from overseas caused delays. A shipment of locking bars was also lost in a disaster on 11 July 1899, when the 'Carlisle Castle' sank off Fremantle with all hands lost.
- The inscription on the photograph refers to Falkirk, now the Perth suburb of Maylands. It was renamed, according to Ferguson family tradition, for Ferguson's eldest daughter May. She kept house after her mother died in 1893 and accompanied her father to Perth from Melbourne in 1899 to establish the Perth works. Ferguson initially named the area Falkirk after his birthplace in Scotland when he bought the land for his pipeworks. Reminders of Ferguson and his work in Maylands today are Foundry Street, which was beside the pipeworks, and Falkirk, Caledonian, Mephan and Ferguson Streets.
- The date of October 1899 on the photograph gives an indication of the length of time it took to complete the Scheme. The Western Australian Public Works Department began plans for a pumping scheme in 1895. In 1896 parliament gave permission for a loan to be raised to finance the Scheme. The loan was finalised in January 1898 and in October 1898 parliament passed a bill giving approval for construction of the Scheme to start. The pipeline was officially opened on 24 January 1903.
- The dimensions of the pipes, 76.00 cm diameter and 0.63 cm thick, were decided after a bit of guesswork, some careful calculations, and an eye on the budget, since there were no data on how much water would be required. Engineer-in-chief C Y O'Connor decided to pump 5 million gallons (22,730 kilolitres) a day for 'technical and other reasons'. The thickness of the pipe's steel was calculated to allow for corrosion and to withstand a safe working pressure. Using pipes of the same diameter and thickness throughout the Scheme reduced the price.

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