

THE GOLDEN PIPELINE

The Golden Pipeline was the world's largest pipeline project of its time. The discovery of gold in Western Australia at Coolgardie in 1892, and Kalgoorlie in 1893, set off a rush that attracted a large number of immigrants to the dry centre of the state. The Eastern Railway to Kalgoorlie required good quality water for the operation of the steam engines, and the growing population increased demand for a reliable domestic water supply. The Goldfields region suffered from long periods of drought due to erratic rainfall patterns. A comprehensive investigation of both above and below ground water resources in the area around Kalgoorlie revealed no adequate, or reliable, source of potable water. In 1895 work commenced on the design of a scheme to provide 22.7 megalitres of water per day to Kalgoorlie from a dam on the Helena River near Mundaring.



The designers chose the Mephan Ferguson Lock Bar steel pipeline system over the riveted and welded steel pipe alternatives. The Lock Bar design provided a 100% efficient joint in the manufacture of the pipe. This allowed for the use of thinner steel plate, thus reducing both the cost and weight of each pipe. Equally as important, the Lock Bar design provided a reduction in fluid friction loss of 25% to an equivalent riveted pipe. This provided savings in the capital cost of pumps, and the ongoing operating cost of pumping. The Lock Bar steel pipe design was innovative, and proved to be well suited to the engineering requirements of the Coolgardie Water Scheme. Manufacture of Lock Bar steel pipes continued for about 40 years both domestically and internationally.



The Coolgardie Water Scheme required 566km of 760mm diameter steel pipe – over 66,000 pipes measuring 8.5m each, the construction of a dam on the Helena River 230m long and 30m high, and the construction of eight steam powered pumping stations located along the pipeline route. In October 1898 contracts were signed with Mephan Ferguson (now Tyco Water) and G. & C. Hoskins for the manufacture and supply of pipe, with each making half of the total pipes required. The pipes were to be Lock Bar steel pipes as designed and patented by Mephan Ferguson in 1896. Mephan Ferguson established a manufacturing facility on the main railway line east of Perth. Steel for the pipe was imported from the United States, Germany and England.

The Coolgardie Water Scheme was officially opened on 24th January 1903. The pipeline will celebrate 100 years of continuous operation on 24th January 2003, with some 350km of the original Lock Bar steel pipe still in service.

The design for 22.7 megaliters per day exceeded what was required in 1895, but provided for growth in both the Goldfields and the agricultural areas along the pipe route. The last 100 years of development have confirmed the value of this design decision. The Coolgardie Water Scheme marked the beginning of steel pipe manufacture in Western Australia by Tyco Water. It began with Mephan Ferguson and continues today with the Tyco Water steel pipe plant located at Kwinana, south of Perth.

For more information click on www.goldenpipeline.com.au