

## Early construction at Mundaring Weir, c1898



### Description

This is a black-and-white photograph taken about 1898 that shows an early stage in the construction of the wall of the dam built to store water for the Coolgardie Water Supply Scheme, which supplies Western Australia's eastern gold fields. A temporary dam to store water for construction purposes can be seen in the background. The steep granite slopes of the river valley chosen for the dam site are evident in the left foreground. People are standing on the temporary platform on the right, and buildings can be seen on the left and in the centre. The photograph measures 15 cm x 20 cm.

### Educational value

- The photograph features early construction work on Mundaring Weir, the storage dam for the Coolgardie Water Supply Scheme. The Scheme involves pumping water from this dam, near Perth, along a 560-km pipeline to WA's gold fields, raising the water 390 m from source to destination. The Scheme is an engineering feat that attracted worldwide attention at the time it was built and has been declared a national engineering landmark. It is still in operation today.
- In the 1890s prospectors rushed to the areas that became known as Coolgardie and Kalgoorlie following rich discoveries of gold. Water was so scarce in the arid gold fields region that some men literally died of thirst, while others died of diseases spread by lack of sanitation and clean water. The gold-mining industry and the railways also needed water and finally it was decided that a pipeline was the only viable solution.
- The site chosen for the storage dam for the Scheme was the bottom of a deep valley on the Helena River, 50 km from Perth, and excavation for the foundations of the dam wall began in April or May of 1898. In this photograph the deep excavations to reach bedrock are still underway. They eventually descended more than 30 m.
- According to engineer T C Hodgson, the granite bedrock, narrow valley and precipitous sides that are visible in this photograph made the site 'almost an ideal



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one' for a storage reservoir. In his report to engineer-in-chief C Y O'Connor, Hodgson recommended that a high wall be built but stated that it did not need to be wide. The dam wall would later take shape immediately in front of the working platform visible in the photograph. A large type of crane known as a derrick crane was used to manoeuvre heavy loads, such as the large granite boulders that would be embedded in the concrete wall.

- The coffer, or temporary holding dam, built a short distance upstream of the future reservoir, and the diversion flume built to direct water around the wall's foundations can both be seen. These were the first works to be undertaken following the construction of a railway line to the site.
- The concrete coffer provided water for the many men working on the site as well as for construction, for example for mixing with cement, sand and aggregate to make concrete. The diversion flume was capable of carrying away nearly 380 million L of water per day. It was largely an open-cut channel but a timber flume was also constructed to carry floodwaters across the weir site to keep it dry.
- The 3.2-sq-km site of the reservoir was 'grubbed' and cleared, with fallen timber and decaying vegetable matter taken out of the riverbed and burned. Decaying vegetable or organic material leads to high ammonia levels in water, and dissolved organic matter can result in dangerous bacteria caused by the decomposition process. For months on end the valley was filled with smoke. Later, any suckers and scrub were again cut down and burnt. In addition, the trees in more than 80 sq km of the lower catchment area were ring-barked to increase the flow of water.
- The dam's problematic rock foundations are visible in the photograph. When work on the dam began the rock proved to be far less solid than trial shafts had indicated. On the right bank a large portion of what was thought to be bedrock turned out to be an immense boulder with a large cavity below it. When he heard the news, O'Connor rushed to the site on 26 December 1899 and spent two days examining every aspect of this unexpected problem. He decided that work should continue although additional excavations to reach bedrock would be necessary. Removing the boulder delayed completion of the project by a year.

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