THE START OF HYDRO TASMANIA

The harnessing of the waters of Great Lake began in 1910 when a private company started work on an ambitious project to divert water from Great Lake and the Shannon River to a power station at Waddamana.

In 1905 Professor Alex McAulay published an article on the potential for hydro-electric power generation in Tasmania.

Mr Gillies, who had developed a new electrolytic metal refining process was seeking a large, cheap power source. After reading the article, Mr Brettingham-Moore who was a civil engineer, arranged a meeting with Mr Gillies.

They formed the Complex Ores Company in 1908 and sought finance for the power scheme from the Tasmanian Government. The Government could not afford the venture. But in 1909 granted a concession to the company to use the water of the Great Lake to produce electricity.
A separate, smaller company called the Hydro-Electric Power and Metallurgical Co. Ltd was formed to build the scheme.

Work began on the scheme in December 1910 with the excavation of the canal which was to convey water from Great Lake to the Penstock Lagoon. Because of considerable difficulties during the early stages and an extremely severe winter in 1912, the company ran short of money and work halted for several months.


ABRIDGED PROSPECTUS OF
Hydro-Electric Power and Metallurgical Company Ltd.
CAPITAL - - £500,000 in 500,000 SHARES £1 EACH.
164,000 are Subscribing Shares.

The prospectus of the original construction company

The company was unable to raise the extra money needed to continue construction. In 1914, the Tasmanian Government bought the hydro-electric assets from the struggling company. The Hydro-Electric Department was formed to manage the completion of the scheme and went on to become Hydro Tasmania as we know it today.

The first two generators came into service in May 1916 providing the first hydro-electric power to Hobart.

GENERATION BEGINS

Between 1918 and 1923 there was an increased demand for electricity. Waddamana A station was enlarged to accommodate a further seven generators.

To increase the supply of water a multiple arch concrete dam was built at Miena to raise the level of Great Lake. The upper reaches of the Ouse River were diverted into Great Lake by a flume and canal to provide further water.

The Shannon Power Station began operation in 1931, it used the fall of water between Great Lake and Waddamana.

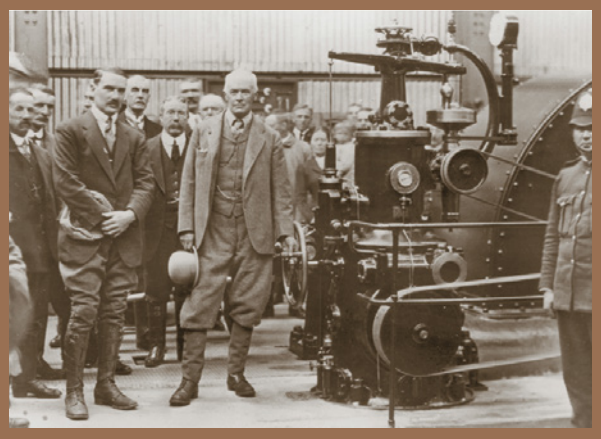
Between 1939 and 1949 a second power station was constructed at Waddamana. Waddamana B was built at right angles to the original Waddamana A Power Station and it contained four turbines.

These three power stations operating together between 1949 and 1964, had a total generating capacity of 107.5 megawatts (MW). Waddamana A and Shannon were decommissioned in 1965, Waddamana B operated until 1995. The water stored in Great Lake is now used at Poatina Power Station located to the north. The sheer drop of the Great Western Tiers makes Poatina a more efficient station.

As a tribute to the beginnings of integrated hydro-electric development in Tasmania, Waddamana A has been faithfully restored as a museum.

**It provides visitors with a sense of what life in the central highlands was like back in the early 1900s.
Exhibits include an extensive photographic display, original machinery, memorabilia and artefacts from the power station and the people.**

OPEN TO START YOUR SELF GUIDED TOUR



The official starting of number one machine in May 1916

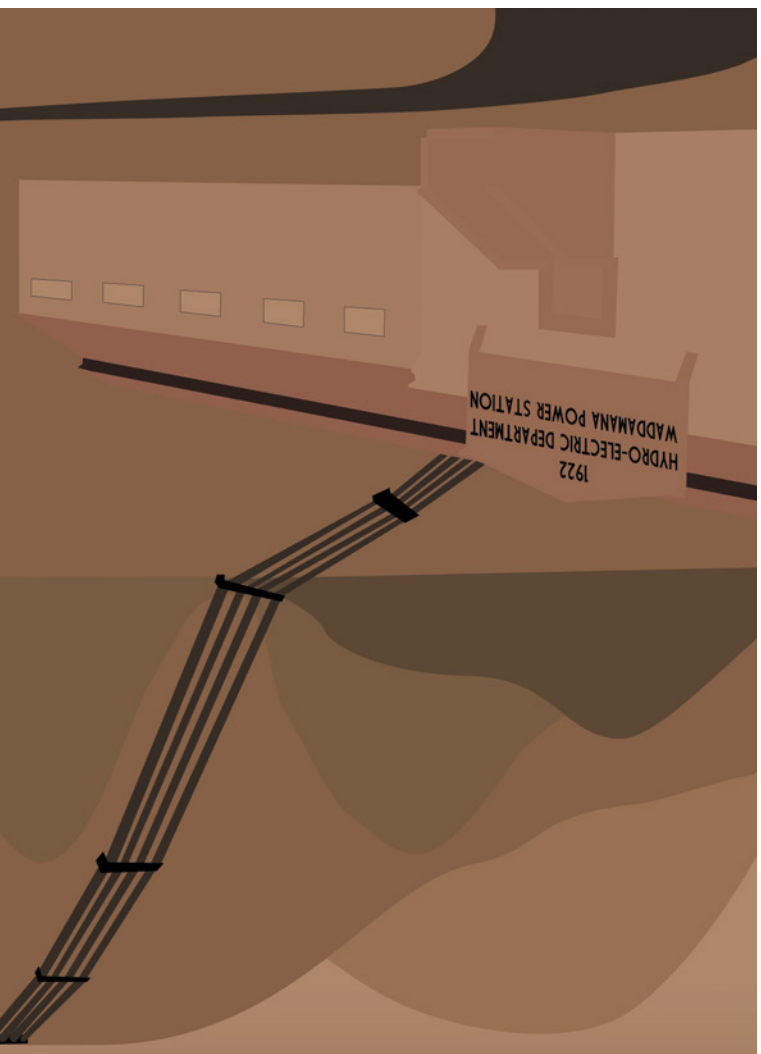
BUILDING A POWER STATION IN THE EARLY 1900s

One of the difficulties facing the early construction workers was the isolation of the area and the challenge of transporting materials. There was no road link to the construction site at Waddamana. Early in 1911 work began on building a 27 km wooden tramway from Red Gate near Bothwell to Waddamana.

The rails were made of 9 inch (225 mm) square hardwood and bridges were constructed over a number of creeks and the Shannon River. The tramway was completed in early 1912 and a regular service of a return trip every two days began.

Teams of up to 15 draught horses pulled each load; the average load was about seven tons. A road was completed in 1922 and the tramway fell into disrepair.

Advertisements for labour made it quite clear that applicants should make their own way to the construction site which was described as a comfortable two day walk from Deloraine. Rates of pay were 8/- (80 cents) a day and a tent and sack of straw to sleep on were provided.



WADDAMANA POWER STATION MUSEUM

self-guided tour

The power of natural thinking
Hydro Tasmania
Printed on 100% recycled paper
170118

WHERE TO FIND US

Waddamana Power Station Museum is located on Waddamana Road in Tasmania's Central Highlands. It is perfectly placed as a scenic diversion through the lake country when travelling between major population centres.

Admission to the museum is free and it is open daily between 10am and 4pm (except Christmas Day, Boxing Day and Good Friday). Public toilets are available.

For more details:
call **+61 3 6259 6120** or **1300 360 441**
email **waddamana@hydro.com.au**
website **www.hydro.com.au/waddamana**

Wooden tramway passenger vehicle, a staff house is pictured in the background

Woodstave pipes under construction

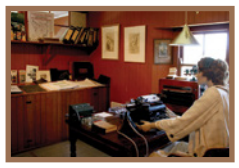
Station extension in progress

SELF GUIDED TOUR

1 MESS ROOM

The mess room was used by workers and shift operators as an area to eat their meals. The room has the original huon pine sink and electric cooker. In one of the cupboards is what is believed to be an original crib box, a popular game at the time.

2 POWER STATION OFFICE

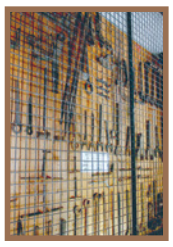


The office belonged to the power station superintendent. It is in original condition and features models in period costume and original office furniture and equipment, papers and power station plans. Also on display is the original telephone switchboard and the old safe.

3 ENGINEERS OFFICE

The engineers office features original plan drawings and furnishings.

4 TOOL STORE



The tool store holds a collection of mostly hand made tools in original condition.

Hand made tools became a necessity in the early days of construction as the workers didn't have access to factory made tools due to the isolation of Waddamana. The tool store is in its original condition, just as it would have been while used by the workers at the power station.

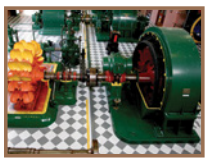
5 PHOTOGRAPHIC DISPLAY

An extensive photographic display depicts the construction of the canals, power station and pipeline. The display also represents the living conditions of the early residents of Waddamana. Included in the exhibition are photographs of the opening ceremony - switching on the first machine by the Governor General of Australia, Sir Ronald Craufurd Munro-Ferguson on 6 May 1916.

6 SHANNON CONTROL ROOM SWITCHBOARD

This is the original control room electrical switchboard from the Shannon Power Station. It was transported to Waddamana after Shannon was decommissioned in 1964.

7 TURBINE AND ALTERNATOR



In 1831 it was discovered that electricity could be produced by rotating an electro-magnet inside coils of wire. The alternators in large power stations work on the same principle. In hydro power stations, water is used to make the electro-magnets spin. At Waddamana, Pelton wheels were used to tap the energy of the moving water. These wheels spin a shaft which is connected to the electro-magnets, which in turn spin around inside the coils of conductor. This generating process converts the mechanical energy of the Pelton wheel into electrical energy.

At Waddamana A two machines were initially installed. Each had a capacity of 4 900 horse power (HP) (3.65 MW) enough electricity to supply about 250 to 300 homes. They came into operation in 1916, at that time there were about 2000 customers in the Hobart area. An additional machine was operating by 1919. A further six 8 000 HP (5.96MW) machines were installed after 1922.

8 WOODSTAVE PIPES

This is a collection of pipeline sections and includes a section of jarrah complete with $^{7}/_{8}$ inch steel band. The original pipeline was constructed of oregon pine. A later wooden pipeline was constructed from kauri and jarrah, imported from Western Australia.

Four wooden pipes were used - each pipe was 2.4 kms. Steel was scarce during the war so wood was used for pipes when the pressure was less than 200 pounds per square inch (psi). At the power station the pressure was 500 psi and required steel.

Woodstave pipelines are still in use at Lake Margaret Power Station on the west coast of Tasmania and elsewhere.

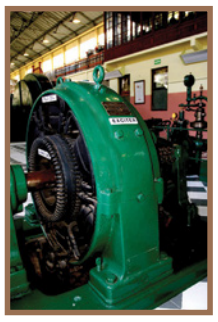
9 SPANNERS

A collection of very large, handmade spanners were used to carry out maintenance on the power station. The spanners were struck with large hammers weighing about 27 pounds (10.5 kgs).

10 OIL FILTERS

The oil filters were used to clean the oil in the generators of any impurities or water. The cleaned oil is then recycled back into the machines.

11 EXCITER



The exciter is used to produce and control the voltage of the generator. The exciter supplies the DC excitation current for the rotor of the AC alternator. The excitation produces the induced electrical current into the generator providing a magnetic field. The rotor turns in the alternator and cuts the magnetic field thereby producing an alternating current.

The exciter at Waddamana A was started by a mini turbine. It was also used for emergency power supply at the power station when normal power supplies were cut off.

12 TRANSFORMER

Transformers are used to increase the electricity voltage produced in the power station for transporting over the transmission lines then decrease to low voltage before being distributed to consumers.

13 INTERACTIVE DISPLAYS

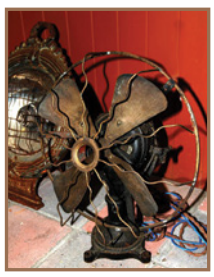
These interactive displays tell the story of hydropower in an engaging way.

The displays show how a water turbine works and what makes hydropower renewable, they are suitable for kids of all ages.

14 DOMESTIC ELECTRICAL APPLIANCES

Dating from the early 1900s, the domestic appliance collection includes stoves, heaters, a foot-warmer, kettles and more.

Most of these appliances have been donated by members of the public, but some came from the original cottages at Waddamana.



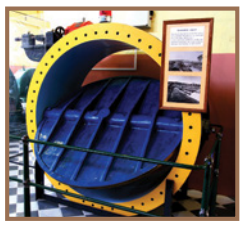
There is also a collection of various types of meters, a display of old adding machines and an original operational machine circuit breaker.

15 CONTROL ROOM

The control room is the heart of a power station. All required changes and alterations to the daily running of the station were made from here. Major events occurring in the power station are recorded by control room staff on a daily log.

The control room was used to control the power supply from both Waddamana A and B stations. The marble panels used for Waddamana A are a feature. The marble was used for its insulating qualities. An air raid siren was also installed during World War II.

16 SHANNON HILLTOP VALVE



This is one of the main intake valves for the Shannon Power Station. It was operated remotely from inside the station to isolate the flow of water through the pipeline to the station.

Another valve from Duck Reach Power Station can be seen at the opposite end of the museum.

17 POWER STATION WORKSHOP

The power station workshop was used for maintaining machines and equipment. The workshop houses a metal lathe, the bed of which was specially adapted to turn extra long shafts. A trolley on a rotating turntable was used for bringing transformers from the switchyard into the power station for maintenance.