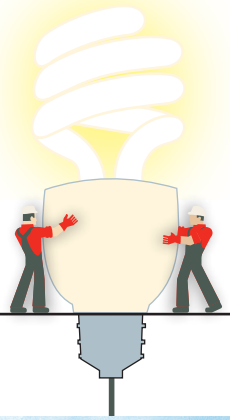
Liapootah Power Station

Derwent Catchment



Liapootah Power Station was commissioned in 1960 and houses three units consisting of English Electric francis turbines coupled to English Electric generators.

A concrete gravity dam with a spillway crest drum gate is situated downstream of Tarraleah and Tungatinah Power Stations and diverts water through a 6.6 kilometre concrete lined tunnel. Lake Liapootah is very narrow and is considered a run of river storage.

During high inflow events the pond level can threaten the Tarraleah Power Station upstream. The drum gate is designed to lower automatically and maintain a maximum pond level below the flood level of Tarraleah station. Having the drum gate installed maximises the head at Liapootah station. The alternative to this would have been to build the dam at a lower level, thus reducing the available output from Liapootah station.

The drum gate floats on a chamber of water and its height is controlled by filling or emptying water from the chamber. The rated flow of water through Liapootah at 84 MW is 105 cumecs (cubic meters per second).

The tunnel intake structure is provided with a vertical lift gravity-close intake gate designed to cut off full flow. The tunnel has a surge tower located at the power station end designed to dissipate any pressure rises in the headworks water conveyance. Steel trifurcation lead to three hill top valves designed to cut off full flow. Three steel penstocks supply water to the power station.

Each turbine has a fully embedded spiral casing and water flow is controlled by a spherical rotary main inlet valve and a turbine relief valve designed to prevent spiral casing overpressure. Twin 70 tonne overhead cranes are provided. Together they can lift a fully assembled rotor with poles.

The station output passes through three banks of three 11/220 kV single-phase transformers and 220 kV outdoor switchgear. Each generator is connected to the transmission system in the Liapootah switchyard.

Scheme:		Lower Derwent	
Year commissioned:		1960	
Power station structure:		Surface, 58 m long x 20 m wide sized to house three generating sets with assembly bay. A two storey control wing and a single storey workshop wing are connected either side of the assembly bay.	
Static head:		110 m	
Generating set:		Three vertical shaft generating sets each comprising a 29.1 MW francis turbine directly coupled to a 3 phase, 50 Hz, 31 MVA synchronous generator and capable of operating in a spinning reverse mode.	
Turbine manufacturer:	English Electric	**Generator manufacturer:**	English Electric
Rated head:	103 m	**Rated output:**	31 MVA
Rated discharge:	32 $m^{3/s}$	**Power factor:**	0.9
Rated speed:	300 rev/min	**Rated voltage:**	11 kV

Hydro Tasmania

The power of natural thinking