

Liapootah

Power Station

Derwent Catchment

Liapootah Power Station was commissioned in 1960 and houses three units consisting of English Electric Francis turbines with English Electric generators.

Starting in 2017 with one machine per year, each has seen a major refurbishment and modernisation. Each one was fully disassembled, runners were replaced, as well as new digital control systems installed and main inlet valves removed.

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 Power Station. Having the drum gate installed maximises the head at Liapootah Power Station.

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 at the power station end designed to dissipate any pressure rises in the headworks. 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. The twin 70 tonne overhead cranes in the station can lift a fully assembled rotor with poles.

The power 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.

Fast facts

Scheme:	Lower Derwent / Nive
Year commissioned:	1960
Power station structure:	<ul style="list-style-type: none"> • 58 m long x 20 m wide • 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

