Cluny Power Station

Derwent Catchment

Cluny Power Station was developed as part of the same scheme as Repulse and Meadowbank power stations, and is the ninth of ten stations in the Lower Derwent / Nive Scheme. The station houses a single Boving Kaplan turbine coupled to a Siemens generator which discharges directly into the Derwent River.

The facilities at Cluny are very similar to the other stations in the scheme, including a concrete gravity dam, intake structure with intake gate designed to cut off full flow. The penstock which is integral with the dam is relatively short compared to the other stations.

As part of the Kaplan program, the station underwent a full modernisation and refurbishment in 2017. This program included a full disassembly, a runner replacement to a more efficient design, as well as new digital control systems.

The modernisations also saw the removal of the rubber hub (an oil filled system originally used to adjust runner blade angle) and its replacement which uses a control rod passing directly through the centre of the rotor shaft.

The turbine has a four-bladed runner and concrete spiral casing. Pre-stressed cables passing through the stay vanes anchor the spiral casing and form part of the station's foundation. No inlet valve is installed in the station.

A riparian outlet valve is installed to release water flow into the Derwent River when the station is not operating.

The transformer yard is beside the station with a separate switchyard a short distance away containing the 220 kV circuit breaker.

Fast facts	
Scheme:	Lower Derwent / Nive
Year commissioned:	1960
Power station structure:	• 33 m long x 21 m wide • Assembly bay and service block adjacent to a deep set, slip formed circular machine bay
Static head:	27 m
Generating set:	• Vertical shaft generating set comprising an 18.6 MW Kaplan turbine • A 3-phase, 50 Hz, 21 MVA synchronous generator
Turbine manufacturer:	Boving
Generator manufacturer:	Siemens
Rated head:	15 m
Rated output:	21 MVA
Rated discharge:	142 m3/s
Power factor:	0.8
Rated speed:	136 rev/min
Rated voltage:	11 kV

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