

Cethana

Power Station

Mersey-Forth Catchment

Cethana Power Station is the fifth station in the Mersey-Forth Scheme. The power station was commissioned in 1971 and houses a single Fuji Francis turbine coupled to a Fuji generator.

Cethana Power Station is a single machine underground station and is supplied with water from Lake Cethana which is fed by the outflow from Lemonthyme (Mersey River) and Wilmot (Lake Gairdner) power stations and uncontrolled flow from the Forth River. Water from the power station is returned to the Forth River through a tailrace tunnel which has a tailrace gate structure at the outlet portal.

In 2015 the power station received a major modernisation and refurbishment. This included a full disassembly of the machine, a new stator, a runner refurbishment and new digital control and protection systems.

The turbine has a partially embedded spiral casing and is connected to a 130 metre-long steel lined power tunnel with a vertical lift, gravity closed intake gate designed to cut off full flow. No relief valve or turbine inlet valve is installed in the power station.

Twin bulkhead gates at the tailrace gate structure permit dewatering of the tailrace and draft tube.

The power station output is fed to the outdoor switchyard via three single-phase 13.8 kV/220 kV generator transformers and associated 220 kV oil filled cables. There is also a spare single-phase transformer and associated cable for contingency. The transformers are situated underground, adjacent to the generator.



| Fast facts | |
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| Scheme: | Mersey-Forth |
| Year commissioned: | 1971 |
| Power station structure: | <ul style="list-style-type: none"> • Underground, 37 m long x 18 m wide x 25 m high. • It houses a generating set, 4 single-phase transformers and assembly bay with service block. |
| Static head: | 99 m |
| Generating set: | Vertical shaft generating set: <ul style="list-style-type: none"> • 100 MW Francis turbine • 3-phase, 50Hz, 100 MVA synchronous generator • Provisions for synchronous compensator operation. |
| Turbine manufacturer: | Fuji |
| Generator manufacturer: | Fuji |
| Rated head: | 98 m |
| Rated output: | 100 MVA |
| Rated discharge: | 113 m ³ /s |
| Power factor: | 0.85 |
| Rated speed: | 200 rev/min |
| Rated voltage: | 13.8 kV |

