GENERATING

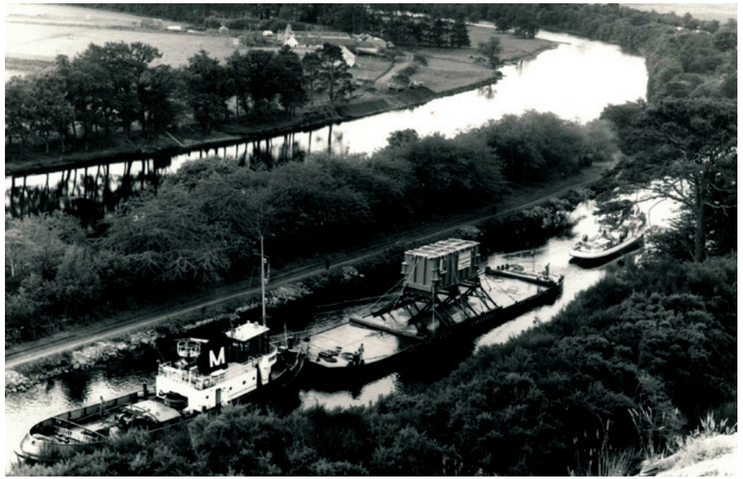
The 72 year-old tunnel and original cast iron pipelines between the intake above the Falls of Foyers and the power station attached to the smelter were adapted to supply a new 5MW turbo-generator in the old power station. This harnessed water which would otherwise have gone to waste during the construction period.

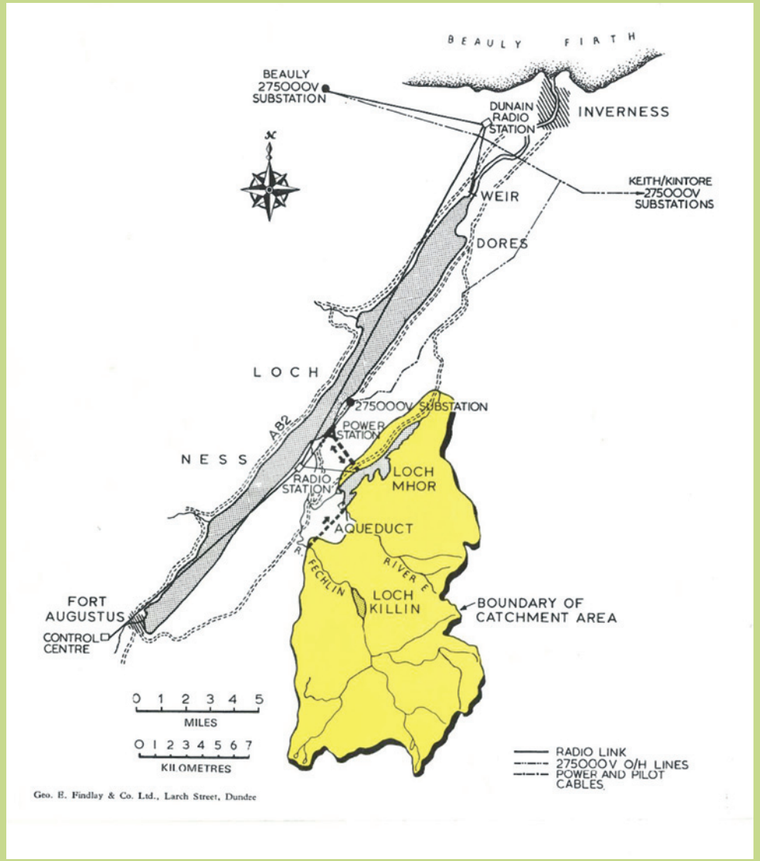
Foyers Falls was recently refurbished and modernised.

When pumping, energy is drawn from the main transmission system at times of low load to drive the two 150 MW Francis turbines in the reverse direction and pump water from Loch Ness up to Loch Mhor.

When the station is generating at full load, 200 cubic metres per second of water - or 200 tonnes per second! is passed into Loch Ness.

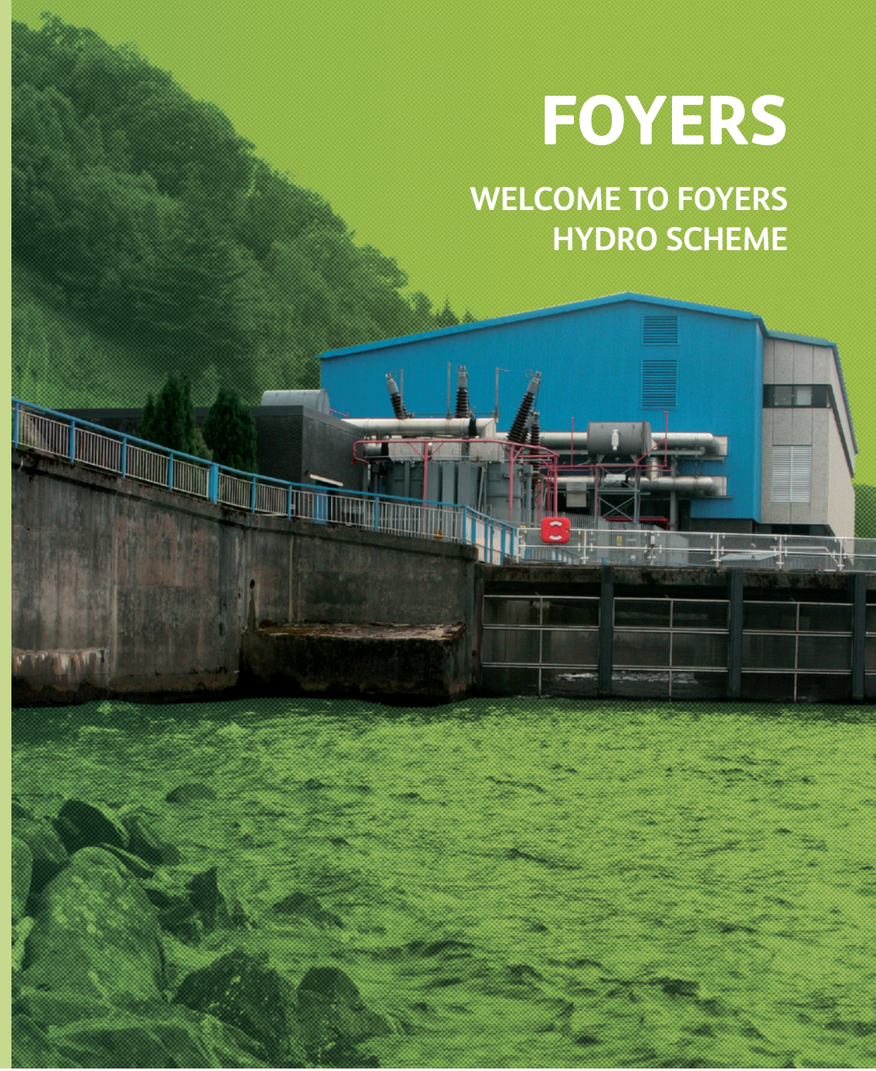
Foyers station is remotely controlled from SSE's Generation Operation Centre in Perth and can quickly respond to peaks in demand. The power station can supply electricity from standstill within one minute!





FOYERS

WELCOME TO FOYERS HYDRO SCHEME



Scottish Hydro

WELCOME TO FOYERS

The Foyers Scheme is a 300 Megawatt (MW) combined conventional hydro and pumped storage scheme. 1896 saw the British Aluminium Company commission Foyers for the smelting of aluminium. The plant was in continuous operation for 70 years until it's closure in 1967. The scheme was promoted by NOSHEB in February 1968 and after receiving statutory approval in April 1969 work started that autumn and was commissioned in 1975 . The high level reservoir is Loch Mhor which was formed under the original development by enlarging and joining Loch Garth and Loch Farraline.

The full catchment area of Loch Mhor today is now 207 sq km.

Pumped storage involves two bodies of water at different heights. During periods of low demand for power, electricity is used to pump water from a lower loch to an upper reservoir. The water is then released to create energy at a time when demand is high.

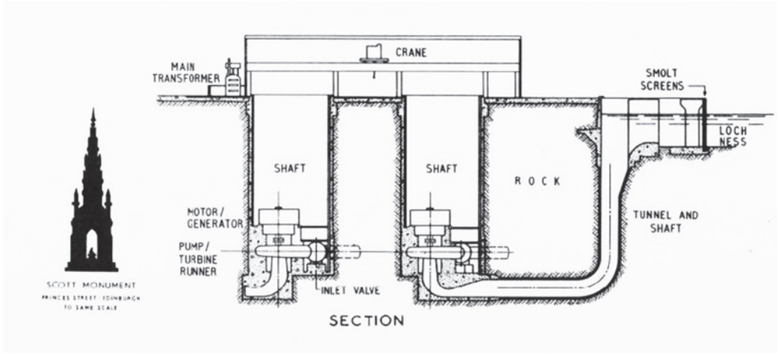
The Foyers site is well suited for hydro-electric power with heavy rainfall (averaging 1.478 annually) on the mountains around the Great Glen filling the high level storage reservoir Loch Mhor.

HOW IT ALL BEGAN

Scottish Hydro, then known as the North of Scotland Hydro Electric Board (NOSHEB) and now part of SSE, was established by an Act of Parliament in 1943. It was responsible for generating, transmitting, distributing and supplying electricity throughout the north of Scotland, including the Highlands and Islands. The region contains Britain's highest mountains and largest inland lochs which, combined with high rainfall make ideal conditions for hydro generation.

ENGINEERING

When the station is generating, water flows from Loch Mhor through 2 miles of tunnels and shafts to the power station. When pumping, energy is drawn from the main transmission system at times of low load to drive the two 150 megawatt machines in the reverse direction and pump water from Loch Ness up to Loch Mhor. The existing gravity dam at the outlet of Loch Mhor (231.7m long and 9.14m high) was retained by NOSHEB . Remedial work was carried out on subsidiary earth embankment dams. The waters of the River Fechlin are diverted into Loch Mhor by a tunnel and the channel of the river.



The main civil engineering works are the tunnel system between Loch Mhor and Loch Ness and the power station on the side of Loch Ness.

A "D" shaped concrete-lined low pressure tunnel, 6.93m in diameter and 2,743m long, leads from the intake to the base of the surge chamber. From the base of the surge chamber and the end of the low pressure tunnel the high pressure system connects to the power station.

A by-pass channel with control gates is provided at the south-eastern end of Douchfour Weir, built by Telford early in the 19th century as part of the Caledonian Canal. This ensures that in the event of dry weather and low water levels in Loch Ness, the flow down the River Ness is not affected by the varying level of Loch Ness caused by transfer of water from Loch Mhor to Loch Ness and vice versa during generation and pumping.

The power station houses two 150 MW sets located in separate 50.2m deep elliptical shafts .The Scott monument in Edinburgh would easily be accommodated in one of these shafts!