The Wye Creek hydroelectric power station has a history spanning back over 80 years; the former Otago Central Electric Power Board purchased the Wye Creek plant from the Goldfields Dredging Company in September 1941. It was originally built by the Golden Terrace Extended Gold Dredging Company Ltd, which went into liquidation in 1929.

At the time of purchase by the Power Board the Wye Creek Hydro Scheme was capable of producing 400 kW of energy. A further generator and turbine (formerly from the Lower Roaring Meg Scheme) was added late 1991.

Pioneer Generation (current owner and operator of the Wye Creek) embarked on the latest upgrade of this scheme. The existing generating equipment was removed and replaced with a new larger Gilkes twin jet Pelton turbine and generator. The contract was placed on Gilkes agent of over 70 years Turnbull and Jones Industries of New Zealand to supply the following scope of supply from Gilbert Gilkes and Gordon Ltd of United Kingdom.

**KEY STATISTICS**

<table>
<thead>
<tr>
<th>Wye Creek Hydroelectric Power Station</th>
<th>Turbine type: Gilkes 900 P343 Twin Jet Horizontal Pelton Turbine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong> 15km South of Queenstown, New Zealand</td>
<td><strong>Speed:</strong> 1000rpm</td>
</tr>
<tr>
<td><strong>Head:</strong> 315m</td>
<td><strong>Output power:</strong> 1723kW</td>
</tr>
<tr>
<td><strong>Flow:</strong> 700l/s</td>
<td></td>
</tr>
</tbody>
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CASE STUDY
WYE CREEK, NEW ZEALAND

Scope of Supply:

- Gilkes 900 P343 Twin Jet Horizontal Pelton Turbine
- Leroy Somer Generator
- Hydraulic Control Module

Separate to equipment above Pioneer Generation designed and supplied a new turbine/generator control and protection system.

The scheme was successfully commissioned in June 2011, the new turbine and generator will have a maximum output of 1.7MW and the station will have an estimated annual energy output of 12.5GWh. This is about a 20% improvement over the existing station, the improvement coming about due to efficiencies in the design of the new turbine and generator.