

## CASE STUDY

# WAINUIOMATA WTW



### KEY STATISTICS

**Head:** 82.6 m

**Flow:** 463 l/s

**Turbine type:** Gilkes Turgo Impulse 15" HCTI Twin Jet

**Speed:** 1000 rpm

**Output power:** 318kW

This project was designed for Wellington Regional Council, with MWH Global NZ acting as consultants.

Scope of supply included GILKES 15" HCTi\_TJ; LEROY SOMER 353kVA 415v Synchronous Generator; CPS Turbine Control/MCCB panel (380kW 400v) and it was shipped to Wellington Port ready to be transported to site.

The turbine was installed and commissioned April / May 2011.

Raw water to the treatment plant is extracted from both the Orongorongo and Wainuiomata rivers. The Orongorongo system comprises intake structures on the Orongorongo River, Big Huia and Little Huia Streams. This water is transported to the Wainuiomata treatment plant by means of a 5.6km long pipeline and tunnel. The Orongorongo intakes are at an elevation of 244m above NCD (New City Datum) and the treatment plant is at 142m above NCD, therefore a series of pressure reducing valves have been installed just upstream of the water treatment plant intake. The Wainuiomata and Lower George Creek intakes are at a much lower level and the supply from the Orongorongo source connects to them immediately downstream of the pressure reducing valves.

The turbine generator will be located in a purpose built structure adjacent to the existing pressure reducing valves. Under normal operation the turbine will take all of the water treatment plant flow, with the valves being retained for periods when the turbine is out of service for any reason.

### CONTACT

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Under favourable weather and water demand conditions the turbine could be expected to operate for as long a six months without any need to shutdown.

The plant operation will be entirely automatic with plant condition being monitored from the water treatment facility control room, which is located about 150m away from the turbine building. The control room is manned 8hrs a day, with a continuously manned call-out roster. Inspections of the turbine generator facility are envisaged to occur at most once per week.

The turbine generator works in parallel to the grid.

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