

MARDI DAM UPGRADE TRANSFER AND HIGH LIFT SYSTEM



PROJECT DETAILS

PROJECT LOCATION:
Wyong, NSW 2259

COMMENCEMENT DATE:
June 2009

COMPLETION DATE:
November 2010

TYPE OF CONTRACT:
Low Voltage/ Design &
Construct

CONTRACT VALUE:
\$5 Million +:

PROJECT MANAGER:
Ray Khairallah

E & I MANAGER:
Mark Bedwell

OVERVIEW TRADE PACKAGE

This project involved modifying the Mardi Dam to Mardi Water Treatment Plant Transfer system, a new Mardi high lift pumping station and high voltage power upgrades works.

The project was headed by the building firm, Boulderstone whom employed Star Group to ensure the electrical and communication components of the upgrade.

The Mardi Dam is an off-river storage dam located near the Wyong River.

The transfer capacity will increase from the current 100 million litres a day to 160 million litres a day.

The project is being funded jointly by Wyong and Gosford councils as part of augmentations to their joint water supply scheme.

This project consists of construction of one 22m high intake tower and 2 pumping stations – one (TPS) for transfer of water from dam to water treatment plant and another (HLPS) for transferring water from Mardi to distributing network.

The project involved a large number of electrically actuated control valves controlled via SCADA HMI screens.

Both pump stations are linked via radio communications for monitoring and control remotely from Wyong Shire Council's operation control room.

COMMERCIAL FACTORS

TRANSFER SYSTEM, INTAKE TOWER, VALVE HOUSE AND PUMPING STATION

- New Transformer Substation
- All cabling within the transformer
- Installation of Main Switch board
- Variable Speed Drives
- Pump station Control cubicle complete with PLC
- Diesel generator connection box.
- Light and General Power Distribution Boards
- UPS Unit for all control and "clean power DB for motorised valves
- Connections to instrumentation including magnetic flowmeter, pressure readers and sensors
- junction boxes, hand stations and emergency stop pushbuttons
- All junction boxes, hand stations and emergency stop pushbuttons.
- 3 phase plus neutral underground 415 V Consumer Mains between the transformer substation
- and the Main 41*5 V Switchboard.
- Combined HV and L V earthing system as required in AS/NZS 3000.
- Lightning and surge protection system.
- All electrical conduits including underground, above ground and cast-in conduits.
- All cable ladders, ladder trays, brackets and fittings.
- All internal and external light fittings and power outlets.
- Security system and smoke detection.
- All power, motor, control, instrumentation, lighting and data cabling.
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- Provision for an industrial split type air conditioning unit
- Voltage switch room.
- PLC programming of the pump station control system.
- Testing and commissioning.

HIGH LIFT PUMP STATION

- Provisions for two, Energy Australia approved, Ring Main Units (RMU)
- 11 kV underground cable from RMUs to main switchboards ~'.
- Detailed Drawings and Programs
- Materials and equipment for tariff metering
- 100 Amp 415/240V submain
- 11 kV, indoor, withdrawable-type, Main Switchboard
- 11 kV, indoor, withdrawable-type, switchboard for the Mardi High Lift Pump Station
- Wire all control and monitoring signals
- Supply and install 11 kV cable from main switchboards to MHLPS switchboard
- Energy Australia and all other fees
- Detailed plan for the changeover of the power supply
- Testing and commissioning
- Power Supply to compressor room/ workshop at Mardi Dam
- Power Supply to existing Raw Water Pumping Station

PROJECT CHALLENGES

- Environmental issues with the co-ordination of bulk excavation for HV and LV reticulation trenching
- Underground boring of an existing road

PROJECT SPECIFICS

The upgrade consisted of the construction of

- a new 22m high intake tower, two pumping stations –
 - one from the dam to the treatment works (TPS) and
 - one from the treatment works into the distribution network (HLPS) and associated pipework's.
- Also included are two tunnels, one 144m long with a diameter of 1.8m and the other is 60m long with a 1.5m diameter.
- There is also over 250m of large diameter pipework and associated valves. These works allow more effective water transfer from Mardi Dam to Mardi water treatment plant.

