

## PROJECT FACT SHEET

**Customer:** Melbourne Water

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**Contractor:** John Holland Pty Ltd

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**Project:** Installation of Electrical and Instrumentation

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**Completion:** February 2010

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**Project Profile:** The Victorian Government had to provide a 70-kilometre large-diameter pipeline to transfer water from the Goulburn River near Yea, to the Sugarloaf Reservoir in the Christmas Hills, 35 km north-east of Melbourne.

The project incorporates two pumping stations, a power substation and an inlet structure to feed the water into the Sugarloaf Reservoir. The completed pipeline is able to deliver up to 75 gigalitres of water to Melbourne annually.

The project covered 5 distinct areas. These were situated at Yea, 75 km north east of Melbourne. The substation is 3 km east of Yea on the Goulburn Valley Highway. The Goulburn River pumping station is 7 km north of Yea on Killingworth Road and the Sugarloaf high lift pumping station is 3 km south of Yea on the Melba Highway.

The Sugarloaf control tank is 40 km south of Yea in the pipeline easement at the top of the Great Dividing Range at Toolangi, with the Sugarloaf outlet control valve on the north side of the Sugarloaf Reservoir.

**Nilsen Scope of Works:**

**1. Electrical and Associated Services Works Package**

Design review, manufacture, supply, installation, testing and maintenance of electrical and associated services including the following,

The Yea Substation

- Supply and installation of substation lightning protection and earthing.
- Installation of auxiliary equipment for 66/22 kV transformers.
- Installation of 22 kV/400 V station auxiliary transformer with protection and control panel.

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- Installation of 22 kV switchboards.
- Supply and installation of telecommunications equipment.
- Supply and installation of uninterruptible power supply (UPS) and UPS distribution board.
- Installation of instrumentation.

Supply of as-built documentation. The pumping stations included

- Supply and installation of lightning protection and earthing.
- Installation of connections to 22 kV/6.6 kV AC transformers.
- Installation of connections to 22 kV/400 V AC auxiliary transformer.
- Installation of 22 kV switchboard.
- Installation of 6.6 kV switchboard.
- Design, manufacture and installation of 690 V 'Intelligent' motor control centre.
- Design, manufacture and installation of 400 V auxiliary switchboard.
- Installation of PLC control panels and remote I/O.
- Installation of six centrifugal pumps and variable speed drives (VSDs).
- Supply and installation of telecommunications equipment.
- Supply and installation of UPS and UPS distribution board.
- Supply and installation of light and power.
- Supply of as-built documentation.

For the outlet control valve and control tank storage, works included:

- Supply and installation of lightning protection and earthing.
- Installation of PLC control panels and remote I/O.
- Supply and installation of telecommunications equipment.
- Supply and installation of light and power.
- Installation of fibre optic cables from the Toolangi Storage tank to the Outlet valve at Sugarloaf of approx 27 Kilometers
- Supply and installation of specified instrumentation.
- Supply of as-built documentation.

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### Project Challenges:

This project was faced with several challenges that had a commercial impact. They were carefully managed through continuous monitoring and regular, clear and open communication with the client to ensure the issues were identified and promptly addressed.

Project challenges with a commercial impact included:

- Remote worksite locations – Nilsen established an office in Yea so the project could be locally managed across the worksites, with issues having a commercial impact able to be dealt with on site.

### Added value accrued to customer because of Nilsen involvement:

#### 1. Efficient Problem Resolution

The initiatives that were implemented by Nilsen to further reduce adverse effects on the environment included:

- Developing special lifting jigs to move transformers and the 6.6 kV variable drives into position without affecting the environment.
- Keeping vehicles well maintained to maximise efficiency.
- Avoiding the use of hazardous chemicals.
- Following material safety data sheet (MSDS) instructions as appropriate.
- Managing the program to ensure efficient use of resources on worksites and to minimise trips to and from the sites, thereby managing greenhouse gas emissions and road-dust production.
- Minimising waste through careful and accurate calculation of required materials.
- Controlling dust and avoiding air-borne contamination.

#### 2. Project Goals and Outcomes

The completed pipeline has also been deemed a success by the Victorian Government and an important infrastructure asset for the people of Victoria.

In contributing to the completion of the project five months ahead of schedule, Nilsen was able to demonstrate its high-quality workmanship and sophisticated management

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systems that enabled the organisation to deliver a large and complex program of technically challenging work to the stringent standards, KPIs and tight deadlines specified by the Sugarloaf Pipeline Alliance.

A letter from the Commercial Manager of the Sugarloaf Pipeline Alliance, Mark Harries, acknowledging Nilsen's valued contribution to the project .

The experience of completing the intensive project across five remote worksites has developed and refined the technical and managerial skill-sets of employees throughout the company. The project required all divisions of the company to work together, further strengthening the already close-knit team and enhancing its ability to deliver a highly complex and integrated program of works.

The project has also strengthened Nilsen's relationships with the John Holland Group.

The experience has had a significant, positive impact on the company and enhanced Nilsen's competitive position for projects of similar scale and complexity in the industrial sector.

### Referees:

#### **Sugarloaf Pipeline Alliance**

Mark Harries

