

## Eastern Gas Pipeline

### Executive Summary

**The need for an alternate supply of natural gas to Sydney, led to the development of the Eastern Gas Pipeline. Completed in 2000, this pipeline transports Bass Strait natural gas a distance of 795 kilometres from Longford in Victoria to Horsley Park in Western Sydney.**

**BlueScope Steel Limited supplied approximately 27,500 tonnes of PIPESTEEL™ for conversion to API 5L X70 strength pipe for use in the Eastern Gas Project. The key attribute of the PIPESTEEL™ supplied, was its excellent product consistency, benefiting both the pipe maker and the on site construction team.**

**Since 1968 BlueScope Steel has supplied more than one million tonnes of steel for pipeline applications. This steel is now known as PIPESTEEL™.**

### Production Detail

#### Location:

The Eastern Gas Pipeline, which was designed and constructed by Duke Energy International to supply gas from Longford in Victoria to Sydney in New South Wales, was developed as an alternative to gas supplied to Sydney via Moomba in South Australia. This dual supply of gas into the Sydney region provides consumers with improved security and reliability of supply as well as the benefit of competing gas retailers.

The pipeline itself extends 795 kilometres from Longford through East Gippsland via the Cann River in the north of Victoria, then North through Bombala and Cooma. From there it heads to the coast before passing through Nowra and Port Kembla on its way to Horsley Park in Western Sydney.

The pipeline was completed at an estimated cost of \$450 million.

#### Construction:

The Eastern Gas Pipeline is 457mm (18") in diameter, manufactured to API 5L X70 specifications, with an operating pressure of 14.89MPa and a design gas delivery rate of 65 petajoules per annum.

The 90,000 tonnes of pipeline required for this project was sourced from both domestic and international suppliers.

OneSteel Oil and Gas Pipe at Kembla Grange in New South Wales converted 27,692 tonnes of PS5200 grade PIPESTEEL™ supplied by BlueScope Steel, to finished API 5L X70 pipe for this project.

BlueScope Steel commenced production of the PIPESTEEL™ in May 1999. The steel was a low Carbon, Manganese, Molybdenum, Niobium, Titanium chemistry, custom designed to meet the project's stringent mechanical and welding requirements, while maintaining the ductility required for the production of such high strength pipelines.

The excellent through-coil and coil-to-coil consistency of BlueScope Steel's PIPESTEEL™ used in this project, was obtained by closely controlling the chemical composition of the steel during the steelmaking process and stringently controlling the finishing and coiling temperatures during final rolling in the Hot Strip Mill. This assisted pipemakers to manufacture pipes with consistent mechanical properties, and aided weld quality and repeatability in the field.

### Date Published: November 2003

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## Eastern Gas Pipeline Production Summary

| Steelmaking Performance - Composition |            |        |       |       |        |       |        |        |        |        |           |       |
|---------------------------------------|------------|--------|-------|-------|--------|-------|--------|--------|--------|--------|-----------|-------|
| Grade                                 |            | C      | Mn    | Si    | S      | Mo    | Al     | Ti     | Nb     | N      | Ceq (IIW) | Pcm   |
| PS5200<br>Product                     | <b>Aim</b> | 0.065  | 1.50  | 0.25  | 0.003  | 0.12  | 0.030  | 0.018  | 0.060  | --     | 0.35      | --    |
|                                       | <b>Ave</b> | 0.069  | 1.51  | 0.25  | 0.002  | 0.12  | 0.031  | 0.017  | 0.061  | 0.0045 | 0.35      | 0.16  |
|                                       | <b>Max</b> | 0.080  | 1.65  | 0.29  | 0.005  | 0.13  | 0.044  | 0.020  | 0.068  | 0.0069 | 0.38      | 0.18  |
|                                       | <b>Min</b> | 0.060  | 1.39  | 0.23  | 0.001  | 0.11  | 0.021  | 0.010  | 0.055  | 0.0032 | 0.33      | 0.15  |
|                                       | <b>SD</b>  | 0.0035 | 0.043 | 0.011 | 0.0005 | 0.005 | 0.0051 | 0.0015 | 0.0023 | 0.0006 | 0.008     | 0.004 |

| Hot Strip Mill Performance |                  |                       |                   |
|----------------------------|------------------|-----------------------|-------------------|
| Grade                      |                  | Finish Roll Temp (°C) | Coiling Temp (°C) |
| PS5600                     | <b>Aim Range</b> | Aim +/- 30            | Aim +/- 30        |
|                            | <b>Ave</b>       | Aim + 5°              | Aim + 4°          |
|                            | <b>Max</b>       | Aim + 23°             | Aim + 32°         |
|                            | <b>Min</b>       | Aim - 36°             | Aim - 20°         |
|                            | <b>SD</b>        | 8.4                   | 8.5               |

| Strip Tensile Properties |       |       |       |                        |       |       |       |                |     |     |      |
|--------------------------|-------|-------|-------|------------------------|-------|-------|-------|----------------|-----|-----|------|
| 0.5% TE Strength (MPa)   |       |       |       | Tensile Strength (MPa) |       |       |       | Elongation (%) |     |     |      |
| Ave                      | Max   | Min   | SD    | Ave                    | Max   | Min   | SD    | Ave            | Max | Min | SD   |
| 574.8                    | 611.6 | 542.6 | 12.58 | 653.0                  | 691.6 | 618.1 | 13.30 | 34             | 41  | 26  | 2.41 |

| Strip Impact Properties              |       |       |       |   |       |       |      |                             |     |     |     |
|--------------------------------------|-------|-------|-------|---|-------|-------|------|-----------------------------|-----|-----|-----|
| Ave Charpy Energy @ -20°C (10x6.7mm) |       |       |       | Ave Charpy Fibrosity @ -20°C (10x6.7mm) |       |       |      | Ave BDWTT Fibrosity @ -20°C |     |     |     |
| Ave                                  | Max   | Min   | Sd    | Ave                                     | Max   | Min   | Sd   | Ave                         | Max | Min | Sd  |
| 597.5                                | 614.9 | 573.5 | 11.94 | 714.0                                   | 730.4 | 693.9 | 8.88 | 30                          | 35  | 25  | 2.6 |

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