

# TRENCHLESS

## A U S T R A L A S I A

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# First in line for trenchless rehabilitation solution

Primus Line was the first choice of remedy for Hunter Water to repair the supply of potable water in Newcastle, NSW. This trenchless technology was the forerunner compared to traditional dig-and-replace methods as it mitigated the need for road closures and disruptions to the environment and residents.

The mild steel cement-lined pipeline DN 900 PN12 runs underneath a busy street and a highway access with two opposing bends of 22.5°. With only two access points and a myriad of project challenges, works had to be conducted with a flexible and adaptable trenchless solution – being the Primus Line's flexible Kevlar® reinforced liner and corresponding end fittings.

This flexibility allows the Primus Line® system to be installed through consecutive bends up to 45° and the robust liner can also withstand bends of 90° depending on the pipeline characteristics.

## Rehabilitation investigation

The section requiring rehabilitation was only approximately 140 m. Upon investigating this pipeline section, Primus Line developed two options for rehabilitating the trunk main.

Hunter Water could choose to either install one Primus Liner DN 500 PN16 with an inner diameter of 452 mm, which would grant Hunter Water a utilisation of under 25 per cent or install three Primus Liners DN 450 PN16 with an inner diameter of 396 mm, granting the utility a utilisation of nearly 60 per cent.

Installing three Primus Liners with the larger DN 500 was not an option as the liners could not

entirely inflate inside a DN 900 host pipe, considering a minimum inner diameter of 1,000 mm or greater would be necessary.

Additionally, the friction coefficient of the Primus Liner is with a K-factor of 0.028 lower than the friction coefficient of the existing main. This showed Hunter Water through calculations that a reduction in diameter would be acceptable, so the Primus Line 3-in-1 solution was chosen as the solution to obtain a higher utilisation.

## Project stages

Hunter Water assigned the installation of the project to Interflow, a pioneer in trenchless technology and the most experienced Primus Line installer in Australian to date.

The existing pipeline was extended at both ends with a customised reduction piece DN 900 to DN 1600 that created space for the three flanges. The reduction and the manifold were designed by Primus Line and locally produced by Hunter Water.

To reach the construction site, the Primus Liner was transported on three reels and then placed

sequentially behind the start pit in line with the run of the pipeline. Each liner was marked with a different colour of tape to ensure that the hoses were at the correct positions of both pipe ends after insertion.

During insertion, the liners were combined and stacked then fixed with tape for identification and to keep their shape. After insertion by a pulling winch, Interflow threaded the liners through the manifold and brought them into shape one-by-one with compressed air.

Following the inflation process, the six connectors could then be installed. The Primus Line system's entire installation was completed within one week, including a separate pressure test with 15 bar conducted for each liner.

This trenchless method enabled the Newcastle region's busy traffic flow to continue smoothly without interruption, caused minimal impacts to the environment and allowed residents to continue with day-to-day activities. Additionally, this project was the first instance of the Primus Line 3-in-1 solution's implementation outside of Europe and it demonstrated great success for the Australian industry. ●

For more information visit [www.primusline.com](http://www.primusline.com)

# PROJECTS



**Opposite:**  
The three spools reels aligned onsite.

**Clockwise:**  
During installation, Interflow threaded the Primus Liner through the manifold prior to expansion.

