

Macarthur Water Pipeline

Water Main Adjacent to Cathodic Protected Gas Main



Project Need

The Upper Canal had supplied the Macarthur region in Southern Sydney with their water needs for years, however to control and maintain the water quality to today's standards; Sydney Water decided to replace it with a water filtration plant and new pipelines. Two significant challenges confronted the designer and constructor. Firstly the pipe route traversed land subject to mine subsidence and secondly it followed a gas transmission pipeline which was cathodically protected.

Solution

Both these issues would suggest that a fully welded steel pipeline should be used, however this would add significantly to the construction costs of the project.

Deep-entry SINTAJOINT[®] rubber ring joint (RRJ) steel pipe with cathodic protection (CP) attachment lugs fitted - was the chosen system. The CP lugs were required as SINTAJOINT is a very effective electrical insulator and therefore an electrical connection across the pipe ends via copper cable was required for the cathodic protection of the entire pipeline.

Pipelines in mine subsidence areas were checked to ensure the joint used was able to accommodate the required amount of spigot withdrawal. In this instance, the expected withdrawal was more than that possible with a normal SINTAJOINT. Therefore Steel Mains Deep-entry SINTAJOINT RRJ steel pipe – with a modified socket profile featuring a deeper and wider throat length was selected to match the project's requirements.

The deep entry joint accommodates abnormal angular rotation and axial displacements, and is typically used in mine subsidence areas where ground strain can be high, typically in the range 3 to 7mm/m.

Achievements

The pipeline system supplied by Steel Mains overcame both of these project specific problems, without any added cost and without affecting construction. In addition to this, by working with the pipeline constructor Transfield (formerly NWT Water), Steel Mains was able to supply all the branches and bends that were required, fitted to pipes at our factory. On-site welding was in this way virtually eliminated and the maximum advantages of constructing with SINTAJOINT[®] pipe were realised.

Project: Macarthur Pipeline

Principal: Sydney Water

Location: Macarthur region – Southern Sydney - NSW

Completion: 1994

Supplied: 16km of 1283OD Deep Entry SINTAJOINT MSCL Steel Pipe with CP Lugs & Fittings