

UEA completes boring project on the Gold Coast

UEA was recently engaged by Abigroup and Gold Coast Water to undertake the Coomera River bore for the Pumps and Pipes recycled water project, Gold Coast, Queensland, based on the company's proposed work method statement and track record of completing difficult bores.

UEA was contracted to install a 630 mm PN 20 PE Pipe under the Coomera River, which involved boring and installing 330 metres of the pipe through very soft silty sandy ground with occasional gravels. Boring under the Coomera River equated to 75 per cent of the bore length

To assist in working to the tolerance a surveyor was engaged to peg out the route and verify the profile. Once this was completed the information was entered into the bore planner software and a profile was created.

UEA utilised its 25 tonne Vermeer D50 x 100 machine to undertake the pilot bore. The ground conditions varied between high plasticity clay, sand, silts and gravels. The geotechnical information supplied by the client was very accurate and enabled the drill muds to be managed effectively through the continually changing ground conditions. With the varying ground conditions, Baroid's experience was utilised to develop a successful mud plan prior to the project starting, this proved to be invaluable during the entire pilot, reaming and pipe installation process.

Due to the salt water, conventional walkover locating systems could not be used. UEA utilised its own Digital Control Incorporated "steering system" to undertake the pilot bore; all information from the bore was recorded onto a software program to verify the position of the bore and provide data for the client. The initial bore was used not only as an exploratory but also to provide a 100 mm return line which would later be used to return drill fluid from the pipe side of the bore back to the drill.

Once the return line was completed a second pilot bore was bored in approximately 2 metres away to be used to install the 630 mm pipe. Once this was completed the rods were left in place until the larger Vermeer D300 x 500 HDD arrived.

The D300 x 500 utilised a cross over to connect to the D50 (3 ½ inch) rods left in the hole, the smaller rods were pushed out and replaced by the larger 5 inch rods. The D50 rods were run out over the ground as they were to be used a dead string during the pre-reaming process. An 850 mm flow through reamer was attached and pulled into place. The D50 rods were then attached

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to the back of the reamer via a swivel so that the hole would not be lost at any point during the pre reaming process.

The rod time for the pre reaming process was approx 40 minutes per rod with “bottom up” (time it took for the mud to reach the surface) of approximately 15 minutes per rod. The pre-reaming process was completed in two days with good returns at all times.

The D300 rods were pushed back out with the help of the

dead string attached to the D50 on the opposite side in preparation for pull in.

The pipe to be installed was a 630mm SDR 9 and weighed approximately 40 tonne. In addition to this the pipe had to be filled with water to create neutral buoyancy and prevent the pipe lifting in the hole and cutting through the surface. Approximately 55,000 litres of water had to be added which increased the total weight to nearly 90 tonne. To aid with pullback three 30 tonne excavators were utilised. Pullback commenced at 6.30 in the morning, 14 hours later the pipe was installed with pullback pressures not exceeding 20 tonne at any time during the installation process.

The project was a complete success for all parties concerned without any major incidents or dramas. The project also highlighted the advantage of the client supplying good geotechnical information upfront and working the solution through with the drilling contractor prior to work commencing on site. The ground conditions were found to be very accurate when referring back to the geotechnical information provided at tender stage and enabled UEA to make the correct decisions with regards to the mud program, tooling and the type of machine required to undertake the project. The pipe was installed ahead of time in preparation for the connections to the open trenched sections either side of the river.

UEA received excellent feedback from the client with regards the quality of the work undertaken, the project management and timing.



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Address: Unit 2 / 26 Baile Road,
Canning Vale, WA 6155
Phone: +61 (0) 8 9256 4499
Fax: +61 (0) 8 9256 4599
Email: gareth@nmtelectrodes.com
www.nmtelectrodes.com