

SHANNON CREEK STORAGE FACILITY PROJECT

OIL/GAS | SEWER | STORMWATER | POWER | WATER | TELCO

LOCATION	Shannon Creek, Nr Grafton NSW	
CLIENT	Leighton Contractors	
PIPE	900mm SDR 11 polyethylene	
GEOLOGY	Hard sandstone, quartz	
LENGTH	320 metres	
TECHNIQUE	Pilot boring	

PROJECT OVERVIEW

The Shannon Creek Storage Facility project undertaken by Leighton Contractors on behalf of the Clarence Valley Council and North Coast Water provides 30,000 megaliters of water storage for the towns of Coffs Harbour and Grafton in northern New South Wales. The population of this region is projected to grow from 90,000 to 220,000 by the year 2050. An environmentally protected escarpment – 50 to 60 metres in height - forms one wall of the dam, which presented an engineering challenge as a natural barrier to bringing communications and power services into the dam as well as taking water away from the dam.

DESIGN AND CONSTRUCTION

The scope of work encompassed four straight bores, each approximately 330 metres, to link up with services laid up to the eastern side of the escarpment. The bores were to house a 110 mm diameter communications conduit, two 140 mm diameter electrical conduits and a 900 mm water main. Due to environmental constraints, a geotechnical investigation could only be conducted in the valley areas. The sandstone outcrop surrounding the Shannon Creek area was estimated at 40-60 Mpa (5800-8700 psi). The project was ideal for UEA's 300,000 pound HDD rig, as the rail could be positioned horizontally against the vertical face of the escarpment, facilitating the six percent upward grade required for the bore. A Digitrak Eclipse Steering Tool was used to guide the pilot bores through the escarpment to the exit point. While drilling the pilot bores UEA encountered harder than expected ground conditions. Based on these findings, the intended style of reamer for the large diameter cut would be inadequate. A 42" (1066mm) hole opener was used to cut through the 120 Mpa (17,400 psi) rock. The grade of the bore hole ensured that it was self cleaning which eliminated the need for complex drilling muds. Although the water pipe had a 90 tonne dead weight pull back, force did not exceed 10 tonnes during the installation.