

GBM/THRUST BORE PROJECT WITHIN PORT BOTANY FOR ELGAS

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

PROJECT OVERVIEW

As part of a new gas transfer pipeline, a section of pipe had to be installed using trenchless techniques to avoid significant utilities crossing the proposed route. Thrust boring was the chosen technique.



LOCATION

Port Botany NSW



CLIENT

Private



PIPE

Steel case enveloper pipe



GEOLOGY

Water charged sand



LENGTH

120 metres



TECHNIQUE

GBM & thrust boring

SCOPE OF WORKS

- 120 metre on-grade bore
- Installation of a 457mm steel case
- Insertion of a 355mm SDR 21 carrier pipe inside the steel case and grout

CONSTRUCTION

A laser guided boring machine (GBM) was used to undertake and complete a successful pilot bore on grade and within 25mm tolerance agreed at design stage, and a conventional auger boring machine was used to install the steel enveloper and the secondary PE enveloper pipe.

CHALLENGES

This bore presented numerous challenges from the onset – not only was it a grade critical installation, but it was also located in tidal affected ground. UEA decided to undertake the pilot bore with the GBM from the normal position – downstream shooting uphill. This technique enabled UEA to guarantee grade accuracy by using the GBM to pull the pilot tubes whilst installing the steel case.



Part of the way through the bore, two very large 1.5 metre diameter storm drains were encountered. The bore was re-designed in order to miss these previously unknown services, resulting in a grade change and UEA lowering the launch pit by an additional two metres.

UEA recommenced the pilot bore using the standard cutting head for the GBM. As the bore progressed, thrust pressures were erratic and eventually the team lost target. Due to these inconsistent ground conditions, UEA chose to complete the pilot bore using some good old-fashioned HDD know how – a conventional Digitrak walkover system completed the bore within 17mm of the design grade!

COMPLETION

Despite the difficult ground conditions, UEA completed the remaining works within five days. The client was very satisfied with the completed works and UEA's capabilities to overcome the ground conditions and unknown services crossing the bore path.