



Western Outer Ring Main

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

PROJECT OVERVIEW

APA's Western Outer Ring Main (WORM) involved the construction of 51 kilometres of high pressure transmission gas pipeline installed from Melbourne's western to northern suburbs. This Ring Main not only increases the capacity of the network to support continued growth in the region, but also significantly adds to the reliability of the network.

UEA was engaged as a specialist HDD contractor to complete two of the project's underbores, both of which involved crossing critical highways leading into, and out of, Melbourne.



LOCATION

Melbourne VIC



CLIENT

Spiecapag Australia



PIPE

508mm steel



GEOLOGY

Highly fractured
bassalt



LENGTH

270m & 280m



TECHNIQUE

HDD

SCOPE OF WORKS

UEA's scope involved installing approximately 550 metres of 508mm steel pipe via two HDDs – 270 metres under the Hume Highway and 280 metres under the Calder Freeway – with each HDD also requiring a supporting drilled-in mud return line.

UEA completed all four bores using the Australian-made Gallagher 660 drill rig, along with our suite of support equipment in combination with Paratrack P2 and Beacon guidance systems, to ensure the strict tolerances of the steel pipe were able to be maintained. With no access within the road corridors and all traffic to remain live and unobstructed, it was imperative that UEA not only ensured accuracy with the drill alignment but also maintained a strict drilling fluid program.



CHALLENGES

The eastern side of the Hume Highway HDD was not suitable for the main HDD spread, nor for welding and stringing of the 508mm steel pipe. As a result, the western side entry pad had to be shared by both the drill crew and pipe welding teams. UEA worked closely with the Spiecapag team to ensure both drilling and welding activities could occur concurrently and achieve the program goals. UEA then mobilised the Vermeer D100 to the eastern side and converted the drill mud return line into a drill mud charge line for pipe installation.

At the Calder Freeway HDD, the fractured basalt ground was significantly more severe than that experienced at the Hume Highway HDD. These fractures, along with large voids in the rock formation, caused unpredictable deflections to the drill head. This prevented desired steers to be achieved and resulting in the bore over-shooting the design punch-out location and breaching the required design tolerances along the final third of the bore's length.

UEA worked with Spiecapag and its client, proposing to deploy a 38" reamer to further over-cut the final third of the bore, providing the pipe additional space within the bore for the pipe to span across the deflections, effectively smoothing out the bore profile. This solution was accepted as an agreeable solution, negating the need to abandon and reattempt the bore.