UNITY WATER SEWER RISING MAIN UPGRADE

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

LOCATION	Deception Bay QLD
CLIENT	Unity Water
PIPE	250mm PE
GEOLOGY	Sand / silty clay
LENGTH	1,100 metres
TECHNIQUE	Pipe bursting

PROJECT OVERVIEW

UEA completed a 1.1 kilometre design and construct pipe bursting upgrade for Unity Water in Deception Bay, Queensland. The existing main varied from a combination of 150mm-200mm asbestos and PVC pipes that were replaced with 250mm PE PN16.

SCOPE OF WORKS

The existing rising main had recently been by-passed as sections had started to deteriorate and collapse requiring full replacement. Unity Water chose pipe bursting as the preferred method to replace the defective main for the following reasons:

- Proximity to two schools – reduce impact on local area
- The main was located under a footpath
- Proximity of the main to the root system of a large Moreton Bay Fig tree
- High pedestrian flow
- Containment of the existing pipe material
- Working close to main roads
- The possibility of working in contaminated or acid sulphate soils
- The possibility of ground water

Little was known of the exact location and depth of the existing main so the first stage of the project was to pothole, locate and record the existing main using vacuum excavation. One finding from the investigation was that at tender stage the estimated depth of the existing main was three metres but it was discovered that the main had a depth range of 500mm to one metre. Due to the upsizing aspect of the project, without careful operation and monitoring during the bursting process, major damage could occur to the existing footpath.

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CHALLENGES

Project works were broken into 100 metre runs, with a pit located at either end for the machine and the other to launch the pipe into. Difficulties were apparent with the very first run - minimal cover, existing main location and material, and the proximity to the local school. All of these issues highlighted the benefits of using the pipe bursting technique. Further benefits of the technique became apparent as the project progressed, in particular the fact that the TT Grundoburst 800g pipe bursting machine could be fenced off and isolated whilst still maintaining a safe path for the school children to walk around.

The next problem was possible damage to the existing footpath caused by heave during the bursting process due to the minimal cover. Damage was managed and swiftly fixed as UEA provided advance notice of the issue. Poor equipment operation could potentially have led to 100% of the route needing to be reinstated but UEA's skilled staff limited this damage to less than 5% of the route, including the launch and receipt pits.

Another issue identified during construction was the continual change in the existing pipe material. Mid-way through, PVC or asbestos cement pipe sections of DICL were found at each of the road crossings, so specialised tooling was shipped from Germany. Once the tooling arrived, these sections of pipe were able to be burst and new PE pipe was installed.

COMPLETION

Once the new PE pipe was installed all of the connections were completed and the new main was pressure tested. All restoration was then finalised and completed to the satisfaction of the client and local council. A commissioning plan was then developed and completed in conjunction with Unity Water and their maintenance crew.