

PEZZIMENTI TUNNELBORE



Specialising in: **Highly Accurate, Laser-Guided Microtunnels.**

Cherrybrook

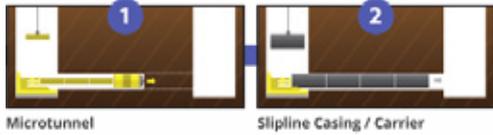


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METHOD FOR BOTH BORES

Freebore in Self Supporting Ground.



OUTCOME

Close-Fit Pipe



LENGTHS

109m
129m



DIAMETERS

Ø800
Ø1650



GROUND

Shale/
Siltstone



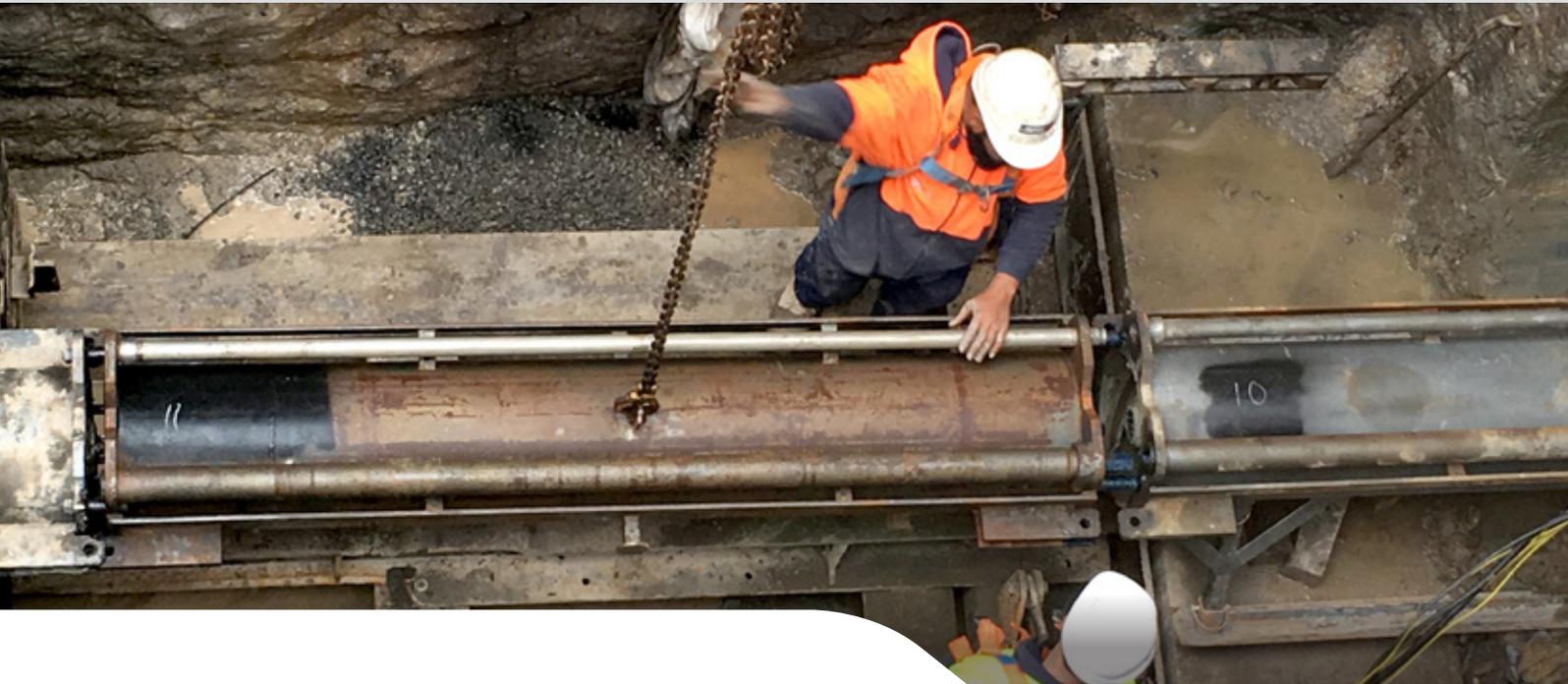
CARRIER PIPES

600RCRRJP
1350RCRRJP



OUTER CASING

N/A



Pezzimenti was engaged by the North West Rapid Transit Infrastructure Joint Venture to install two large stormwater drainage lines associated with the Cherrybrook Station. Pezzimenti undertook the construction of the boring shafts.

Pezzimenti was able to offer a Freebore solution whereby the bore was completed and pipe installed post bore. Freeboring eliminated the need for access shafts to remove the heads at the end of the drives.

The ground condition was self-supporting shale and siltstone. A high torque head was designed for this rock over the given distance. The smaller bore was completed using our vacuum spoil removal system. The larger bore was undertaken with our larger gear which uses an auger spoil removal system.

Client / Head Contractor
North Rapid Transit

Location
Cherrybrook

Length
2 x tunnels
Total 229m

Categories
Rail
Deep Shaft
FreeBoring

1st Microtunnel - DN600 x 109m

Cherrybrook station was constructed by cut and cover. The first bore housed a DN600 Reinforced Concrete Jacking Pipe which drained the station box and surrounding rail track.

From a launch shaft 109m from the edge of the station box wall, an 800mm diameter microtunnel was freebored to a proposed pit location just inside the station box. The head and drill rods were removed and then the DN600 pipes sliplined into the bore. This was carried out without disturbing the critical construction occurring within the station box. The connection from the station box drainage to the already installed microtunnel was done later when it best suited the main project.

The Freebore method also saved valuable time and space for the construction of the receive pit in the main station.

The first stage of the Cherrybrook Station works was the excavation of the station box which acted as the tunnel portal for the TBM drives. Temporary rock anchors had been used to support the concrete pile walls for the bulk excavation of the station box. Some of the rock anchors were installed along the alignment of the stormwater microtunnels and were to be removed by the client prior to boring. However, at approx 93m in, a hard object was struck and a rod near the head broke. The Freeboring method allowed us to remove the head from the microtunnel to replace the drilling rod. A CCTV was put up the bore which showed the remnants of a rock anchor in the top left hand corner of the face. The client elected to dig up the bore at that location to remove the rock anchor. The bore then continued through to the proposed pit





The 2nd Microtunnel - DN1650 x 129m

The second bore was 1650 diameter to house a DN1350 Reinforced Concrete Jacking Pipe. This bore proved more troublesome than the first.

Microtunnelling progressed in Freeboring mode until another rock anchor was hit at the approximate location as was encountered on the DN600 microtunnel. The larger cutters actually tore through the rock anchor but not without damage to the rods and drive system. The Ø1650 head was withdrawn, repairs made and sent back to the face to continue drilling.

Digging up the rock anchors at this location was not an option, so the client removed the rock anchors by vertical drilling with a high torque specialised vertical boring rig. The void was backfilled with sand and cement mix and microtunnelling continued. More rock anchors were encountered under the base slab of the box station and were removed by coring to allow microtunnelling to continue. The bore was completed on target and the 1350 concrete stormwater pipes inserted through the microtunnel to a circular shaft for connection to the suburban stormwater system.



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For all inquiries, including Job Inspections, Quotations and Project Feasibilities – please don't hesitate to contact Pezzimenti Tunnelbore. We are confident we'll hit the mark on your next microtunneling project.

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When Accuracy Matters.