

# Tunnel Drainage

Station Box Floor, Cavidrain Invert, Sydney Metro, Australia



CASE STUDY



## Project Description

Sydney Metro is Australia's largest public transport project. Once complete, the Metro will deliver 31 metro stations and more than 66 km of new metro rail, revolutionising the way Australia's biggest city travels. Sydney Metro Northwest is the first stage of the Metro and will be the first fully-automated metro rail system in Australia.

## The Challenge

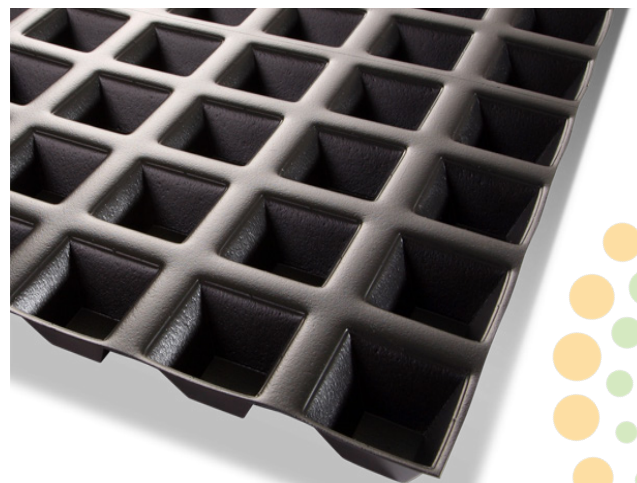
The Northwest project involved building 15 km twin tunnels and the construction of eight new railway stations and 4,000 commuter car parking spaces. Five new underground stations were constructed at Bella Vista, Norwest, Showground, Castle Hill and Cherrybrook. Consulting engineer Mott MacDonald was engaged by the contractor to undertake detailed design of each underground station. Mott MacDonald recognised that creating a long-term dry station required not just a good waterproofing system but also hydrostatic pressure relief behind the waterproofing. In addition, the engineer needed a system that would combat the oxides in the ground water known to clog traditional pipe systems.

## The Solution

Identifying the successful use of Cavidrain Invert in the Legacy Way Tunnel in Brisbane, Mott MacDonald approached ABG to assist in the detailed design of the underground stations.

## Project Information

<b>Client</b>	New South Wales Government
<b>Contractor</b>	Northwest Rapid Transit
<b>Consultant</b>	Mott MacDonald
<b>Product</b>	ABG Cavidrain Invert
<b>Quantity</b>	30,000m <sup>2</sup>
<b>Benefits</b>	<ul style="list-style-type: none"><li>• Reduced installation requirements</li><li>• Increased drainage capacity</li><li>• Minimised damage caused by mineral calcification</li><li>• Proven and reliable drainage system</li></ul>



ABG Cavidrain Invert

ABG LTD

E7 Meltham Mills Road, Meltham, Holmfirth, HD9 4DS • +44 (0)1484 852096 • [www.abgltd.com](http://www.abgltd.com)

a Bontexgeo Group company

# Tunnel Drainage

Station Box Floor, Cavidrain Invert, Sydney Metro, Australia

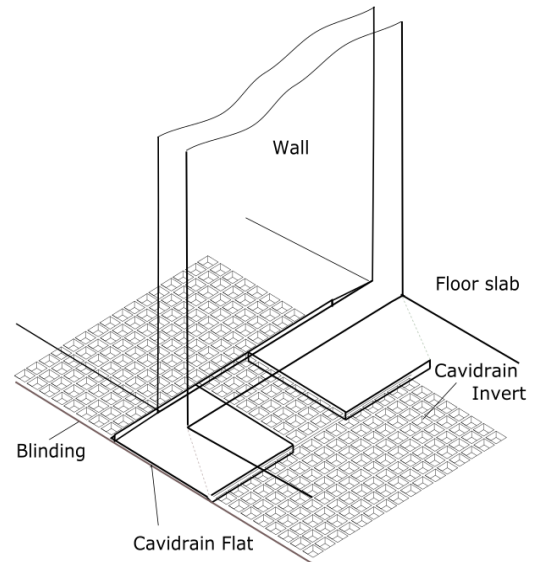


**Cavidrain Invert** was chosen by the engineer to form a drainage network under the floor of each station. This system enabled enzymes that dissolve the oxide precipitates to be added periodically. **Cavidrain**, with its multiple inter-connected flow channels, is particularly resistant to precipitate formation and allows groundwater to flow safely under the station box from tunnel to tunnel.

**Cavidrain Invert** was laid on to the blinded rock formation and the concrete slab cast in to Cavidrain. Once set, Cavidrain therefore becomes as strong as the concrete itself.

## The ABG Service

ABG provided design support including drainage and bearing area calculations, produced shop drawings, and detailed installation advice. ABG customised the manufacture of **Cavidrain** to suit project requirements, and delivered on time to allow the project to meet tight timescales.



Extract from shop drawing illustrating Cavidrain wall channel detailing



Installed panels of Cavidrain ready to receive concrete



Ongoing construction after casting of floor slab

ABG LTD

E7 Meltham Mills Road, Meltham, Holmfirth, HD9 4DS • +44 (0)1484 852096 • [www.abgltd.com](http://www.abgltd.com)

a Bontexgeo Group company