

Underground Gas Main at Busy Melbourne Intersection Decommissioned with Terefil®

PROJECT PROFILE

V18E039

mainmark



INDUSTRY

Infrastructure

STRUCTURE

Gas main

PROBLEM

Gas pipe decommission

LOCATION

Brunswick, VIC,
Australia

DURATION / YEAR

1 day / July 2018

TECHNOLOGY

Terefil®

BUSINESS UNIT

Mainmark Australia

Summary

An abandoned low pressure cast-iron gas main, located underneath an extremely busy tram stop in the Melbourne suburb of Brunswick, needed to be safely decommissioned as part of a broader maintenance program, and to make way for the construction of a new super tram stop for Yarra Trams. Portions of the cast iron main are close to 100 years old.

The 300mm gas main is located beneath one of Melbourne's busiest tram lines and the intersection of two major roads, Royal Parade and Brunswick Road. The tram line connects the northern suburbs of Melbourne with the CBD, Queen Victoria Markets, University of Melbourne and Royal Melbourne Hospital.

Due to its location beneath the road and tram line, once it was isolated from the broader gas network, it was not safe to be left in situ without risk of it collapsing and causing damage to the road, tram lines and tram stop. Excavation to remove the main was deemed unfeasible as it would have come at a high financial cost. In addition, it would cause major disruptions to the local community, including residents and businesses, and create unnecessary mess, noise and traffic diversions.

Mainmark was appointed by Comdain Infrastructure to deliver a time-efficient and cost-effective solution to fill the redundant gas pipe that would avoid digging up the road and tramway, minimising disruption to local residents, businesses, commuters and traffic.

Once Comdain crews had safely isolated the gas pipe and removed the residual gas, it was then prepared for Mainmark to fill the void in the abandoned pipe. Using Terefil®, an advanced light-weight polymer modified cementitious based fill, the project was completed quickly and efficiently overnight, allowing the intersection to continue functioning as usual the following morning.

Underground Gas Main at Busy Melbourne Intersection Decommissioned with Terefil® continued

Objectives

The overall objective was to safely fill the abandoned cast-iron gas main with Terefil as quickly and efficiently as possible to minimise interruptions to the road and tram network at the major Melbourne intersection.

To further avoid inconvenience to local residents and businesses, it was essential that the remediation solution was delivered with as few entry points as possible to reduce the need for substantial excavation works and ensure the pipe could be structurally filled for maximum safety.



Gas main pipe to be filled with Terefil®

Solution

Mainmark's advanced engineered Terefil cementitious fill was used to fill a 300mm 'T' section of the gas main pipe. The 'T' shaped pipe had 2 major lengths; a 25m length section and a 100m length section.

Terefil was ideal for the specific project conditions as it is highly flowable and can be delivered up to 30m³ per hour making it well-suited to the tight project schedule and access limitations. Once set, the cementitious fill

grout continues to strengthen over time, providing a long lasting and durable solution without impacting the environment.

Due to its pumpability and self-compacting properties, Terefil was able to fill the entire abandoned pipe leaving no unfilled spaces, air pockets or gaps. Unlike other fills and grouts, Terefil doesn't release any water as it sets, ensuring zero bleed and minimal shrinkage along the crown of the pipe, and provides firm contact between the material and the pipe as it sets, preventing the formation of underground cavities or voids as the cast iron pipe erodes over time.

A total of 10.2m³ of Terefil was required to completely fill the gas main pipe without any air pockets or gaps, with the cementitious fill placed at a density of 700kg/m³.

The Mainmark team was required to work within a tight work zone, approximately 3m by 10m, with additional access for two concrete agitator trucks that delivered material to the site.



Typical Terefil® site set up

Only three pits were required to access the in-ground pipe (one acting as an inflow point, the other two acting as a 'breather' to allow air to escape the pipe whilst it was filling from the inflow end), which helped reduce costs, time and disruption to the local community. The project was successfully completed within a single overnight shift.