36 inch Trunk Main Repair

Thames Water Lane Rental Industry Publication

TRANSPORT FOR LONDON

Introduction

On 2Ist of January 2020 a 36” trunk water main that runs under Blackfriars Road, the Cut and Union Street burst, flooding the immediate area. This, required an immediate closure of the road, affecting commercial properties and Southwark tube station.

This particular main is a critical transfer that runs between Battersea Thames Water Ring Main and Nunhead Lowers Reservoir. It also provides a hydraulic link for two other South London areas.

Once the main had been shut in and the burst location identified, the project team were required to determine a repair method which would be safe, effective and limit disruption to the road network.

As the main was eight meters below the road surface, under three sewers and above the tube station, an innovative solution was required.

The Project

Typically, trunk mains are repaired either by open cut, which requires excavating the carriageway and welding a new section in place, or by inserting a small diameter plastic main within the older damaged pipe, known as slip lining.

Neither of these were feasible in this case, as the open cut method was prevented by the volume of services that lay above and slip lining would have reduced the hydraulic capacity of the water network too significantly to maintain supply.

After careful consideration of II solutions in total, the project team proceeded with a bespoke modular repair method using a stainless-steel structure, along with AMEXI0 seals.

Prefabricating the modules, an operative entered the main by two twelve metre deep shafts in less traffic sensitive roads, manually placing the steel segments and bolting/sealing the structure together. This high risk but innovative repair method had never been used by Thames Water before.

To ensure all road users were able to navigate the temporary road layout, traffic marshals were deployed, along with bespoke signs created for the approaches to provide adequate warning of the works ahead.

Outcomes

This method of repair meant Blackfriars Road could be reopened within a matter of weeks rather than the several months by undertaking the open cut method.

Blackfriars road was returned to two-way traffic, including re-opening the cycle highway north/south, also known as CS6 after just one month, while repairs continued.

The solution removed the need for a long term road closure on Blackfriars Road and also reduced the risk to the integrity of the underground network, as the solution did not require tunneling to be carried out in the vicinity.

The use of stainless-steel modules and AMEXI0 seals improved the asset life span of the repaired section by 50 years, mitigating future bursts.

Lessons Learnt

Where open cut is not possible due to safety or access restrictions, the industry standard is typically to look at a plastic slip lining. This project has enabled the widening of options available for consideration when undertaking this type of activity.

Conclusion

The repair of the main using this method was a success and enabled the road to be returned to full use following only a few weeks of closure. In comparison, open cut would have taken several or more months to complete due to the network of services and without any further problems being encountered when carrying out deep excavation, presenting a safety risk.

Traffic marshals and bespoke signage worked generally well, with the project team receiving anecdotal feedback that this assisted with the busy foot fall and cycle traffic seen at this section of road network.

While repairs and traffic management solutions should always be job and site specific, following this project, the project team would recommend that repairs with minimal excavation be explored first, in order to minimise impact on the road network. Additional measures for managing traffic should also be considered, even if they are extraordinary, to weigh up the benefits.

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