

Bedford Pumps dual pumping system secures drinking water for London

Bedford Pumps Ltd, in partnership with Morgan Sindall, has recently completed an extensive project which forms part of a £150M improvement to the Thames Water London Ring Main system.

The Thames Water Ring Main (TWRM) formerly known as the London Water Ring Main, is a major part of London's water supply infrastructure. The initial ring, 80 km long and 45 m below ground level, was constructed between 1988 and 1993 and has recently been extended to the North and South of London.

The TWRM forms a complete circuit around the main water supply zones in London and was designed to improve the speed and efficiency of transferring potable water.

Since the mid 19th century, London's drinking water was pumped from a Water Treatment Works to the West and North-East of the city. This was prohibitively expensive and no longer economically viable due to the expanding population. The radical solution was to tunnel around London, linking Transfer Pump Shafts with Water Treatment Works and Pumping Stations along the route.

Bedford Pumps involvement in this project was part of a £12.3M upgrade to the works at Coppermills WTW in Walthamstow, East London. Morgan Sindall were the contractors employed to construct a new Transfer Pump Shaft, and with Bedford Pumps assistance were able to facilitate a 'dual pumping process', from Coppermills to the TWRM and from the TWRM to Coppermills High Lift Pump Station.

The Transfer Pump system contained within the shaft was of a highly complex design and Bedford Pumps worked closely with Morgan Sindall and Mott MacDonald to ensure it satisfied Thames Water's rigorous performance criteria.

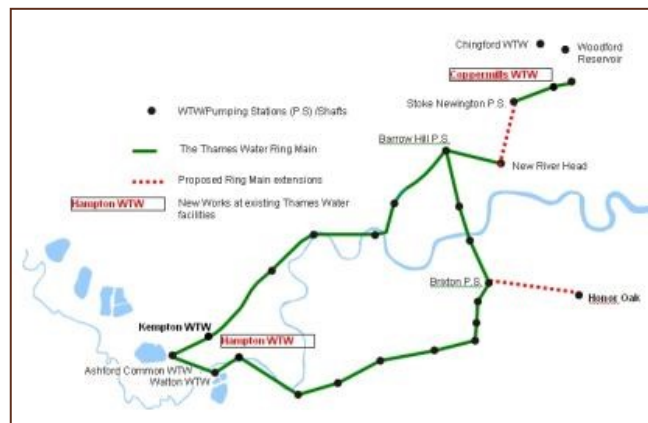


Fig 1. The Thames Water Ring Main

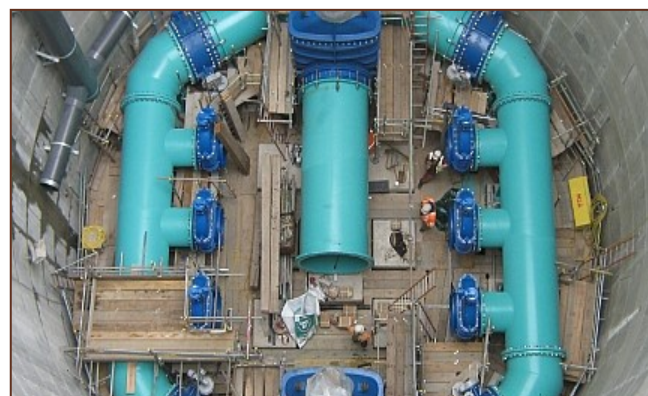


Fig 2. Coppermills WTW

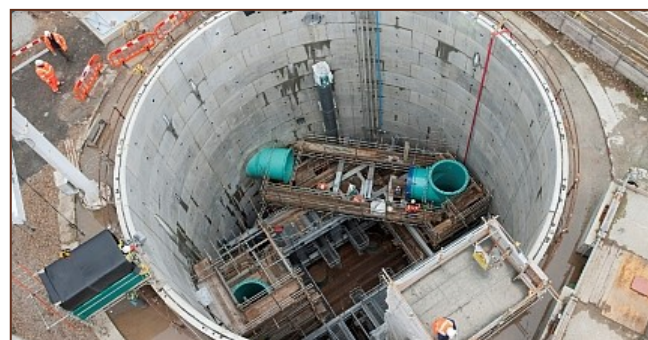


Fig 3. Coppermills WTW installation in progress

Coppermills WTW Case Study

The new shaft, measuring 15m in diameter and 30m deep, connects to two existing shafts on the Coppermills site and is able to pump water in a bi-directional flow as well as providing a gravity route into the TWRM. In normal operation the Pump Station will be capable of delivering 160 Ml/d of potable water into the TWRM.

Bedford Pumps designed, manufactured and supplied four Submersible Bowl Pumpsets and one Tunnel Drainage Pump. The main Transfer Pumps were mounted in the shaft in a dry well vertical installation and the drainage pump in a horizontal position.

To enable the bi-directional flow of water, the pumps must be able to perform at both a primary and secondary duty. The performance of the pumps at the primary duty point (to TWRM) will give a flow rate of 926 l/s at a head of 3.7m. At the secondary duty point (to Coppermills) a flow of 724 l/s with a head of 10.7m must be achieved.

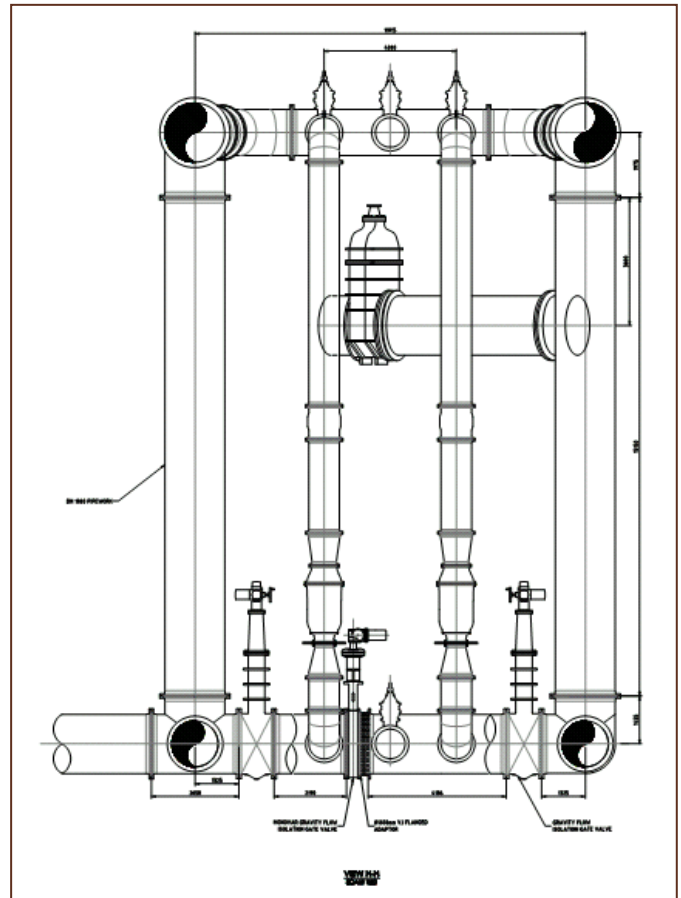


Fig 4. Station arrangement

To comply with the stringent regulations for pumping potable water all materials had to comply with Regulation 31 of the Water Supply (Water Quality) Regulations. Bedford Pumps Ltd use their own “Royal Purple” barrier fluid which has passed the test on the effect on water quality under the Water Regulation Advisory Scheme (WRAS) and has been approved for use with drinking water under the Water Fittings By-Laws Scheme (WFBS).

Bedford Pumps Ltd, is one of Europe’s largest manufacturers of large submersible and conventional pumps to the water and wastewater industry. Their pumps range from 100 l/s to 12,000 l/s at heads between 2m and 100m.

Bedford Pumps offer the complete “Engineered Solution”. With their state of the art design studio and a specialist test bay, they also undertake complete project management and installation, service and refurbishment, and can test pumps supplied by other manufacturers as part of a routine service contract.

