Barhale

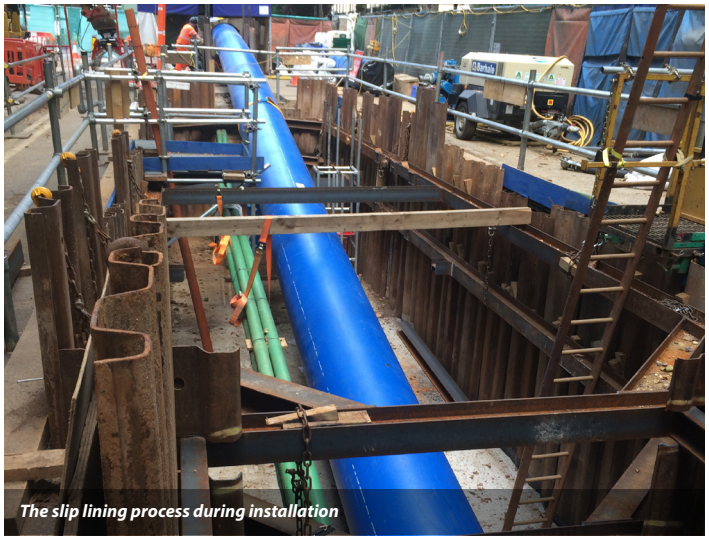
Sussex Gardens Trunk Water Mains Relay

Client:	Thames Water
Location:	Paddington, West London
Value:	£4.5m
Duration:	22 Months

In Brief...

Barhale were contracted By Thames Water and Crossrail to re-lay several 200 year old Victorian Cast Iron trunk water mains in Sussex Gardens, which is situated in close proximity to the Paddington tube and main line stations.

Bespoke temporary works designs were devised to protect adjacent services as well as the main replacements



The slip lining process during installation

Technical Features...

Works were required to provide mitigation to any settlement, which may have been caused as a result of the Crossrail Tunnel Boring Machine (TBM), which passed through the area a year earlier. Barhale were awarded this work due to their experience of working on large diameter water mains in heavily congested trenches within central London locations.

Work was delivered in two phases.

Phase one consisted of:

- Slip lining 50m of 380mm Cast Iron (CI) pipe with PE plastic pipe
- Slip lining 50m of 530mm CI pipe with PE plastic pipe
- Slip lining 50m of 910mm CI pipe with PE plastic pipe

Phase two consisted of:

- Slip lining 90m of 760mm CI pipe with PE plastic pipe
- The relaying of 95m of 910mm water main with both PE pipework and Ductile Iron Pipework, delivered through a combination of slip lining and open cut techniques

Key success factors...

The team designed and fabricated bespoke steel cradles to successfully support existing mains, some of which were over 200 years old. They also incorporated BIM capability to prove the feasibility of installing a new main underneath an existing one before successfully installing the design on site. Barhale opted to slip line as much of the pipe re-lay as possible to reduce the amount of open cut installation. This innovation resulted in:

- Less muck away and lorry movements
- Less interaction with utilities
- Few alterations to traffic management

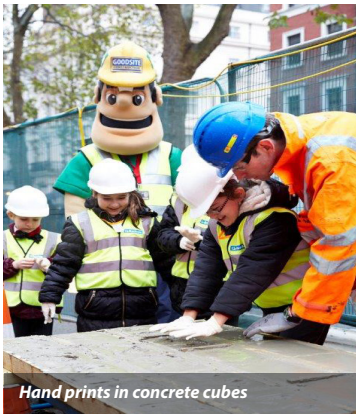
The team won the category for 'Health and safety in planning and design' at the Thames Water Health and Safety Awards 2016, as well as being awarded a gold accreditation in the Considerate Constructors Awards in 2017.

Innovation of Safe Digging Practices...

One of the key features of the project was the successful excavation of deep pits in an environment highly congested with utilities. Excavation of spoil using an excavator was not an option due nearby services. The team therefore excavated large volumes by digging the pits by hand and filling skips which were lowered into the pit. To avoid operative fatigue, a trial was carried out with lighter tools. Operatives gave continual feedback and selected the tools most suitable for the job.

School Visit...

The team invited a local primary school St. James & St. John Primary School, to visit the site. A number of pupils were accompanied around the site by Barhale supervisors. Along with the help of "Ivor Goodsite" from the Considerate Constructors Scheme, the children were invited to ask as many questions as they wanted, made hand prints in concrete cubes and had their first 'Tool Box Talk' from Contracts Manager John Prendergast.



Hand prints in concrete cubes

The winning artist showing off his art work

Barhale site management team and visitors

Customer Benefits...

The area is highly congested at peak times with both vehicular traffic and pedestrians (due to the surrounding tube stations). Barhale went the extra mile to ensure the safety of all involved with carefully designed traffic and pedestrian management plans. The rigorous Section 61 Noise rules put in place by Westminster City Council were met successfully in an area that consists of mixed use, residential and hotel businesses. Barhale used best practicable means whilst using more innovative ideas including acoustic tents and real life extensive sound monitoring.