

Thames River Walls Coring Tests

Client: Thames Tideway

Location: London

Value: £990k

Duration: 14 Months

In Brief...

In preparation for the Thames Tideway Tunnel, Thames Tideway selected Barhale to carry out a number of horizontal and vertical cores on the existing Thames River Wall Structure at various locations throughout London. The cores were then sent for laboratory testing to assess the condition and structural capacity of the river wall.

The work sites were spread over 8 different locations along the river Thames, spanning from, Wandsworth in the west, to Shadwell in the east. A total of 20 vertical cores, and 44 horizontal cores were completed as part of the works. The Barhale team employed their experience in tidal working environments as well as in multi-stakeholder management, to facilitate the safe, efficient and responsible delivery of the works required on the Thames River Wall Coring Scheme.

Customer Benefits...

- The works were completed on time and under budget
- Positive feedback was received from the client and other stakeholders - the client sent a site representative to each work location throughout the project who approved each section of works as they were completed
- The works saw the successful implementation of bespoke safety and environmental procedures to combat the potential risks of the works – with no recorded incidents throughout the project
- Successful management of a tidal working environment and implementation of a time-sensitive programme to ensure the works were completed safely
- Incorporation of innovative measures to gain access to the required work sites

Technical Features...

- 20 vertical cores
- 44 horizontal cores
- Cores between 100mm and 300mm diameter
- Tidal working
- Stakeholder Management
- Sub-contractor collaboration

The vertical cores were taken along the river embankment and completed by an accredited sub-contractor, using a Beretta T41 Coring Rig. This unit was carefully selected for the workplace due to its compact design, small working footprint and the capacity to core inclined holes, necessary at several points along the route.

Due to the terrain of the foreshore the coring rig could not be used for the horizontal coring since it was highly likely the rig would sink in the wet ground. Instead, the team used a hand portable, 110v electric drill held steady by a supporting frame that was bolted to the face of the river wall.



Horizontal coring taking place from the foreshore using a support frame



The team utilised low tide times to complete the works.



Man riding baskets were used to access some locations

Tidal Working...

The horizontal cores were required at only 1m above the river foreshore level, which meant the team had to plan working in tidal conditions and complete the work at each location in a single tide cycle. To mitigate the risk of the works not being completed before the tidal levels rose, the team kept approved double bungs on hand to plug the voids if necessary. Once the cores were extracted, the voids were reinstated using approved quick set epoxy mortar and the brick face was reinstated using similar facing brickwork.

Tidal works were planned as follows:

- The project programme was initially developed around the Port of London tide tables
- Tide timetables were then re-checked the day before coring activities to ensure that it was safe to proceed
- Works were only carried out during low tide times and all work activities were aimed to be complete within one tidal cycle
- Secondary means of access and escape were provided at all times during works
- All operatives working on the foreshore had to wear life jackets
- Tide level indicators were used, once the tide reached a designated mark, the works were stopped and all personnel had to evacuate the foreshore area

Although the horizontal coring works interventions all took place along-side the same riverbank, the conditions of the foreshore and surrounding areas varied dramatically over the 10 mile area that the works covered. As such, the team were challenged by differing access requirements and executed a number of innovative methods to gain access to the required levels along the river wall. This was completed as follows:

Using Existing river wall access ladders

In locations where the tide dropped far enough to expose the foreshore level, the Port of London Authority allowed the Barhale team to carry out the works on foot, from the river bed. In these instances access was obtained via existing wall ladders. All operatives wore safety harnesses and were clipped on to a fall arrest inertia reel line while using the ladders.

Access facilitated by 8t crawler crane and man-riding basket

Where the foreshore was inaccessible by foot, the team positioned an 8t crawler crane above the required work location and lowered 2 operatives and the equipment in a man-riding basket along the face of the wall. Once in position the man-riding basket was secured to the wall face using anchor bolts to prevent any movement of the basket during the coring activities.

Work Barge access

At the central London locations; Victoria Embankment and Blackfriars Bridge, it was not possible to set up a crawler crane on the adjacent footpath. The team then made use of work barges to gain access to the river wall. The barges were fitted with appropriate edge protection and operatives were constantly secured to anchor points on the barge via fall arrest lanyards and safety harnesses. Access on to the barges was obtained via the safety standby boat.

4x4 vehicle access along jetty

At Albert Embankment the team were able to utilise an existing jetty owned by the London Duck Tours from which to work. In this instance access was obtained via a 4x4 vehicle travelling down the jetty. Operatives were then able to work from the jetty.

Bespoke Safety Measures...

All of the above activities involved the implementation of robust safety precautions to ensure the welfare of the work team. All operatives were required to wear safety harnesses and life jackets at all times. An emergency access counterbalance davit arm system was set up at each work site, located in close proximity to the primary access. Lastly, a fully crewed, external RIB safety boat was on standby at all locations during the works to provide additional mitigation. None of these additional safety measures were called in to action during the works.



Stakeholder Engagement...

The team had to liaise with several different stakeholders and external bodies throughout the works including:

- Correspondence with **The Port of London Authority**, which was constant throughout the works to obtain programme approvals and ensure that our team did not affect other river users.
- All site working methodologies had to be approved by the **Environmental Agency** to ensure the works did not contaminate the river and its surrounding. Contamination was prevented by directing all off cuts, coring water, and grout resin into designated spill containers which were either located on; the foreshore, work barge, jetty or in the man-rider, depending on the work location. All fuel powered plant was positioned on top of the embankment along the footpaths, to mitigate the risk of fuel contamination to the river. All plant and equipment was placed on industry accredited drip trays and plant nappies, and fully stocked spill kits were kept in close proximity to all work activities.
- The team had to ensure that the new facing material, installed during the re-instatement of the voids, was approved by **Natural England**.
- The team also had to ensure numerous other third parties were aware of the works to guarantee access and approvals were granted. These included **MI6, London Duck Tours, and various private and commercial vessels** moored along the river wall.

Sub-Contractor Management...

The following Sub-contractors were successfully managed by the Barhale team on this project:

- CA Drillers – Horizontal Coring – 2 operatives
- Bactec – Vertical Coring – 3 operatives
- SDS Safety Boats – Crewed safety standby boats – 2 crew members