

CASE STUDY

BARKING RIVERSIDE, LONDON



PILING

CLIENT



www.barkingriverside.co.uk

MAIN CONTRACTOR



SCOPE OF WORKS

Precast piling

Project Brief

Roger Bullivant Limited (RB) was contracted to design and install piles for the first phase of L & Q's flagship development at Barking Riverside - comprising mansion blocks, rows of townhouses and a podium housing block. When completed the overall Barking Riverside Development will encompass 10,800 new homes, 7 new schools, commercial buildings and a railway station built on the former Barking Power Station site which was decommissioned in the 1980's. RB designed and installed over 1200 no. square driven precast piles for the structures, which provided a quick, clean installation process utilising the RB QT Hammer which deadens the noise associated with driven piling. RB also employed its largest Continuous Flight Auger (CFA) rig to deliver the 750mm diameter piles for the on-site tower crane bases. The project had a tight schedule so it was imperative to L&Q that the piling works finished within the allotted programme.

Key Issues/ Requirements

- Piles were required to support the in-situ beams for the townhouses and in conjunction with pile caps for the East Podium and mansion blocks.
- 250mm square driven piles were utilised where compression loadings and shear loadings were required and 300mm square piles were utilised where piles were to resist overturning moments, due to design requirements that internal double pile caps were not going to be restrained in two directions.
- The ground conditions comprised made ground which has previously been surcharged and alluvial materials overlying river terrace gravels at around 12m - 14m depth and London Clay at around 18-20m depth.
- The driven precast piles were designed to Eurocodes, and in addition to compressive loads were designed to resist shear loadings between 15kN and 25kN.



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PILING



Solution

- RB had already completed successful works on the adjacent Barking School, where precast concrete piles were driven to resistance in the gravels, and dynamically tested and the same approach was adopted successfully for the houses and apartments at Barking Riverside.
- For the Tower Crane, 750mm diameter CFA piles were taken through the gravels and into London Clay to resist loadings of up to 1291kN compression in conjunction with tension and shear loadings.
- The Roger Bullivant South East piling team liaised closely with L & Q and their Engineers from an early stage to assist in developing a value-engineered solution using driven piles.
- By involving RB at the earliest stages, L & Q engineers were able to keep the pile loadings to suitable levels to allow the vast majority of the piles to be smaller 250mm², with 300mm² only used locally for overturning moments due to eccentricity.
- RB designed the piles in accordance with Eurocodes and verified the capacity using dynamic and static testing on site.

- RB installed 1246 no. 250mm and 300mm square driven precast concrete piles using two RB 5000 series driven rigs, and 14 no. 750mm CFA piles up to 24.5m length using our 7007 rig for the tower crane bases.
- All piling works were delivered within the programme schedule allowing follow on works to proceed as planned.
- RB used segmental piles and were able to change the section lengths accordingly, dependent on where the final set was achieved in the gravels to allow the site team to minimise wastage on site, as much as was practical.

“We are very proud to have been involved in this exciting new development along the River Thames and working with the team towards delivering the first phase of a 15 year construction project for the Barking Riverside Team,” said RB engineer Nicola Carr.

“We were also happy to take part in an BRL photoshoot, when our driven piling rig became the backdrop for breaking ground photography featuring Barking MP Dame Margaret Hodge and other dignitaries including L&Q’s CEO David Montague!” Nicola added.

“I attended the RB Breakfast Club seminar provided by Roger Bullivant in November 2016 and established they delivered a piling project in close proximity to our first development plot on stage two at Barking.

I subsequently met with their team who provided initial technical and commercial advice; this was further refined through detailed design development.

RB commenced piling installation nine months later and safely delivered to both time and budget; in fact in advance of our agreed construction programme.

Thank you and I look forward to working with you on future plots.”

Liam Duffy Operations Director L&Q



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