

## Overwater Investigation for Mixed Used Development on Thames Estuary

The site is located on the southern bank of the Thames Estuary, just south of the M25 Dartford Crossing and forms part of the final phase of the major and prestigious development. The Phase 4, Waterfront and Pier scheme, will provide a mixed use development incorporating approximately 370 residential apartments and 25,000 sq ft of commercial space including retail, surgery, pharmacy, bars and restaurants together with associated parking and landscaped areas. Proposed buildings range between 4 and 16 storey and extend out some 60m into the Thames Estuary across the footprint of a former jetty structure.



The proposed works presented a number of challenges. The site was categorised as having a risk of encountering Unexploded Ordnance (UXO) during intrusive works. As such, a survey of the required borehole positions was undertaken to avoid possible UXO contact. Discussions were held with Natural England due to the possible presence of the Tentacle Lagoon Worm with appropriate 'soft start' mitigation measures implemented. The works were also very dependent upon tide timings and the need to minimise any noise or disruption to the residents of nearby completed properties.

The boreholes were drilled using a shell and auger rig from a 27m x 17m barge, equipped with two 22m spud legs. A support vessel/tug was also provided. The barge was manoeuvred into position, the spud legs dropped and secured by anchor chains, with exact borehole coordinates checked by GPS. UXO operations were carried out in accordance with guidance given in CIRIA publication C681 (2009) with a UXO engineer present at all times. Each borehole was cleared for the presence of magnetic anomalies that could indicate the presence of ferro-magnetic objects. This was done through the use of a 3m lead length of stainless drilling casing and insertion of a magnetometer to clear to a specified depth. When the specified depth was reached, the sensor was then reinserted to survey a new depth.



The British Geological Survey map for the area indicated the underlying soils to comprise Alluvium over Gravel over Chalk, which, due to its soft and variable nature, could give rise to many construction problems. The investigation revealed a significant thickness of the Alluvial Deposits (soft clay and peat) to depths of up to 8m over 2-3m of gravel with chalk at depth.

A detailed geotechnical report was prepared providing the Client with preliminary pile design calculations and recommendations for installation. A piling rig would have to be mounted onto a barge thus limiting its overall weight and pull back capabilities.

Southern Testing Head Office  
East Grinstead  
Tel: 01342 333100  
enquiries@southernesting.co.uk

ST Consult Midlands  
Northampton  
Tel: 01604 500020  
creaton@stconsult.co.uk

ST Consult North West  
Warrington  
Tel: 01925 661 700  
warrington@stconsult.co.uk

ST Consult South West  
Swindon  
Tel: 01793 441 522  
swindon@stconsult.co.uk

