

# CASE STUDY

LOCATION  
Battersea, South London

PROJECT  
Multi-disciplined Survey of London Dock

RESOURCES  
Trimble SX10 Scanning Total Station  
RD8000  
Van Walt Peat Corer  
Allied Tigre 32 Probe ERT System  
Trimble R10 GNSS  
High Resolution SLR Camera



SX10 Laser Scan Data Capture, Dock-Side

## MULTI-DISCIPLINED SURVEY OF A LONDON DOCK

A proposed residential development on the River Thames at Battersea, South London, included plans to alter the position of an existing dock wall. Historical information suggested that a bund wall once existed within the dock. However, given the build up of sediment, it was no longer visible and therefore the extents could not be determined. A number of timber defenders protrude up from the sediment and are assumed to mark the boundary line of the suspected bund.

### Survey Aims

- Accurate mapping and positional survey of the dock wall
- Condition/defect report of the dock wall
- Map dock base levels
- Map typical depth of silt at bottom of the dock
- Determine whether a bund exists and if so map the extents

To address the survey aims, LandScope completed the following:

### Positioning and Condition Survey

- Installation of survey control to Ordnance Survey Grid/Datum
- Full colour, high resolution laser scanning survey
- High resolution photographic survey

### Subsurface Mapping [Bund Extents and Sediment Depths]

- Hand / Peat Corer
- Electrical Resistivity Tomography (ERT)
- Spot Ground Penetrating Radar Measurements

The laser scanning survey element was completed from the edge of the dock, capturing both photography and positioning data. To determine the depth of silt and bund extents surveyors were required to enter the dock which proved to be a challenging environment to work in.

The water depth at high tide was insufficient for a vessel to be deployed with marine geophysical equipment and the tidal influence meant that the dock base was semi-fluid and unstable for deployment of terrestrial geophysical techniques on foot.

After exploring different approaches to address the silt depth and bund extent survey, a temporary pontoon was deemed to be both practical and safe. The pontoon was installed parallel to the dock wall and provided a safe platform for surveyors to work from whilst not impeding the required works. LandScope liaised with a specialist pontoon provider to facilitate the safe pontoon deployment using a 'spider crane' to lift and position individual cells in a controlled manner.

High tide meant that there was a relatively small window for data collection therefore a team of two performed the dock base geophysical survey with an additional support member top side. The geophysical survey was undertaken with an Allied Tigre ERT system which measures the electrical resistivity at different levels below the subsurface. The bund/silt interface was expected to provide a large contrast within the data set.

With ERT collection underway, a small number of strategic locations were augured and spot GPR measurements taken. These measurements provided additional values to calibrate the resistivity data thus

providing consistency and confidence in the data collected.

The geophysical survey points were accurately surveyed using a Trimble SX10 Scanning Total Station on predefined control locations on the surrounds of the dock wall.

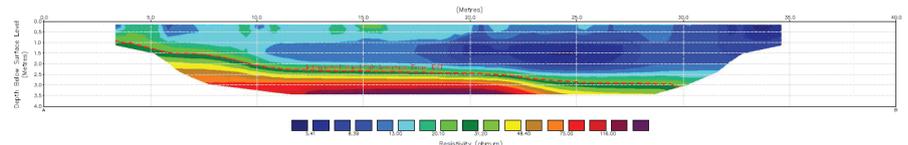
The SX10 was also used to collect high-resolution point cloud data and part of the photography for the wall position and condition reports. The SX10 photography was supplemented with additional high resolution SLR camera imagery.

The point cloud provided all of the level and positional data required. This data was extracted into an AutoCAD drawing in conjunction with the results of the geophysical survey. These results, along with the photography and derived condition report, were issued to the client. These deliverables fed directly into the client's design models and monitoring scheme.

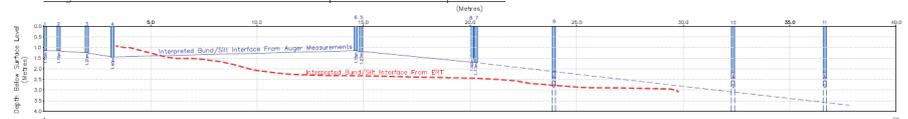


SX10 Laser Scan Data Combined with Colour Photography

### Inverse Model Resistivity Section



### Auger Measurement and ERT Interpretation Compilation



ERT Data Plot