

Award-Winning Survey Helps Save Aldgate Square Scheme



The Client

The City of London Corporation is the governing body of the Square Mile, the historic centre of London. Home to the financial district, the Square Mile welcomes over 450,000 commuters every day and over 10 million tourist visits per year. The city has transformed the Aldgate area into a new public space for events, leisure and play. The newly created Aldgate Square is now one of the largest public spaces in the Square Mile.

Background

Due to the nature of the city environment and the complexities of the scheme, one of the biggest issues facing the city was the dense network of utilities and subsurface features within the public highway. Altogether, 11 utility companies were affected by the scheme. It soon became apparent that necessary diversionary works might compromise the buildability of the scheme, with one company alone estimating costs of around £1.5 million. Detailed radar surveys of the area were needed to accurately identify the depth and position of all utilities, so that project engineers could design the scheme around the existing utilities as far as possible.

“Due to the size of the scheme and the number of utilities involved, it was one of the biggest projects the City of London has ever undertaken.”

Simon Rollinson, Project Engineer TS Nexus, consultant for City of London

Taming the Complexity

The location of the scheme threatened to make the construction work incredibly complex. Macleod Simmonds responded by deploying their innovative vehicle-towed 40-channel Stream EM Ground Probing Radar (GPR) system. When combined with conventional utility mapping techniques using in-house subsurface image processing, all detectable utilities, buried structures and other features and anomalies present were located. They even detected remnants of the old London Wall, an archaeological treasure.

Designing-Out the Problems

Macleod Simmonds developed new CAD routines to permit a 3D model of the area to be elevationally derived, directly from the supplied 3D topographical survey. This meant that 3D radar information could be overlaid onto the proposed 3D CAD designs for the scheme, resulting in clashes being spotted early on, so that they could be designed-out.

A First for London

Macleod Simmonds' experts also created an algorithm for their in-house GPR CAD data processing software to provide heat maps of variations in the concrete slab-base within the carriageways. This allowed engineers to assess what needed to be replaced prior to breaking ground. This information was crucial for the city, as undetected failures could have caused unexpected delays.



Award Winners

The innovative nature of the contribution made by Macleod Simmonds to the scheme won them the Most innovative Highway Authority Award at the 2018 Highways Awards. Judges praised the entry for:

“...very positive outcomes achieved from the highways project that has shown excellent practice and new ways of working.”

Commenting on the award, Craig Simmonds, MD of Macleod Simmonds commented:

“We are extremely proud of our achievements on this ground-breaking project, all of which could not have been happened without the support of the fantastic team from the City of London.”

Ben Manku, Construction Manager, City of London added that he is:

“Thrilled to receive recognition from Highways Awards 2018 for this incredibly complex project requiring leading edge technology and teamwork.”

Summary

A complex multi-stakeholder transformation of Aldgate Square by the City of London Corporation required an innovative and creative subsurface data approach, to keep utility diversionary costs in check. Macleod Simmonds' scanning and novel analysis tools helped planners design-out issues that would have sent costs spiralling. The clear visualisations provided were also used to inform all stakeholders throughout the design and construction phases of the project.

“Macleod Simmonds are clearly the ‘go-to’ experts when it comes to radar surveys... The aftercare and interpretations were excellent.”

Simon Rollinson, Project Engineer TS Nexus, consultant for City of London