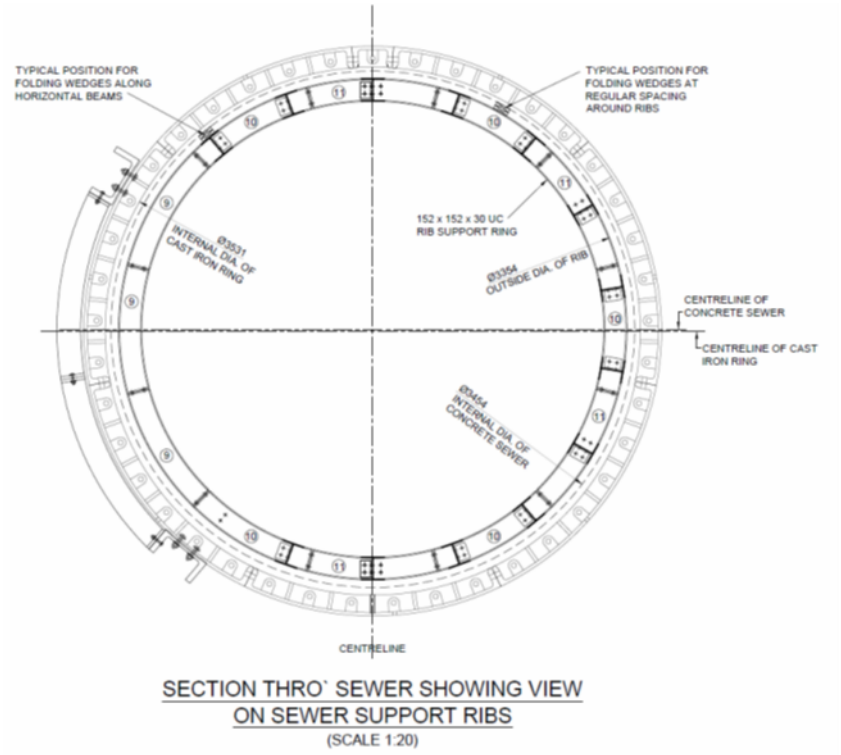
Robert Walpole and Partners

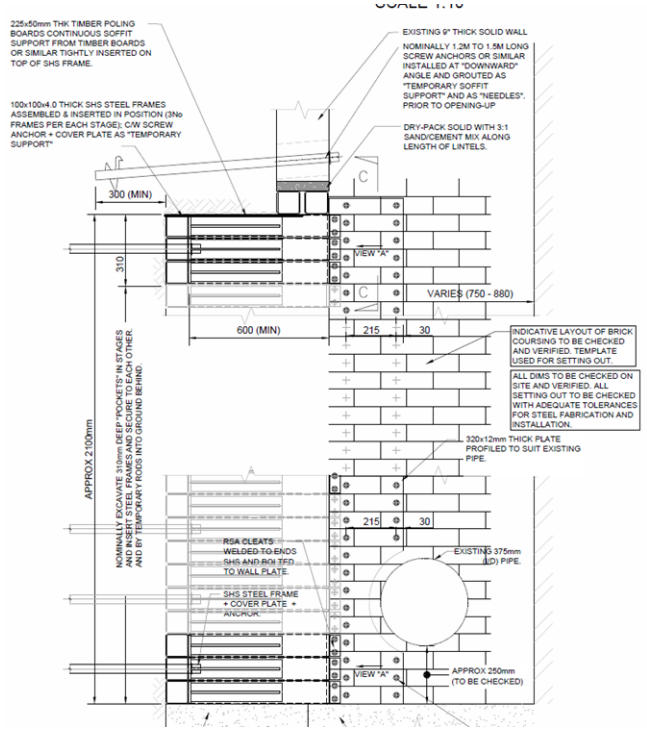
Consulting Civil and Structural Engineers

Capability Statement



SECTION THRO' SEWER SHOWING VIEW ON SEWER SUPPORT RIBS

(SCALE 1:20)



11B08 RC Thrust Blocks and 600mm Pipe Bridge at Luton Guided Busway

15K07 Western Deep Sewer, Victoria, London (Sewer Monitoring with Extensometer)

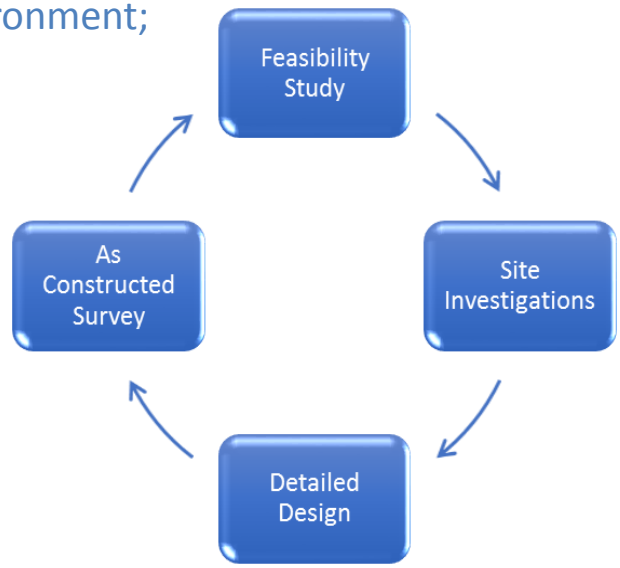
Company History

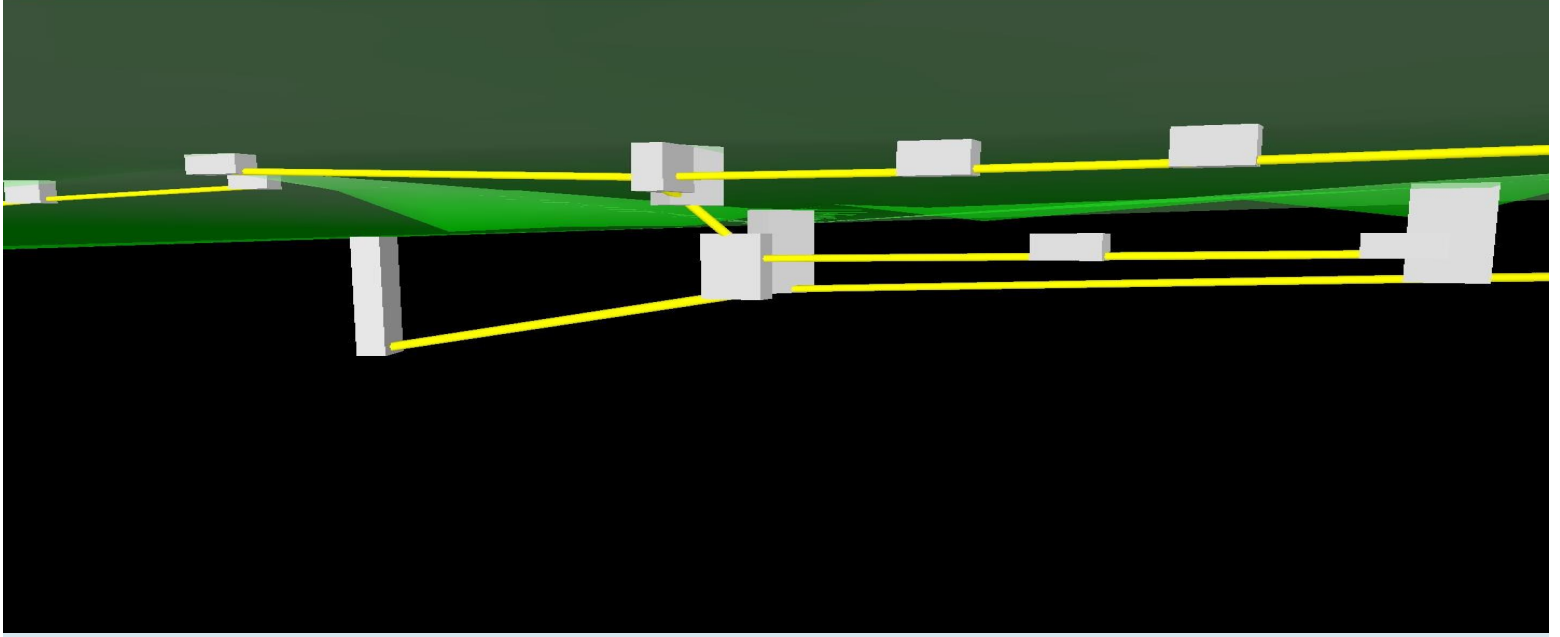
Robert Walpole & Partners was founded in 1968 and has been working for clients in the United Kingdom ever since. Our engineers have 30+ years individual experience in the construction industry. This includes leading design teams for contractors and consultants and being co-located in collaborative client-supplier delivery teams. The Practice is engaged in a wide range of civil engineering and building works offering a complete technical service: design, site supervision and project management.

Our expertise spans utilities and transportation sectors allowing us to provide expert advise, in particular where they interface. For example:

- Sewer diversion under the rail track;
- Track monitoring regime during sewer installation;
- Utilities tracing and plotting within rail environment;

A core element of our services is the multi discipline engineering support that can be tailored to any stage of a project.

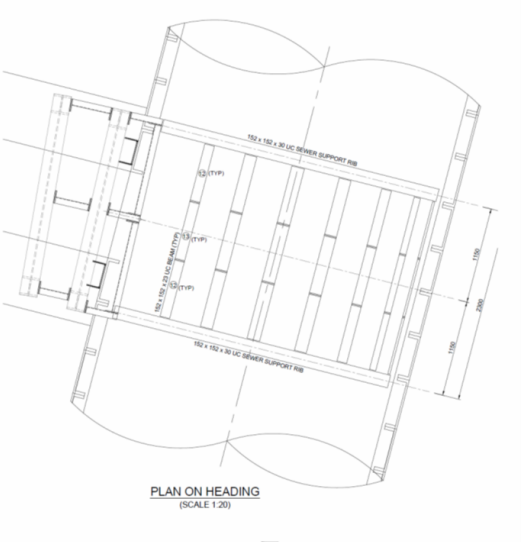




Hydraulic Modelling

Our experience

- Sewer and mains diversions
- Sewer strengthening
- Sewer inspection and assessment
- Headings
- Weir board and screens
- Thrust blocks
- Pipe jacking
- Pipe lining
- Headwalls, buttresses
- Erosion protection
- Movement joints
- Flood protection
- Hydraulic modelling
- Utilities tracing
- RC and Steel structures
- Brickwork and masonry structures
- Foundations
- Hardstanding
- Temporary works
- Crane loading assessments
- Retaining walls
- Working platforms
- Gantries and cable bridges



Our people

All civil and structural engineering design work is carried out in-house. We employ multiple chartered civil engineers; members of the Institution of Civil Engineers and Chartered Institution of Water and Environmental Management. We are also a member of the Association of Consulting Engineers.

Jonathan Walpole BSc(Eng) ACGI CEng MICE M ConsE

A Chartered Civil and Structural Engineer Jonathan Walpole has over 40 years' experience and is responsible for all structural engineering within the practice. This currently includes foundations, reinforced concrete, steel frames and masonry design for a variety of buildings. The most recent projects include detailed design on behalf of London Underground Ltd and Crossrail as well as Affinity Water.

Mark Simmons BSc(Eng) ACGI CEng MICE MCIWEM

A Chartered Civil Engineer Mark Simmons has over 35 years' experience and is responsible for delivery of civil engineering projects within the practice. This currently includes water supply and sewerage network infrastructure, lineside track infrastructure, drainage, and associated civil engineering structures for utility infrastructure and transportation projects.

15E03 Twin 800mm GRP Rising Main Repairs (Store Road)

08L02 Wandsworth CSO Replacement Weir Boards (Survey and Detailed Design)

Tideway Central (Thames Water)

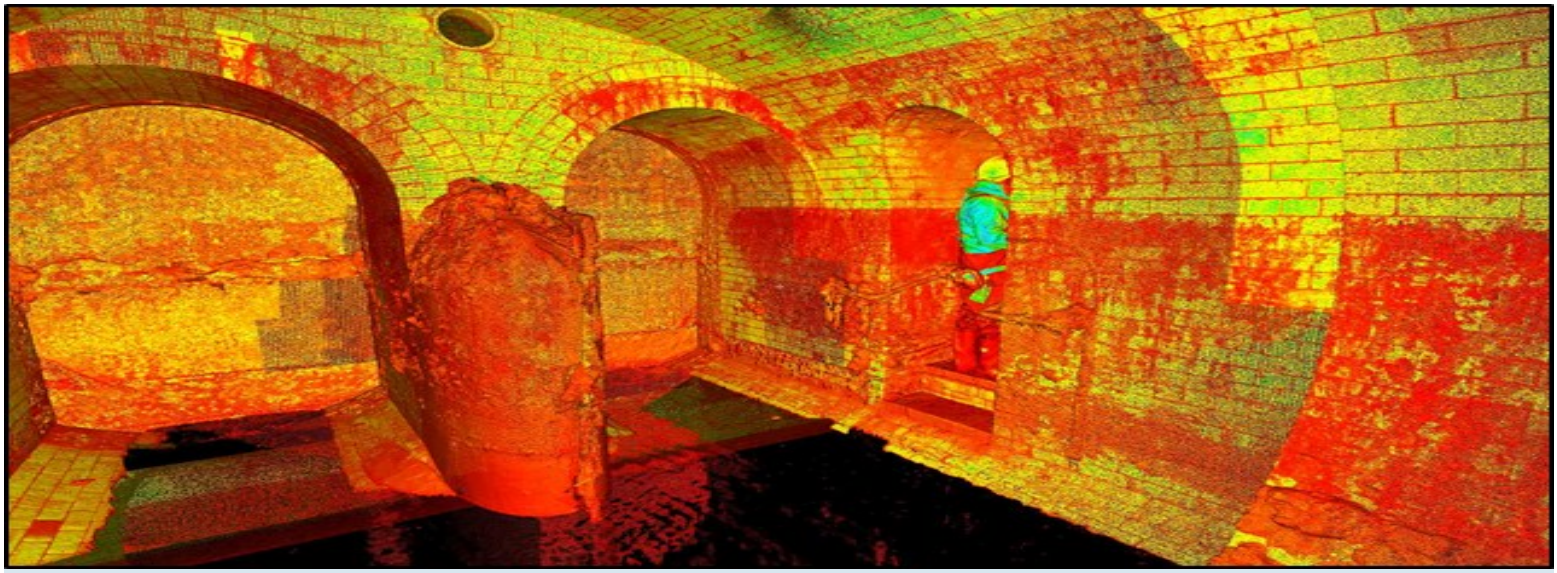
We have undertaken Pre-Condition surveys of all existing Thames Water Utilities Ltd. (TWUL) assets likely to be affected by the proposed permanent works at Heathwall (HEAPS), Chelsea Embankment (CHEEF), and Albert Embankment (ALBEF).

The project brief required an accurate 3D model of TWUL assets to be constructed to the Tideway control grid. We linked High Definition Scanning (HDS) to the topographical survey and were able to provide comprehensive information at all elevations. Laser 3D scanning was used to detail the interior of each TWUL structure.

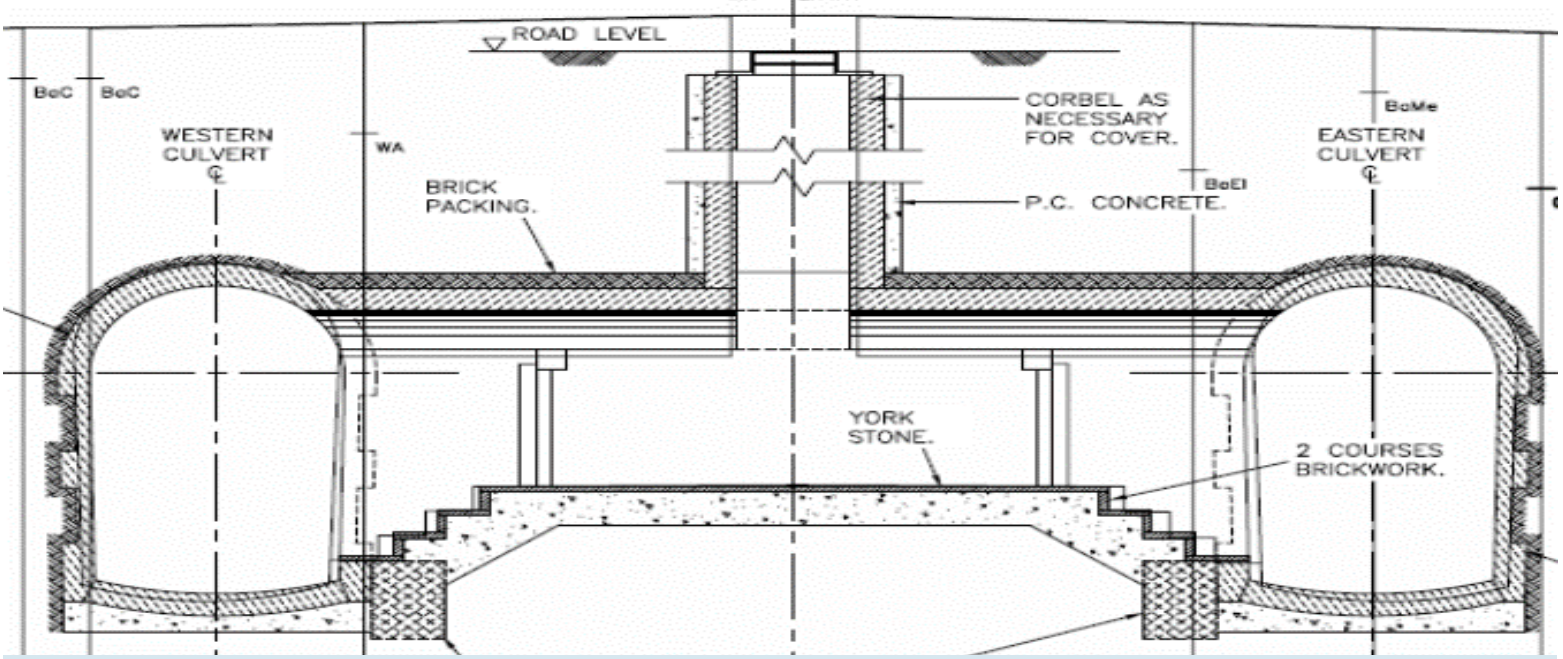
The HDS allows 3D images to be generated quickly, but we also compiled detailed 3D models of the existing structures in AutoCAD for inclusion in the Tideway Central BIM system.

The survey works consisted of:

- Establishing a secondary and tertiary control networks
- Transferring control from the surface into the TWUL assets
- Topographical, Line & level surveys of the sewers
- HDS surveys/3D modelling of the sewers and CSO structures
- HDS surveys/3D modelling of existing pumping stations



3D Image of Thames Water sewer



09B02 Fleet Sewer, Ludgate Circus

(Detailed Survey, RC Structures Design)

Flood Resilience (Affinity Water)

We have designed flood resilience measures at Walton, Egham and Chertsey WTWs, which are critical sites to the water supply of the local region for Affinity Water. These flood resilience measures included installation of flood doors, duct sealing, drainage alterations, raising of electrical equipment, structural waterproofing of buried assets and civil structures. BS 8102 Type A Barrier, Type B Integral and Type C Drained protection methods were utilised.

Track Monitoring (HS2)

As part of HS2 project we undertook track and embankment monitoring at Copthall cutting to facilitate diversion of water mains beneath Chiltern Line embankment. We developed and implemented a monitoring regime appropriate to each construction phase, and prepared daily reports for the Client. Total Station and manual cant measurements were taken for the period the Tunnel Boring Machine was beneath the track's zone of influence. Ground settlement indicators were installed and monitored. These provided an immediate indicator of failure that was incorporated into the Contractor's Emergency Preparedness Plan. The condition of the track - before and after works - has also been assessed.

15E04 Foundation Design for Temporary Pedestrian Bridge at Taplow Station

Embankment Surveys

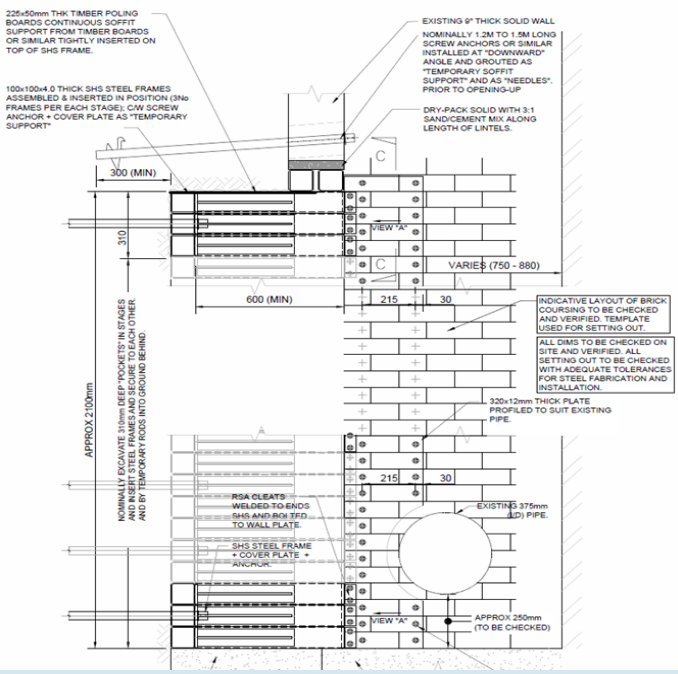
(Crossrail Wester Outer Electrification)

New foundations for OLE were to be installed on embankments which were classed as poor by Network Rail. Robert Walpole and Partners were engaged to provide a suite of earthwork profiles to allow the Geotechnical Engineers to assess the impact of the foundations' installations and agree suitable mitigations with Network Rail.

All surveys needed to be tied into the Primary and Secondary survey grids to ensure accuracy. This mean that tertiary control was installed strategically to enable the survey teams to traverse and close out surveys to a very high level of precision.

To minimise time spent on site and reduce costs to the Client, we proposed carrying out the surveys during traffic hours rather than night Possessions, which are less productive and would have required task lighting. Temporary accesses to the work sites were made to reduce the requirement for walking adjacent to the running lines and thus improve site safety.

11L01 Site Investigation works at Ealing Common, London



14C01 Shaft widening at Earl's Court Station

Track Drainage Detailed Design (LUL)

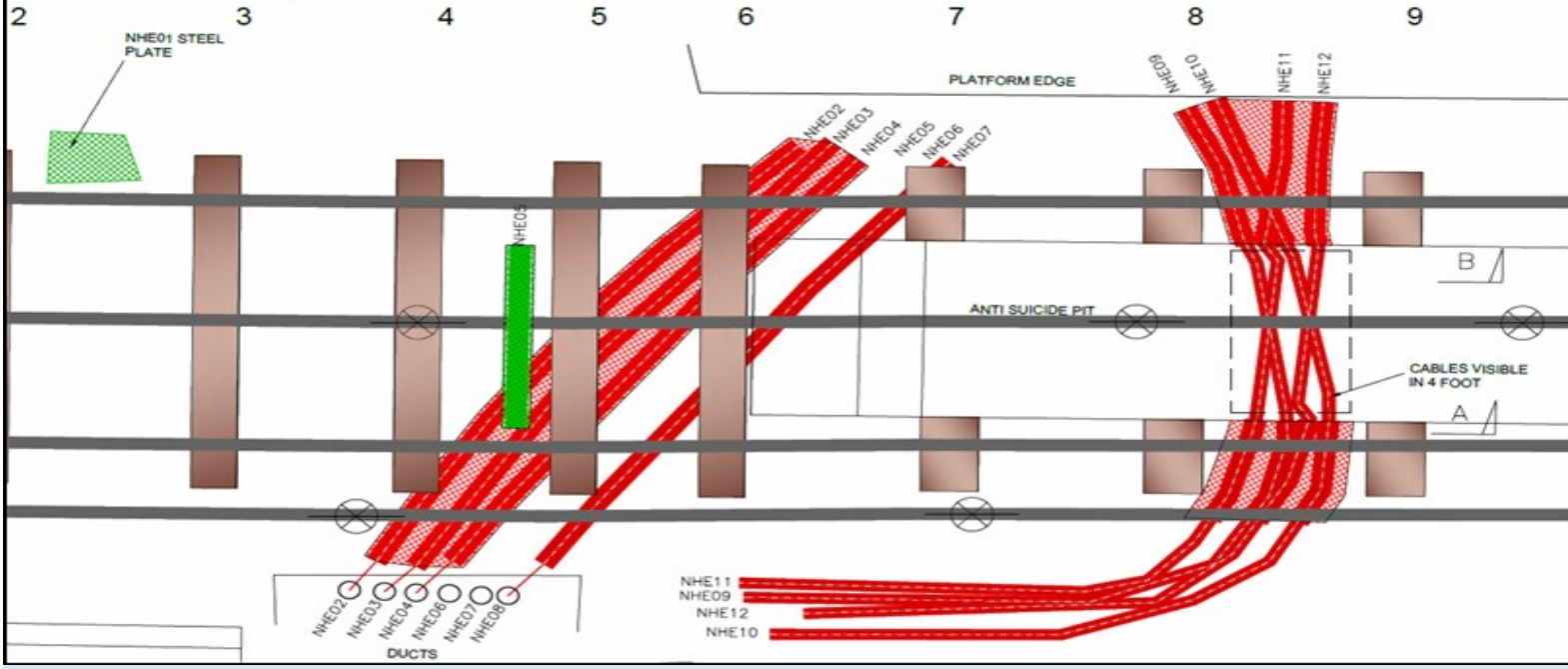
We have provided design and investigation consultancy services to London Underground (LUL) since 2007. For the track drainage renewal contracts, we provide technical competency throughout the project lifecycle.

Our experience in site survey and investigation, inspection and assessment is applied during the feasibility stage to assess existing catchment properties and allow an appropriate solution to be developed and presented to the Client. A hydraulic model of the existing catchment is constructed using LUL's preferred software MicroDrainage.

Combining asset assessment information and hydraulic model results allowed us to present an efficient value-engineered solution, often comprising a mixture of retention, renewal and trenchless rehabilitation solutions in both railway and highway environments.

During the design process, we liaise with third parties, local authorities, Environment Agency (EA) and Lead Local Flood Authorities to secure access for surveys and consents for designs as required.

A well-managed and extensive programme of works allowed us to assign resources appropriately to deliver the designs significantly in advance of the respective planned construction closures. This provided the Client with additional flexibility when planning associated construction works.



Detailed buried services survey for deep tube tunnel rail reconditioning project (LUL)

Buried Services Survey (LUL)

Due to a cable strike on the London Underground (LUL) network in 2014, LUL's Track Delivery Unit (TDU) required all deep tube tunnel rail reconditioning sites to undertake a detailed buried services survey prior to breaking out any concrete trackbeds. This initially put several partially renewed sites on hold, with the Contractor unable to hand back the sites to LUL.

We were awarded a NEC3 PSC Framework Agreement to deliver the utilities surveys at 36 No. sites. These sites were primarily located at station platforms. The contract was extended in 2017 and we have subsequently completed utilities surveys at 64 No. sites for TDU and at 12 No. sites for Track Partnership/Integrated Track Team (ITT), covering station grounds, roads on depots, highways, open sections and tunnels.

Robert Walpole and Partners developed a combination PAS128 compliant survey methodology to accurately locate and map known and uncharted utilities. We provide the technical competency required at each site to assess the scope, plan the work, undertake the initial desktop study, supervise the site work, undertake the visual inspections (including the confined space entries), collate the survey information, prepare survey drawings, and compile the Findings Report.

Robert Walpole and Partners

Consulting Civil and Structural Engineers

Accreditation

Main clients

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