

CASE STUDY

Power Supply Upgrade

LOCATION: West Ham, London
 CLIENT: Network Rail
 DATE COMPLETED: July 2014



Scope of Works

Global Rail Construction Ltd (GRCL) was awarded a £3m design and construct contract associated with eight existing and one totally new substation at West Ham on the Metropolitan & District Line. Having worked closely with the client at tender stage in support of their bid to LUL, GRCL fully project managed all aspects of the design and construction of the civil and building elements of the work. The existing substations were: Campbell Road, East Ham, Heathway, Hornchurch, Plaistow and Upminster Bridge.

In general works at these substations were to strengthen and alter the existing buildings and structures to allow the positioning of new transformers, switchgear, cables and ancillary equipment or provide new bases, structures and building extensions to support and house the same. Work included:

- ① Verification of Conceptual Design Statements
- ① Method statement Preparation and submission for approval
- ① Undertaking all measured, intrusive and non-intrusive surveys including ground penetrating radar surveys, cover meter surveys and material sampling and testing
- ① Undertaking full geotechnical surveys for foundation design
- ① Undertaking dilapidation surveys of the existing building structure
- ① Provision of detailed design, designers risk assessments and calculations using our in house Design Department
- ① Demolition and site clearance

- ① Installation of mini piles within the existing buildings
- ① Provision of new RC Bases, slabs and walls including 6m high blast walls
- ① Provision and installation of new structural steelwork
- ① Forming new openings in walls and slab
- ① Construction of a new lean to extension building at Heathway Substation including precast concrete beam and slab floor, brickwork, blockwork and roofing
- ① Drainage alterations
- ① Installation of new and alterations to existing fencing
- ① Floor screeding and levelling

A new substation was provided at West Ham. After clearing the site of existing vegetation and existing structures a 350mm piling mat was installed and 63Nr x 350mm dia bored insitu concrete piles installed to depths of 17m. An RC ring beam and suspended slab was constructed on the piles. The building was a steel portal frame with brick and block cladding and a Sarnafil roof covering and insulation on a lightweight metal deck. A suspended upper ground floor RC slab was constructed to the whole area of the building. Internally a mess room and toilets were constructed and fitted out. Works to the substation compound included foul and storm water drainage including connections to the existing public system, fencing, compound surfacing and a stepped masonry retaining wall.