



CASE STUDY

Scheme	Ilford Depot
Location	Ilford, East London
Client	Volker Fitzpatrick
Completed	August 2017



The Ilford Yard Stabling Project was a rail infrastructure scheme to provide additional stabling for new Crossrail rolling stock along the north-eastern section of the Crossrail network. The works involved the partial demolition of existing facilities at Ilford Depot to accommodate the proposed Crossrail stabling sidings and location of new operations and welfare facilities on the Ilford Depot site. Upon completion, this project forms part of Crossrail, one of the largest schemes of its kind in Europe.

Having had previous success with depot electrification projects at Three Bridges and Williams Way with Volker Fitzpatrick (VFL), RJ Power Rail (RJ Power) was invited to tender for the provision, installation and subsequent test and commissioning of the electrical power works associated with Stages 3-7 of the Ilford Yard Stabling works.

Under the expert guidance of Matt Woolley, Sales Director of RJ Power Rail, and having submitted a most compelling offer, RJ Power was subsequently awarded the points heating, signalling and general power supplies contract works with a commencement date of August 2016.



RJ Power was also awarded an electrical enabling works package in preparation for the main improvement works. These works included:

- 🌀 Installation of temporary LV supplies to depot support buildings including the yard controller's office and mess rooms
- 🌀 Cable pulling, installation, termination and testing
- 🌀 Final testing and commissioning of portacabin supplies

The awarded sub-contract package was RJ Power's largest contract to date and was testament to the quality of the bid submitted, which required RJ Power to supply all access and operative accreditation for below ground cabling installation and cable installation plant. The bid included a carefully thought through methodology in respect of the off-loading and lifting of all fixed equipment into final position on site and provision of part time on site management for the two months leading up to construction, to support effective and collaborative planning and co-ordination with the PCL, to achieve a series of milestones and to ensure that the exact start date for the fixed plant installation was met. It was also a requirement for the team to supply full time site management for the duration of the on site works up to the acceptance date from Crossrail and for energisation of all services installed.

Project Deliverables

RJ Power's contracted electrical power scope of works for the project consisted of the following extensive deliverables:

Installation of HV and LV substation, cabling and switchgear consisting of:

- 🌀 Provide support to UKPN in connection with the installation of 2No brand new Ring Main Units (RMU)
- 🌀 Supply and installation of a new Bombardier Transportation (BT) prefabricated substation which included 1No HV distribution panel, 2No 1 MVA 11KV/400V transformers and 1No LV distribution panel
- 🌀 Supply and installation of Workshop 'A' new switchroom and LV switchboard
- 🌀 Supply and installation of a new AGA 500kVA packaged substation
- 🌀 Provision and installation of power to DNO cubicles
- 🌀 Provision of associated earthing and bonding to all locations



Installation of 650V signalling power system including:

- Supply and installation of new 3-core 650V feeder cables using the third core as the Continuous Protective Conductor (CPC), connected in parallel with the cable armour to ensure that all locations on the feeder were equipotentially bonded
- A new Principal Supply Point (PSP) as a point of common connection for all sources of electricity from which power could be distributed. The PSP housed a full remote condition monitoring system
- Provision of Functional Supply points (FSP) to house the necessary power supply equipment required to supply the signalling functional circuits of 120V and below

Installation of points heating equipment, consisting of:

- 2 no. three phase Points Heating Control Cubicles (PHCC), each with a dedicated fuse way situated on the LV side of a new 500 kVA Operation and Welfare Building Substation
- A total of 19 no. point ends heated comprising AV, BV and AVT type switches. Each point had a 5kVA, 230/110V transformer with dual isolated secondary windings
- Trackside connection boxes installed and located adjacent to each point end to provide a means of local termination during testing and maintenance procedures



Challenges and Solutions

Complex project interfacing:

RJ Power faced challenges with the timescale of this project due to the number of different project interfaces during the course of these works. With the works being of a multi-disciplinary nature and with multiple contractors needing to negotiate access arrangements, RJ Power's team needed to be extremely flexible and work collaboratively when approaching and delivering key milestones in their programme.

Careful logistical management was also needed as multiple electrical assets were being supplied by RJ Power. All deliveries were pre-planned in accordance with a Traffic Management Plan. All vehicles accessing the site had to be Crossrail compliant, and in line with the directives given by Traffic Marshals. All plant/pedestrian interfaces had to be managed around the nominated site storage area, with segregated walking zones provided and Banksman present during the transportation and lifting into position of all materials for the works.

As a result of some of the client programme delays, RJ Power was presented with a number of resourcing conflicts due to requirements on concurrent projects. Close communication and liaison between the project teams was vital in highlighting any potential risks and providing a safe and comprehensive solution. RJ Power's role as team player with a collaborative working approach was commended by VFL Head of Commercial Andy Gardiner, who praised the project team for their fantastic achievement in helping to achieve 500,000 project delivery hours without any incidents or accidents following completion of a major blockade at the end of 2016.

Installing a rare joint:

As part of this complex E&P scope, RJ Power was also asked to complete a unique and rare joint at Ilford Depot.

The existing cable (25kV) was installed in 1959 and was a Mass Impregnated Non Draining cable. RJ Power was asked to joint this to a modern XLPE cable, using a unique joint that needed commissioning by specialist Tyco in Germany.

With an 8-10 week lead-time on the joint, careful planning was needed. The residual risk being that if the joint, on arrival from Germany, did not fit the two separate cables or was unsuitable, the programme would have been severely disrupted.

RJ Power engaged its procurement and logistics team, which managed the purchase and shipping of the joint in close liaison with Tyco, to enable seamless delivery of this specialist joint.

The company's skilled jointers then took over to deliver this high-risk element of the works, successfully completing them and delivering a first class solution, the sort of which RJ Power's experienced electrical team thrives upon.



Why RJ Power Rail?

Our electrical engineers offer a reliable and flexible service with exceptional expertise, providing engineering solutions in the power sector.

Having two complementary divisions, which cover both rail and private networks, enables us to understand the requirements of all relevant power installations on the railway infrastructure. It is this knowledge that consistently allows us to meet and exceed our customers' requirements in respect of the design, installation, testing and commissioning of both high and low voltage power applications in the UK.

Our pride in providing outstanding quality to our clients through an open and honest approach, has led to the establishment of many long lasting relationships.

Testimonial

"Congratulations from me to everyone involved. This is a testament to the excellent collaboration and dedication which you've established on the project. We're on the verge of commissioning our new sidings in support of Crossrail's Stage 1 opening after many people thought it couldn't be done. That will be a great achievement. Thanks to everyone for your hard work."

Bill Tucker, Section Delivery Director, Crossrail