



## CASE STUDY

# RJ POWER RAIL

Collaborative Engineering Solutions

<b>Scheme</b>	750V Traction DC Cable Refurbishment
<b>Location</b>	Wessex Route (St Johns Sub-Station to Barton Mill Sub-Station)
<b>Client</b>	Network Rail
<b>Completed</b>	February 2018 – March 2019



This DC cable renewal project involved the installation, testing and commissioning of new DC Cables which was derived from the DC Cable Refurbishment Woking - Basingstoke Route Requirements Document issued by Network Rail (NR).

RJ Power Rail were invited to competitively tender and subsequently secured the full scope of works for the renewal and modification of DC LV Cables and the doubling of identified +ve cables at the Open Route sections/ locations between St Johns and Barton Mills Sub-Stations.

The line of route between St Johns (near Woking station) and Barton Mill (near Basingstoke Station) on the Bournemouth Main Line was identified as being at particularly high risk of failure, hence the urgent requirement for this project. The third rail electrification system in NR's Wessex area has large number of DC distribution cables used as part of its traction power system. The age and condition of certain cables and problems with the reliability of lugs has resulted in failures impacting directly on train performance.

RJ Power Rail's contract covered replacement and modification work on positive DC cables to enhance traction power performance in this area, increasing the life expectancy of the cables and reducing the amount of future faulting work for NR's maintenance teams.

During the first part of the works, cables and cable lugs were provided free-issue. During the second part of the works, RJ Power Rail supplied all materials for the works. All materials were delivered to the RJ Power Rail secure facility, which allowed the rail team to deliver a fully logistically managed solution.

Works, which were fully managed and self-delivered by RJ Power Rail's in-house team, required completion during TIII possessions, requiring full access planning and arrangements in conjunction with NR's Works Delivery Team.

The project was successfully completed to meet Network Rail's requirements.



### PROJECT DELIVERABLES

The scope of works was to survey, produce detailed reports and install new 750v DC Traction cables at various locations between St Johns Substation to Barton Mills Substation stretching over 20 linear miles:

#### Pre-commencement stage

- 🌀 Undertake site surveys of 4 operational lines along 20 linear miles (26m 00ch to 46m 00ch)
- 🌀 Update Network Rail's existing conductor rail drawings
- 🌀 Compile a detailed asset report of the existing infrastructure to allow NR Works Delivery to manage scope change to the RAM

#### Design stage

It was agreed with Network Rail that this particular project would not require the usual Form A & B design process as the works entailed replacing existing infrastructure. The scope would be, therefore, defined by the workbank reports and the updated conductor rail drawings. This process was agreed by the Network Rail RAM and project team.

#### Implementation stage

- 🌀 Surveys
- 🌀 Produce survey data reports
- 🌀 Production of DC Traction cables
- 🌀 Installation of DC Traction cables
- 🌀 Test and produce relevant ITP's
- 🌀 Hand back



## CHALLENGES AND SOLUTIONS

### Critical planning

All the works associated with this project required TIII possessions. As there were not enough 27hr or 52hr possessions, most of the works had to be delivered in mid-week night possessions providing a maximum of 3hrs clear working time. The works involved were super critical, due to the number of previous failures within the infrastructure. The RJ Power Rail Access Team and the Network Rail Possessions Access Manager worked collaboratively to ensure an achievable programme was developed.

### Logistics management

RJ Power Rail took delivery of approx. 40 cable drums that were free issued from Network Rail. These cable drums were delivered into RJ Power Rail's own secure depot facility. All the drum numbers and their locations were attributed to a 'workbank datasheet' to provide full supply and installation traceability. The second part of the project required RJ Power Rail to supply the materials and log them in the same method.

Using the workbank datasheet, all the cables were then cut to the required length and one end of the cable was lugged in readiness. These cables were then palletised and numbered relating to the mileages and the route numbering scheme.

The site team then loaded the pallets onto our lorry and delivered them to the site on a 'just in time' basis prior to the possession.

### Delivery knowhow

Given the tight time constraints of the access regime, the experienced in-house team led by Adam Lovegrove were able to deliver and install on average 15 cables per week. This quantity, in restricted locations and during small possession durations, could only have been achieved with the years of knowledge and experience that the RJ Power Rail Team has.

## WHY RJ POWER RAIL?

RJ Power Rail has an established Team that combines design, engineering and delivery expertise across all rail electrification activities and can be trusted with the most complex and demanding of projects.

The company offers the full range of rail electrification and power services from one-off cable repairs to multi-million-pound HV, LV and Scada D&B projects.

They are an experienced power solutions delivery provider who work collaboratively with their clients and own supply chain as a reliable partner, providing exceptional expertise and proven project delivery in respect of HV Electrification and DC Switchgear schemes.