

# CASE STUDY

## Felixstowe Capacity Upgrade Project

LOCATION: Ipswich to Felixstowe  
CLIENT: Volker Fitzpatrick  
DATE COMPLETED: June 2019



### Introduction

The Felixstowe Capacity Upgrade Project was a rail infrastructure programme for Network Rail, which involved the double tracking of sections of Permanent Way – over approximately 20 Kilometres between North Ipswich and Felixstowe – to increase capacity for the main freight route from the Port of Felixstowe.

The full project scope of works included upgrading five Level Crossings with new barrier controls and the installation of new Permanent Way, Signalling, Power and Telecoms for a new loop installation in order to facilitate the expansion of the strategically important freight connections.

The Principal Contractor for the works was Volker Fitzpatrick Ltd (VFL), acting on behalf of Network Rail as part of their Anglia Regional Collaboration (ARC) CP5 framework. Global Rail

Construction Limited provided a fully managed sub-contract service to VFL, completing the full scope of Ancillary Civil Engineering and E&P works for the project.

Having a multi-disciplinary workforce including design, civil and structural engineering and E&P expertise, along with in-house project management and having previously delivered time-pressurised, highly co-ordinated schemes, allowed Global Rail Construction Limited to provide the necessary solution in order to complete the works to meet the client's requirements.

## The Deliverables

Global Rail Construction Limited were among a team of specialist rail contractors who worked in a collaborative relationship to deliver this important project for Network Rail. The specialist discipline support services that were undertaken by Global Rail Construction covered the entire end-to-end scope for the E&P and Ancillary Civil Engineering works.

### **E&P Scope of Works:**

The E&P deliverables comprised of:

#### Signalling Power

- ① Installation of 42 new Class II Functional Supply Points (FSP's)
- ① Installation of over 20km's of new 650v power - Dual feed 95mm
- ① Installation of new Principle Supply Point (PSP) at Westerfield (Ipswich)
- ① Modifications to existing PSP at Trimley (Felixstowe)

#### Points Heating

- ① Installation of 3 new Points Heating Control Cubicles (PHCC's)
- ① Installation of 5 Point heating sets

#### Level Crossings

- ① Installation of 5 new DNO Power supplies
- ① Installation of local Signalling supplies for REB's
- ① Installation of Level Crossing lighting
- ① Installation of new L.V Sub main supplies for lineside equipment

## Challenges and Solutions

The first of two key project milestones were to commission the new Signalling power installation prior to the commencement of a five-day Christmas blockade to enable key Signalling staging works and Permanent Way realignment to be undertaken. To achieve this required:

- ① Installation of 16 number Staging platforms for the installation of the new Signalling LOC's and Signalling power FSP's.
- ① Installation of UTX's and URX's at five key level crossings to enable the installation of the Signalling power
- ① Installation and Commissioning of a new PSP at Westerfield
- ① Controlled isolations of the existing PSP at Trimley to facilitate the installation of new Signalling feeder circuits on the existing PSP

#### Interfaces

- ① Retention of the existing Class I signalling power for the duration of the project
- ① Staged decommissioning of the existing Class I Signalling power

### **Ancillary Civils Scope of Works:**

The Ancillary Civils scope of works comprised of:

- ① Sheet Piling installations for ground and slope retention
- ① Screw Piling installations for new lineside equipment housings
- ① Under Track Crossings (UTX's)
- ① Under Road Crossings (URX's)
- ① Signalling Bases
- ① Trackside Signage bases
- ① PHCC Bases
- ① DNO Bases for new DNO supplies
- ① Lineside bases for Points Heating transformers and Trackside Connection Boxes
- ① Trackside Containment
  - ① Standard Troughing
  - ① GRP troughing

The existing Signalling power (via the legacy Signalling LOC's) was maintained in full operation until the Christmas blockade, when 50% of the original installation was decommissioned and the Signalling power migrated to the new Class II power from the new PSP at Westerfield. The new Class II installation provided resilience by splitting the Signalling load via two PSP's with the facility to reconfigure the installation such that all Signalling Power could be derived from a Single source under fault conditions.

The remainder of the original installation was retained in service until the 2nd key commissioning at the end of in May 2019, during which the new Class II power was maintained as fully operational.

#### Restricted Access

With the existing layout being a single-track route, a number of interface issues needed overcoming in order to accommodate the various requirements for all key rail disciplines to undertake project installation work over any one weekend possession. Global Rail Construction Limited worked closely with all project stakeholders, in order to agree the necessary programme deconflictions and negotiate sectional access planning throughout the works.

#### Cabling Installation

A dual feed cable installation requiring long sections was installed by Global Rail Construction Limited using bespoke cut to length cable sections. This mitigated the need for designed cable joints for sections over 800m in length. Detailed coordination of individual cable drums was required, which provided the most effective installation in respect of the robustness of the installation, as well as reducing the maintenance over the lifespan of the installation.

#### Key Interfaces

As part of the delivery for the Ancillary Civils and the E&P packages, Global Rail Construction Limited were able to provide a coordinated programme of works to interact between the key structural installations required to facilitate the new lineside equipment. Predominantly the Signalling equipment and the E&P power installations.

Challenging ground conditions were also faced in conjunction with the installation of the hardstand bases and staging platform

## The Benefits

When a project is time-critical and crucial milestones have to be met, experience is a key factor in achieving success.

Having an in-house team of design engineers, project managers and installers that are able to interface with each other as well as a myriad of stakeholders, without doubt, enabled solutions to be quickly and effectively formed – providing programme surety.

The ability to call on the full extent of its in-house management team and supply chain partners, as and when needed to keep the works on track, also evidenced the superb ethos, mentality and togetherness within Global Rail Construction.

structures required for new Signalling and E&P equipment. These were crucial to the already finely balanced timeframe for the project, as they needed to be operational in time for the Christmas blockade. Global Rail Construction Limited utilising its in-house design capabilities provided additional support to the client and identified design solutions options that enabled the project to stay on track.

The subsequent installation required careful coordination of both Civils and E&P equipment installation activities, requiring both disciplines to work seamlessly over several weekend possessions, to allow the works to be completed in order to meet the key date.

Close coordination with the designated Signalling contractor was also required to ensure that the 110v Signalling supplies were available to meet the pre-commissioning Signalling testing works. Global Rail Construction Limited also provided further E&P support working in conjunction with the Signalling installers to undertake:

- ① Modifications to existing Signalling LOC's
- ① Removal of redundant equipment within live Signalling LOC's
- ① Controlled power isolations to facilitate Signalling testing & Commissioning and;
- ① Coordination and staged handover of Signalling Power to the Network Rail maintenance team

Global Rail Construction is a multi-faceted, multi-disciplinary design and build contractor which works in civil engineering, electrification, mechanical and power, signalling and building, and directly employs several hundred staff for projects in both mainline and metro rail systems.