



LOCATION:
CLIENT:
DATE:

Dublin to Cork Railway Line near Newbridge Train Station, Co Kildare Irish Rail September 2021 - October 2021



#### Introduction

The objective of the project was to install new concrete headwall sections of a culvert on the railway line named UBC66A, including

# **Project Deliverables**

Global Rail Services was appointed Main Contractor and PSCS for these works. The works were completed under full night time track possessions and one weekend shutdown of the rail line.

Vegetation and trees around the site and lay down areas were removed prior to works commencing. The existing sheet piles were removed and excavations carried out for installation of the headwall and in-situ culvert connection.

Pumps were put in place for rerouting the water handled by UBC66A, diverting the flow across the railway line to the east side of the culvert. The pumps ran 24/7 to accommodate the flow of water. Pipes were placed under the track during night works.

excavation, over pumping, backfilling and forming a small section of reinforced concrete.

During the 17 hour weekend shutdown, the existing culvert draining wall was removed, taking care not to damage the integrity of the existing structure. Once the area was backfilled, levelled, head walls cleared and existing culvert cleaned out of stone, the precast units were transported to site and carefully lifted into place using a 250t crane.

Completion works carried out over night time track possessions included the installation of in-situ concrete, fitting of a handrail and safety access ladder to the headwall unit and the installation of palisade fencing and a lockable gate. The culvert was powerwashed prior to demobilisation from site.

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# **Challenges and Solutions**

The works took place within strict timelines. The weekend shutdown had been provisionally booked prior to contract award. Global Rail Services had to ensure availability of resources, plant and material to carry out the works in accordance with Irish Rail's programme. This involved careful planning and co-ordination of specialist subcontractors.

The access route to the site location was extremely narrow at the rear of the Newbridge station carpark. This meant that during operations, all deliveries of plant, men, equipment and materials had to be planned with military precision. Otherwise there was a potential of being land locked. The possession window was extremely tight to execute the works and as much prep work as possible was completed in the run up to the possession with the support of Irish Rail and their teams.

The pre-cast units were provided by Irish Rail. There was no room for error on the night of installation. To safeguard against any issues, the units were pre-assembled to ensure a seamless fit on the night.

The existing culvert was used to manage huge volumes of water underneath the railway line and away into two 1.5m diameter storm drains. The existing culvert itself however was only 1m wide

### **Benefits**

The project benefitted from Global Rail Services' extensive experience working alongside live rail lines and during planned weekend shutdowns. We have worked on similar projects over the past 20 years. This meant we were fully aware of the challenges that could arise while working to strict possession hours and shutdowns.

The majority of works were carried out by our in-house civils teams and Appointed Person who was present during the installation of the precast culvert units. This meant we had more control over the project programme and weren't relying on subcontractors to complete the works within the specified timelines.

Prior to the installation of the culvert head walls, during heavy rain the water levels would rise to such a significant level that the by 600mm deep. This meant that the culvert under the railway was a choke point due to the volumes of water this drainage system catered for. In heavy rain the water levels at the entry point rose up to 3m above the head of the culvert. To combat this during the construction, it was decided to dam the culvert and over pump to remove water from the working area. Two 8" pumps were used, capable of pumping 161 l/s each in case the weather changed and there was a surge of water.

The crane size and pad location had to be planned meticulously due to the narrow access point. The crane size was limited to 250t, being located adjacent to the rail and culvert excavation. Ground investigation was carried out and the crane pad and location designed accordingly, all carefully co-ordinated and agreed with Irish Rail to coincide with the possession requirements. The area was land locked and this was the only access point and position a crane could sit, having to lift a 10t pre-cast element for 27m.

surrounding area of land at the entry point would flood and put significant pressure on the railway infrastructure. Ballast would slip into the existing culvert further, reducing the capacity for water to drain away which would only add to the problem and reduce water capacity further. With the new installation of head walls and the cleaning of the existing culvert, the project reduced flooding, protecting railway infrastructure for the future and allowed for easier access and maintenance with new fencing and access ladders.



## Testimonial

"Global Rail Services provided a high level of expertise, efficiency, safety, communication and quality throughout the project. They understood the complexity (pumping a live water source, craning precast concrete headwall units), site constraints (ESB overhead lines, deep excavations and narrow access route) and time constraints of the project (17hr track shutdown) from day one. Global rail demonstrated exceptional efficiency and time management in the execution of the project. Every detail from manpower, plant and equipment and materials was organised and delivered promptly. Everyone knew their role on site, which ultimately led to the successful installation of the project."

"Global Rail Services maintained a strong focus on safety throughout the project, adhering to all safety regulations and identifying any potential risks early and implementing control measures to limit their impact. Overall, the quality of workmanship was excellent, the attention to detail was meticulous and the overall end product was above and beyond the required specifications and standards."

"I would highly recommend Global Rail Services and look forward to the opportunity to work with them again in the future."

#### Cormac Carroll

Assistant Engineer, CCE Regional Managers Office Irish Rail, Heuston Station