

# CASE STUDY

## Fluid Filled Cables Assessment Project - Site Investigation

**LOCATION:** Greater Dublin Area  
**CLIENT:** ESB Networks  
**DATE:** October 2021 - August 2022



### Introduction

ESB Networks commissioned ESB Engineering & Major Projects (EMP) to undertake an environmental screening assessment of the fluid filled cables network to identify and assess leaks. Following the completion of the assessment, in agreement with the EPA and relevant authorities, a decision was made to begin intrusive assessments at agreed locations in order for an Environmental Consultant to complete the assessment. Global Rail Services Ltd (GRSL) were appointed as main contractor and PSCS for the project for the 23No sites identified - encompassing both slit and 90° L trench excavations - at locations and sensitive receptors in agreement with the Environmental Consultant.

Project activities included the safe exposure and logging of all services, ground conditions and make up therein. No outages were available for the cables during the works, so all cables were treated as live. Global Rail Services were responsible for the temporary works required to support the trench excavations. Water samples were taken by the Environmental Consultant, which were recovered from rivers and canals close to each leak location.

### Project Deliverables

GRSL liaised with stakeholders, carried out letter drops and erected notice signage two weeks prior to works commencing on site. Relevant stakeholders included landowners, wayleave owners, residents, property owners, local authorities, Transdev, Waterways Ireland, Leopardstown Club Ltd and Irish Rail.

Pre-works dilapidation surveys which included a photographic record of all 64 trial pit locations were carried out prior to works commencing due to the proximity to existing structures and boundary walls. The condition of all road gullies were recorded and dilapidation surveys conducted of all structures and assets within 10m of the excavations. All existing defects and surface conditions were noted and recorded in the dilapidation surveys.

Soil samples were recovered at 23 sites, involving 62 slit trenches and 3 'L' trenches between the assumed leak locations and sensitive receptors. Water samples were recovered at 20 sites. Road opening and road closure licences were applied for by ESB with the assistance of GRSL and works carried out within the agreed timeframe. Traffic management plans were produced for all T2 road licence applications and implemented at each location in accordance with Local Authority requirements and road licence conditions.

GRSL liaised closely with the ESB appointed Environmental Consultants and provided support to assist with water sampling and was coordinated to take place at the same time as excavation works, to avoid lone working and to take advantage of the operational hours on the local authority issued T2 road opening licence.

Slit trenches measuring 3m x 0.75m x 3m deep were carried out on roads, paths and grass areas. Soil samples were recovered from the trench at ground level. 'L' type trenches allowed soil sample recovery from the blinding of the existing cable. 'L' type trenches

## Challenges and Solutions

As the local authorities would not permit the sloping or stepping back of excavations in the public roads or footpaths, temporary works designs were required at all sites. Works in close proximity to trees, walls and housing structures, also required temporary works designs. GRSL were required to provide ESB with temporary works designs for all proposed traffic management alterations and the associated traffic management plans. The solution identified was to deploy lightweight aluminium trench boxes into the 3m deep excavations. Selected for their lightweight nature, they could be easily lifted with a 5 tonne excavator being used to carry out the works. ESB were provided with a design statement of capabilities by the trench box manufacturer, which gave assurance that operatives could enter the 3m deep trench without being put at risk. All excavations were carried out in space restricted urban carriageway environments.

## Benefits

Global Rail Services Ltd have been carrying out trenching and ducting works for ESB Networks since 2014 on the National Trenching & Ducting Framework. Through this framework and other projects, we are familiar with Road Opening Licence applications

included the standard sized slit trench and an additional 1m long hand excavated trench perpendicular to the excavated trench in the direction of the existing cable.

Following close liaison with the various Local Authorities, all areas were reinstated to match their requirements and to match the existing adjoining surfaces. This included landscaping, road construction and resurfacing works, concrete works, specialist surfacing, road marking and anti-skid surfacing.

At the end of the works GRSL provided as-built drawings in AutoCAD and PDF showing the exact location and orientation of each slit trench excavated. GRSL also provided a report that detailed the locations of the trial holes, the dimensions of each trial hole, the utility and services encountered (depth, service type, duct/pipe size, duct/pipe material etc.). Photographic records of each of the trial holes were taken showing the excavation area and services/utilities within each trial hole.

One site on the Merrion Road was identified to have a presence of Japanese Knotweed. GRSL in consultation with an Environmental specialist and the client ESB discussed the possibility of relocating the slit trenches in this area away from the area of Japanese Knotweed. In consultation with other utility owners, ESB and Environmental specialists, it was agreed to relocate to the carriageway. The benefit of collaborative engagement provided the client with soil samples without the risk of cross contamination from the Japanese Knotweed.

and liaising with various Local Authorities. We have a large pool of CSCS certified machine drivers and Chapter 8 qualified Traffic Management staff allowing us to undertake these works in-house.

## Testimonial

“This is to confirm that Global Rail Services recently completed works on behalf of ESB EMP. The project was Fluid Filled Cables Assessment Project Site Investigations A completed between October 2021 and August 2022. The works involved the excavation of deep slit trenches, up to 3m deep, in order to obtain soil samples for laboratory testing. This was needed across 20+ locations throughout Dublin city centre. The obtaining of these soil samples facilitated EMP employed environmental consultants to complete environmental assessments at known fluid filled cable leak locations.

“This was a very challenging project because of the multiple site nature of the works and the different requirements needed at each location to commence works at each location. The works on site themselves were not without challenge either as many of the slit trenches required were in close proximity to live ESB infrastructure and other services. There were a multitude of different stakeholders including the various departments in DCC, DLRCC and SDCC in order to arrange road opening licences, traffic light switch outs, lane closures etc. Further to that significant collaboration was required at some of the locations with ESB Networks, GNI, Transdev / TII and Dublin Bus.

“Given the difficult locations that were required to be investigated, Global Rail Services showed exemplary ability to plan, organise and execute the works. Each location was essentially its’ own mini-project. All works were completed in a timely, safe and competent manner. The staff at Global Rail Services always showed a great ability to adapt and deal with the changing circumstances that were encountered throughout the works. The EMP Project Team were very pleased with how the project went and Global Rail Services were a key part of that.”

**Paul O’Neill**  
**Senior Civil Engineer, Civil & Environmental Engineering,**  
**Engineering and Major Projects, ESB**