

# Rose Fitzgerald Kennedy bridge over the River Barrow. Design and Construction of a long span extrados bridge

**Marcos Sanchez Sanchez**

*ARUP Ireland*

**Miguel Angel Astiz Suarez**

*Carlos Fernandez Casado S.L.*

**John Iliff**

*Transport Infrastructure Ireland*

**Contact:** [marcos.sanchez@arup.com](mailto:marcos.sanchez@arup.com) , [maastiz@cfcsll.com](mailto:maastiz@cfcsll.com) , [john.iliff@tii.ie](mailto:john.iliff@tii.ie)

## Abstract

This paper describes the key elements from early planning to completion of a new bridge over the River Barrow which is part of the New Ross bypass in the south of Ireland. The structure has a total length of 887m, with a span arrangement of 36-45-95-230-230-95-70-50-36m. The two central twin spans are the longest of its kind in the world (extrados with a full concrete deck). The bridge carries a dual carriageway with a cable arrangement consisting of a single plane of cables located in the central axis of the deck. The design and construction focused in providing a structure with long term durability, resilience, and a robust approach to design scenarios using the Eurocodes and state of the art analysis techniques, including extreme events such as fire and ship impact.

**Keywords:** post tensioning, design for durability, extrados, cable stayed, concrete deck, ship impact, wind engineering.

## 1 Introduction

The town of New Ross, located in the south west of Ireland is crossed by the river Barrow. The existing town bridge is the latest fixed crossing before the sea, around 25km downstream, and attracts a significant local and inter urban traffic which leads to frequent traffic congestion (Figure 1). For many years, a bypass of New Ross has been in the planning with the river crossing being the main challenge.



*Figure 1. New Ross town old bridge.*

### 1.1 Planning, and Environmental Impact Statement. Conceptual design

The river Barrow, which is around 300m wide at any location from New Ross to the sea represents a major obstacle for a new motorway scheme.