

Nottingham Station Bridge, UK

Brian DUGUID
Associate (Bridges)
Mott MacDonald
Manchester, UK
brian.duguid@mottmac.com



Brian Duguid, born 1969, received his civil engineering degree from the University of Aberdeen, United Kingdom in 1990. He is an Associate for Mott MacDonald in Manchester, United Kingdom, and is a visiting lecturer in bridge design at Manchester University and Liverpool University.

Summary

The existing tram system in Nottingham, United Kingdom, is to be extended with two new lines to the south and west. To enable operations, all trams must pass on a new viaduct above the historic Nottingham Railway Station, a one-hundred year old building with protected heritage status. The new viaduct has been designed with construction in mind to minimise alteration to the station's historic fabric, and minimum disruption to busy rail services. It is also required to be elegant and visually appropriate.

A number of alternative structural forms have been considered, and considerable effort devoted to aesthetic refinement. Remnant foundations from a previous structure are to be re-used to minimise construction impact.

Keywords: Light rail; truss bridges; steel bridges; bridge launching; construction; feasibility study; heritage.

1. Introduction

A new tram system, Nottingham Express Transit (NET), was opened in Nottingham, UK in March 2004, running from the city centre northwards for 14 km. Two extensions of the system to the south and west are currently under development. The extensions are being promoted by Nottingham City Council, and procured under the UK government's Private Finance Initiative, with a mixture of funding from central government, local government via a Workplace Parking Levy, and from private banks supporting the tram system contractor and operator.

The extended tram lines will pass above the historic Nottingham Railway Station, a one-hundred year old building with protected heritage status. The new viaduct carrying the tramway is on the scheme's critical path, with significant associated risks. It must be built with minimum alteration to the station's historic fabric, minimum disruption to busy rail services, and minimum disruption to the surrounding highway network. An elegant and visually appropriate structure is also required due to the sensitive location.

Mott MacDonald were appointed in 2001 to assist the Promoter in scheme development including the public inquiry process (see below), and following its successful conclusion in 2007, were appointed to carry out various elements of design prior to procurement of the contractor, including detailed design of the Nottingham Station tramway viaduct.

2. Nottingham Express Transit Phase Two

2.1 Proposed lines

The southern terminus of the existing tramway is supported on Trent Street Viaduct, a remnant of the Great Central Railway system, immediately to the north of Nottingham mainline railway station (hereafter "Nottingham Station"), see Fig. 1.